Exhibit 4: Physical Art Finalist Recommended Proposals



Exhibit 4 Item 4-A, June 18, 2018 Public Art Commission

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Public Art Program Finalist Proposal

\$150,000 Award Category

Rockspinners

Artist: Zachary Coffin

Proposed Location: this artwork, which includes two Rockspinners, is proposed for one of two possible locations:

- Alternative #1: One Rockspinner on each side of the Bay Farm Bridge
- Alternative #2: Two Rockspinners at the natural playground at Jean Sweeney Park

Rockspinners by Zachary Coffin

City of Alameda Physical Public Art Proposal

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What is a Rockspinner?

A Rockspinner is a multi-ton boulder, which can be spun easily and silently with a single push, compelling viewers to interact and explore while creating a sense of place and an opportunity for fun. I use engineering to make these huge rocks appear weightless, juxtaposing large natural rocks with highly machined technical elements. Rockspinners are physically engaging and playful art pieces that can lower barriers between people, spark friendships, and build community. In addition to being very fun, Rockspinners are also extremely durable and are designed to work without maintenance for at least 50 years.



Other Works by Zachary Coffin



Site Plan for Bay Farm Island Bridge

See Appendix A for site plan.

Site Plan for Jean Sweeney Open Space Park

See Appendix A for site plan.

Materials

See Appendix B for manufacturer & supplier Safety Data Sheets (SDS) & Technical Data Sheets (TDS) for the Rockspinner materials.

- 1. Granite
- 2. Stainless steel bearing housing
- 3. Marine grease deep inside sealed housing
- 4. Cured epoxy gluing the housing deep into the stone

<u>Budget</u>

Item	Amount	Notes
Stone acquisition & transport	\$10,000	
Custom-machined stainless steel	\$36,000	
bearing housing & shaft	ψ50,000	
Bearings	\$3,000	
Drilling & bearing mount	\$3,000	
Custom rigging	\$1,000	For bearing maintenance. Will be documented and delivered to City of Alameda.
Foundation & geoengineering	\$37,000	
Installation	\$8,000	
Surface treatment	\$3,000	Foundation cover, crushed rock
Insurance & rent for shop	\$10,000	
Artist fee (10%)	\$15,000	
Rigging & maintenance documentation	\$2,000	
Contract review	\$800	
Engineering	\$6,000	Structural engineering report & stamp
		Estimated at \$1,500 for \$150,000 artwork, and
Permit costs	\$1,500	\$1,000 for \$50,000 artwork. Assumes that if a
		BCDC permit is required, it's included in this cost.
Subtotal	\$136,300	
10% contingency	\$13,630	
Total	\$149,930	

Installation Plan

Erik Kneer, principle structural engineer at Holmes Structures, will be the engineer of record for this project. The sculpture will be bolted to a heavy concrete foundation as specified by Holmes Structures.

Each Rockspinner will be transported on a flatbed truck to the site in Alameda from American Steel in Oakland. The Rockspinners will be installed onsite using a crane.

Maintenance Plan

Per a consultation with the project's structural engineer (Erik Kneer of Holmes Structures) on the lifespan of the artwork, we can ensure a minimum working lifespan of 50 years. The works are also designed to be fail-safe, meaning they would become non-kinetic sculptures well before (many centuries before) they presented any kind of safety hazard.

While the rock will last millions of years and stainless steel is incredibly durable, one potential issue is the long term corrosion of the bearings and failure of the lubrication. The bearings are rated for at least a million revolutions, a number hard to reach with a human powered sculpture. If maintenance of the bearings is required, the current Rockspinner design has built in rig points, which allow the sculpture to be easy lifted in order to replace/restore the bearing.

These Rockspinners will be made of granite from the Sierra Nevadas, a very strong and impermeable stone. Graffiti can be removed with a simple powerwash.

Task	Week #	Notes
Planning & Design		•
Complete schematic drawings	Week 4	Similar to a conceptual drawing, but with more context and detail.
Complete design development drawings	Week 8	Should include scale, size, and materials; may also include weight.
Complete 80% construction drawings	Week 14	Near complete construction drawings.
Complete 100% construction drawings	Week 18	Complete construction drawings
Commence permit process	Week 4	
Finalize coordination with the City's site design and permit approval process	Week 26	Planning & design drawings, permits (BCDC, etc.), foundation engineering, structural engineering, soils testing, infiltration testing
Fabrication & Installation		
Commence fabrication	Week 28	Stone acquisition, transportation, machining,
Fabrication 50% complete	Week 34	rock drilling, bearing fabrication, foundation
Fabrication 100% complete	Week 40	work, in-shop kinetics testing
Installation coordination with the City	Week 42	
Installation team scheduling & coordination	Week 42	
Installation	Week 46	
Kinetics testing	Week 48	
Contract closeout	Week 52	

Schedule

Additional Information

1) Is there a design to the rock itself?

I have sourced Rockspinners from all over the world. I look for a specific geometry that tapers to the base to avoid bumping knees and children. I also search for dramatic shape, texture, and structural integrity. Essentially, I spend weeks combing through rock piles, lifting them up and spinning them to find just the right rock.

2) How do you anticipate the marine environment impacting the piece, particularly the ball bearing housing and shaft?

I have redesigned the bearing for the Rockspinners multiple times. I am now using entirely 316 (or its close and easy to machine cousin 304) stainless steel for all parts with the exception of the bearings and shaft. For the shaft I will either use nickel-plated high strength steel, or a specific high strength stainless steel. The top of the bearing is sealed deep inside the rock. The bottom bearing will have a sliding seal and I will use a tenacious and heavy duty marine grease that will protect the bearings further.

3) Provide a detailed proposal with particular focus on foundation and corrosion control in that marine environment.

The approach to the foundation for the Rockspinners will be the same as any major infrastructure in a marine environment and as specified by Erik Kneer of Holmes Structures. This will include galvanized rebar, specific concrete, proper site drainage, stainless steel hardware, and whatever else is required.

4) How will the ball bearings need to be maintained?

As long as someone spins the Rockspinners periodically, they should require no maintenance for the first 50 years or so. If they ever start squeaking or if they get immersed in salt water, it will be necessary to use the specialized rigging that will be included and documented to lift the rock off the bearing assembly and inspect and re-grease the bearings. Any crane company will be able to perform this task.

5) Additional Rockspinner design information.

See Appendix C for an example cross-section of the bearing housing design from a previous commission.

See Appendix D for example structural engineering analysis and certification from a previous commission.

Appendix A

Site Plans for Bay Farm Island Bridge & Jean Sweeney Open Space Park







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omittal	

Appendix B

Material Safety Data Sheets (SDS) & Technical Data Sheets (TDS)

Material Safety Data Sheet

U.S. Department of Labor Occupational Safety and Health Administration

Occupational Safety and Health Administration (Non-Mandatory Form) Form Approved OMB No. 1218-0072

IDENTITY (As Used on Label and List)	Granite

Section I

Manufacturer's Name	Emergency Telephone Number
MS International	714-685-7500
Address (Number, Street, City, State, and ZIP Code)	Telephone Number for Information
	714-685-7500
	Date Prepared
2095 North Batavia	1/18/2013
	Signature of Preparer (optional)
Orange, CA 92865	Luis Maya

Section II - Hazard Ingredients/Identity Information

Hazardous Components (Specific Chemical Identity; Common Name(s))	OSHA PEL	ACGIH TLV	Other Limits Recommended	% (optional)
SiO2; Silica	NA	NA	NA	28 - 77
Note: Dimension Stone is an inert material in its undisturbed or finished state. Only when natural stone is worked is there a potential for release of dust.				

Section III - Physical/Chemical Characteristics

Boiling Point		Specific Gravity ($H_2O = 1$)	
	NA		2.0 to 4.0
Vapor Pressure (mm Hg.)		Melting Point	
	NA		NA
Vapor Density (AIR = 1)		Evaporation Rate	
	NA	(Butyl Acetate = 1)	NA
Solubility in Water			
Not Solub	le		

Appearance and Odor					
Basic Stone Colors No Odor					
Section IV - Fire and Explosion H	lazard Data				
Flash Point (Method Used)	Flammable Limits	LEL	UEL		
NA	NA	NA	Na		
Extinguishing Media					
NA					
Special Fire Fighting Procedures					
NA NA					
Unusual Fire and Explosion Hazards					
NA					

Section V - Reactivity Data

Stability	Unstable		Conditions to Avoid
Stable	Stable		NA
		\checkmark	NA
Incompatibility (Mater	rials to Avoid)		
	Hydrofluo	ric Acid	
Hazardous Decomposi	tion or Byproducts		
	NA		
Hazardous	May Occur		Conditions to Avoid
Polymerization			
WUNDO	Will Not Occur		
will Not Occur		\checkmark	NA

Section VI - Health Hazard Data

Route(s) of Entry: Dust	Inhalation?	Skin?	Ingestion?
creation during machining	Yes	No	Yes
Health Hazards (Acute and Ci	hronic)		
Chronic Silicosis			
Carcinogenicity:	NTP?	IARC Monographs?	OSHA Regulated?
Silicosis	NA	NA	NA

Signs and Symptoms of Exposure - Chronic Silicosis signs and symptoms may include shortness of breath following physical exertion, severe cough, fatigue, loss of appetite, chest pain and fever

Medical Conditions

Generally Aggravated by Exposure None

Emergency and First Aid Procedures

Leave area until dust settles – Clean Up

Section VII - Precautions for Safe Handling and Use

Steps to Be Taken in Case Material is Released or Spilled	
Not considered Hazardous waste	
Waste Disposed Mathed	
Normal Maskad for New Herede W	
Normal Method for Non- Hazardous waste	
Precautions to Be taken in Handling and Storing	
Safety Toe Shoes where toes/feet are exposed to rolling objects	
	an
Other Precautions	
None	

Section VIII - Control Measures

Respiratory Protection (Specify Type,)		
Dust Control Equipment- Yes			
Ventilation	Local Exhaust	Special	
Yes	Yes	NA	
	Mechanical (General)	Other	
	NA	NA	

Protective Gloves- Not required for dust	Eye Protection -Yes	ñ
Other Protective Clothing or Equipment Safety Toe Shoes where toes/feet are exposed to rolling obje	cts	
Work/Hygienic Practices- Housekeeping and Vacuuming with HEPA filter and wet floor cleaning Prevent high dust levels		
		V

Section IX - Special Precautions

Precautions to be taken in Handling and Storing NA Other Precautions NA



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MATERIAL SAFETY DATA SHEET 316, 316L & 316LVM STAINLESS STEEL UPDATED: JANUARY 2014

SECTION 1: COMPONENT DATA: Approximate concentrations for industrial hygiene purposes

INGREDIENTS	CAS NUMBER	PERCENT	PERMISSABLE EXPOSURE LIMIT (PEL) OSHA	THRESHOLD LIMIT VALUE (TLV) ACGIH
Iron *	7439-89-6	60 - 72 %	10 mg/m^3	5 mg/m^3
Chromium	7440-47-3	16 - 19 %	0.5 ma/m ³	0.5 mg/m^3
Nickel	7440-02-2	10 - 15 %	1 mg/m^3	1 mg/m^3
Molybdenum	7429-98-7	2-3 %	5 mg/m ³ (SOL)	10 mg/m ³ (INSOL)
Manganese	7439-96-5	0-2 %	5 mg/m ³ C	0.2 mg/m^3
Copper	7440-50-8	05 %	1 mg/m^3 , 0.1 mg/m ³ (FUME)	1 mg/m^3 . 0.1 mg/m ³ (EUME)
Cobalt	7440-48-4	0-1 %	0.1 mg/m ³	$.02 \text{ mg/m}^3$

* Regulated substance in oxide form

SECTION 2: PHYSICAL DATA:

Vapor Pressure: Vapor Density: Specific Gravity (H₂0=1): Solubility in Water: Evaporation Rate: Freezing Point: **Boiling Point:** Viscosity: PH Information: Appearance: Odor: Physical State:

Not Applicable (N/A) N/A 7.5 to 8.5 Insoluble in Water N/A N/A N/A N/A N/A Silver/Gray/Metallic Odorless Solid

SECTION 3: FIRE & EXPLOSION HAZARD DATA:

Flash Point (°F) and Method: Flammability Limits: Auto-Ignition Temperature (°F): Melting Point: General Hazard: Fire Fighting Instructions & Equipment: Extinguishing Media: Hazardous Combustion Products

N/A N/A N/A 2400-2800º Fahrenheit Not Combustible No special equipment for product as shipped No fire or explosion hazards None expected in form shipped



SECTION 4: HAZARD IDENTIFICATION:

Stainless Steel alloys are not considered hazardous in solid rod/bar, wire, tubing, strip and sheet form. However, if subsequent processing involves grinding, melting, welding, cutting, or any process that causes release of dust or fume, hazardous levels of dust or fumes of the constituents of these alloys can be generated.

The following list summarizes the potential health effects of the hazardous elements that may be contained in these alloys. It is the responsibility of the user to assess potential exposure based on processing of the product.

<u>Welding:</u> Fumes generated by the welding of Zinc, Magnesium and Copper are known to cause metal fume fever. Inhalation of Aluminum, Iron, Nickel, Manganese, Selenium, and Tin has also been reported to cause metal fume fever. Flu-like symptoms include shortness of breath, coughing, muscle pain, fever and chills. Generally, these symptoms resolve with rest within a few days.

Exposure Routes:

Inhalation: Primary route of exposure is steel dust or fume, which can cause irritation to the respiratory tract. Chronic exposure may aggravate pre-existing conditions.

Skin and Eye Contact: May cause irritation or skin sensitivity.

Ingestion: Certain constituents may be harmful if swallowed.

Specific Health Effects:

<u>Aluminum:</u> Metal dust and oxide is generally considered a nuisance particulate. May irritate the eyes and mucous membranes. Excessive concentrations have been known to cause fibrosis.

Boron Oxide: An eye and respiratory irritant. May cause eye irritation, dryness of mouth, nose and throat, or excessive coughing.

<u>Chromium</u>: The toxicity of Chromium is dependent on its' oxidation state. Chromium metal is relatively nontoxic. If metal is heated to high temperatures, as in welding, fumes produced may be toxic to the lungs. Under high temperatures, hexavalent chromium may be produced. If in insoluble form, it is designated a confirmed human carcinogen. Other health effects include nasal irritation and possible kidney and liver damage. Chromite dust may also cause skin ulceration, dermatitis and allergic skin reactions.

<u>Cobalt</u>: May cause interstitial fibrosis, pneumonitis, and sensitization of the respiratory tract and skin. Cobalt liberation during tungsten carbide machining is also associated with the development of hypersensitivity asthma. Hypersensitivity pneumonitis generally disappears when the exposure ceases. Cobalt is listed by the National Toxicological Program (NTP) as a 2B carcinogen, anticipated to be carcinogenic from studies in experimental animals.

Columbium (a.k.a. Niobium): Eye or skin irritant. May cause kidney damage.

<u>Copper:</u> May irritate the upper respiratory tract. May be characterized by a metallic or sweet taste. May also cause metal fume fever.

<u>Iron Oxide:</u> Repeated inhalation of iron oxide fume or dust causes benign pneumoconiosis (siderosis), but generally does not cause symptoms in the exposed person.



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Specific Health Effects (continued)

<u>Manganese:</u> Acute effects include skin and eye irritation and metal fume fever. Chronic exposure may lead to central nervous system symptoms such as headache, changes in motor activity and psychological disturbances.

<u>Molybdenum</u>: Insoluble compounds of Molybdenum have a low order of toxicity. Molybdenum trioxide is an irritant to the eyes and mucous membranes.

<u>Nickel:</u> Known to cause contact dermatitis and a respiratory irritant. Nickel refining and specific compounds are considered respiratory carcinogens to humans. The International Agency for Research on Cancer lists elemental nickel as a possible 2B carcinogenic to humans. The National Toxicological Program (NTP) lists Nickel as reasonably anticipated to be carcinogenic from studies in experimental animals. The American Conference of Governmental Industrial Hygienists recommends that nickel compounds be differentiated according to solubility for their carcinogenic effects.

<u>Selenium</u>: Selenium dust vapors and fumes are irritants of the eyes, mucous membranes and skin. Chronic exposure may cause central nervous system effects and gastrointestinal disturbances. Selenium is listed by the National Toxicological Program (NTP) as a 2B, anticipated to be carcinogenic from studies in experimental animals.

<u>Tantalum</u>: Considered to have a low order of toxicity. As surgical implant material, it has demonstrated its' physiological inertness.

Titanium: A mild pulmonary irritant generally regarded as a nuisance dust.

<u>Tungsten</u>: Both Tungsten and Tungsten Carbide pose an extremely low order of toxicity. Tungsten is considered an inert dust.

<u>Vanadium</u>: The oxides of Vanadium are toxic. May cause irritation to eyes or respiratory tract. May cause bronchitis with wheezing and chest pain. Repeated exposure may cause more severe respiratory symptoms.

Zirconium: Considered to have a low order of toxicity. Skin rash has been associated with exposure to deodorants containing Zirconium.

SECTION 6: HAZARD RATINGS:

<u>NFPA</u>

<u>HMIS</u>

Health:0 (as shipped)2 (ground, welded or melted)Flammability:0Reactivity:0

0 (as shipped) 2 (ground, welded or melted) 0



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SECTION 7: FIRST AID MEASURES:

The likelihood of hazardous consequences through eye or skin contact, inhalation or ingestion is minimal as shipped

Inhalation: Remove person from exposure area. If breathing difficulty occurs, get prompt medical attention.

Skin and Eye Contact: Flush eye with plenty of water for 15 minutes. Seek medical attention if irritation persists. Wash skin with soap and water. If rash develops, seek medical attention.

Ingestion: Seek medical attention.

SECTION 8: ACCIDENTAL RELEASE MEASURES:

Land/Water Spill: This product does not pose a hazard to the environment in the as-shipped form.

SECTION 9: EXPOSURE CONTROL / PERSONAL PROTECTION:

Engineering Controls: The use of local exhaust ventilation is recommended to control emissions near the source of the metal being cut, ground, welded or melted.

<u>Personal Protection</u>: When handling, leather gloves are recommended. Additional personal protective equipment is dependent on the operation performed. Safety Glasses and a Face Shield are recommended when grinding.

If industrial hygiene monitoring reveals an overexposure during processing, engineering controls are required to be installed to reduce exposures below OSHA permissible exposure limits. In the absence of feasible engineering controls, wear a NIOSH approved respirator for protection for the type of particulate generated.

SECTION 10: STABILITY & REACTIVITY:

The product is stable and hazardous polymerization will not occur. Incompatible materials and conditions to avoid: Acids, bases, and oxidizers. Hazardous Decomposition: None for product in as-shipped form.

SECTION 11: TOXICOLOGICAL INFORMATION: SEE SECTION 4 (HAZARD IDENTIFICATION)

SECTION 12: ECOLOGICAL INFORMATION: NO DATA AVAILABLE

SECTION 13: HANDLING & STORAGE:

Storage Temperature:Not ApplicableStorage Pressure:Not ApplicableGeneral:Store away from acids and oxidizers

SECTION 14: DISPOSAL CONSIDERATIONS:

Recycling of all metallic byproducts as scrap is strongly encouraged. If byproducts need to be treated and/or disposed of as wastes, hazardous waste characterizations must be performed prior to treating and/or disposing. Contact appropriate parties to ensure compliance with all federal, state and local rules and regulations related to waste treatment and disposal.



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SECTION 15: TRANSPORTATION INFORMATION:

For Hazardous Wastes:DOT (Department of Transportation)Proper Shipping Name:Hazardous Waste Solid, n.o.s. (Component A, Component B)Hazard Class:9Identification Number:NA3077Packing GroupIIIEmergency Response Guide Number:171

SECTION 16: REGULATORY INFORMATION:

TSCA (Toxic Substances Control Act) Not Applicable CERCA (Comprehensive Response Compensation and Liability Act: Not Applicable

SARA Title III (Superfund Amendments and Reauthorization Act):

311/312 Hazardous Categories:	Not applicable for storage of items as shipped.
	End product may require reporting if processed.

<u>313</u>: Product ingredients subject to reporting requirements may include: Chromium, Nickel, Manganese, Cobalt or Copper

Regulations such as Clean Air Act, Clean Water Act, Resource Conservation and Recovery Act may apply to the handling of steel grindings and particulates from processing.

California Safe Drinking Water Act (Proposition 65) listing:

Component	CAS Number
Nickel	7440-02-0
Cobalt	7440-48-4

Governors list of chemicals known to cause cancer and reproductive toxicity includes hexavalent compounds of Chromium and Nickel dust from pyrometallurgical processing.



MATERIAL SAFETY DATA SHEET

COMPANY DETAILS

Company: LUBEMASTER Address - Street: 5 RALPH STREET ALEXANDRIA - City : SYDNEY - State : NSW Postcode: 2015 Telephone Number(Office Hours): (02) 9669 0261 Emergency Telephone Number(Outside Office Hours): (02) 92140755 Date of Issue: DEC - 2004 Fax Number: (02) 9693 1562

IDENTIFICATION

Product Name: PREMALUBE XTREME GREEN

Other Names: EXTREME DUTY, MULTI-PURPOSE, MARINE GRADE GREASE

Manufacturer's Product Code: 325J

Statement of Hazardous Nature: NOT CLASSIFIED AS HAZARDOUS ACCORDING TO CRITERIA OF NOHSC

UN Number: NONE ALLOCATED

Dangerous Goods Class & Sub-risk: NONE ALLOCATED

Hazchem Code: NONE ALLOCATED

Poisons Schedule: SCHEDULE 5

Packaging Group: NONE ALLOCATED

Pack Size: 450 GRAMME

Container Type: HIGH DENSITY POLYETHYLENE

Major Recommended Uses: AS A LUBRICANT FOR HIGH TEMPERATURE, HIGH PRESSURE INDUSTRIAL APPLICATIONS

Major recommended Method(s) of Application: WITH A GREASE GUN

Physical Description/Properties Appearance: A BLUE-GREEN, OPAQUE, ODOURLESS, VISCOUS GREASE

Boiling Point	:321°C
Vapour Pressure	:<0.01 mm Hg
Specific Gravity	:1.01
Flashpoint Flashpoint Method Flammability Limits (%)	:257°C :C.O.C. :N/A
Solubility in Water (g/L)	:NEGLIGIBLE
Other Properties: EVAPORATION RATE VAPOUR DENSITY % VOLATILE BY VOLUME	:<0.01 (BU A/C = 1) :>5 :0

Ingredients

Chemical EntityCAS NoProportion'INGREDIENTS DETERMINED NOT TO BE HAZARDOUS'100%

HEALTH HAZARD INFORMATION

Health Effects

Acute - Swallowed: MAY CAUSE IRRITATION WITH POSSIBLE NAUSEA AND VOMITING. MAY CAUSE IRRITATION TO THE MOUTH, THROAT AND ESOPHAGUS WITH DIZZINESS AND DROWSINESS.

Acute - Eye: MAY CAUSE IRRITATION SEEN AS TEARING, SWELLING, REDNESS AND EXCESSIVE BLINKING.

Acute - Inhaled: MAY CAUSE RESPIRATORY IRRITATION SEEN AS COUGHING AND SNEEZING.

Chronic: MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE ARE PRE-EXISTING RESPIRATORY AND SKIN CONDTIONS SUCH AS ASTHMA, EMPHYSMA, AND DERMATITIS.

First Aid

Swallowed: GIVE 3 TO 4 GLASSES OF WATER, BUT DO NOT INDUCE VOMITING. IF VOMITING OCCURS, GIVE FLUIDS AGAIN. SEEK MEDICAL ATTENTION IF DISCOMFORT OCCURS.

Eye: IMMEDIATELY RINSE THE EYES WITH WATER. REMOVE ANY CONTACT LENSES AND CONTINUE FOR AT LEAST 15 MINUTES. GET IMMEDIATE MEDICAL ATTENTION IF IRRITATION DEVELOPS. Skin: WASH AFFECTED AREAS WITH PLENTY OF SOAP AND WATER FOR SEVERAL MINUTES. SEEK MEDICAL ATTENTION IF IRRITATION DEVELOPS. Inhaled: REMOVE FROM AREA TO FRESH AIR.

First Aid Facilities: GENERAL EYE WASH

Advice to Doctor: THERE IS NO SPECIFIC ANTIDOTE. TREAT THE PATIENT SYMPTOMATICALLY.

PRECAUTIONS FOR USE

Exposure Standards: HYDROTREATED & DEWAXED PETROLEUM DISTILLATE TLV: 5 mg/m³

Engineering Controls: GENERAL VENTILATION IS ADEQUATE

Personal Protection: NEOPRENE OR NITRILE RUBBER GLOVES SHOULD BE WORN WHEN HANDLING.

Flammability: NOT FLAMMABLE

SAFE HANDLING INFORMATION

Storage and Transport: STORE IN THE ORIGINAL CONTAINER AND KEEP IN A COOL AND DRY PLACE. STORE BELOW 49°C.

Spills and Disposal: FOR LARGE SPILLS, SCOOP INTO PROPERLY LABELED CONTAINERS FOR DISPOSAL IN ACCORDANCE WITH LOCAL, STATE AND COMMONWEALTH LAWS.

Fire/Explosion Hazard: MAY EMIT OXIDES OF CARBON AND SULFUR; ALDEHYDES AND SILICA UPON THERMAL DECOMPOSITION. FIREFIGHTERS SHOULD WEAR A SELF-CONTAINED BREATHING APPARATUS AND PROTECTIVE GEAR. EXTINGUISHING MEDIA INCLUDES FOAM, CO2, DRY CHEMICAL AND WATER SPRAY.

OTHER INFORMATION:

KEEP OUT OF REACH OF CHILDREN. READ ALL SAFETY DIRECTIONS BEFORE USING PRODUCT. INCOMPATIBLE WITH STRONG OXIDISING AGENTS SUCH AS CHLORINE BLEACH AND CONCENTRATED HYDROGEN PEROXIDE; REDUCING AGENTS SUCH AS SODIUM THIOSULPHATE, ACIDS AND BASES.

CONTACT POINT

Title/Position Section Telephone Number : 02 9669 0208

: TECHNICAL SERVICES CHEMIST : TECHNICAL DEPARTMENT



Version number 8

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Reviewed on 05/18/2015

1 Identification

Product identifier

• Trade name: <u>Hilti HIT-RE 500</u>

- · Container size: 330 ml, 500 ml
- · Relevant identified uses of the substance or mixture and uses advised against
- · Sector of Use Building and construction work
- · Application of the substance / the mixture Adhesive mortar for rebar and anchor fastenings in solid concrete

· Details of the supplier of the safety data sheet

• Manufacturer/Supplier: Hilti, Inc. 5400 South 122nd East Ave. US-Tulsa, OK 74146 Phone: (800) 879-8000 Fax: (800) 879-7000 Español: (800) 879-5000

· Information department:

anchor.hse@hilti.com

see section 16

Emergency telephone number: Chem-Trec

Tel.: 1 800 424 9300 (USA, PR, Virgin Islands, Canada) Tel.: 703 527 3887 (Other countries) Hilti, Inc. Phone: (800) 879-8000 Fax: (800) 879-7000 Español: (800) 879-5000

2 Hazard(s) identification

· Classification of	the substance or mixture		
Skin Corr. 1A	H314 Causes severe skin burns and eye damage.		
Eye Dam. 1	H318 Causes serious eye damage.		
Aquatic Chronic 2	2 H411 Toxic to aquatic life with long lasting effects.		
Skin Sens. 1	H317 May cause an allergic skin reaction.		
 Label elements GHS label elements Hazard pictogram 	nts The product is classified and labeled according to the Globally Harmonized System (GHS). ns		
GHS05 GH	S07 GHS09		
· Signal word Dang	ger		
· Hazard-determin	ing components of labeling:		
m-Xylylenediamir	1e		
reaction product: bisphenol-A-(epichlorhydrin) epoxy resin			
(number average molecular weight = 700)			
Reaction product: bisphenol-F epichlorhydrin resin, $MW \le 700$			
Hazard statement			
H314 Causes seve	re skin burns and eye damage.		
H411 Toxic to agu	in anergic skin reaction.		
· Precautionary sta	aterie intervieta iong fasting effects.		
P260	Do not breathe vanours		
P280	Wear protective gloves/protective clothing/eve protection/face protection		
P303+P361+P353	IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/		
	shower.		
P305+P351+P338 If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.			
P333+P313	If skin irritation or rash occurs: Get medical advice/attention.		
P337+P313	If eye irritation persists: Get medical advice/attention.		
	(Contd. on page 2)		
	US EN —		



Version number 8

Trade name: Hilti HIT-RE 500

Reviewed on 05/18/2015

	Classification system	(Contd. of page 1)
	· NFPA ratings (scale 0-4)	
	Health = 3 Fire = 1 Reactivity = 0	
	• Other hazards • Results of PBT and vPvB assessment • PBT: Not applicable. • vPvB: Not applicable.	
	· Additional information:	
	Hilti HIT	
	• Information pertaining to particular dangers for man and environment: A H315 Causes skin irritation.	
	H319 Causes serious eye irritation.	
	H411 Toxic to aquatic life with long lasting effects.	
	Information pertaining to particular dangers for man and environment: B	
	H314 Causes severe skin burns and eye damage. H317 May cause an allernic skin reaction	
	H412 Harmful to aquatic life with long lasting effects.	
_		

3 Composition/information on ingredients

· Chemical characterization: Mixtures

• Description:

2-component-foilpack, contains: Component A: Epoxy resin, Reactive diluent, inorganic filler Component B: Amine hardener, inorganic filler

Mixture of the substances listed below with nonhazardous additions.

Dangerous components: .

25068-38-6	reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight = 700)	25-50%
28064-14-4	Reaction product: bisphenol-F epichlorhydrin resin, MW ≤ 700	10-25%
16096-31-4	1,6-bis(2,3-epoxypropoxy)hexane	10-25%
30499-70-8	Trimethylolpropane, (chloromethyl)oxirane polymer	2.5-10%
14808-60-7	Quartz (SiO2)	25-50%
· Dangerous	components B:	

Danger ous components D.		
1477-55-0	m-Xylylenediamine	30-40%
14808-60-7	Quartz (SiO2)	15-30%
1344-28-1	aluminium oxide	5-10%
		· · · · · · · · · · · · · · · · · · ·

• Additional information For the wording of the listed risk phrases refer to section 16.

4 First-aid measures

· Description of first aid measures

· General information Immediately remove any clothing soiled by the product.

After inhalation

Take affected persons into fresh air and keep quiet.

Seek medical treatment in case of complaints.

· After skin contact Immediately wash with water and soap and rinse thoroughly.

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	(Contd. of page 2)
a After eye contact	
Seek immediate medical advice.	
Rinse opened eye for several minutes under running water. Then consult a	doctor.
Protect unharmed eye.	
Seek medical treatment.	
After swallowing	
Do not induce vomiting; immediately call for medical help.	
Rinse out mouth and then drink plenty of water.	
· Information for doctor	
· Most important symptoms and effects, both acute and delayed Allergic	reactions
Indication of any immediate medical attention and special treatment ne	eeded

No further relevant information available

5 Fire-fighting measures

Extinguishing media

- Suitable extinguishing agents
- CO2, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- · For safety reasons unsuitable extinguishing agents Water with full jet.
- Special hazards arising from the substance or mixture
- In case of fire, the following can be released:
- Nitrogen oxides (NOx)
- Carbon monoxide (CO)
- In certain fire conditions, traces of other toxic gases cannot be excluded.
- · Advice for firefighters
- · Protective equipment: Wear self-contained respiratory protective device.

6 Accidental release measures

Personal precautions, protective equipment and emergency procedures

- Wear protective equipment. Keep unprotected persons away.
- Wear protective clothing.
- Ensure adequate ventilation
- **Environmental precautions:**
- Do not allow product to reach sewage system or any water course.
- Do not allow to penetrate the ground/soil. Methods and material for containment and cleaning up:
- Pick up mechanically.

Clean the affected area carefully; suitable cleaners are:

organic solvent

Dispose contaminated material as waste according to item 13.

- **Reference to other sections**
- See Section 7 for information on safe handling
- See Section 8 for information on personal protection equipment.
- See Section 13 for disposal information.

7 Handling and storage

·Handling

- Precautions for safe handling
- The usual precautionary measures for handling chemicals should be followed.
- Take note of emission threshold.
- Use only in well ventilated areas.
- Check the expiry date: see imprint on manifold (month/year). Do not use expired mortar!
- Information about protection against explosions and fires: Keep ignition sources away Do not smoke.
- Conditions for safe storage, including any incompatibilities
- Storage
- Requirements to be met by storerooms and receptacles:
- Keep in a cool, dry and dark place; 41 °F / 5 °C to 77 °F / 25 °C.
- · Information about storage in one common storage facility: Store away from foodstuffs.
- Further information about storage conditions: Protect from heat and direct sunlight.
- · Storage class As per VCI (1991) storage classification concept.

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*

	(Contd. of page 3)
8 Exposure controls/personal protection	
· Control parameters	
Components with limit values that require monitoring at the workplace:	
1477-55-0 m-Xylylenediamine	r this product.
REL Short-term value: C 0 1 mg/m ³	
Skin	
TLV Short-term value: C 0.1 mg/m ³ Skin	
Additional information: The lists that were valid during the creation were used as basis.	
Exposure controls	
Personal protective equipment	
The usual precautionary measures for handling chemicals should be followed	
Immediately remove all soiled and contaminated clothing	
Wash hands before breaks and at the end of work.	
Store protective clothing separately.	
Avoid contact with the eyes and skin. Do not eat, drink smoke or sniff while working	
Clean skin thoroughly immediately after handling the product	
Ensure that washing facilities are available at the work place.	
Keep away from foodstuffs, beverages and feed.	
Use skin protection cream for skin protection.	
Breathing equipment:	
Not necessary if room is well-ventilated.	
In case of brief exposure or low pollution use respiratory filter device. In case of intensive or long	er exposure use
Recommended filter device for short torm uses Filter A X	
Recommended inter device for short term use: Ther AA	
Protection of hands:	
Protection of hands:	
Protection of hands:	
Protection of hands: Protective gloves.	
Protection of hands: Protective gloves.	
Protection of hands: Protective gloves. Only use chemical-protective gloves with CE-labeling of category III.	
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EN 166 / EN 170	
Body protection:	

Protective work clothing.

9 Physical and chemical properties

Information on basic physical and chemical properties			
· General Information			
Form-	Dasty		
Color:	Component A: arou		
0101.	Component B: red		
	Mixture: red		
· Odor:	Amine-like		
· Odour threshold:	Not determined		
· pH-value:	Component A: 7		
L	Component B: 11.5		
	Mixture: 11,5		
· Change in condition			
Melting point/Melting range:	Not determined.		
Boiling point/Boiling range:	> 200 °C (> 392 °F)		
· Flash point:	> 100 °C (> 212 °F) (DIN EN ISO 1523)		
Flammability (solid, gaseous)	Not determined		
· Ignition temperature:	Not determined		
Decomposition temperature:	Not determined		
· Auto igniting:	Product is not selfigniting.		
• Danger of explosion:	Product does not present an explosion hazard.		
• Explosion limits:			
Lower:	Not determined		
Upper:	Not determined		
· Vapor pressure at 20 °C (68 °F):	0.04 hPa		
Density:	Component A: 1.5 g/cm ³ (DIN 51757)		
	Component B: 1.4 g/cm ³ (DIN 51757)		
	Not determined		
Veneur density	Not determined		
· Evanoration rate	Not determined		
· Solubility in / Miscibility with Water:	Incoluble		
• Partition coefficient (n-octanol/wate	Insoluble		
r ar tition coefficient (n-octanol/water): Not determined			
dynamic at 20 °C (68 °E).	50 Dec (DDI 52010)		
kinematic at 20 °C (68 °F):	>20 c (ISO 2431)		
	~ 20 3 (150 2431)		
Solvent content:	0.0/		
Water			
• Other information	No further relevant information available		
	I I C PA		

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10 Stability and reactivity

- · Reactivity
- · Chemical stability
- · Thermal decomposition / conditions to be avoided: No decomposition if used according to specifications.
- · Possibility of hazardous reactions No dangerous reactions known
- · Conditions to avoid No further relevant information available.
- · Incompatible materials: No further relevant information available.
- \cdot Hazardous decomposition products: No dangerous decomposition products known

TT TOXICOIO	gicai into	fination
· Informati	on on tox	icological effects
· Acute toxi	icity:	
· LD/LC50	values the	at are relevant for classification:
1477-55-0	m-Xylyle	nediamine
Oral	LD50	1040 mg/kg (rat)
Dermal	LD50	2000 mg/kg (rabbit)
Inhalative	LC50/4h	2.4 mg/l (rat)
· Primary in	rritant eff	lect:
· on the skin	n: Strong	caustic effect on skin and mucous membranes.
· on the eye	:	
Strong cau	stic effect	
Strong irrit	ant with the	he danger of severe eye injury.
Sensitizati	on: Sensit	ization possible through skin contact.
· Additional	l toxicolog	gical information:
The produc	t shows th	he following dangers according to the calculation method of the General EU Classification Guidelines
for Prepara	tions as is	sued in the latest version:
Corrosivo		
Irritant		
Swallowing	n will load	to a strong coustic offect on mouth and threat and to the demand for the strong of the strong strong for the strong stron
stomach.	g will lead	to a strong causic effect on mouth and throat and to the danger of perforation of esophagus and
Carcinoge	nic catego	ries
· NTP (Nati	onal Toxi	cology Program)
14808-60-7	/ Quartz (SiO2) K

12 Ecological information

25069 29	6 reaction meduate bionhandl & (anishing to 1 th)	
23000-30	o reaction product: Disphenoi-A-(epichiorhydrin) epoxy resin	
EC50/48h	(Aumber average molecular weight – 700)	
EC30/401	9.4 mg/l (Algae)	
	1.7 mg/l (magna daphnia)	
EC50/96h	1.2 mg/l (fish)	
28064-14-	4 Reaction product: bisphenol-F epichlorhydrin resin, MW ≤ 700	
EC50/48h	9.4 mg/l (Algae)	
	1.7 mg/l (magna daphnia)	
EC50/96h	1.5 mg/l (fish)	
16096-31-	4 1,6-bis(2,3-epoxypropoxy)hexane	
EC50/48h	23.1 mg/l (Algae)	
	39 mg/l (magna daphnia)	
EC50/96h	17.1 mg/l (fish)	
1477-55-0	m-Xylylenediamine	
EC50/48h	12 mg/l (Algae)	

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15.2	mg/l	(magna	daphnia)			
------	------	--------	----------	--	--	--

- EC50/96h 75 mg/l (fish)
- Persistence and degradability No further relevant information available.
- Behavior in environmental systems:
- Bioaccumulative potential No further relevant information available.
- · Mobility in soil No further relevant information available.
- · Ecotoxical effects:
- · Remark: Toxic for fish · Additional ecological information:
- · According to the formulation contains the following heavy metals and compounds from the EU guideline NO. 2006/11/EC:

None

- General notes:
- Avoid transfer into the environment.
- The product contains materials that are harmful to the environment. Also poisonous for fish and plankton in water bodies.
- Toxic for aquatic organisms
- Water hazard class 2 (German Regulation) (Self-assessment): hazardous for water.
- Results of PBT and vPvB assessment
- · PBT: Not applicable.
- vPvB: Not applicable.
- Other adverse effects No further relevant information available.

13 Disposal considerations

· Waste treatment methods

- Recommendation
- Must not be disposed of together with household garbage. Do not allow product to reach sewage system.
- Hand over to hazardous waste disposers.
- Full or only partially emptied cartridges must be disposed of as special waste in accordance with official regulations.

European waste catalogue:

- 08 04 09* waste adhesives and sealants containing organic solvents or other dangerous substances
- 20 01 27* paint, inks, adhesives and resins containing dangerous substances
- · Uncleaned packagings:
- **Recommendation:**
- Disposal must be made according to official regulations.
- Dispose of packaging according to regulations on the disposal of packagings.

14 Transport information

· UN-Number	
· ADR, IMDG, IATA	3259 / PG II
	3077 / PG III
· UN proper shipping name	
ADR	AMINES, SOLID, CORROSIVE, N.O.S. (m-Xylylenediamine)
	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S.
	(Bisphenol A/F Epoxy Resin)
IMDG, IATA	AMINES, SOLID, CORROSIVE, N.O.S (m-Xylylenediamine)
	ENVIRONMENTALLY HAZARDOUS SUBSTANCE, SOLID, N.O.S
	(Bisphenol A/F Epoxy Resin)
· Transport hazard class(es)	
ADR	
· Class	8 Corrosive substances
	9 Miscellaneous dangerous substances and articles.
· IMDG, IATA	
· Class	8
	9
	(Contd. on page



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· Label	8
	9
· Packing group	
· ADR, IMDG, IATA	3259 / PG II
	3077 / PG III
Environmental hazards:	Not applicable.
Special precautions for user	Not applicable.
· EMS Number:	F-A, S-B
Transport in bulk according to Annex	II of
MARPOL73/78 and the IBC Code	Not applicable.
Transport/Additional information:	
IMDG	
Remarks:	Limited Quantity (LQ)
	1 kg
	5 kg
ΙΑΤΑ	
Remarks:	Packing Instruction No.
	UN 3259: 859
	UN 3077: 956
	All packed in one
UN "Model Regulation":	Ш
HS-Code:	3214 10 10: Glaziers' putty, grafting putty, resin cements, caulking
	compounds and other mastics

15 Regulatory information

*

· Safety, hea	lth and environmental regulations/legislation specific for the substance or mixture	
· Section 35	5 (Extremely hazardous substances):	
None of the	ingredients is listed.	
· Section 31	3 (Specific toxic chemical listings):	-
1344-28-1	aluminium oxide	
· TSCA (Tox	ic Substances Control Act):	
14808-60-7	Quartz (SiO2)	
25068-38-6	reaction product: bisphenol-A-(epichlorhydrin) epoxy resin (number average molecular weight = 700)	
28064-14-4	Reaction product: bisphenol-F epichlorhydrin resin, MW ≤ 700	
1477-55-0	m-Xylylenediamine	
16096-31-4	1,6-bis(2,3-epoxypropoxy)hexane	
30499-70-8	Trimethylolpropane, (chloromethyl)oxirane polymer	
67762-90-7	FUMED SILICA (SILOXANES AND SILICONES, DI-ME, REACTION PRODUCTS WITH SILICA)	
65997-16-2	Cement, alumina, chemicals	
1344-28-1	aluminium oxide	
· Proposition	65:	
Chemicals	known to cause cancer:	
14808-60-7	Quartz (SiO2)	-
·Canceroger	ity categories	
· EPA (Envi	conmental Protection Agency)	
None of the	ingredients is listed.	
· TLV (Thre	shold Limit Value established by ACGIH)	
14808-60-7	Quartz (SiO2)	A2
1344-28-1	aluminium oxide	A4
108-46-3	resorcinol	A4
	(Contd. on pa	1ge 9)
		-USE



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Trade name: Hilti HIT-RE 500

Reviewed on 05/18/2015

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1

2

USEN

(Contd. of page 8)

· MAK (German Maximum Workplace Concentration)

14808-60-7 Quartz (SiO2) 1344-28-1 aluminium oxide

NIOSH-Ca (National Institute for Occupational Safety and Health)

14808-60-7 Quartz (SiO2)

National regulations

The product is subject to be labeled according with the prevailing version of the regulations on hazardous substances.

· Information about limitation of use: Employment restrictions concerning young persons must be observed.

· Chemical safety assessment: not required.

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· Relevant phrases H318 Causes serious eye damage.

· Department issuing SDS:

Hilti Entwicklungsgesellschaft mbH Hiltistrasse 6 D-86916 Kaufering Tel.: +49 8191 906310 Fax: +49 8191 90176310

e-mail: anchor.hse@hilti.com

Contact: Mechthild Krauter

Date of preparation / last revision 05/18/2015 / 7

· Abbreviations and acronyms: ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road) IMDG: International Maritime Code for Dangerous Goods IATA: International Air Transport Association

ACGIH: American Conference of Governmental Industrial Hygienists

EINECS: European Inventory of Existing Commercial Chemical Substances

ELINCS: European List of Notified Chemical Substances CAS: Chemical Abstracts Service (division of the American Chemical Society)

NFPA: National Fire Protection Association (USA)

LC50: Lethal concentration, 50 percent LD50: Lethal dose, 50 percent

Skin Corr. 1A: Skin corrosion/irritation, Hazard Category 1A

Eye Dam. 1: Serious eye damage/eye irritation, Hazard Category 1 Skin Sens. 1: Sensitisation - Skin, Hazard Category 1

Aquatic Chronic 2: Hazardous to the aquatic environment - Chronic Hazard, Category 2

* Data compared to the previous version altered.

Appendix C

Example Cross-section of the Bearing Housing Design



Zachary Coffin Studio Inc.

Cross-sectional diagram of the bearing housing design for the Copernicus Science Museum, Warsaw, Poland.

Final design date January 2017 Diagram for informational purposes only. All rights reserved, Zachary Coffin, 2017. No reproduction without express written permission. www.zacharycoffin.com

Appendix D

Example Structural Engineering Analysis and Certification

Holmes Structures

235 Montgomery Street, Suite 1250 San Francisco, CA 94104 T: 415 693 1600

> 523 W. 6th Street, Suite 1122 Los Angeles, CA 90014 T: 213 481 5630

> > holmesstructures.com

January 11, 2017

16183.10

To: The Authority Having Jurisdiction c/o Zachary Coffin 1960 Mandela Pkwy Oakland, CA 94607

SUBJECT: Geospinner, Berndt Hall Installation Fort Lewis College, Durango, CO

Dear Sir/Madam:

This letter is to notify you of completion of construction for the foundations supporting the "Geospinner" sculpture installation at Fort Lewis College. Holmes Structures was not notified prior to construction of the foundations and has therefore not performed any structural observations as defined in Chapter 17 of the 2012 International Building Code (IBC) for the concrete pier or its reinforcement. Additionally, there was no third-party special inspections or material testing performed prior to or during the placement of the foundations.

Based on a review of the letter, dated 11/29/16, and photo documentation provided by the contractor Advanced Concrete Solutions (Appendix A), the pier supporting the artwork appears to have been built according to the design intent of the structural narrative (Appendix B).

Please don't hesitate to contact me if you have any questions. Thank you,

HOLMES STRUCTURES

Enilh

Erik Kneer, Colorado P.E. 51645 ASSOCIATE PRINCIPAL




APPENDIX A -- ADVANCED CONCRETE SOLUTIONS AS-BUILT DOCUMENTATION







FOR ALL YOUR CONCRETE NEEDS

DATE: November 29, 2016

Zach Coffin TO: Zachary Studio, Inc.

CONCRETE – Concrete Piers RE:

The piers for the "Rock Spinners" at Fort Lewis College were installed per structural narrative from HolmesCully, dated July 29, 2016. ACS was never given direction nor has a contractual obligation with Zach Coffin/Zachary Studio, Inc to have the piers and rebar cage inspected prior to concrete placement. There is no implied warranty with this letter for the concrete piers and/or rebar. ACS is not responsible for any failure that the piers may incur from the piers not being inspected by the Artist, Zach Coffin/Zachary Studio or the engineer firm HolmesCully.

Brian Stahlin, General Manager Advanced Concrete Solutions, Inc.

Ph (970) 259-9252 Fax (970) 259-6242

77 Parker Ave. Durango, CO 81301





APPENDIX B – HOLMES SOLUTIONS STRUCTURAL NARRATIVE/DESIGN CRITERIA



4



San Francisco Los Angeles

STRUCTURAL NARRATIVE FOR FORT LEWIS ROCKSPINNER DURANGO, CO JULY, 2016 JOB NO. 16183.10







<u>Allowable Soil Bearing Pressures ("Berndt Hall Reconstruction Geotechnical Evaluation"</u> <u>by Western Technologies Inc., dated 9/16/2009</u>)</u>

Allowable Bearing Capacity: 2,000 psf Passive Presure: 375 psf/ft (Shallow column footings) Coefficient of Base Friction: 0.25 (when used in conjunction with passive pressure) Frost Line Depth: 2'-8" below grade

Structure Description

The proposed sculpture is a permanent installation at Fort Lewis College in Durango, Colorado of a Rockspinner sculpture by Zachary Coffin. The sculpture is an approximately 6'-0" tall x 3'-0" diameter stone mounted on a bearing hub that allows the stone to rotate about its vertical axis of balance. The stone weighs approximately 12,000 lbs. The sculpture will be supported on a cast-in-drilled hole (CIDH) pier that is approximately 2'-0" in diameter and 5'-0" deep. We understand that the frost line is located 2'-8" below grade based on the referenced geotechnical report.

Connection to the footing will be made through a stainless steel embed assembly that will be cast-in place with the drilled pier and serve as a bolt template for (6) 1" dia anchor bolts that will mount to the bearing hub of the baseplate. The bearing hub will be epoxy doweled into the boulder a minimum of 10".

Refer to Exhibit A for detailed sketches and drawings used as the basis of our design.

Design Assumptions

Our recommendations are based on the following assumptions:

• The sculpture is a permanent installation and will not be relocated. These recommendations do not apply to any future installations.

We also take this opportunity to make the following additional recommendations concerning the installation:

- The condition of all connecting hardware (bolts etc.) should be reviewed by the artist and confirmed to be in good condition prior to installation, or replaced.
- That periodic visual observation be performed to verify the integrity of the structural components and connections.



Conclusions

Based on the above criteria and assumptions, we have concluded that the sculpture and its foundation outlined in Appendix A meets the strength and stability structural design requirements of the 2012 IBC.

We appreciate the opportunity to be of service. Please contact us if have any questions or require additional information. Thank you.

Sincerely,

1 h

Erik Kneer, SE, LEED AP BD+C ASSOCIATE PRINCIPAL



APPENDIX A: Structural Sketches and Basis of Design









Public Art Program Finalist Proposal

\$150,000 Award Category

Dragon Dance

Artist: Dmitrii Volkov

Proposed Location: Adjacent to the Main Street Ferry Terminal

DMITRII VOLKOV

"DRAGONS DANCE"

PROPOSAL

PHYSICAL PUBLIC ART

For The CITY OF ALAMEDA

Site Plan

The sculpture "Dragons Dance" is supposed to be placed just west of the Alameda Main Street Ferry Terminal. The sculpture would greet ferry passengers as they arrive in Alameda, and directly face the famous Oakland cranes across the estuary at the Port of Oakland.



- **1.** The sculpture "Dragons Dance"
- **2.** Alameda Main Street Terminal
- **3.** San Francisco Bay Trail



The height of the sculpture is 33 feet.



The height of the sculpture is 33 feet.

The sculpture is offered in two dimensions: 24' height and 33' height



Information about materials

The sculpture will fabricated from ecological natural materials. For fabrication the sculpture will be used steel A606-4 and A588 (COR-TEN).

The finish will be made with natural bee's wax that will protect the steel and gives it natural patina.

The base is made of concrete and steel reinforcement.

Detailed Budget

(A) Fabrication in cooperation with GIZMO Art Production, Inc. The height of the sculpture is 33 feet.

ltem	Amount	Notes
Artist fee	25000	
Fabrication of bodies and		
<u>wings:</u>		
Management:Project		GIZMO Art Production: project and production
Management	8000	management
		GIZMO: draftspersn for creating of plans, details,
Design: Drafting	9000	specifications
	45000	GIZMO: engineering for sculpture — CA stamped
Design: Engineering	15000	drawings
Materials: Metal	1/952	GIZMO: Corten metal
	10500	GI2MO: waterjet cutting
Materials: Hardware	1500	GIZMO: riverts
Labor: Fabricator 3	20240	GIZMO: expert metal woker
Labor: Fabricator 2	15840	GIZMO: journeyman metal woker
Design: Engineering	1800	GIZMO: inspections — welding
Materials: Paint	800	GIZMO: bees wax
Foundation:	45000	GIZMO: concrete base
Delivery to Alameda	2500	GIZMO: delivery to the site
Equipment rental	15000	GIZMO: crane
Installation: Installer 3	3680	GIZMO: rig and install sculpture
Installation: Installer 2	8640	GIZMO: rig and install sculpture
Materials: speciality	900	GIZMO: anti-bird guard wires
Fabrication of heads:		
Materials: Metal	1500	Corten metal
Materials: Hardware	300	Riverts
Materials: Cardboard	80	Cardboard
Consumables	1400	Brushes, disks, gloves, oxygen, propane.
Labor: Fabricator	15000	High level blacksmith
Workshop rent	3000	Workshop rent 3 months
		Delivery from WV to CA (Gizmo) by DB Schenker
Delivery to Alameda	8000	service
		Author's supervision 4 visits to Gizmo (travelling from
Author's supervision	12000	WV)
Engineering		Indicated above
Permit costs	2250	Based on GIZMO estimation
Subtotal	244882	
10% contingency	24488,2	
Total	269370,2	

(B) Fabrication in cooperation with Anvil Works in West Virginia. The height of the sculpture is 33 feet and 24 feet.

Item	Amount	Amount	lotes		
	Height 33'	Height 24'	The height of the sculpture		
Artist fee	25000	24000			
			Foundation drawings and calculations for		
Foundation engineering	4800	3500	support and seismic anchorage of sculpture		
Foundaton fabrication	30000	17000	Concrete fundation		
Design: Drafting	8000	7000	Creating plans, details, specificatios		
Design: Engineering	9000	7000	Engineering for sculpture		
Materials: Metal	5200	4700	Cor-ten L-metal 20'x20'		
Materials: Metal	3300	2800	Cor-ten flat sheets thickness 1/8 inch		
Materials: Metal	1000	800	Cor-ten flat bar thickness ¼ inch		
Materials: Hardware	1000	800	Riverts		
Materials: Cardboard	180	140	Cardboard		
Materials: Bee's wax	900	700	Finish Bee's wax		
Consumables	2500	1800	Brushes, disks, gloves, oxygen, propane.		
Cutting service	6000	2440	Laser cutting		
Labor: Fabricator	28800	24000	High level blacksmith		
Labor: Fabricator	21600	10080	Journeyman blacksmith		
Workshop rent	14000	10000	Rent a workshop with a ceiling above 40' / 30'		
Equipment rental	6000	4000	Bending machine		
Delivery to Alameda	18000	9000	DB Schenker service		
Equipment rental	7500	4500	Crane		
Materials: Specialty	900	600	Anti-bird guard wires		
			Indicated above: Design Engineering,		
Engineering			Foundation engineering		
			Estimated at \$1,500 for \$150,000 artwork, and		
Permit costs	1500	1500	\$1,000 for \$50,000 artwork		
Subtota	l 195180	136360			
10% contingency	19518	13636			
Tota	l 214698	149996			

Installation plan



(B) The sculpture will be brought in dismantled in the form of 18 details and will be assembled at the site.



The sculpture has five points of support which are anchored to the concrete base. The base is immersed in the ground and covered with grass.





Maintenance plan

Corten steel has a chemical composition in which the rust forms a protective coating that protects the part from atmospheric corrosion. So the constant maintenance is optional. In order to extend the life of the sculpture, it could be covered with bees wax once in one or two years.

Schedule for completion of the work

	Week (Dates)	Notes
Complete Schematic drawings	0 (09/03/18)	The part of detailed proposal
Complete design development drawings	2 (00/24/18)	Design include scale, size, and materials; may also include weight
	5 (05/24/18)	Near complete construction drawings - some details may
Complete 80% construction drawings	3 (10/15/18)	be undecided, or presented as alternatives
Complete 100% construction drawings	3 (11/05/18)	Complete construction drawings
Commence permit process	2 weeks	It is suggestion, do not obtain exact information
Commence fabrication	11/19/2018	
Fabrication 50% complete	18 (03/24/19)	18 weeks
Fabrication 100% complete	18 (07/28/19)	18 weeks
Installation	08/05/19	Transportation from WV to CA takes one week



Gizmo Art Production, Inc PO BOX 411372 SAN FRANCISCO, CA 94141-1372 415-222-6181 mark@gizmosf.com

ESTIMATE

ADDRESS 1840 - Dmitrii Volkov -Dancing Dragons ESTIMATE # 1572 DATE 05/08/2018

ACTIVITY	QTY	RATE	AMOUNT
Based on conceptual drawings for "Dancing Dragons" by Dmitrii Volkov; sculpture is approx. 53' long x 20' wide x 33' high and is built from cortex steel and sculpted elements. The sculpture will be anchored to a concrete pad.			
Management:Project Management Project and Production Management	80	100.00	8,000.00
Design:Drafting Draftsperson for creating of plans, details, specifications.	100	90.00	9,000.00
Design:Engineering Engineering for sculpture - CA stamped drawings - based on current size	1	15,000.00	15,000.00
Permit Fees Permit Fees	1	2,250.00	2,250.00
Materials:Metal Metal - 8" x 12" I-beams (CORTEN) @ 30' LONG (W12X40)	5	1,510.00	7,550.00
Materials:Metal Metal - 1/4" corten plate - 5' x 10'	14	608.00	8,512.00
Materials:Metal Metal - 4" x 4" corten tubing (1/8" wall) @ 20'	6	315.00	1,890.00
Cutting Services Waterjet Cutting	60	175.00	10,500.00
Materials:Hardware Hardware (Rivets)	1	1,500.00	1,500.00
Labor:Fabricator 3 Fabricator Level 3; Expert Metal Worker - form and weld metal parts	176	115.00	20,240.00
Labor:Fabricator 2 Fabricator Level 2; Journeyman Metal Worker - form and weld metal parts	176	90.00	15,840.00
Design:Engineering Inspections - welding	1	1,800.00	1,800.00
Materials:Paint Finish - Bee's wax or equivalent (includes application)	1	800.00	800.00
Materials:Concrete	1	45,000.00	45,000.00

www.gizmosf.com

QTY	RATE	AMOUNT
ormwork, INISHED		
1	2,500.00	2,500.00
1	15,000.00	15,000.00
32	115.00	3,680.00
96	90.00	8,640.00
1	900.00	900.00
TOTAL	\$17	8,602.00
	QTY Formwork, INISHED 1 32 96 1 TOTAL	QTY RATE formwork, INISHED 1 2,500.00 1 15,000.00 32 115.00 96 90.00 1 900.00 TOTAL \$17

Accepted By

Accepted Date

COR-TEN,CORTEN A,CORTEN STEEL,A242,A558 GR A,S355JOW, DIFFERENT TYPE AND GRADES OF CORTEN STEEL.

CORTEN A STEEL / Weather resistant steel

Physical Properties

Weather resistant steel	Standard	Tensile Strength MPa	Yield Strength MPa	Elongation in 2 inches (min.) %
CORTENA	US steel	470-630	355	20
IRSM 41-97	Indian Railways	480 min	340 min	21
ASTM A 588	ASTM	485 MIN	345 min	21

Chemical Properties

Weather resistant steel	С	Mn	Р	S	Si	Cr	Ni	Mo	Cu
Corten-A	0.12	0.20- 0.50	0.070- 0.150	0.030	0.25- 0.75	0.50- 1.25	0.65	-	0.25-0.55
IRS M-41	0.10	0.25- 0.45	0.075- 0.112	0.030	0.28- 0.72	0.35- 0.49	0.20-0.49	-	0.30-0.39
ASTM A 588	0.20	0.75- 1.30	0.04 MAX	0.050	0.15- 0.50	0.30-050	0.50 MAX	-	0.20-0.40

ASTM A242-04 High-Strength Low-alloy Structural Steel

		Che	micals Composi	tion%		Tensile Test				
Crada								Tensile Streng		
Gidue						Thikness	Yield Point	h		
	С	Mn	P	S	Cu	(t)mm	Ksi(N/mm2)	Ksi(N/mm2)	Elong	ation
							50(345)		Test Piece	
						t<19.05	Min	70(480) Min	In (mm)	% Min
			0.15	0.05	0.20	19.05 <t<38.10< td=""><td>46(315) Min</td><td>67(460) Min</td><td>GL=8(200)</td><td>18</td></t<38.10<>	46(315) Min	67(460) Min	GL=8(200)	18
	0.15 Max	1.00 Max	Max	Max	Min	38.10 <t<101.6< td=""><td>42(290) min</td><td>63(435) Min</td><td>GL=2(50)</td><td>21</td></t<101.6<>	42(290) min	63(435) Min	GL=2(50)	21
Type1										

Remarks:

1 For plates wider than 24 in (600mm), the Elongatior requirment is reduce Two Percentage points.

2 For normal thickness 5/16in(8mm), the deduction from the specified percentage of elongation in 8 in(200mm). Shall be made for decereses of the nominal thickness below 5/16 in.(8mm). See elongation requirement adjustment under the tension tests section of specification A6 for deduction values.

Specifications for Corten Steel Strip & Coil according tp Jis 3125-87(SPA-H & SPA-C)JAPAN STANDA										
Type Symbol	С	Si	Mn	Р	S	Cu	Cr	Ni	Yield N/mm2	TensileN/mm
SPA-H	0.12	0.25 to	0.20 to	0.07 to	0.4	0.25	0.30 to	0.65	343 min	481 min
SPA-C	max	0.75	0.50	0.15	max	to0.60	1.25	max	34 min	451 min

Standards

Europe	Material no.	D	F	GB	USA	J	Salzgitter Flachstahl	FK ¹⁾
S355J0WP	1.8945	-	E 36 WA 3	WR 50 A	-	-	Allwesta 510 P	В
S355J2WP	1.8946	-	E 36 WA 4	-	A 242 Type 1	-	Allwesta 510 FP	В
S355J0W	1.8959	-	E 36 WB 3	WR 50 B	A 588	SMA 50 AW	Allwesta 510	В
S355J2W	1.8965	WTSt 52-3	E 36 WB 4	WR 50 C	-	SMA 50 CP	Allwesta 510 F	В
S355K2G2W	1.8967	-	_	_	-	_	Allwesta 510 F 40	В

¹⁾FK = Tensile strength class

Chemical composition in percent by weight¹⁾[%] (Heat analysis)

Grade	С	Si	Mn	Р	S	N	Cu	Cr	Ni
	max.	max.			max.	max.			max.
S355JOWP	0,12	0,75	max. 1,00	0,06 - 0,15	0,035	0,009 ³⁾	0,25 - 0,55	0,30 - 1,25	0,65
S355J2WP	0,12	0,75	max. 1,00	0,06 - 0,15	0,030	_4)	0,25 - 0,55	0,30 - 1,25	0,65
S355JOW	0,16	0,50	0,50 - 1,50	max. 0,035	0,035	0,009 ²⁾ ₃₎	0,25 - 0,55	0,40 - 0,80	0,65
S355J2W	0,16	0,50	0,50 - 1,50	max. 0,030	0,030	_4)	0,25 - 0,55	0,40 - 0,80	0,65
S355K2W	0,16	0,50	0,50 - 1,50	max. 0,030	0,030	_4)	0,25 - 0,55	0,40 - 0,80	0,65

1) The steel may contain a maximum of 0,65 % Ni, 0,30 % Mo and 0,15 % Zr.

2) Exceeding the specified maximum value is permitted if the phosphorous content

remains below the maximum value by 0,005 % for each 0,001 % of nitrogen; however, the nitrogen content must not exceed 0,012 % in the heat analysis.

3) The maximum nitrogen content shall not apply if the steel grades contain at least 0,020 % Altotal or sufficient quantities of other nitrogen-fixing elements.

4) The steel grades contain at least one of the following elements: Altotal : \geq 0,020 %, Nb: 0,015 - 0,060 %, V: 0,02 - 0,12 %, Ti: 0,02 - 0,10 %. If a combination of these elements is present, at least one of them is contained with the specified minimum content.

Grade	Position of sample	Min. yield strength		Teı stre	Tensile strength		Min. total elongation [%]			
		MPa		MPa		L ₀ = 80 mm			$L_0 = 5,65$ $\sqrt{S_0}$	
		e ²⁾ ≤ 16	e ²⁾ > 16	e ²⁾ < 3	e ²⁾ ≥ 3	$e^{2} \le 2$	$2 < e^{2} \le 2,5$	2,5 < e ²⁾ ≤ 3	e ²⁾ ≥ 3	
S355J0WP	l/t	355	-	510 - 680	470 - 630	16/14	17/15	18/16	22/20	
S355J2WP	l/t	355	-	510 - 680	470 - 630	16/14	17/15	18/16	22/20	
S355J0W	l/t	355	345	510 - 680	470 - 630	16/14	17/15	18/16	22/20	
S355J2W	l/t	355 ³⁾	345	510 - 680	470 - 630	16/14	17/15	18/16	22/20	
S355K2W	l/t	355 ³⁾	345	510 - 680	470 - 630	16/14	17/15	18/16	22/20	

Mechanical properties¹⁾

The tensile test values given in the table apply to longitudinal samples; in case of strip and sheet steel of widths of \geq 600 mm, transverse samples should be taken. 2) Nominal thickness e [mm]

3) S355J0WP and S355J2WP: $e \le 12$ mm.

Notch impact energy in condition of delivery (minimum values obtained using Charpy-V samples)

Grade	Notch impact energy ¹⁾	Position
	J	⁰ C
S355J0WP	27	0
S355J2WP	27	-20
S355J0W	27	0
S355J2W	27	-20
S355K2W	40	-20

Average values of 3 samples; one individual value may fall short of the required minimum value by not

2)More than 30 %. The sample width shall equal the product thickness if the latter is between 5 - 10 mm,

3)The tests being performed using samples which are similar to Charpy-V samples. The valuesspecified

4)In the table above are to be reduced proportionally to the sample width.

COR-TEN, CORTEN, CORTEN A, CORTEN STEEL, A242, A558 GR A, S355JOW,

Scope

CORTEN A applies to plates up to 12.5mm in thickness, CORTEN B applies to plates up to 50mm in thickness.

Definition

Weathering means that due to their chemical compositions CORTEN A and CORTEN B steels, when utilised unprotected, exhibits increased resistance to atmospheric corrosion compared to unalloyed steels. This is because it forms a protective layer on its surface under the influence of the weather.

The corrosion retarding effect of the protective layer is produced by the nature of its structure components and the particular distribution and concentration of alloying elements in it. The layer protecting the surface develops and regenerates continuously when subjected to the influence of the weather.

Formation, duration of development and protective effect of the covering layer on weathering steels depend largely upon the corrosive character of the atmosphere. Its influence varies and depends mainly upon general weather condition (e.g. continental) macroclimate (e.g. industrial, urban, maritime or countryside climate) and the orientation of the structure components (e.g. exposed to or shaded from the weather, vertical or horizontal position). The amount of aggressive agents in the air has to be taken into account . In general the covering layer offers protection against atmospheric corrosion in industrial, urban and countryside climate.

When utilising this steel in unprotected condition it is up to the designer to take into account the expected loss of thickness due to corrosion and as far as necessary, compensate for it by increasing the thickness of the material.

In cases of particular air pollution by aggressive agents conventional surface protection is recommended. Coating is absolutely necessary in cases of contact with water for long periods, when permanently exposed to moisture, or if it is to be used in the vicinity of the sea. The susceptibility of paint coats to undercreepage by rust is less in the case of weathering steel than in the case of comparable non-weathering steel.

Applications

The corten steel is used for various types of welded, bolted and riveted constructions e.g. steel frame structures, bridges, tanks and containers, exhaust systems, vehicles and equipment constructions.

Basic guidles for the use of corten steel in the unprotected condition are described in EN 10025-5 and DASt rule 007.

The entire application technology is of fundamental importance for the performance of the products made from this steel. It must be taken into account that not only general climate conditions but also specific unfavourable local climate conditions in the broadcast sense as well as details of a construction may affect the corrosion behaviour of unprotected weathering steel. The dependency on these facts makes it understandable that no warranty can be given. It is recommended to control the corrosion progress of protected parts out of weathering steel exposed to the influence of weather in reasonable time intervals. A minimum thickness of 5mm is recommended when exposed to the

weather in the unprotected condition.

To use the benefits of the higher atmospheric corrosion resistance of CORTEN in comparison to unalloyed steel it is necessary that design and execution of structures as well as the performance of maintenance works allow an impeded formation and regeneration of the protective rust layer. The methods must meet the latest requirements of technical progress and must be suited for the proposed application. Due consideration must be given to relevant construction specifications.

The selection of the material is up to the purchaser.

Grade	С	Si	Mn	Р	S	Cr	Cu	V	Ni
COR-TEN A	0.1 2	0.25- 0.75	0.20- 0.50	0.07- 0.15	0.030	0.50- 1.25	0.25- 0.55		0.65
COR-TEN B	0.1 6	0.30- 0.50	0.80- 1.25	0.030	0.030	0.40- 0.65	0.25- 0.40	0.02- 0.10	0.40

Chemical Composition(heat analysis, %)

In order to obtain fine grain structure a sufficient amount of nitrogen absorbing elements is added (e.g. $\geq 0.02\%$ Al).

Mechanical Properties, in the state of delivery condition

At room temperature for plates \geq 3mm in thickness (transverse test specimans, according to EN 10002). Requirements to hot rolled plates \leq 3mm in thickness according to EN 10025-5.

Grade	Minimum yield point (ReH	Tensile strength	Minimum elongation
	Mpa *)	Rm MPa	A (Lo=5.65 √So) %
COR-TEN A	355	470-630	20

*) 1 Mpa = 1N/mm2

In case of cold rolled material the yield point is min. 310 Mpa and the tensile strength min. 445 MPa. Furthermore cold rolled sheets ≤3mm in thickness made of steel grade COR-TEN A-F for increased demand to the cold formability is available. Mechanical properties: Yield point min. 275 Mpa; Tensile strength min. 410 Mpa; elongation min. 25%. Tolerances on dimensions and shape according to EN 10131.

Mechanical Properties, in the state of delivery condition

At room temperature for plates \geq 3mm in thickness (transverse test specimans, according to EN 10002). Requirements to hot rolled plates \leq 3mm in thickness according to EN 10025-5.

Grade	Material thickness mm	Minimum yield point (ReH Mpa *)	Tensile strength Rm MPa	Minimum elongation A (Lo=5.65 √So) %
COR-TEN B	≤16	355	470-630	20
	> 16 ≤50	345		

*) 1 Mpa = 1N/mm2

The notched-bar impact energy is determined on ISO-V longitudinal test specimans at a temperature of - 20°C as an average of three tests. For product thicknesses ≥10mm the average value is at least 27 J. For thicknesses between 10mm and 6mm, the minimum impact value is reduced

proportionally to the speciman width (product thickness).

No impact test is performed on products below 6mm in thickness.

Number of Tests

1 tensile test	1 test specimen per 40 t from eachheat*)
1 notched bar impact test	1 set specimens per 40 t from each heat *)
(3 specimens)	(at test temperature -20°C)
*) as referenced in EN	
10025-5	

General Processing Information

The information given below can only deal with some important points.

Forming

The conditions for hot forming are in accordance with those stated in EN 10025-5. For cold forming the statements according to table 6 of EN 10025-5 are valid. If the mechanical properties have undergone changes due to cold forming, the properties indicated in the table can be substantially restores by stress relieving - at least 30 minutes at 530°C - 580°C. For higher degrees of cold forming subsequent normalising is recommended.

Flame Cutting

CORTEN is suitable for flame cutting provided proper operating methods are used. At temperatures below 5°C a sufficiently wide zone on either side of the intended cut should be preheated. If flame cut edges are to undergo cold forming, the hardening effect should be prevented by preheating - as in the case of S355J2 or the hardened zones must be worked off e.g. by appropriate grinding.

Welding

CORTEN can be welded both manually and mechanically, provided the general rules of welding practices are observed. A prerequisite for obtaining identical mechanical properties in the weld and in the base material is the application of suitable welding consumables and the choice of appropriate welding conditions. To consider are EN 10025-5 - Technical delivery conditions for structural steels with improved atmospheric corrosion resistance

Recommendations for welding are also given in EN 1011 part 1 and part 2 - Welding, Recommendations for welding of metallic materials-.

Lime basic electrodes, inert-gas welding wire, and wire/power combinations equivalent to the tensile strength of S355 are used as welding consumables

For unprotected use care must be taken that the welded joint is also weather resistant. This is possible by using welding consumables matching the base material.

If due to design or building specification stress relieving is required, it should be performed in the range temperature from about 530°C to 580°C.

Bolting and Riveting

Joining elements such as bolts, rivets and their accessories (nuts and washers) must be so selected that the formation of local electro-chemical cells are avoided. The joining elements should preferably consist of weathering steel.

At these joints capillary action can lead to permanent moisture resulting in increased corrosion. Critical zones should therefore be protected by painting, sealing or other protective measures.

In the case of high-strength connections (HV) the conditions for non-weathering structural steels as given in DIN 18800 part 1 apply.



BRONZE, BRASS, COPPER SDS				
<u>AMPCO # J79-191</u>	all AMPCO, Bronze Alloys 624, 630, 642, 954		<u>Mueller Brass</u>	Leaded Brass Alloys 353, 360
<u>KME</u>	Copper Alloy 147		Drawn Metal Tube	Brass Alloy 330
National Bronze Copper Alloys 110, 122, 145 * Brass Alloys 230, 260, 280, 464, 485 * Bronze Alloys 220, 316, 510, 544, 932				

STEEL SDS		
North American Stainless	All Stainless Grades	
	Structural Product Grades: A36, A572, A588, A709 (Gr 36, Gr 50), A992	
Nucor - Carbon & Alloy Steels	Carbon Steel Bar Grades: A36, A709 Gr 36, 10xx, 11xx, 12xx, INcut®, Stressproof®, Fatigue-Proof®	
	Alloy Steel Bar Grades: 41xx, 43xx, 86xx, E52100, "e.t.d." 150®	
Nucor Cold Finish Steel	All Bars Leaded Grades - Carbon and Alloy	
	Hot Roll Plate Carbon Grades: A36, A709 Gr 36, Abrasion Resistant, CQ, 1045	
<u>U.S. Steel # 73712</u>	Hot Roll Plate HSLA Grades: A656, A709 Gr 36, 50, 50W, AR 400, Ex-Ten, Cor-Ten, CleanForm, DOMEX	
	Hot Roll Plate Grades for: Pressure Vessel Quality Plate and Floor Plate	
Arcelor Mittal USA-003	Steel Plate Alloy Grades T-1 or A514	
11 S. Stool # 52207	Sheet/Coil Carbon Grades: CS, DS, 1050, 1074, 1095	
0.5. 51001 # 52297	Sheet/Coil HSLA Grades: Ex-Ten, Cor-Ten, DOMEX, A1011 HSLAS	
<u>U.S. Steel # 1650</u>	Sheet/Coil Coated Grades: Galvanized, Galvannealed, Paintgrip	
<u>U.S. Steel # 7644</u>	Sheet/Coil Coated Grade: Electrogalvanized-Paintlok	
Arcelor Mittal USA-002	Sheet/Coil Coated Grade: Aluminized	
PTC Alliance-Steel Tube	Tube and Pipe : All Grades	
Precision Marshall Steel	Tool Steel/Drill Rod: All Grades	

RESOURCES

- Quality Policy

- Product Guides

- Terms and Conditions

- SDS/MSDS

- Conversions & Calculators

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Red Metals

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CENTRAL STEEL FABRICATIONS

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http://www.centralsteel.com/resources/sds-msds.php


Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp Safety Data Sheet (SDS)

USS IHS Number: 52297

(Replaces USS Code Number: 3A001, 3C011, 3H011)

Locations: Irvin, Fairfield, Gary, Granite City, Lake Erie, Hamilton

Section 1 – Identification

1(a) Product Identifier Used on Label: Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp

1(b) Other Means of Identification: Carbon Steel Sheet/Strip and Skelp

1(c) Recommended Use of the Chemical and Restrictions on Use: None

1(d) Name, Address, and Telephone Number:

United States Steel Corporation 600 Grant Street, Room 1662 Pittsburgh, PA 15219-2800 Phone number : (412) 433-6840 (8:00 am to 5:00 pm) FAX: (412) 433-5019

1(e) Emergency Phone Number: 1-800-262-8200 (CHEMTREC)

Section 2 – Hazard(s) Identification

2(a) Classification of the Chemical: As sold, this product, **Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp** is not hazardous according to the criteria specified in REACH [REGULATION (EC) No 1907/2006] and CLP [REGULATION (EC) No 1272/2008]. Under 29 CFR 1910.1200 Hazard Communication Standard, steel products are considered mixtures due to further processing which may produce dusts and or fume. The categories of Health Hazards as defined in <u>"GLOBALLY HARMONIZED SYSTEM OF CLASSIFICATION AND LABELLING OF CHEMICALS (GHS), Third revised edition ST/SG/AC.10/30/Rev. 3" United Nations, New York and Geneva, 2009 have been evaluated. Refer to Section 3, 8 and 11 for additional information. Precautionary Statement/Emergency Overview: This formed solid metal product poses little or no immediate health or fire hazard. When product is subjected to welding, burning, melting, sawing, brazing, grinding or other similar processes, potentially hazardous airborne particulate and fumes may be generated.</u>

2(b) Signal Word, Hazard Statement(s), Symbols and Precautionary Statement(s):

Hazard Symbol	Hazard Classification	Signal Word	Hazard Statement(s)	Precautionary Statement(s)
	Carcinogenicity - 2 Toxic to Reproduction - 2 Single Target Organ Toxicity (STOT) Repeat Exposure -1 Acute Toxicity-Oral 4 Skin Sensitization - 1	Danger	Suspected of causing cancer. Suspected of damaging fertility or the unborn child. Causes damage to lungs through prolonged or repeated inhalation exposure. Harmful if swallowed.	Do not breathe dusts / fume / spray. Wear protective gloves / protective clothing / eye protection / face protection. Contaminated work clothing must not be allowed out of the workplace. Use only outdoors or in well ventilated areas. Wash thoroughly after handling. Obtain special instructions before use.
NA	STOT Single Exposure - 3 Eye Irritation - 2B		May cause an allergic skin reaction. May cause respiratory irritation. Causes eye irritation.	Do not handle until all safety precautions have been read and understood. Do not eat, drink or smoke when using this product. If inhaled: Remove person to fresh air and keep comfortable for breathing. If exposed, concerned or feel unwell: Get medical advice/attention. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If on skin: Wash with plenty of water. If irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. Dispose of contents in accordance with federal, state and local regulations.

2(c) Hazards Not Otherwise Classified: None Known

2(d) Unknown Acute Toxicity Statement (mixture): None Known

Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp

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Section 3 – Composition/Information on Ingredients

3(a-c) Chemical Name, Common Name (synonyms), CAS Number and Other Identifiers, and Concentration:					
Chemical Name	CAS Number	EC Number	% weight		
Iron	7439-89-6	231-096-4	>86		
Aluminum	7429-90-5	231-072-3	≤2.0		
Chromium	7440-47-3	231-157-5	≤5.0		
Copper	7440-50-8	231-159-6	≤2.5		
Manganese	7439-96-5	231-105-1	≤3.0		
Molybdenum	7439-98-7	231-107-2	≤2.5		
Nickel	7440-02-0	231-111-4	≤5.0		
Silicon	7440-21-3	231-130-8	≤2.0		

EC- European Community

CAS- Chemical Abstract Service

Section 4 – First-aid Measures

4(a) Description of Necessary Measures: If exposed, concerned or feel unwell: Get medical advice/attention.

- Inhalation: Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp as sold/shipped is not a likely form of exposure. However during further processing (welding, grinding, burning, etc.). If inhaled: Remove person to fresh air and keep comfortable for breathing. If exposed, concerned or feel unwell: Get medical advice/attention.
- Eye Contact: This product as sold/shipped is not a likely form of exposure. However during further processing (welding, grinding, burning, etc.). If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue Rinsing. If eye irritation persists: Get medical advice/attention. If exposed, concerned or feel unwell: Get medical advice/attention.
- Skin Contact: If on skin: Wash thoroughly after handling. Wash with plenty of water. If irritation or rash occurs: Get medical advice/attention. Take off and wash contaminated clothing before reuse.
- **Ingestion:** This product as sold/shipped is not a likely form of exposure. However during further processing (welding, grinding, burning, etc.). If swallowed: Call a poison center/doctor if you feel unwell. Rinse mouth. If exposed, concerned or feel unwell: Get medical advice/attention.

4(b) Most Important Symptoms/Effects, Acute and Delayed (chronic):

- Inhalation: This product as sold/shipped is not likely to present an acute or chronic health effect.
- Eye: This product as sold/shipped is not likely to present an acute or chronic health effect.
- Skin: This product as sold/shipped is not likely to present an acute or chronic health effect.
- **Ingestion:** This product as sold/shipped is not likely to present an acute or chronic health effect.

4(c) Immediate Medical Attention and Special Treatment: None Known

Section 5 – Fire-fighting Measures

5(a) Suitable (and unsuitable) Extinguishing Media: Not applicable for Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp as sold/shipped. Use extinguishers appropriate for surrounding materials.

5(b) Specific Hazards Arising From the Chemical: Not applicable for this product as sold/shipped. When burned, toxic smoke and vapor may be emitted.

5(c) Special Protective Equipment and Precautions for Fire-fighters: Self-contained NIOSH approved respiratory protection and full protective clothing should be worn when fumes and/or smoke from fire are present. Heat and flames cause emittance of acrid smoke and fumes. Do not release runoff from fire control methods to sewers or waterways. Firefighters should wear full face-piece self-contained breathing apparatus and chemical protective clothing with thermal protection. Direct water stream will scatter and spread flames and, therefore, should not be used.

Section 6 - Accidental Release Measures

6(a) Personal Precautions, Protective Equipment and Emergency Procedures: Not applicable for **Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp** as sold/shipped. For spills involving finely divided particles, clean-up personnel should be protected against contact with eyes and skin.

6(b) Methods and Materials for Containment and Clean Up: Not applicable for this product as sold/shipped. If material is in a dry state, avoid inhalation of dust. Fine, dry material should be removed by vacuuming or wet sweeping methods to prevent spreading of dust. Avoid using compressed air. Do not release into sewers or waterways. Collect material in appropriate, labeled containers for recovery or disposal in accordance with federal, state, and local regulations. Follow applicable OSHA regulations (29 CFR 1910.120) and all other pertinent state and federal requirements.

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Section 7 - Handling and Storage

7(a) Precautions for Safe Handling: Not applicable for **Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp** as sold/shipped, however further processing (welding, burning, grinding, etc.) with the potential for generating high concentrations of airborne particulates should be evaluated and controlled as necessary. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Practice good housekeeping. Avoid breathing metal fumes and/or dust. Do not eat, drink or smoke when using this product.

7(b) Conditions for Safe Storage, Including any Incompatibilities: Store away from acids and incompatible materials.

Section 8 - Exposure Controls / Personal Protection

8(a) Occupational Exposure Limits (OELs): Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp as sold/shipped in its physical form does not present an inhalation, ingestion or contact hazard, nor would any of the following exposure data apply. However, operations such as high temperature (burning, welding, sawing, brazing, machining and grinding) may produce fumes and/or particulates. The following exposure limits are offered as reference, for an experience industrial hygienist to review.

Ingredients	8(a) OSHA PEL ¹	ACGIH TLV ²	NIOSH REL ³	IDLH ⁴
Iron	10 mg/m ³ (as iron oxide fume)	5.0 mg/m ³ (as iron oxide dust and fume)	5.0 mg/m ³ (as iron oxide dust and fume)	$2,500 \text{ mg Fe/m}^3$
Aluminum	15 mg/m ³ (total dust, PNOR) ⁵ 5.0 mg/m ³ (as respirable fraction, PNOR)	1.0 mg/m ³	10 mg/m ³ (as total dust) 5.0 mg/m ³ (as respirable dust)	NE
Chromium	0.5 mg/m ³ (as Cr II & III, inorganic compounds)	0.5 mg/m ³ (as Cr III, inorganic compounds)	0.5 mg/m ³ (as Cr II & III, inorganic compounds)	250 mg/m ³ (as Cr II & metal)
	1.0 mg/m ³ (as Cr, metal)	0.5 mg/m ³ (as Cr, metal)	0.5 mg/m ³ (as Cr, metal)	25 mg/m ³ (as Cr III)
	0.005 mg/m ³ (as Cr VI, inorganic compounds & certain water insoluble)	0.05 mg/m ³ (as Cr VI, inorganic compounds)	0.001 mg/m ³ (as Cr VI, inorganic compounds &	15 mg/m ³ (as Cr VI)
	"AL" 0.0025 mg/m ³ (as Cr VI, inorganic compounds & certain water insoluble)	0.01 mg/m ³ (as Cr VI, inorganic compounds & certain water insoluble)	certain water insoluble)	
Copper	0.1 mg/m ³ (as fume, Cu) 1.0 mg/m ³ (as dusts & mists, Cu)	0.1 mg/m ³ (as fume) 1.0 mg/m ³ (as dusts & mists, Cu)	1.0 mg/m ³ (as dusts & mists)	100 mg Cu/m ³
Manganese	"C" 5.0 mg/m ³ (as Fume & Mn compounds)	0.2 mg/m ³	"C" 5.0 mg/m ³ 1.0 mg/m ³ (as fume) "STEL" 3.0 mg/m ³	500 mg Mn/m ³
Molybdenum	15 mg/m ³ (as total dust, PNOR) 5.0 mg/m ³ (as respirable fraction, PNOR)	10 mg/m ³ (as Mo insoluble compounds, inhalable fraction ⁶)	NE	NE
		3.0 mg/m ³ (as Mo insoluble compounds, respirable fraction ⁷)		
		0.5 mg/m ³ (as Mo soluble compounds, respirable fraction)		
Nickel	1.0 mg/m ³ (as Ni metal & insoluble	1.5 mg/m ³ (as inhalable fraction Ni metal)	0.015 mg/m ³ (as Ni metal &	10 mg/m ³ (as Ni)
	compounds)	0.2 mg/m ³ (as inhalable fraction Ni inorganic only insoluble and soluble compounds)	insoluble and soluble compounds)	
Silicon	15 mg/m ³ (total dust, PNOR)	10 mg/m ³	10 mg/m3 (as total dust)	NE
	5.0 mg/m ³ (as respirable fraction, PNOR)		5.0 mg/m ³ (as respirable dust)	

NE - None Established

- 1. OSHA PELs (Permissible Exposure Limits) are 8-hour TWA (Time-Weighted Average) concentrations unless otherwise noted. A ("C") designation denotes a ceiling limit, which should not be exceeded during any part of the working exposure unless otherwise noted. An Action level (AL) is used by OSHA and NIOSH to express a health or physical hazard. They indicate the level of a harmful or toxic substance/activity, which requires medical surveillance, increased industrial hygiene monitoring, or biological monitoring. Action Levels are generally set at one half of the PEL but the actual level may vary from standard to standard. The intent is to identify a level at which the vast majority of randomly sampled exposures will be below the PEL.
- 2. Threshold Limit Values (TLV) established by the American Conference of Governmental Industrial Hygienists (ACGIH) are 8-hour TWA concentrations unless otherwise noted. ACGIH TLVs are for guideline purposes only and as such are not legal, regulatory limits for compliance purposes. A Short Term Exposure Limit (STEL) is defined as the maximum concentration to which workers can be exposed for a short period of time (15 minutes) for only four times throughout the day with at least one hour between exposures.
- 3. The National Institute for Occupational Safety and Health Recommended Exposure Limits (NIOSH-REL) Compendium of Policy and Statements. NIOSH, Cincinnati, OH (1992). NIOSH is the federal agency designated to conduct research relative to occupational safety and health. As is the case with ACGIH TLVs, NIOSH RELs are for guideline purposes only and as such are not legal, regulatory limits for compliance purposes.
- 4. The "Immediately Dangerous to Life or Health air concentration values (IDLHs)" are used by NIOSH as part of the respirator selection criteria and were first developed in the mid-1970's by NIOSH. The Documentation for Immediately Dangerous to Life or Health Concentrations (IDLHs) is a compilation of the rationale and sources of information used by NIOSH during the original determination of 387 IDLHs and their subsequent review and revision in 1994.

5. PNOR (Particulates Not Otherwise Regulated). All inert or nuisance dusts, whether mineral, inorganic, or organic, not listed specifically by substance name are covered by a limit which is the same as the inert or nuisance dust limit of 15 mg/m³ for total dust and 5 mg/m³ for the respirable fraction.

- 6. Inhalable fraction. The concentration of inhalable particulate for the application of this TLV is to be determined from the fraction passing a size-selector with the characteristics defined in the ACGIH 2013 TLVs [®] and BEIs[®] (Biological Exposure Indices) Appendix D, paragraph A.
- 7. Respirable fraction. The concentration of respirable dust for the application of this limit is to be determined from the fraction passing a size-selector with the characteristics defined in ACGIH 2013 TLVs [®] and BEIs [®] Appendix D, paragraph C.

8(b) Appropriate Engineering Controls: Use controls as appropriate to minimize exposure to metal fumes and dusts during handling operations. Provide general or local exhaust ventilation systems to minimize airborne concentrations. Local exhaust is necessary for use in enclosed or confined spaces. Provide sufficient general/local exhaust ventilation in pattern/volume to control inhalation exposures below current exposure limits.

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Section 8 - Exposure Controls / Personal Protection (continued)

8(c) Individual Protection Measures:

• **Respiratory Protection:** Seek professional advice prior to respirator selection and use. Follow OSHA respirator regulations (29 CFR 1910.134) and, if necessary, use only a NIOSH-approved respirator. Select respirator based on its suitability to provide adequate worker protection for given working conditions, level of airborne contamination, and presence of sufficient oxygen. Concentration in air of the various contaminants determines the extent of respiratory protection needed. Half-face, negative-pressure, air-purifying respirator equipped with P100 filter is acceptable for concentrations up to 10 times the exposure limit. Full-face, negative-pressure, air-purifying negative-pressure and powered air respirators is limited. Use a positive-pressure-demand, full-face, supplied air respirator or self-contained breathing apparatus (SCBA) for concentrations above 50 times the exposure limit. If exposure is above the IDLH (Immediately Dangerous to Life or Health) for any of the constituents, or there is a possibility of an uncontrolled release or exposure levels are unknown, then use a positive-demand, full-face, supplied air respirator with escape bottle or SCBA.

Warning! Air-purifying respirators both negative-pressure, and powered-air do not protect workers in oxygen-deficient atmospheres.

- Eyes: Wear appropriate eye protection to prevent eye contact. For operations, which result in elevating the temperature of the product to or above its melting point or result in the generation of airborne particulates, use safety glasses to prevent eye contact. Contact lenses should not be worn where industrial exposures to this material are likely. Use safety glasses or goggles as required for welding, burning, sawing, brazing, grinding or machining operations.
- Skin: Wear appropriate personal protective clothing to prevent skin contact. Cut resistant gloves and sleeves should be worn when working with steel products. For operations, which result in elevating the temperature of the product to or above its melting point or result in the generation of airborne particulates, use protective clothing, and gloves to prevent skin contact. Protective gloves should be worn as required for welding, burning or handling operations. Contaminated work clothing must not be allowed out of the workplace.
- Other Protective Equipment: An eyewash fountain and deluge shower should be readily available in the work area.

Section 9 - Physical and Chemical Properties

9(j) Upper/lower Flammability or Explosive Limits: NA

9(k) Vapor Pressure: NA

9(1) Vapor Density (Air = 1): NA

9(m) Relative Density: 7.85 g/cc

9(p) Auto-ignition Temperature: NA

9(q) Decomposition Temperature: ND

9(o) Partition Coefficient n-octanol/water: ND

9(n) Solubility(ies): Insoluble

9(r) Viscosity: NA

9(a)	Appearance	(physical	state,	color,	etc.):	Metallic	Gray
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- 9(b) Odor: Odorless
- 9(c) Odor Threshold: NA
- 9(d) pH: NA
- 9(e) Melting Point/Freezing Point: ~ 2750 °F (~1510 C)
- 9(f) Initial Boiling Point and Boiling Range: ND
- 9(g) Flash Point: NA
- 9(h) Evaporation Rate: NA
- 9(i) Flammability (solid, gas): Non-flammable, non-combustible

NA - Not Applicable ND - Not Determined for product as a whole

Section 10 - Stability and Reactivity

10(a) Reactivity: Not Determined (ND)

10(b) Chemical Stability: Steel products are stable under normal storage and handling conditions.

10(c) Possibility of Hazardous Reaction: None Known

10(d) Conditions to Avoid: Storage with strong acids or calcium hypochlorite.

10(e) Incompatible Materials: Will react with strong acids to form hydrogen. Iron oxide dusts in contact with calcium hypochlorite evolve oxygen and may cause an explosion.

10(f) Hazardous Decomposition Products: Thermal oxidative decomposition of steel products can produce fumes containing oxides of iron and manganese as well as other alloying elements.

Section 11 - Toxicological Information

11(a-e) Information on Toxicological Effects: The following toxicity data has been determined for Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp as a mixture when further processed using the information available for its components applied to the guidance on the preparation of an SDS under the GHS requirements of OSHA and the EU CPL:

Hazard Classification	Hazard Category		Hazard	Signal Word	Signal Word Hazard Statement	Hazard Statement
Hazaru Classification	EU	OSHA	Symbols	Signal Word	Hazaru Statement	
Acute Toxicity Hazard (covers Categories 1-5)	NA*	4 ^a		Warning	Harmful if swallowed.	
Eye Damage/ Irritation (covers Categories 1, 2A and 2B)	NA*	2B ^c	No Pictogram	Warning	Causes eye irritation.	

Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp

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Section 11 - Toxicological Information (continued)								
11(a-e) Information on Toxico	11(a-e) Information on Toxicological Effects (continued):							
Hazard Classification	Hazard	Category	Hazard	Signal Word	Hazard Statement			
	EU	OSHA	Symbols	Signal Word	Huzur a Statement			
Skin/Dermal Sensitization (covers Category 1)	NA*	1 ^d	(!)	Warning	May cause an allergic skin reaction.			
Carcinogenicity (covers Categories 1A, 1B and 2)	NA*	2 ^g		Warning	Suspected of causing cancer.			
Toxic to Reproduction (covers Categories 1A, 1B and 2)	NA*	2 ^h		Warning	Suspected of damaging fertility or the unborn child.			
Specific Target Organ Toxicity (STOT) Following Single Exposure (covers Categories 1-3)	NA*	3 ⁱ		Warning	May cause respiratory irritation.			
STOT following Repeated Exposure (covers Categories 1 and 2)	NA*	1 ^j		Danger	Causes damage to lungs through prolonged or repeated inhalation exposure.			
* Not Applicable	-							

Toxicological data listed below are presented regardless to classification criteria. Individual hazard classification categories where the toxicological information has met or exceeded a classification criteria threshold are listed above.

a. No LC_{50} or LD_{50} has been established for **Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp**. The following data has been determined for the components:

- Iron: Rat LD₅₀ =98.6 g/kg (REACH) Rat LD₅₀ =1060 mg/kg (IUCLID) Rat LD₅₀ =984 mg/kg (IUCLID) Rabbit LD₅₀ =890 mg/kg (IUCLID) Guinea Pig LD₅₀ =20 g/kg (TOXNET) Human LD_{LO} =77 g/kg (IUCLID)
- Aluminum: Rat $LD_{50} > 15.9 \text{ g/kg}$ (REACH)
- **Copper:** Rat LD₅₀ = 481 mg/kg (REACH Rat LD₅₀ > 2500 mg/kg (REACH)
- Nickel: LD₅₀ >9000 mg/kg (Oral/Rat); NOAEC >10.2 mg/l(Inhalation/Rat)
- Silicon: $LD_{50} = 3160 \text{ mg/kg}$ (Oral/Rat)
- Manganese: Rat LD₅₀ > 2000 mg/kg (REACH)
 - Rat $LD_{50} > 9000 \text{ mg/kg}$ (NLM Toxnet)

b. No Skin (Dermal) Irritation data available for **Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp** as a mixture. The following Skin (Dermal) Irritation information was found for the components:

• Molybdenum: May cause skin irritation.

- c. No Eye Irritation data available for **Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp** as a mixture. The following Eye Irritation information was found for the components:
 - Iron and Molybdenum: Causes eye irritation.
 - Silicon: Slight eye irritation in rabbit protocol.
 - Nickel: Slight eye irritation from particulate abrasion only.
- d. No Skin (Dermal) Sensitization data available for Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp as a mixture. The following Skin (Dermal) Sensitization information was found for the components:
 - Nickel: May cause allergic skin sensitization.
- e. No Respiratory Sensitization data available for Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp as a mixture or its components.
- f. No Germ Cell Mutagenicity data available for **Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp** as a mixture. The following Mutagenicity and Genotoxicity information was found for the components:
 - Iron: IUCLID has found some positive and negative findings in vitro.
 - Aluminum: IUCLID; ATSDR have found this ingredient is not mutagenic in vitro; but has marginal effects in vivo.
 - Nickel: EU RAR has found positive results in vitro and in vivo but insufficient data for classification.
- g. Carcinogenicity: IARC, NTP, and OSHA do not list **Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp** as carcinogens. The following Carcinogenicity information was found for the components:
 - Welding Fumes IARC Group 2B carcinogen, a mixture that is possibly carcinogenic to humans.
 - Chromium (as metal and trivalent chromium compounds) IARC Group 3 carcinogens, not classifiable as to their human carcinogenicity.
 - Nickel and certain nickel compounds Group 2B metallic nickel Group 1 nickel compounds ACGIH confirmed human carcinogen. Nickel EURAR Insufficient evidence to conclude carcinogenic potential in animals or humans; suspect carcinogen classification Category 2 Suspected of causing cancer.
- h. No Toxic to Reproduction data available for **Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp** as a mixture. The following Toxic to Reproductive information was found for the components:
 - Nickel: Effects on fertility.

Section 11 - Toxicological Information (continued)

11(a-e) Information on Toxicological Effects (continued):

- i. No Specific Target Organ Toxicity (STOT) following a Single Exposure data available for **Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp** as a mixture. The following STOT following a Single Exposure data was found for the components:
 - Iron and Molybdenum: Irritating to respiratory tract.
 - Copper: Target organs affected Skin, eyes liver, kidneys and respiratory tract.
 - Aluminum: Repeated exposure associated with Asthma, fibrosis in lungs and encephalopathy in humans.
- j. No Specific Target Organ Toxicity (STOT) following Repeated Exposure data was available for **Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp** as a whole. The following STOT following Repeated Exposure data was found for the components:
 - Aluminum: Reviews have found chronic exposure to aluminum flake has been reported to cause pneumoconiosis in workers. Repeat oral exposure to aluminum results in decrements in neurobehavioral function and development.
 - Copper: Target organs affected Skin, eyes liver, kidneys and respiratory tract
 - Nickel: Rat 4 wk inhalation LOEL 4 mg/m³ Lung and Lymph node histopathology. Rat 2 yr inhalation LOEL 0.1 mg/m³ Pigment in kidney, effects on hematopoiesis spleen and bone marrow and adrenal tumor. Rat 13 Week Inhalation LOAEC 1.0 mg/m³ Lung weights, and Alveolar histopathology.
 - Manganese: Inhalation of metal fumes Degenerative changes in human Brain; Behavioral: Changes in motor activity and muscle weakness (Whitlock *et al.*, 1966).

The above toxicity information was determined from available scientific sources to illustrate the prevailing posture of the scientific community. The scientific resources includes: The American Conference of Governmental Industrial Hygienist (ACGIH) Documentation of the Threshold Limit Values (TLVs) and Biological Exposure Indices (BEIs) with Other Worldwide Occupational Exposure Values 2013, The International Agency for Research on Cancer (IARC), The National Toxicology Program (NTP) updated documentation, the World Health Organization (WHO) and other available resources, the International Uniform Chemical Information Database (IUCLID), European Union Risk Assessment Report (EU-RAR), Concise International Chemical Assessment Documents (CICAD), European Union Scientific Committee for Occupational Exposure Limits (EU-SCOEL), Agency for Toxic Substances and Disease Registry (ATSDR), Hazardous Substance Data Bank (HSDB), and International Programme on Chemical Safety (IPCS).

The following health hazard information is provided regardless to classification criteria and is based on the individual component(s) and potential resultant components from further processing:

Acute Effects by component:

- Iron and Oxides: Iron is harmful if swallowed, causes skin irritation, and causes eye irritation. Contact with iron oxide has been reported to cause skin irritation and serious eye damage.
- Aluminum: Not Reported/ Not Classified
- Chromium, Oxides and Hexavalent Chrome: Hexavalent chrome causes damage to gastrointestinal tract, lung, severe skin burns and eye damage, serious eye damage, skin contact may cause an allergic skin reaction. Inhalation may cause allergic or asthmatic symptoms or breathing difficulties.
- Copper and Oxides: Copper may cause allergic skin reaction. Copper oxide is harmful if swallowed, causes skin and eye irritation, and may cause an allergic skin reaction.
- Manganese and Oxides: Manganese and Manganese oxide are harmful if swallowed.
- Molybdenum and Oxides: Molybdenum causes skin and eye irritation. Molybdenum oxide is toxic if swallowed, and causes eye irritation.
- Nickel and Oxides: Nickel may cause allergic skin sensitization. Nickel oxide may cause an allergic skin.
- Silicon and Oxides: May be harmful if swallowed.

Delayed (chronic) Effects by Component:

- Iron and Oxides: Chronic inhalation of excessive concentrations of iron oxide fumes or dusts may result in the development of a benign pneumoconiosis, called siderosis, which is observable as an X-ray change. No physical impairment of lung function has been associated with siderosis. Inhalation of excessive concentrations of ferric oxide may enhance the risk of lung cancer development in workers exposed to pulmonary carcinogens. Iron oxide is listed as a Group 3 (not classifiable) carcinogen by the International Agency for Research on Cancer (IARC).
- Aluminum: Chronic inhalation of finely divided powder has been reported to cause pulmonary fibrosis and emphysema. Repeated skin contact has been associated with bleeding into the tissue, delayed hypersensitivity and granulomas. Chronic exposure to aluminum flake has been reported to cause pneumoconiosis in workers. Repeat oral exposure to aluminum results in decrements in neurobehavioral function and development.
- Chromium, Oxides and Hexavalent Chromium: The health hazards associated with exposure to chromium are dependent upon its oxidation state. The metal form (chromium as it exists in this product) is of very low toxicity. The hexavalent form is very toxic. Repeated or prolonged exposure to hexavalent chromium compounds may cause respiratory irritation, nosebleed, ulceration and perforation of the nasal septum. Industrial exposure to certain forms of hexavalent chromium has been related to an increased incidence of cancer. NTP (The National Toxicology Program) Fourth Annual report on Carcinogens cites "certain Chromium compounds" as human carcinogens. ACGIH has reviewed the toxicity data and concluded that chromium metal is not classifiable as a human carcinogen. Hexavalent chromium may cause genetic defects and is suspected of damaging the unborn child. Developmental toxicity in the mouse, suspected of damaging fertility or the unborn child.
- Copper and Oxides: Inhalation of high concentrations of freshly formed oxide fumes and dusts of copper can cause metal fume fever. Chronic inhalation of copper dust has caused, in animals, hemolysis of the red blood cells, deposition of hemofuscin in the liver and pancreas, injury to lung cells and gastrointestinal symptoms.
- Manganese and Oxides: Chronic exposure to high concentrations of manganese fumes and dusts may adversely affect the central nervous system with symptoms including languor, sleepiness, weakness, emotional disturbances, spastic gait, mask-like facial expression and paralysis. Animal studies indicate that manganese exposure may increase susceptibility to bacterial and viral infections. Occupational overexposure (Manganese) is a progressive, disabling neurological syndrome that typically begins with relatively mild symptoms and evolves to include altered gait, fine tremor, and sometimes, psychiatric disturbances. May cause damage to lungs with repeated or prolonged exposure. Neurobehavioral alterations in worker populations exposed to MnO including; speed and coordination of motor function are especially impaired.

Section 11 - Toxicological Information (continued)

Delayed (chronic) Effects by Component (continued):

- Molybdenum and Oxides: Certain handling operations, such as burning and welding, may generate both insoluble molybdenum compounds (metal and molybdenum dioxide) and soluble molybdenum compounds (molybdenum trioxide). Molybdenum compounds generally exhibit a low order of toxicity with the trioxide the more toxic. However, some reports indicate that the dust of the molybdenum metal, molybdenum dioxide and molybdenum trioxide may cause eye, skin, nose and throat irritation in animals. Also has been reported to cause induction of tumors in experimental animals, suspected of causing cancer. Molybdenum oxide is suspected of causing cancer in humans.
- Nickel and Oxides: Exposure to nickel dusts and fumes can cause sensitization dermatitis, respiratory irritation, asthma, pulmonary fibrosis, edema, and may cause nasal or lung cancer in humans. Causes damage to lungs through prolonged or repeated inhalation exposure. IARC lists nickel and certain nickel compounds as Group 2B carcinogens (sufficient animal data). ACGIH 2013 TLVs® and BEIs[®] lists insoluble nickel compounds as confirmed human carcinogens. Suspected of damaging the unborn child.
- Silicon and Oxides: Silicon dusts are a low health risk by inhalation and should be treated as a nuisance dust. Eye contact with pure material can cause particulate irritation. Skin contact with silicon dusts may cause physical abrasion.

Section 12 - Ecological Information

12(a) Ecotoxicity (aquatic & terrestrial): No Data Available for Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp as sold/shipped. However, individual components of the product when processed have been found to be toxic to the environment. Metal dusts may migrate into soil and groundwater and be ingested by wildlife as follows:

- Iron Oxide: LC_{50} : >1000 mg/L; Fish 48 h- EC_{50} > 100 mg/L (Currenta, 2008k); 96 h- $LC_0 \ge 50,000$ mg/L. Test substance: Bayferrox 130 red (95 97% Fe₂O₃; <4% SiO₂ and Al₂O₃) (Bayer, 1989a).
- Aluminum Oxide: LC₅₀ >100 mg/l for fish and algae.
- Hexavalent Chrome: EU RAR listed as category 1, found acute EC_{50} and LD_{50} to algae and invertebrates < 1 mg.
- Nickel Oxide: IUCLID found LC₅₀ in fish, invertebrates and algae > 100 mg/l.

12(b) Persistence & Degradability: No Data Available

12(c) Bioaccumulative Potential: No Data Available

12(d) Mobility (in soil): No data available for this product as sold/shipped. However, individual components of the product have been found to be absorbed by plants from soil.

12(e) Other Adverse Effects: None Known

Additional Information:

Hazard Category: Not Reported

Signal Word: No Signal Word

Hazard Symbol: No Symbol Hazard Statement: No Statement

Section 13 - Disposal Considerations

Disposal: Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp should be recycled whenever possible. Product dusts and fumes from processing operations should also be recycled, or classified by a competent environmental professional and disposed of in accordance with applicable federal, state or local regulations

Container Cleaning and Disposal: Follow applicable federal, state and local regulations. Observe safe handling precautions. European Waste Catalogue (EWC): 16-01-17 (ferrous metals), 12-01-99 (wastes not otherwise specified), 16-03 (off specification batches and unused products), or 15-01-04 (metallic packaging).

Please note this information is for Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp in its original form. Any alterations can void this information.

Section 14 - Transport Information

14 (a-g) Transportation Information:

US Department of Transportation (DOT) under 49 CFR 172.101 **does not** regulate **Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp** as a hazardous material. All federal, state, and local laws and regulations that apply to the transport of this type of material must be adhered to.

Shipping Name: Not Applicable (NA)	Packaging Authorizations	Quantity Limitations
Shipping Symbols: NA	a) Exceptions: NA	a) Passenger, Aircraft, or Railcar: NA
Hazard Class: NA	b) Group: NA	b) Cargo Aircraft Only: NA
UN No.: NA	c) Authorization: NA	Vessel Stowage Requirements
Packing Group: NA		a) Vessel Stowage: NA
DOT/ IMO Label: NA		b) Other: NA
Special Provisions (172.102): NA		DOT Reportable Quantities: NA

International Maritime Dangerous Goods (IMDG) and the Regulations Concerning the International Carriage of Dangerous Goods by Rail (RID) classification, packaging and shipping requirements follow the US DOT Hazardous Materials Regulation.

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Section 14 - Transport Information (continued)

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14 (a-g) Transportation Information:				
Regulations Concerning the International Carriage of	Dangerous Goods	by Road (ADR) d	oes not regulate Hot o	or Cold Rolled Steel
Sheet/Strip and Hot Rolled Skelp as a hazardous material.				
Shipping Name: Not Applicable (NA)	Packaging		Portable Tanks & Bu	Ilk Containers
Classification Code: NA	a) Packing Inst	ructions: NA	a) Instructions: NA	
UN No.: NA	b) Special Pack	ing Provisions: NA	b) Special Provision	s: NA
Packing Group: NA	c) Mixed Packin	ng Provisions: NA		
ADR Label: NA				
Special Provisions: NA				
Limited Quantities: NA				
International Air Transport Association (IATA) does	not regulate Hot o	or Cold Rolled Ste	el Sheet/Strip and Ho	ot Rolled Skelp as a
hazardous material.				
Shipping Name: Not Applicable (NA)	Passenger & Car	go Aircraft	Cargo Aircraft Only:	Special Provisions:
Class/Division: NA	Limited Quantity	(EQ)	Pkg Inst: NA	NA
Hazard Label (s): NA	Pkg Inst: NA	Pkg Inst: NA		
UN No.: NA			Max Net Qty/Pkg:	ERG Code: NA
Packing Group: NA	Max Net	Max Net	NA	
Excepted Quantities (EQ): NA	Qty/Pkg: NA	Qty/Pkg: NA		
Pkg Inst – Packing Instructions Max Net Qty/Pkg – Ma	ximum Net Quantity per	Package	ERG – Emergency Re	sponse Drill Code

Transport Dangerous Goods (TDG) Classification: Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp does not have a TDG classification.

Section 15 - Regulatory Information

Regulatory Information: The following listing of regulations relating to a U. S. Steel product may not be complete and should not be solely relied upon for all regulatory compliance responsibilities. This product and/or its constituents are subject to the following regulations:

SARA Potential Hazard Categories: Immediate Acute Health Hazard; Delayed Chronic Health Hazard.

Section 313 Supplier Notification: The product, Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp contains the following toxic chemicals subject to the reporting requirements of section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 and 40 CFR part 372:

CAS #	Chemical Name	Percent by Weight
7440-47-3	Chromium	5.0 max
7440-50-8	Copper	2.5 max
7439-96-5	Manganese	3.0 max
7440-02-0	Nickel	5.0 max

State Regulations: The product, **Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp** as a whole is not listed in any state regulations. However, individual components of the product are listed in various state regulations:

California Prop. 65: Contains elements known to the State of California to cause cancer or reproductive toxicity. This includes chromium compounds and nickel.

Other Regulations:

WHMIS Classification (Canadian): The product, Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp is not listed as a whole. However individual components are listed.

Ingredients	WHMIS Classification
Copper	D2B, B4
Manganese	B4, D2A
Molybdenum	B4, D2B
Nickel	D2B
Silicon	B4

This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the SDS contains all the information required by the Controlled Products Regulations.

Section 16 - Other Information

Prepared By: United States Steel Corporation

Revision History:

4/1/2014 - Update to OSHA HAZ COM 2012.

12/16/10 – Combined the following three SDS's to create one that covers all three of these products:

Rev. 4/14

Expiration Date: 4/01/17

USS IHS No.: 52297

Section 16 - Other Information (continued) **Revision History (continued):** Update of content and format to comply with GHS. **USS Code** SRP Number **IHS Number Product Name** 1848 Hot or Cold Rolled Alloy Steel Sheet/Strip & Hot Rolled Skelp 3A001 22123 Hot or Cold Rolled Carbon Steel Sheet/Strip & Hot Rolled Skelp 3C011 1652 Hot or Cold Rolled Carbon Steel Sheet/Strip & Hot Rolled Skelp 3H001 **Additional Information:** Hazardous Material Identification System (HMIS) Classification National Fire Protection Association (NFPA) **Health Hazard** 1 **Fire Hazard** 0 **Physical Hazard** 0 HEALTH= 1, Denotes possible chronic hazard if airborne dusts or fumes are generated HEALTH = 1, Exposure could cause irritation but only minor residual injury even if no Irritation or minor reversible injury possible. treatment is given. FIRE= 0. Materials that will not burn FIRE = 0. Materials that will not burn PHYSICAL HAZARD= 0, Materials that are normally stable, even under fire conditions, and INSTABILITY = 0, Normally stable, even under fire exposure conditions, and are not will not react with water, polymerize, decompose, condense, or self-react. Non-explosives. reactive with water. ABBREVIATIONS/ACRONYMS: ACGIH American Conference of Governmental Industrial Hygienists NIF No Information Found BEIs **Biological Exposure Indices** NIOSH National Institute for Occupational Safety and Health CAS NTP Chemical Abstracts Service National Toxicology Program CERCLA Comprehensive Environmental Response, Compensation, and ORC Organization Resources Counselors Liability Act CFR Code of Federal Regulations OSHA Occupational Safety and Health Administration CNS Central Nervous System PEL Permissible Exposure Limit PNOR GI, GIT Gastro-Intestinal, Gastro-Intestinal Tract Particulate Not Otherwise Regulated HMIS Hazardous Materials Identification System PNOC Particulate Not Otherwise Classified International Agency for Research on Cancer PPE Personal Protective Equipment IARC LC50 Median Lethal Concentration ppm parts per million LD50 Median Lethal Dose RCRA Resource Conservation and Recovery Act Lowest Dose to have killed animals or humans RTECS Registry of Toxic Effects of Chemical Substances LD Lo Lower Explosive Limit LEL SARA Superfund Amendment and Reauthorization Act LOEL Lowest Observed Effect Level SCBA Self-contained Breathing Apparatus LOAEC Lowest Observable Adverse Effect Concentration SDS Safety Data Sheet µg/m³ microgram per cubic meter of air STEL Short-term Exposure Limit mg/m³ milligram per cubic meter of air TLV Threshold Limit Value TWA million particles per cubic foot Time-weighted Average mppcf Mine Safety and Health Administration UEL Upper Explosive Limit MSHA NFPA National Fire Protection Association

Disclaimer: This information is taken from sources or based upon data believed to be reliable. However, United States Steel Corporation makes no warranty as to the absolute correctness or sufficiency of any of the foregoing or that additional or other measures may not be required under particular conditions.



Hot or Cold Rolled Steel Sheet/Strip and Hot Rolled Skelp

Signal Word: DANGER

Symbols:



HAZARD STATEMENTS:

Suspected of causing cancer. Suspected of damaging fertility or the unborn child. Causes damage to lungs through prolonged or repeated inhalation exposure. Harmful if swallowed. May cause an allergic skin reaction. May cause respiratory irritation.

Causes eye irritation.

PRECAUTIONARY STATEMENTS

Do not breathe dusts / fume / spray. Wear protective gloves / protective clothing / eye protection / face protection. Contaminated work clothing must not be allowed out of the workplace. Use only outdoors or in well ventilated areas. Wash thoroughly after handling. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not eat, drink or smoke when using this product. If inhaled: Remove person to fresh air and keep comfortable for breathing. If exposed, concerned or feel unwell: Get medical advice/attention. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If on skin: Wash with plenty of water. If irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. Dispose of contents in accordance with federal, state and local regulations.



SAFETY DATA SHEET

1. Identification

Product identifier	Rapid Set Concrete Mix				
Other means of identification					
Product code	130010060, 130013000, 130040045, 130040047, 130040050, 131010060, 132013000, 132040050				
Recommended use	Industrial use.				
Recommended restrictions	Workers (and your customers or users in the c presence of respirable dust and respirable crys Appropriate training in the proper use and hand under applicable regulations.	ase of resale) should be informed of the potential stalline silica as well as their potential hazards. dling of this material should be provided as required			
Manufacturer/Importer/Supplier/I	Distributor information				
Company name Address	CTS Cement Manufacturing Corporation 11065 Knott Ave Suite A Cypress, CA 90630 United States				
Telephone	1-800-929-3030				
E-mail	info@ctscement.com				
Contact person	Safety Officer				
Emergency telephone number	1-800-929-3030 (8 AM - 5 PM)				
2. Hazard(s) identification					
Physical hazards	Not classified.				
Health Hazards	Skin corrosion/irritation	Category 2			
	Serious eye damage/eye irritation	Category 1			
	Carcinogenicity	Category 1A			
	Specific Target Organ Toxicity, Single Exposure	Category 3 respiratory tract irritation			
	Specific Target Organ Toxicity, Repeated Exposure	Category 2 (Lungs)			
OSHA defined hazards	Not classified.				
Label elements					
Signal word	Danger				
Hazard statement	Causes skin irritation. Causes serious eye dan irritation. May cause damage to organs (Lungs	nage. May cause cancer. May cause respiratory) through prolonged or repeated exposure.			
Precautionary statement					
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust. Wash thoroughly after handling. Use in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection.				
Response	If exposed or concerned: Get medical advice/attention. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor. If on skin: Wash with plenty of water. If skin irritation occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. If inhaled: Remove person to fresh air and keep comfortable for breathing. Call a poison center/doctor if you feel unwell.				
Storage	Store in dry location. Store away from incompa	atible materials.			

Dispose of contents/container in accordance with local/regional/national/international regulations. None known.

Hazard(s) not otherwise

Disposal

classified (HNOC) 3. Composition/information on ingredients

		_
IVI	ixture	S

Chemical name	CAS number	%
Calcium Sulfoaluminate Cement	960375-09-1	20-35
Silica sand, quartz	14808-60-7	65-80

Composition comments	All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.
4. First-aid measures	
Inhalation	If dust from the material is inhaled, remove the affected person immediately to fresh air. Call a physician if symptoms develop or persist.
Skin contact	Remove contaminated clothing. Wash with plenty of soap and water. If skin irritation occurs: Get medical advice/attention. Wash contaminated clothing before reuse.
Eye contact	Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get medical attention immediately.
Ingestion	Immediately rinse mouth and drink plenty of water. Call an ambulance and take these instructions. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Upper respiratory tract irritation. Coughing. Discomfort in the chest. Shortness of breath. Wheezing. Skin irritation.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.
General information	If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.
5. Fire-fighting measures	
Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire fighting equipment/instructions	Move containers from fire area if you can do so without risk.

General fire hazards

Use standard firefighting procedures and consider the hazards of other involved materials. No unusual fire or explosion hazards noted.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Do not breathe dust. Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.
Methods and materials for containment and cleaning up	Stop the flow of material, if this is without risk. If sweeping of a contaminated area is necessary use a dust suppressant agent which does not react with the product. Collect dust using a vacuum cleaner. Minimize dust generation and accumulation. Prevent entry into waterways, sewer, basements or confined areas. Following product recovery, flush area with water. For waste disposal, see section 13 of the SDS.
Environmental precautions	Avoid discharge into drains or water courses.
7. Handling and storage	
Precautions for safe handling	Provide appropriate exhaust ventilation at places where dust is formed. Minimize dust generation and accumulation. Do not breathe dust. Do not get this material in contact with eyes. Avoid prolonged exposure. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Store in original tightly closed container. Store in dry location. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-3 (29 CFR 1910.1000)

Components	Туре	Value	Form
Silica, quartz (CAS	TWA	20 mppcf	
14808-60-7)		0.3 mg/m3	Total dust.
		0.1 mg/m3	Respirable.
US. ACGIH Threshold Limit Values		2.4 mppcf	Respirable.
Components	Туре	Value	Form
Silica, quartz (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable
,	fraction.		

US. NIOSH: Pocket Guide to Chemical Hazards

Components	Туре	Value	Form
Silica, quartz (CAS	TWA	6 mg/m3	
14808-60-7)	TWA	0.05 mg/m3	Respirable dust.
Biological limit values	No biological exposure limits noted fo	r the ingredient(s).	
Exposure guidelines	nes Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica should be monitored and controlled.		spirable crystalline silica
Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Ventilation should be sufficient to effectively remove and prevent buildup of any dusts or fumes that may be generated during handling or thermal processing. If engineering measures are not sufficient to maintain concentrations of dust particulates below the Occupational Exposure Limit (OEL), suitable respiratory protection must be worn. Eye wash facilities and emergency shower must be available when handling this product.		

Rapid Set Concrete Mix

Individual protection measures, such as personal protective equipment

Eye/face protection	Wear safety glasses or safety goggles unless full face respirator is in use.
Skin protection	
Hand protection	Wear appropriate chemical resistant gloves.
Other	Wear appropriate chemical resistant clothing. Use of an impervious apron is recommended.
Respiratory protection	Use a NIOSH/MSHA approved respirator if there is a risk of exposure to dust/fume at levels exceeding the exposure limits.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	When using, do not eat, drink or smoke. Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Observe any medical surveillance requirements.

9. Physical and chemical properties

Appearance

Physical state	Solid.
Form	Powder.
Color	Tan.
Odor	Low.
Odor threshold	Not available.
рН	11 – 12 when wet
Melting point/freezing point	Not applicable.
Initial boiling point and boiling range	Not applicable.
Flash point	Not applicable.
Evaporation rate	Not applicable.
Flammability (solid, gas)	Non combustible.
Upper/lower flammability or exp	losive limits
Flammability limit - lower (%)	Not applicable.
Flammability limit - upper (%)	Not applicable.
Vanor pressure	Not applicable
Vapor density	Not applicable
Relative density	2 7-3 1 @ 20°C
Solubility(ies)	2.7 0.7 @ 20 0
Solubility (water)	Not available.
Partition coefficient	Not applicable.
(n-octanol/water)	
Auto-ignition temperature	Not applicable.
Decomposition temperature	2460 °F (1350 °C)
Viscosity	Not applicable.
Other information	
Bulk density	60 lb/ft ³
Partition coefficient	Not applicable.
VOC (Weight %)	0 g/L when mixed with water

10. Stability and reactivity

Reactivity Chemical stability Possibility of hazardous reactions	The product is stable and non-reactive under normal conditions of use, storage and transport. Material is stable under normal conditions. No dangerous reaction known under conditions of normal use.
Conditions to avoid	Avoid temperatures exceeding the decomposition temperature. Contact with incompatible materials. Avoid dispersal of dust in the air (i.e., clearing dust surfaces with compressed air).
Incompatible materials Hazardous decomposition products	Powerful oxidizers. Carbon oxides. Sulfur oxides. Silicium oxide.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause damage to organs through prolonged or repeated exposure by inhalation. Inhalation of dusts may cause respiratory irritation. Prolonged inhalation may be harmful.
Skin contact	Causes skin irritation. Prolonged contact with wet cement/mixture may cause burns.
Eye contact	Causes serious eye damage. Prolonged contact with wet cement/mixture may cause burns.
Ingestion	Swallowing may cause gastrointestinal irritation.
Symptoms related to the physical, chemical and toxicological characteristics	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Upper respiratory tract irritation. Coughing. Discomfort in the chest. Shortness of breath. Wheezing. Skin irritation.

Information on toxicological effects

Acute toxicity	May cause respiratory irritation.
Skin corrosion/irritation Serious eye damage/eye irritation	Causes skin irritation. Causes serious eye damage.

Respiratory or skin sensitization

Respiratory sensitization Skin sensitization	No data available. No data available.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.
Carcinogenicity	May cause cancer. In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However in making the overall evaluation, IARC noted that "carcinogenicity was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.) In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk" (SCOEL SUM Doc 94-final, June 2003) According to the current state of the art, worker protection against silicosis can be consistently assured by respecting the existing regulatory occupational exposure limits. Occupational exposure to respirable dust and respirable crystalline silica should be monitored and controlled.

IARC Monographs, Overall F	valuation of Carcinogenicity	
Silica, quartz (CAS 14808- NTP Report on Carcinogens	-60-7) 1 Carcinogenic to humans.	
Silica, quartz (CAS 14808 OSHA Specifically Regulated Not listed.	-60-7) Known To Be Human Carcinogen. I Substances (29 CFR 1910.1001-1050)	
Reproductive toxicity	May damage fertility or the unborn child.	
Specific target organ toxicity - single exposure	May cause respiratory irritation.	
Specific target organ toxicity - repeated exposure	May cause damage to organs (Lungs) through prolonged or repeated exposure.	
Aspiration hazard	Due to the physical form of the product it is not an aspiration hazard.	
Chronic effects	Prolonged or repeated exposure may cause lung injury, including silicosis. May cause skin disorders if contact is repeated or prolonged.	
12. Ecological information		
Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the	

Ecotoxicity	The product is not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.
Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available.
Mobility in soil	No data available.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.	
Local disposal regulations	Dispose in accordance with all applicable regulations.	
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.	
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).	
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.	

14. Transport information

DOT

Not regulated as dangerous goods.

ΙΑΤΑ

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to Not applicable. Annex II of MARPOL 73/78 and the IBC Code

15. Regulatory information

US federal	regulations
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This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

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TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)
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Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

Superfund Amendments and Reauthorization Act of 1986

(SARA) Hazard categories	

Delayed Hazard - Yes Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No

Immediate Hazard - Yes

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous Yes chemical

SARA 313 (TRI reporting)

Not regulated.

Other federal regulations

Clean Air Act (CAA) Section 112 Hazardous Air Pollutants (HAPs) List

Not regulated.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130)

Not regulated.

Safe Drinking Water Act Not regulated.

(SDWA)

US state regulations

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

US. Massachusetts RTK - Substance List Silica, quartz (CAS 14808-60-7) US. New Jersey Worker and Community Right-to-Know Act

Silica, quartz (CAS 14808-60-7)

US. Pennsylvania Worker and Community Right-to-Know Law Silica, quartz (CAS 14808-60-7)

US. Rhode Island RTK

Not regulated.

US. California Proposition 65

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Silica, quartz (CAS 14808-60-7)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s). A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date	30-September-2014
Revision date	-
Version #	01
HMIS® ratings	Health: 3* Flammability: 0 Physical hazard: 0
Disclaimer	CTS Cement Manufacturing Corporation cannot anticipate all conditions under which this information and its product, or the products of other manufacturers in combination with its product, may be used. It is the user's responsibility to ensure safe conditions for handling, storage and disposal of the product, and to assume liability for loss, injury, damage or expense due to improper use. The information in the sheet was written based on the best knowledge and experience currently available.

CONCRETE MIX





PRODUCT DATASHEET

DESCRIPTION: Rapid Set[®] CONCRETE MIX is a high-performance, fast-setting, multipurpose concrete repair material. Durable in wet environments, CONCRETE MIX is a blend of Rapid Set hydraulic cement and quality aggregates. CONCRETE MIX is non-metallic and no chlorides are added. Mix CONCRETE MIX with water to produce a workable, quality concrete material that is ideal where fast strength gain, high durability and low shrinkage are desired. CONCRETE MIX sets in 15 minutes and is ready for traffic in 1 hour.*

USES: Use CONCRETE MIX for general and structural concrete repair, construction of pavements, formed work, footings, setting posts, industrial floors and machine bases. CONCRETE MIX contains an air-entraining admixture, in some geographical areas, for freeze-thaw durability.

ENVIRONMENTAL ADVANTAGES: Use CONCRETE MIX to reduce your carbon footprint and lower your environmental impact. Production of Rapid Set cement emits far less CO_2 than portland cement. Contact your representative for LEED values and environmental information.

APPLICATION: Apply CONCRETE MIX in thicknesses from 2" to 24" (5 cm to 61 cm). For thinner sections, use Rapid Set[®] Cement All[®] or Rapid Set[®] Mortar Mix. Not intended for high heat applications above 300°F (149°C). For overlay applications, a minimum of one test section should be prepared to evaluate the suitability of the materials and procedures.

SURFACE PREPARATION: For repairs, application surface shall be clean, sound and free from any materials that may inhibit bond, such as oil, asphalt, curing compound, acid, dirt and loose debris. Roughen surface and remove all unsound material. Apply CONCRETE MIX to a thoroughly saturated surface with no standing water.

MIXING: The use of a power-driven mechanical mixer, such as a mortar mixer or a drillmounted mixer, is recommended. Organize work so that all personnel and equipment are in place before mixing. Use clean potable water. **CONCRETE MIX may be mixed using 3.5 to 4.5 quarts (3.3 L to 4.2 L) of water per 60-lb (27.2-kg) bag. Use less water to achieve higher strengths. Do not exceed 4.5 quarts (4.2 L) of water per bag.** For increased fluidity and workability, use Rapid Set[®] FLOW Control[®] plasticizing admixture from the Rapid Set[®] Concrete Pharmacy[®]. Place the desired quantity of mix water into the mixing container. While the mixer is running, add CONCRETE MIX. Mix for the minimum amount of time required to achieve a lump-free, uniform consistency (usually 1 to 3 minutes). Do not retemper.

INSTALLATION: CONCRETE MIX may be placed using traditional construction methods. Organize work so that all personnel and equipment are ready before placement. Place, consolidate and screed quickly to allow for maximum finishing time. Use a method of consolidation that eliminates air voids. Do not wait for bleed water; apply final finish as soon as possible. CONCRETE MIX may be troweled, floated or broom finished. On flatwork, do not install in layers. Install full-depth sections and progress horizontally. To extend working time, use Rapid Set[®] SET Control[®] retarding admixture from the Concrete Pharmacy or cold mix water. Do not install on frozen surfaces. CONCRETE MIX may be applied in temperatures ranging from 45°F to 90°F (7°C to 32°C).

OVERVIEW

Highlights:

Fast: Sets in 15 minutes, ready for traffic in 1 hour*

Durable: Formulated for long life in critical applications

Structural: For repair and new construction

Multi-Purpose: Use for concrete repair, formed work, setting posts, footings, floors, machine bases, and more

Conforms to:

ASTM: C928, C387

State and Local Approvals

MasterFormat® 2016

03 01 30	Maintenance of Cast-in-Place Concrete
03 01 50	Maintenance of Cast Decks and Underlayment
03 01 70	Maintenance of Mass Concrete
03 33 00	Architectural Concrete - Cast-in- Place Concrete

Manufacturer:

CTS Cement Manufacturing Corp. 11065 Knott Ave., Suite A Cypress, CA 90630 Tel: 800-929-3030 | Fax: 714-379-8270 Web: www.CTScement.com E-mail: info@CTScement.com



CONCRETE MIX Very Rapid Hardening Concrete

CURING: Water cure all Rapid Set[®] CONCRETE MIX installations by keeping exposed surfaces wet for a minimum of 1 hour. Begin curing as soon as the surface starts to lose its moist sheen. When experiencing extended setting time due to cold temperature or the use of retarder, longer curing times may be required. The objective of water curing shall be to maintain a continuously wet surface until the product has achieved sufficient strength.

COLD WEATHER: Environmental and material temperatures below 70°F (21°C) may delay setting time and reduce the rate of strength gain. Lower temperatures will have a more pronounced effect. Thinner sections will be more significantly affected. To compensate for cold temperatures, keep material warm, use heated mix water, and follow ACI 306 Procedures for Cold Weather Concreting.

WARM WEATHER: Environmental and material temperatures above 70°F (21°C) may speed setting time and increase the rate of strength gain. Higher temperatures will have a more pronounced effect. To compensate for warm temperatures, keep material cool, use chilled mix water and follow ACI 305 Procedures for Hot Weather Concreting. The use of Rapid Set® SET Control® retarding admixture from the Rapid Set® Concrete Pharmacy® will help offset the effects of high temperatures.

YIELD & PACKAGING: CONCRETE MIX is available in 60-lb (27.2-kg) bags. One 60-lb (27.2-kg) bag of CONCRETE MIX will yield approximately 0.5 ft³.

SHELF LIFE: CONCRETE MIX has a shelf life of 12 months when stored properly in a dry location, protected from moisture, out of direct sunlight, and in an undamaged package.

USER RESPONSIBILITY: Before using CTS products, read current technical data sheets, bulletins, product labels and safety data sheets at www.CTScement.com. It is the user's responsibility to review instructions and warnings for any CTS products prior to use.

WARNING: DO NOT BREATHE DUST. AVOID CONTACT WITH SKIN AND EYES. Use material in well-ventilated areas only. Exposure to cement dust may irritate eyes, nose, throat, and the upper respiratory system/lungs. Silica exposure by inhalation may result in the development of lung injuries and pulmonary diseases, including silicosis and lung cancer. Seek medical treatment if you experience difficulty breathing while using this product. The use of a NIOSH/MSHA-approved respirator (P-, N- or R-95) is recommended to minimize inhalation of cement dust. Eat and drink only in dust-free areas to avoid ingesting cement dust. Skin contact with dry material or wet mixtures may result in bodily injury ranging from moderate irritation and thickening/cracking of skin to severe skin damage from chemical burns. If irritation or burning occurs, seek medical treatment. Protect eyes with goggles or safety glasses with side shields. Cover skin with protective clothing. Use chemical resistant gloves and waterproof boots. In case of skin contact with cement dust, immediately wash off dust with soap and water to avoid skin damage. In case of skin contact with wet concrete, wash exposed skin areas with cold running water as soon as possible. In case of eye contact with cement dust, flush immediately and repeatedly with clean water, and consult a physician. If wet concrete splashes into eyes, rinse eyes with clean water for at least 15 minutes and go to the hospital for further treatment.

<u>PROPOSITION 65 WARNING:</u> This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

Please refer to the SDS and www.CTScement.com for additional safety information regarding this material.

LIMITED WARRANTY: CTS CEMENT MANUFACTURING CORP. (CTS) warrants its materials to be of good quality and, at its option, will replace or refund the purchase price of any material proven to be defective within one (1) year from date of purchase. The above remedies shall be the limit of CTS's responsibility. Except for the foregoing, all warranties expressed or implied, including merchantability and fitness for a particular purpose, are excluded. CTS shall not be liable for any consequential, incidental, or special damages arising directly or indirectly from the use of the materials.

TYPICAL PHYSICAL DATA

Set Time, ASTM C403		
Initial set	15 minutes	
Final set	35 minutes	
Compressive Streng	th, ASTM C39	
1 hour*	3000 psi (20.7 mpa)	
3 hours	3600 psi (24.8 mpa)	
24 hours	4500 psi (31.0 mpa)	
7 days	5500 psi (37.9 mpa)	
28 days	6000 psi (41.4 mpa)	
Slant Shear Bond, A	STM C882	
24 hours	1200 psi (8.27 mpa)	
28 days	2200 psi (15.2 MPa)	
Splitting Tensile, AS	TM C496	
7 days	600 psi (4.14 MPa)	
28 days	700 psi (4.83 MPa)	
Flexural Strength, A	STM C78	
7 days	500 psi (3.45 MPa)	
28 days	550 psi (3.79 MPa)	
Length Change, ASTN	A C157 per C928 (max)**	
28 days in air	-0.04	
28 days in water	0.02	
*After final set Data obtained at 4" slump by As	STM C143 at 70°F (21°C)	



(2





Beeswax

Description

Pure filtered Beeswax is a firm, light-colored wax having none of the softness or stickiness of lower-quality waxes. Beeswax is commonly used for modeling, engraving, and finishing leather, textile, and wood. Each cake weighs approximately 1 pound.

Physical Properties

Color	Light Yellow
Melting Point	143.6-149°F
Penetration @ 77°F	15.0-20.0
Specific Gravity	0.95-0.96
Flash Point	468-482°F
Acid Value	17.0-24.0
Ester Value	72.0-79.0

Ordering Information

SKU	Description	Size	Net wt.
027220	Beeswax	Cake	1 lb.

The user shall determine the suitability of this product for their application and assumes all risks and liabilities associated with the use of this product. The exclusive remedy for all proven claims is replacement of our materials only and in no event shall Freeman Mfg. & Supply Co. be liable for special, incidental, or consequential claims.

READ SAFETY DATA SHEETS AND PRODUCT LABELS BEFORE USING PRODUCT



Beeswax

Section 1 Identification			
Product identifiers HMIS Product name: Beeswax H Relevant identified uses F Identified uses: Pharmaceutical/Cosmetic/Personal Care F Details of the supplier of the safety data sheet PPE Freeman Manufacturing and Supply Company Sec. 8 1101 Moore Road, Avon, OH 44011 Phone (440) 934-1902 FAX (440) 934-7200 FAX (440) 934-7200			IMIS 0 1 0 PE c. 8
Se	ction 2 Hazards Identificatio	on	
GHS Classification Not a hazardous substance GHS Label Symbols: Not applicable Hazard Statements: None Precautionary Statements: Con	ntact with molten wax may cau	ise thermal burns	
Section 3 Co	omposition/Information on I	ingredients	
Component	CAS Number	Weight %]
Beeswax	8006-40-4 (yellow)	100	
Impurities/Additives: None			_
	Section 4 First Aid Measures		
 Eye Contact Eye irritation. Flush immediately with large amounts of water for at least 15 minutes. Eyelids should be held away from the eyeball to ensure thorough rinsing. Get immediate medical attention. Skin Contact For contact with molten material, leave material on skin and flush or immerse affected area(s), using cold water. Seek Medical Attention. Inhalation If respiratory symptoms develop from exposure to fumes emitted by the molten material, move victim away from source of exposure and into fresh air. If symptoms persist, seek medical attention. 			
 attention. If victim is not breatning, immediately begin artificial respiration. If breatning difficulties develop, oxygen should be administered by qualified personnel. Seek immediate medical attention. Ingestion Solid material is not acutely toxic; however, if molten material is swallowed, seek immediate medical attention. 			



Beeswax

Section 5 Fire-Fighting Measures

Extinguishing media

Use dry chemical, foam, sand, water fog

Special hazards arising from the substance or mixture

This material may burn, but will not readily ignite

Advice for firefighters

Wear proper protective equipment and positive pressure self-contained breathing apparatus.

Section 6 Accidental Release Measures

Isolate area and keep unauthorized personnel out. Contain spill if it can be done with minimal risk. Wear appropriate protective equipment. Prevent spilled material from entering sewers, storm drains, other unauthorized treatment drainage systems, and natural waterways. Cleanup molten wax under supervision is advised.

Section 7 Handling and Storage

Precautions for safe handling

Wash thoroughly after handling. Do not wear contaminated clothing or shoes. Use good personal hygiene practice.

Conditions for safe storage, including any incompatibilities

Store in tightly closed containers in cool, dry, well-ventilated area away from heat, sources of ignition and incompatibles such as strong oxidizers. Store at ambient or lower temperature. Store out of direct sunlight. Protect against physical damage.

Section 8 Exposure Controls/Personal Protection

Components with workplace c	ontrol narameters			
None	unit of parameters			
Personal protective equipmen	t			
Skin Protection	•			
When handling in molter	When handling in molten form, proper resistant clothing, gloves, and shoes must be worn.			
Eve Protection				
When handling in molter	When handling in molten form, proper eye shields are worn to prevent injury			
Respiratory Protection	Respiratory Protection			
No special precautions for	No special precautions for normal use			
Sec	Section 9 Physical and Chemical Properties			
Appearance:	Yellow solid at room temperature			
Odor:	Wax			
Odor Threshold:	None			
pH:	None			
Melting Point:	62 - 65°C			
Initial Boiling Point:	Not applicable			
Evaporation Rate:	Not applicable			
Flash Point:	400°C			



Beeswax

Section 9 Physical and Chemical Properties continued

Flammability:Not flammableVapor Pressure:Not applicableVapor Density:Not applicableSpecific Gravity:0.96 g/ml at 20Solubility:Insoluble in waPartition Coefficient:Not determineAuto-ignition Temperature:Not applicableDecomposition Temperature:Not applicableVolatility:Not applicableViscosity:8 - 12 cSt at 10

Not flammable Not applicable Not applicable 0.96 g/ml at 20°C Insoluble in water. Soluble in organic solvents when warmed Not determined Not applicable : Not applicable Not applicable 8 - 12 cSt at 100°C

Section 10 Stability and Reactivity

Reactivity: This material is stable and unlikely to react in a hazardous manner under normal conditions of use.

Chemical Stability: Stable under normal conditions. Avoid strong oxidizing agents.

Hazardous Reactions: Avoid strong oxidizing agents.

Decomposition Products: Thermal decomposition can produce a variety of products which may include oxides of carbon and nitrogen.

Section 11 Toxicological Information

Signs and Symptoms of Overexposure

Nasal and throat irritation.

Acute Effects

Eye Contact: Not expected to be an eye irritant

Skin Contact: No harmful effects from skin adsorption.

Inhalation: Vapors emitted from molten wax are expected to have slight degree of irritation **Ingestion:** No harmful effects are expected.

Acute Toxicity Values

CIR Review of Natural Waxes published in 2005. FDA: GRAS (Generally Recognized As Safe) Title 21 CFR 184.1973

Section 12 Ecological Information

Toxicity Persistence and degradability Bioaccumulative potential Mobility in soil Results of PBT & vPvB assessment No data available Readily biodegradable Not expected No data available No data available

Section 13 Disposal Considerations

Not considered a RCRA hazardous waste if discarded. Disposal must be made in accordance with all applicable Local, State and Federal regulations.



Beeswax

Section 14 Transport Information
DOT: Not regulated
TDG: Not regulated
IMDG: Not regulated
IATA: Not regulated
Section 15 Regulatory Information
U.S. Federal Regulations
Toxic Substances Control Act (TSCA): All components of this product are included on the TSCA
inventory.
Clean Water Act (CWA): Not hazardous.
Clean Air Act (CAA): Not Hazardous
Superfund Amendments and Reauthorization Act (SARA) Title III Information: This product
contains no toxic chemical(s) subject to reporting requirements of SARA Section 313 (40 CFR
372)
State Regulations
California: This product contains no chemicals(s) known to the State of California to cause
cancer, birth defects or reproductive harm.
International Regulations
Canadian Environmental Protection Act: All of the components of this product are included on the Canadian Domestic Substances list (DSL).
Canadian Workplace Hazardous Materials Information System (WHMIS): This product has
not been classified in accordance with the hazard criteria of the Controlled Products
Regulations and the MSDS contains all the information required by the Controlled Products
Regulations.
European Inventory of Existing Chemicals (EINECS): All of the components of this product
are included on EINECS.
EU Classification: None EU Risk (R) and Safety (S) Phrases: None
Section 16 Other Information
Disclaimer
The following supersedes Buyer's documents. SELLER MAKES NO REPRESENTATION OR
WADDANTY EVDDESSED OD IMDI JED INCLUDING ANY WADDANTY OF MEDCHANTABILITY

The following supersedes Buyer's documents. SELLER MAKES NO REPRESENTATION OR WARRANTY, EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. No statements herein are to be construed as inducements to infringe any relevant patent. Under no circumstances shall Seller be liable for incidental, consequential or indirect damages for alleged negligence, breach of warranty, strict of liability arising in connection with the product(s). Buyer's sole remedy and Seller's sole liability for any claims shall be Buyer's purchase price. Data and results are based on controlled lab work and must be confirmed by Buyer by testing for its intended conditions of use. The product(s) has not been tested for, and is therefore not recommended for, uses for which prolonged contact with mucous membranes, abraded skin, or blood is intended; or for uses for which implantation within the human body is intended.



Public Art Program Finalist Proposal

\$150,000 Award Category

Bronze Squid

Artist: Rossella Scapini & Luke Heimbigner

Proposed Location: Bay Trail at West Hornet Avenue: 61 West Hornet Avenue

CITY OF ALAMEDA PHYSICAL PUBLIC ART PROPOSAL

The following proposal exemplifies details of Rossella Scapini and Luke Heimbigner's "Squid" project as physical public art for the City of Alameda.

CONCEPT OF ART PIECE

We envision an iconic new symbol for Alameda point, a 12 foot tall bronze sculpture that will draw attention and make the area immediately recognizable, combining the elements of the site's historic naval past with the increasing awareness for marine conservancy.

The project is for a 12 foot tall bronze sculpture in the shape of a stylized squid standing erect on its arms. Tall and sleek, the sculpture is envisioned as a design object rather than a realistic animal, with the tentacles working as arches/columns, allowing people to walk between the inner/outer space they create. The domed space between the tentacles will be roughly 6 feet wide and, being the sculpture hollow, just a little less of 12 feet high.

Instead of suckers, the tentacles will have a single line of portholes-shaped rings, a reference to Alameda Point's naval past. The portholes will be closed with a metal screen; this will avoid collecting litter inside, and at the same time will allow light and interaction.

We wish to find original portholes from historical ships in Alameda (possibly 3 different sizes) to cast and use in the sculpture!

CONSTRUCTION PROCESS

To create the bronze sculpture the artists will first get a digital scan of the display model and enlarge it in foam through a CNC milling process (Scan by ScanSite, Marin CA; foam enlargement by Satellite Studio, Belmont CA)

We will then resurface the sculpture with clay to create the right texture and add details before proceeding in making the mold in rubber and plaster. The piece will then be cast using the lost wax technique, assembled and finished. It will sit on a specifically designed concrete pad that will be built on location prior to the installation.

SITE PLAN

The designed location for this project is the Alameda Point Shoreline, on the lot west of the Hornet Soccer Field. The sculpture will be installed on the lot's south western edge where a dirt road connects the shoreline to W Hornet Ave. Such lot is currently vacant, with no trees or any other visible elements. On the other side of the dirt road is another grassy lot with some trees. The sculpture will be facing the water, oriented towards the Bay Trail.

MATERIALS

The sculpture will be made of cast bronze and stainless steel, anchored to a concrete pad. -**BRONZE**: alloy composed of 96% copper, zinc and other elements in smaller quantities. -**MARINE GRADE STAINLESS STEEL**: SAE 316 stainless steel is a molybdenum-alloyed steel and is the preferred steel for use in marine environments because of its greater resistance to pitting corrosion. -**CONCRETE PAD**: Reinforced Concrete (composition of three main components: coarse aggregate (stone), fine aggregate (sand) and cement) with steel rebars to strengthen and hold concrete in compression.

INSTALLATION AND MAINTENANCE PLAN

Kenneth Hughes is the designed structural engineer for the project (krhughes@pacbell.net)

The sculpture will be transported to location via flatbed truck, unloaded and installed with a forklift of appropriate capacity. Onsite the piece will be secured to the pad, bolting the inner stainless steel to the concrete. (The sculpture's feet will have openings in order to access the stainless steel, once secured they will be closed with bolts)

The sculpture is designed to have a green teal patina with a pattern of layered colors, stains and spots. In proximity of marine environment it will naturally oxidize towards a green mint, adding greenish hues and coppery dots that will enrich the color scheme.

Care and maintenance for an outdoor bronze requires cleaning and waxing. Dust and bird droppings will be removed with light soap water using rags and brushes. Once rinsed and dried-usually in a couple of hours-, the sculpture will need to be waxed, wax being the real barrier that seals the bronze from the outdoor elements.

Johnson's Clear Paste Wax or Renaissance Wax are some recommended products. This maintenance plan should be performed once a year in the first five years, and then biannually.

ARTISTS TEAM

Rossella Scapini has extensive experience in figurative sculpting and bronze casting, has worked with local and international artists such as:

- Scientific Art Studio, Richmond CA, where she created scientific replicas of flora and fauna for the San Francisco Zoo and the Oakland Zoo,
- Artwork Foundry, Berkeley CA, supervising sculpting and large scale mold making department,
- Mario Chiodo's "Remember Them" monument in downtown Oakland,
- Grup Graf, Barcelona Spain, creating sculptures for water parks and movies.

Luke Heimbigner is a bronze and metal sculptor, with a long experience as a metal finisher at Artworks Foundry, Berkeley CA, Among the artists he has worked with are Stephen DeStaebler, Bruce Wolfe and Bruce Beasley.

Both artists show regularly at Vessel Gallery, Oakland CA>

	150040	Total
	13640	10% contingency
	136400	Subtotal
Estimated at \$1,500 for \$150,000 artwork, and \$1,000 for \$50,000 artwork	1,500.00	Permit costs
	2,500.00	Engineering
	20,000.00	ARTISTS STIPEND
	3,000.00	TRANSPORT AND INSTALLATION
	1,300.00	concrete pad
	5,000.00	stainless steel marine grade 3/16
	90,000.00	cast bronze
		BRONZE
	500	fiberglass
	1,000.00	plaster
	4,000	urethne rubber
		MOLD MAKING
	2,000	oil based clay
	4,600	foam enlargement
	1,000.00	3D scan
		MODEL MAKING
Notes	Amount	Item

City of Alameda Public Art Budget Template Note: this budget includes mandatory cost categories (engineering, permit costs, and contingency). Please add your budget line items to this sheet.

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Note: we know start dates may vary, so please use days or weeks from start to show schedule timelines (i.e. complete in week 1 or week 3 etc) Note: This is a template schedule with suggested dates. Please edit as needed.

	Day or Week	Notes
Complete Schematic drawings	2 weeks	Similar to a conceptual drawing, but with more context and detail (this may be a part of your detailed proposal
Complete design development drawings	4 weeks	Should include scale, size, and materials; may also include weight.
Complete 80% construction drawings	10 weeks	Near complete construction drawings - some details may be undecided, or presented as alternatives
Complete 100% construction drawings	12 weeks	Complete construction drawings
Commence permit process	14 weeks	
Commence fabrication	15 weeks	assemble foam, resurface
⁻ abrication 50% complete	40 weeks	mold, wax
⁻ abrication 100% complete	80 weeks	cast, finish, patina
nstallation	84 weeks	





STAINLESS STEEL

REINFORCEMENT STRUCTURE

#1





STAINLESS STRUCTURE REINFORCEHENT

#2



2




Public Art Program Finalist Proposal

\$50,000 Award Category

Gateway Columns

Artist: Norman Moore

Proposed Location: Jean Sweeney Park

Norman Moore

Proposal for

"Gateway to California"

Sculptural Mosaic Work to be placed in

Jean Sweeney Open Space Park Alameda, California

Proposal date: May 10, 2018

Norman Moore

Letter of Interest – Sweeney Open Space Park Sculpture Proposal

My name is Norman Moore: I am an artist living in Alameda since 1996. As an artist, I am developing a technique of rendering colorful surfaces in glass mosaic over sculptural forms cast in reinforced concrete. This technique was conceived when I saw the tight mosaic surface of the Challenger space shuttle in Los Angeles.

The RFP for public art in Alameda immediately sparked my imagination to create a work of art at Jean Sweeney Open Space Park that spoke of the rich heritage and special location of Alameda using this sculptural technique.

I want to create a destination in our city: a place that people will make a special trip to see. This sculpture would be a gateway – a metaphor for the island of Alameda as the original gateway for prospectors heading to gold country. In addition, Alameda is a part of the land surrounding San Francisco Bay that forms a bridge between the Pacific Ocean and the interior with the fantastic life forms endemic to this transitional region. This makes Alameda a biological gateway as well an historic one.

I have created public art commissions including mosaic panels for the City of New York Subway System and the Alameda County Arts Council at the new Castro Valley Library. My project with Alameda County included two years of prep work consulting with architects, engineers and contractors to bring the original vision of illuminated windows to a satisfactory completion. This can be seen at the library as a permanent part of the building.

In addition, I have created many private commissions and works for gallery exhibitions. These included large scale steel sculptures at the Empire Fulton Ferry State Park in Brooklyn on the East River between the Brooklyn and Manhattan Bridges.

I have been teaching neon and illuminated sculpture at the Crucible in Oakland since 2004. The Crucible is a unique institution where one can learn industrial arts in a safe and encouraging environment. Teaching art is important to me because it gives me a chance to share the techniques and concepts that have been so important to the trajectory of my life. It also keeps me engaged with the local community and allows me to maintain awareness of what people are thinking and doing around me.

My education includes two years study at Urban Glass in Brooklyn, New York; an MFA in Sculpture from Pratt Institute in New York and a BFA in Fine Arts from Columbus College of Arts and Design in Columbus, Ohio.

My contact information is:

Norman Moore 907 Union Street Alameda, CA 94501 Phone: (510) 731-7629 email: *normanericmoore@gmail.com* website: <u>WWW.NormanEMoore.com</u>

Norman Moore "Gateway to California" 2017 Jean Sweeney Open Space Park, Alameda, CA

Concept of Proposed Art Piece

I propose making a sculpture that forms two columns. The two columns would be a gateway at the Western Loop Plaza medallion in Jean Sweeney Open Space Park. The gateway would provide a naturalistic sculptural transition between the parking/playground area to the native plantings and meandering paths in the center of the park.

The sculptural gateway mosaics would be thirteen feet tall and two feet in diameter. The columns would be mounted on concrete pedestals. Each column would be an image of Pacific breakers supporting granite slabs of the Northern Sierra Mountains. They would be cast in steel reinforced concrete and the surface rendered in glass mosaic. The concrete would have swirling, undulating surface typical of ocean waves. The crashing wave images would be directing their visual energy up as if to support the alpine slabs above them.

The patterns of the breaker images would be in the blues and greens and give an internal logic to the mosaic tiles that are used to make them. The shapes at the top of the columns representing granite slabs would be rendered with glass in the pinks speckled with black and grey typical of the stone found in the Sierras. The space between the glass tiles would be nominal and deepened in color giving the impression of a continual glass surface. The tiles would be slightly bumpy but soft to the touch – there would be no perceivable sharp edges.

The estimated life expectancy of the mosaics is 50 to 100 years. Maintenance of putting water seal on the surface every 5-10 years to protect the thin set from getting wet would significantly increase life expectancy of the work. In addition, the sculpture should be hosed down when it gets covered with urban grit.





JEAN SWEENEY OPEN SPACE PARK

PROPOSED PUBLIC ART LOCATION



OVERALL SITE LAYOUT



SITE ENLARGEMENT





PLOT DATE: 02-02-17 PLOTED BY: mmcoreery PRAWAG NAME: L: PRF-05.0/07_Cod/DC&&_##/1-10-DET-PLANTING.dwg

Mosaic renderings made in artist's studio in sections and applied to surface of concrete columns cast in place at Sweeney Open Space Park.



.17 ft.



Proposed process for making "Gateway" Norman Moore - 2017

City of Alameda Public Art Budget Template

Item	Amount	Notes
Glass	\$4,500	Stained glass sheets to be cut down into various chip shapes
Steel	\$3,000	Interior reinforcement and steel to fabricate the exterior skeleton sections
Cement	\$2,500	Core of scupture
Thin set Cement	\$800	For bonding glass to surface
Foam	\$600	For supporting cement during fabrication
Misc. tools	\$500	Masks, troughs, glass cutters, etc.
Sono Tubes	\$1,500	For casting columns
Cement pump truck and crew	\$3,500	Contractor: Victor Amador - softconcrete@gmail.com
Insurance	\$900	workers comp & liability
Hired labor	\$3,500	
Documentation	\$1,500	Professional photos
Waste Disposal	\$650	
Artist time and labor	\$17,000	This is may vary with other costs
Engineering	\$4,000	TENNEBAUM-MANHEIM ENGINEERS, 414 Mason Street, Suite 605, San Francisco, CA 94102
Permit costs	\$1,000	Estimated at \$1,500 for \$150,000 artwork, and \$1,000 for \$50,000 artwork
Subtotal	\$45,450	
10% contingency	\$4,545	
Total	\$49,995	

City of Alameda Public Art ScheduleTemplate

Note: we know start dates may vary, so please use days or weeks from start to show schedule timelines (i.e. complete in week 1 or week 3 etc) Note: This is a template schedule with suggested dates. Please edit as needed.

	Day or Week	Notes
		Similar to a conceptual drawing, but with more context and detail (this may be a part of
Complete Schematic drawings	Week 1	your detailed proposal)
Complete design development drawings	Week 1	Should include scale, size, and materials; may also include weight.
		Near complete construction drawings - some details may be undecided, or presented as
Complete 80% construction drawings	Week 2	alternatives
Complete 100% construction drawings	Week 3	Complete construction drawings – working with structural engineers
Commence permit process	Week 3	
Commence fabrication	Week 3-4	Work in studio should begin right away - mosaic is a slow process
Fabrication 50% complete	Week 16-17	Columns will be cast in place during this period by contractors
Fabrication 100% complete	Week 32-36	
		Delivery and assembly of finished sections to site – columns will need work in place
Installation	Week 30	afterward



mosari 3, 14 × (24/24) 13,0 = 40,2 st. + 18 soft base 134 · 2# ~ 60 sg Ft



PRODUCT DATA SHEET

WATER SEAL

Thompson's Water Seal, offers superb weather protection for bricks, mortar, stone & concrete. Its advanced silicone micro emulsion soaks in deep to provide long lasting protection against rain damage.

COMPOSITION

Thompson's Water Seal is based on a unique water based combination of alkyl polysiloxane resin and hydrophobic waxes

PROPERTIES

Appearance – Slightly milky. Viscosity – Low viscosity liquid. Odour – Low, inoffensive. VOC Content- Minimal (0%-0.29%)

AREAS OF APPLICATION

Suitable for use on brick, mortar, stone & concrete.

PREPARATION

Give the surface a scrub with a stiff bristle brush. Fill any cracks and do pointing repairs, if needed.

APPLICATION

Give the tin a good shake. Apply using a brush or roller. If you're applying onto a wall, work in 1m sections from the bottom upwards. Once an area is fully saturated move onto the next section. Make sure you also coat mortar lines. Make sure you treat the whole wall and not just isolated areas. As soon as the first coat has soaked in, you can apply a second coat. Use at full strength. Do not dilute.

COVERAGE

Thompson's Water Seal will cover approximately 4 m² per litre. Coverage will vary depending on the texture and porosity of the surface to being treated.

DRYING TIME

Thompson's Water Seal should be dry in 2 hours under normal conditions.

Dry times depend on the texture & type of surface you're coating.

CLEANING OF TOOLS

Remove as much product as possible from equipment before cleaning.

All equipment should be cleaned immediately after use with detergent and warm water.

MAINTENANCE

To maintain water repellency periodic retreatment will be required. The frequency of retreatment will vary with the type, nature and exposure of treated surfaces, as well as prevailing weather conditions.

REPAIRS

Damaged areas may be re-waterproofed by local applications of Thompson's Water Seal. Brush down surfaces before application of Thompson's Water Seal.

IMPORTANT NOTES

- · Always read the instructions carefully before use
- Do not apply if air or surface temperature is below 10°C
- Don't apply if it's raining or forecast to rain
- Do not use over masonry paint or on pre painted surfaces
- · Do not use prior to painting with masonry paint
- Some substrates may darken when treated.
- Always test on a small area prior to coating the whole surface
- Do not use detergent to clean the surface which is being protected
- Do not use on asphalt, synthetic fibres, plastics or natural rubber
- Do not apply onto wood
- Ensure you have enough ventilation when applying the product
- FOR EXTERNAL USE ONLY. Do not use on floors, patios, ponds, roofs, garden retaining walls, below ground and damp proof membranes or where positive water pressure is likely
- Protect from frost
- Always remove as much product as possible before cleaning your equipment with warm water and detergent

STORAGE

Store in frost free conditions.

To avoid risk of spillage always store and transport in a secure and upright position.

No. 11135 January 2009



HEALTH AND SAFETY

Observe and follow all warnings and instructions for use shown on the pack. Specific health and safety data sheets are available

FLAMMABILITY

on request.

Flash point above 60CC (Closed Cup) Non-flammable product.

SUPPLY

Obtainable from DIY outlets, paint suppliers and builders' merchants.

SIZES

1L, 2.5L & 5L.

DISPOSAL

Don't empty any left over product into drains or watercourses.

Your local authority may have special ways to get rid of waste coatings.

LIABILITY

Whilst these specifications are based on expert technical knowledge and practical experience, we cannot assume responsibility for any work as the ultimate result depends on factors beyond our direct control. Standard codes of painting practice should be followed.

INFORMATION AND SERVICE

Our Technical Services Department will be pleased to offer specific guidance or provide any further information you may require.

DATA SHEETS

Data sheets on other Thompson's products are available on request from our Technical Services Department.

Sherwin-Williams Diversified Brands Ltd. operate an Environmental Management System that complies with the requirements of BS 7750:1994, Certificate No. EMS 35924. Sherwin-Williams Diversified Brands Ltd. has achieved Investors in People certification, (certificate number 59586).

Sherwin-Williams Diversified Brands Ltd has been registered to BS EN ISO 9000 1994 (Registered Firm No. FM 1669/1).

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Tel: (0114) 240 9469 (Technical Services) (0114) 246 7171 (Main Switchboard) Fax: (0114) 245 5629 Email: enquiry@thompsonsweatherproofing.co.uk Web: www.thompsonsweatherproofing.co.uk

Thompsons is a Registered Trademark of the Sherwin-Williams Company. JANUARY, 2009 ISSUE 1

MATERIAL SAFETY DATA SHEET

DATE OF PREPARATION Apr 6, 2010

SECTION 1 — PRODUCT AND COMPANY IDENTIFICATION

PRODUCT NUMBER

2411-

PRODUCT NAME

THOMPSON'S WATER SEAL® Clear VOC Waterproofing Sealer MANUFACTURER'S NAME THE THOMPSON'S COMPANY 10136 Magnolia Drive Olive Branch, MS 38654

Telephone Numbers and Websites

Regulatory Information	(216) 566-2902	
	www.paintdocs.com	
Medical Emergency	(216) 566-2917	
Transportation Emergency* (800) 424-9300		
*for Chemical Emergency ONLY (spill, leak, fire, exposure, or accident)		

SECTION 2 — COMPOSITION/INFORMATION ON INGREDIENTS

% by Weight	CAS Number	Ingredient	Units	Vapor Pressure
6	64742-88-7	Mineral Spirits		
		ACGIH TLV	100 PPM	2 mm
		OSHA PEL	100 PPM	
SECTION 3 — HAZARDS IDENTIFICATION				

ROUTES OF EXPOSURE

INHALATION of vapor or spray mist.

EYE or SKIN contact with the product, vapor or spray mist.

EFFECTS OF OVEREXPOSURE

EYES: Irritation.

SKIN: Prolonged or repeated exposure may cause irritation.

INHALATION: Irritation of the upper respiratory system.

In a confined area vapors in high concentration may cause headache, nausea or dizziness.

Prolonged overexposure to hazardous ingredients in Section 2 may cause adverse chronic effects to the following organs or systems: the liver

• the urinary system

SIGNS AND SYMPTOMS OF OVEREXPOSURE

Redness and itching or burning sensation may indicate eye or excessive skin exposure.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE

None generally recognized.

CANCER INFORMATION

For complete discussion of toxicology data refer to Section 11.

SECTION 4 — FIRST AID MEASURES

- EYES: Flush eyes with large amounts of water for 15 minutes. Get medical attention.
- SKIN: Wash affected area thoroughly with soap and water.
- Remove contaminated clothing and launder before re-use.
- INHALATION: If affected, remove from exposure. Restore breathing. Keep warm and quiet.

INGESTION: Do not induce vomiting. Get medical attention immediately.

SECTION 5 — FIRE FIGHTING MEASURES

FLASH POINT	LEL	UEL	FLAMMABILITY CLASSIFICATION
Not Applicable	N.A.	N.A.	Not Applicable

HMIS Codes

0

0

Health 2

Flammability

Reactivity

2411-

EXTINGUISHING MEDIA

Carbon Dioxide, Dry Chemical, Alcohol Foam UNUSUAL FIRE AND EXPLOSION HAZARDS

Closed containers may explode (due to the build-up of pressure) when exposed to extreme heat.

During emergency conditions overexposure to decomposition products may cause a health hazard. Symptoms may not be immediately apparent. Obtain medical attention.

SPECIAL FIRE FIGHTING PROCEDURES

Full protective equipment including self-contained breathing apparatus should be used.

Water spray may be ineffective. If water is used, fog nozzles are preferable. Water may be used to cool closed containers to prevent pressure build-up and possible autoignition or explosion when exposed to extreme heat.

SECTION 6 — ACCIDENTAL RELEASE MEASURES

STEPS TO BE TAKEN IN CASE MATERIAL IS RELEASED OR SPILLED

- · Remove all sources of ignition. Ventilate the area.
- Remove with inert absorbent.

SECTION 7 — HANDLING AND STORAGE

STORAGE CATEGORY

Not Applicable

PRECAUTIONS TO BE TAKEN IN HANDLING AND STORAGE

Keep container closed when not in use. Transfer only to approved containers with complete and appropriate labeling. Do not take internally. Keep out of the reach of children.

SECTION 8 — EXPOSURE CONTROLS/PERSONAL PROTECTION

PRECAUTIONS TO BE TAKEN IN USE

Use only with adequate ventilation.

Avoid contact with skin and eyes. Avoid breathing vapor and spray mist.

Wash hands after using.

This coating may contain materials classified as nuisance particulates (listed "as Dust" in Section 2) which may be present at hazardous levels only during sanding or abrading of the dried film. If no specific dusts are listed in Section 2, the applicable limits for nuisance dusts are ACGIH TLV 10 mg/m3 (total dust), 3 mg/m3 (respirable fraction), OSHA PEL 15 mg/m3 (total dust), 5 mg/m3 (respirable fraction).

Removal of old paint by sanding, scraping or other means may generate dust or fumes that contain lead. Exposure to lead dust or fumes may cause brain damage or other adverse health effects, especially in children or pregnant women. Controlling exposure to lead or other hazardous substances requires the use of proper protective equipment, such as a properly fitted respirator (NIOSH approved) and proper containment and cleanup. For more information, call the National Lead Information Center at 1-800-424-LEAD (in US) or contact your local health authority.

VENTILATION

Local exhaust preferable. General exhaust acceptable if the exposure to materials in Section 2 is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, 1910.108.

RESPIRATORY PROTECTION

If personal exposure cannot be controlled below applicable limits by ventilation, wear a properly fitted organic vapor/particulate respirator approved by NIOSH/MSHA for protection against materials in Section 2.

When sanding or abrading the dried film, wear a dust/mist respirator approved by NIOSH/MSHA for dust which may be generated from this product, underlying paint, or the abrasive.

PROTECTIVE GLOVES

Wear gloves which are recommended by glove supplier for protection against materials in Section 2.

EYE PROTECTION

Wear safety spectacles with unperforated sideshields.

SECTION 9 — PHYSICAL AND CHEMICAL PROPERTIES

PRODUCT WEIGHT	8.08 lb/gal 967 g/	1
SPECIFIC GRAVITY	0.97	
BOILING POINT	212 - 395 °F 100 - 2	201 °C
MELTING POINT	Not Available	
VOLATILE VOLUME	90%	
EVAPORATION RATE	Slower than ether	
VAPOR DENSITY	Heavier than air	
SOLUBILITY IN WATER	N.A.	
pH	5.5	
VOLATILE ORGANIC COMPOUNDS (VOC The	eoretical - As Packaged)	
3.14 lb/gal 376 g/l	Less Water and Federally E	Exempt Solvents
0.55 lb/gal 66 g/l	Emitted VOC	

SECTION 10 — STABILITY AND REACTIVITY

STABILITY — Stable

CONDITIONS TO AVOID

INCOMPATIBILITY

None known.

HAZARDOUS DECOMPOSITION PRODUCTS

By fire: Carbon Dioxide, Carbon Monoxide

HAZARDOUS POLYMERIZATION

Will not occur

SECTION 11 — TOXICOLOGICAL INFORMATION

CHRONIC HEALTH HAZARDS

No ingredient in this product is an IARC, NTP or OSHA listed carcinogen.

TOXICOLOGY DATA

CAS No.

64742-88-7

Ingredient Name Mineral Spirits

LC50 RAT LD50 RAT

4HR

Not Available Not Available

SECTION 12 — ECOLOGICAL INFORMATION

ECOTOXICOLOGICAL INFORMATION

No data available.

SECTION 13 — DISPOSAL CONSIDERATIONS

WASTE DISPOSAL METHOD

Waste from this product is not hazardous as defined under the Resource Conservation and Recovery Act (RCRA) 40 CFR 261. Incinerate in approved facility. Do not incinerate closed container. Dispose of in accordance with Federal, State/Provincial, and Local regulations regarding pollution.

SECTION 14 — TRANSPORT INFORMATION

US Ground (DOT)

Not Regulated for Transportation. Canada (TDG)

Not Regulated for Transportation.

Not Regulated for Transportation.

SECTION 15 — REGULATORY INFORMATION

SARA 313 (40 CFR 372.65C) SUPPLIER NOTIFICATION

CAS No.	CHEMICAL/COMPOUND	% by WT	% Element
No ingredients in this	product are subject to SARA 313 (40 CFR 372.65C) Supplier Not	ification.	

CALIFORNIA PROPOSITION 65

WARNING: This product contains chemicals known to the State of California to cause cancer and birth defects or other reproductive harm. TSCA CERTIFICATION

All chemicals in this product are listed, or are exempt from listing, on the TSCA Inventory.

SECTION 16 — OTHER INFORMATION

This product has been classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all of the information required by the CPR.

The above information pertains to this product as currently formulated, and is based on the information available at this time. Addition of reducers or other additives to this product may substantially alter the composition and hazards of the product. Since conditions of use are outside our control, we make no warranties, express or implied, and assume no liability in connection with any use of this information.



GREAT STUFF PRO™ Gaps & Cracks Insulating Foam Sealant

1. PRODUCT NAME

GREAT STUFF PRO[™] Gaps & Cracks Insulating Foam Sealant

2. MANUFACTURER

The Dow Chemical Company Dow Building Solutions 200 Larkin Midland, MI 48674 1-866-583-BLUE (2583) Fax 1-989-832-1465

Dow Chemical Canada ULC Dow Building Solutions 450 – 1st St. SW, Suite 2100 Calgary, AB T2P 5H1 1-866-583-BLUE (2583) (English) 1-800-363-6210 (French)

www.dowbuildingsolutions.com

3. PRODUCT DESCRIPTION

GREAT STUFF PRO[™] Gaps & Cracks Insulating Foam Sealant is a minimalexpanding, single component polyurethane foam sealant for general purpose building envelope air sealing.

In the United States, the sealant is easily identified by its bright orange color. It has led the way in the industry by being recognized as a fireblock, which means it resists the free passage of flames to other areas of the building through concealed spaces.

Basic Use

GREAT STUFF PRO[™] Gaps & Cracks Insulating Foam Sealant fills and seals gaps up to 3" (75 mm).* GREAT STUFF PRO[™] Gaps & Cracks Insulating Foam Sealant:

- expands to take the shape of cracks and voids, forming an airtight and waterresistant bond to wood, metal, masonry, glass and most plastics
- reduces pathways where insects can enter
- installs in minutes (tack-free in 5-10 minutes**, trims within 60 minutes)

GREAT STUFF PRO[™] Gaps & Cracks Insulating Foam Sealant is both costeffective and effective as an air sealant.

Sizes

GREAT STUFF PRO[™] Gaps & Cracks Insulating Foam Sealant is available in 24 oz (680 g) and 30 oz (850 g) gun- and reusable straw-applied versions.

Accessories

Using one of several PRO Series foam dispensing guns simplifies the application of GREAT STUFF PRO[™] Gaps & Cracks. In addition to enabling pinpoint application control, an airtight and moisture tight seal between the gun and the can prevents the foam from curing and blocking the dispensing valve, allowing a can to be reused up to one month later.

GREAT STUFF PRO[™] Gun Cleaner is a solution to simplify cleanup of uncured polyurethane foam from dispensing guns and work areas. Cured foam must be mechanically removed or allowed to wear off in time.

4. TECHNICAL DATA Applicable Standards

GREAT STUFF PRO[™] Gaps & Cracks Insulating Foam Sealant meets the following standards:

- ASTM E84 Standard Test Method for Surface Burning Characteristics of Building Materials
- ASTM E814 (modified) Standard Test Method for Fire Tests of Through-Penetration Fire Stops
- CAN/ULC S102 Method of Test for Surface Burning Characteristics of Building Materials and Assemblies

Code Compliances

GREAT STUFF PRO[™] Gaps & Cracks complies with Underwriters Laboratories, Inc. (UL) Classification, Classified as a sealant: see UL R13655.

Evaluation Reports

ICC-ES ESR-1961 (US only)
CCMC R13074 (CAN only)
Contact your Dow sales representative or local authorities for state/provincial and local building code requirements and related acceptances.

Physical Properties

GREAT STUFF PRO[™] Gaps & Cracks is a polyurethane-based foam with a minimal-expansion formulation. It cures quickly and has a moistureresistant skin. GREAT STUFF PRO[™] Gaps & Cracks Insulating Foam Sealant exhibits the typical properties indicated in Table 1 when tested as represented.

5. INSTALLATION

GREAT STUFF PRO[™] Gaps & Cracks Insulating Foam Sealant is easy to use. Complete installation instructions are provided on each can. Application surface should be free of dust and dirt. Damp surfaces will not impair the bond. PRO Series foam dispensing guns provide clean and precise dispensing with professional results.

Safety And Conditions Of Use

- Read all instructions and (Material) Safety Data Sheet ((M)SDS).
- GREAT STUFF PRO[™] Gaps & Cracks Insulating Foam Sealant contains isocyanate and a flammable blowing agent. Vapors may travel to other rooms. Ensure adequate ventilation and shut off all pilot lights and open flames; eliminate all sources of ignition before use. Do not smoke or use lighters or matches while dispensing foam.
- Do not breathe vapor or mist. Use in well-ventilated areas or wear proper respiratory protection. Isocyanate is irritating to the eyes, skin and respiratory system, and may cause sensitization by inhalation or skin contact.

*For cavities, cracks and penetrations larger than 3° (75 mm), Dow recommends FROTH-PAK™ Foam Sealant or FROTH-PAK™ Foam Insulation (US only). For window and door framework, minimal-expanding GREAT STUFF PRO™ Window & Door Insulating Foam Sealant is proven not to distort or bow the framework, when properly applied. **70 ± 5 °F and 50 ± 5 %RH, , 1 inch bead diameter, 6 inch length. Cure rate is dependent on temperature, humidity, and size of foam bead.

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- GREAT STUFF PRO[™] foam is very sticky and will adhere to most surfaces and skin. Do not get foam on skin. Cover all skin, wear long sleeves, gloves, and goggles or safety glasses. Cured foam must be mechanically removed or allowed to wear off in time.
- The contents are under pressure. Not to be used for filling closed cavities or voids such as behind walls and under tub surrounds. The can may burst if left in areas susceptible to high temperatures, such as motor vehicles, or near radiators, stoves or other sources of heat. Do not place can in hot water. Do not puncture, incinerate or store at temperatures above 120°F (49°C).
- GREAT STUFF PRO[™] foam should not be used around heaters, furnaces, fireplaces, recessed lighting fixtures or other applications where the foam may come in contact with heat-conducting surfaces. GREAT STUFF PRO[™] foam is combustible and will burn if exposed to open flame or sparks from high-energy sources. Do not expose to temperatures above 240°F (116°C).

Visit www.dowbuildingsolutions. com or contact a local Dow representative for more specific instructions.

6. AVAILABILITY

GREAT STUFF PRO[™] Gaps & Cracks Insulating Foam Sealant is distributed through an extensive network. For more information, call: 1-800-232-2436 (English) 1-800-565-1255 (French)

TABLE 1: Typical Physical Properties¹ Of GREAT STUFF PRO[™] Gap & Cracks Insulating Foam Sealant

Property and Test Method	Value
Flexural Strength, ASTM C203, parallel to rise, psi (kPa), min.	8.8 (60.7)
K-factor (Thermal Conductivity) per inch (25mm), ASTM C518 @75°F (24°C) mean temp., Btu•in/ft2•hr•°F (W/m•°C), min.	0.26 (0.037)
Compressive Strength, ASTM D1621, parallel to rise, psi (kPa)	9.3 (64.1)
Apparent Core Density, ASTM D1622, pcf (kg/m3)	1.01 (16)
Dimensional Stability, ASTM D2126, % volume change 100°F/100%RH@2wks	14.31
-40°F/ambRH@2wks	0.41
Closed Cell Content, ASTM D2856, %	80
Tensile Strength, ASTM D1623, parallel to rise, psi (kPa)	14.4 (99.3)

¹Not to be considered sales specifications

7. WARRANTY

Not applicable.

8. MAINTENANCE

GREAT STUFF PRO[™] Gaps & Cracks Insulating Foam Sealant has a shelf life of 12 months when stored at 75°F (24°C). Contents of the can are under pressure. Can may burst if left in areas susceptible to high temperatures, such as motor vehicles, or near radiators, stoves or other sources of heat. Do not place can in hot water. Do not puncture, incinerate or store at temperatures above 120°F (49°C).

9. TECHNICAL SERVICES

Dow can provide technical information to help address questions when using GREAT STUFF PRO[™] Gaps & Cracks Insulating Foam Sealant. For technical assistance, call: 1-866-583-BLUE (2583) (English) 1-800-363-6210 (French)

10. FILING SYSTEMS

www.dowbuildingsolutions.com



In the United States

The Dow Chemical Company

Dow Building Solutions 200 Larkin Center Midland, MI 48674

In Canada Dow Chemical Canada ULC Dow Building Solutions 450 – 1st St. SW Suite 2100

Calgary, AB T2P 5H1

For Technical Information: 1-866-583-BLUE (2583) (English) 1-800-363-6210 (French)

For Sales Information: 1-800-232-2436 (English) 1-800-565-1255 (French)

dowbuildingsolutions.com

NOTICE: No freedom from infringement of any patent owned by Dow or others is to be inferred. Because use conditions and applicable laws may differ from one location to another and may change with time, Customer is responsible for determining whether products and the information in this document are appropriate for Customer's use and for ensuring that Customer's workplace and disposal practices are in compliance with applicable laws and other government enactments. The product shown in this literature may not be available for sale and/or available in all geographies where Dow is represented. The claims made may not have been approved for use in all countries or regions. Dow assumes no obligation or liability for the information in this document. References to "Dow" or the "Company" mean the Dow legal entity selling the products to Customer unless otherwise expressly noted. NO EXPRESS WARRANTIES ARE GIVEN EXCEPT FOR ANY APPLICABLE WRITTEN WARRANTIES SPECIFICALLY PROVIDED BY DOW. ALL IMPLIED WARRANTIES INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED.

Dow Polyurethane Foam Insulation and Sealants

CAUTION: When cured, these products are combustible and will burn if exposed to open flame or sparks from high-energy sources. Do not expose to temperatures above 240°F (116°C). For more information, consult (Material) Safety Data Sheet ((M)SDS), call Dow at 1-866-583-BLUE (2583) or contact your local building inspector. In an emergency, call 1-989-636-4400 in the U.S. or 1-519-339-3711 in Canada. When air sealing buildings, ensure that combustion appliances, such as furnaces, water heaters, wood burning stoves, gas stoves and gas dryers are properly vented to the outside. See website: http://www.epa.gov/iaq/homes/hipventilation.html. In Canada visit http://archive.nrc-cnrc.gc.ca/eng/ibp/irc/bsi/83-house-ventilation.html.

GREAT STUFF PROTM Insulating Foam Sealants contain isocyanate and a flammable blowing agent. Read all instructions and (Material) Safety Data Sheet ((M)SDS) carefully before use. Eliminate all sources of ignition before use. Cover all skin. Wear long sleeves, gloves, and goggles or safety glasses. Provide adequate ventilation or wear proper respiratory protection. Contents under pressure. Not to be used for filling closed cavities or voids such as behind walls and under tub surrounds.

GREAT STUFF PROTM Gun Cleaner is flammable and contains acetone and propane. Read all instructions and (M)SDS carefully before use. Eliminate all sources of ignition before use. Cover all skin. Wear gloves, and goggles or safety glasses. Provide adequate ventilation or wear proper respiratory protection. Contents under pressure.

Building and/or construction practices unrelated to building materials could greatly affect moisture and the potential for mold formation. No material supplier including Dow can give assurance that mold will not develop in any specific system.

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Printed in the U.S.A. Form No. 179-07323-0815 CDP 178-00752-0815 CDP CDP 56398



C1: Portland Cement Based Concrete Products

SAFETY DATA SHEET

(Complies with OSHA 29 CFR 1910.1200)

SECTION I: PRODUCT IDENTIFICATION

The QUIKRETE[®] Companies 5 Concourse Parkway, Suite 1900 Atlanta, GA 30328

Emergency Telephone Number INFOTRAC (800) 535-5053 Information Telephone Number (800) 282-5828

SDS C1 Revision: Feb-18

QUIKRETE [®] Product Name	ltem #(s)
Fence Post Mix	1005
Fiber-Reinforced Concrete Mix	1006
Crack Resistant Concrete Mix	1006-80
Pro-Finish Crack Resistant Concrete Mix	1006-68
QUIKRETE 5000 Concrete Mix	1007
QUIKRETE 6000 Concrete Mix	1007
Pro-Finish QUIKRETE 5000	1007-85
Lightweight Concrete Mix	1008
Basic Concrete Mix	1015
Maximum Yield Concrete Mix	1100-80
Concrete Mix	1101-10, -20, -40, -60, -80, -90
Green Concrete Mix	1101-63, -73
B-Crete	1101-81
Red-E-Crete Concrete mix	1101-91, -87; 1141-62, -63, -92, -93, Bulk NR810035
Countertop Mix	1106-80
Form & Pour Concrete Mix	1120-80/NR810065
Form & Pour Concrete Mix MS	1120-80/NR810065
All-Star Concrete Mix	1121
Rip Rap	1129
Rip Rap Scrim	1134-80
Handicrete Concrete Mix	1141-59, -60, -80
RiteMix Concrete	1171-60
Fiber Reinforced Deck Mix	1251-80, -81
All-Star Crack Resistant Concrete Mix	1470-03
All-Star 5000 Concrete Mix	1470-01
FlowCrete 5000 (Mix 801)	8080026/NR80026
Mix 801 Concrete Mix	NR81001
Product Use: Portland cement-based, aggregat	ed products for general construction
SDS C1 QUIKRE	ETE Companies, LLC 2/7/2018



See most current revision of this document at www.QUIKRETE.com.

SECTION II - HAZARD IDENTIFICATION

Hazard-determining components of labeling: Silica, Portland cement 2.1 Classification of the substance or mixture

Carcinogen – Category 1A Skin Corrosion – Category 1B Eye Damage – Category 1 Skin Sensitization – Category 1B Specific Target Organ Toxicity Repeat Exposure – Category 1 Specific Target Organ Toxicity: Single Exposure – Category 3

2.2a Signal word DANGER!

2.2b Hazard Statements

May cause cancer through chronic inhalation Causes severe skin burns and serious eye damage May cause an allergic skin reaction Causes damage to lungs through prolonged or repeated inhalation May cause respiratory irritation Harmful if swallowed.

2.2c Pictograms



2.2d Precautionary statements

Do not handle until all safety precautions have been read and understood.

Wear impervious gloves, such as nitrile. Wear eye protection, and protective clothing.

Do not eat, drink or smoke when using this product.

Wash thoroughly after handling.

Use only in a well-ventilated area. Wear a NIOSH approved respirator (mask) such as N95 in poorly ventilated areas, when used for extended periods, when use is frequent, or when permissible exposure limits may be exceeded.

Do not breathe dust.

If swallowed: Rinse mouth. Do NOT induce vomiting.

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QUIKRETE Companies, LLC

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If inhaled: Remove person to fresh air and keep comfortable for breathing.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If on skin (or hair): Remove immediately all contaminated clothing and wash before re-use. Rinse skin or hair with water.

If significant skin irritation or rash occurs: get medical advice or attention.

Immediately seek medical advice or attention if symptoms are significant or persist.

Store in a well-ventilated place. Keep container tightly closed. Dispose of contents/containers in accordance with all regulations.

2.3 Additional Information

The Portland cement in this product can cause serious, potentially irreversible damage to skin, eye, respiratory and digestive tracts due to chemical (caustic) burns, including third degree burns. Burns from Portland cement may not cause immediate pain or discomfort. You cannot rely on pain to alert you to cement burns. Portland cement can cause dermatitis or sensitization. Therefore precautions must be taken to prevent all contact with Portland cement. Cement burns can become worse even after contact has ended. If there is contact with this product, immediately remove all product from body and thoroughly rinse with water. If you experience or suspect a cement burn or inflammation you should immediately see a health care professional.

Skin burns and irritation may be caused by brief exposure, though often are caused by extended exposure of 15 minutes, an hour, or longer. Interaction of Portland cement with water or sweat releases a caustic solution which produces the burns or irritation. Any extended exposure should be treated as though a burn has occurred until determined otherwise.

Skin contact with Portland cement can also cause inflammation of the skin, referred to as dermatitis. Signs and symptoms of dermatitis can include itching, redness, swelling, blisters, scaling, and other changes in the normal condition of the skin. Signs and symptoms of burns include the above and whitening, yellowing, blackening, peeling or cracking of skin.

The Portland cement in this product may cause allergic contact dermatitis in sensitized individuals. This overreaction of the immune system can lead to severe inflammation. Sensitization may result from a single exposure to the low levels of Cr (VI) in Portland cement or repeated exposures over months or years. Sensitization is long lasting and, after sensitization, even very small quantities can trigger the dermatitis. Sensitization is uncommon. Individuals who experience skin problems, including seemingly minor ones, are advised to seek medical attention.

2.3a HNOC – Hazards not otherwise classified: Not applicable2.3b Unknown Acute Toxicity: None

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SECTION III - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION			
Hazardous Components	<u>CAS No.</u>	<u>% by Weight</u>	
Sand, Silica, Quartz	14808-60-7	60-100*	
Portland Cement	65997 15 1	10-30*	
Fly Ash	68131-74-8	5-10*	

*The concentrations ranges are provided due to batch-to-batch variability. None of the constituents of this material are of unknown toxicity.

SECTION IV – FIRST AID MEASURES

4.1 Description of the first-aid measures General information:

After inhalation: Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. In case of unconsciousness, place patient stably in side position for transportation.

After skin contact: Wash skin with cool water and pH-neutral soap or a mild detergent. If significant skin irritation or rash occurs: get medical advice or attention.

After eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

After swallowing: Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately. Never give anything by mouth to an unconscious person.

4.2 Most important symptoms/effects, acute and delayed

Inhalation: May cause respiratory tract irritation. Causes damage to organs through prolonged or repeated inhalation. This product contains crystalline silica. Prolonged or repeated inhalation of respirable silica from this product can cause silicosis.

Skin contact: Skin burns and irritation may be caused by brief exposure, though often are caused by extended exposure of 15 minutes, an hour, or longer.

Eye Contact: Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

Ingestion: May be harmful if swallowed. Ingestion may cause discomfort and/or distress, nausea or vomiting.

4.3 Indication of immediate medical attention and special treatment needed:

Immediately seek medical advice or attention if symptoms are significant or persist.

SECTION V - FIRE FIGHTING MEASURES

- 5.1 Flammability of the Product: Non-flammable and non-combustible
- **5.2 Suitable extinguishing agents:** Treat for surrounding material

5.3 Special hazards arising from the substance or mixture: None

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5.3a Products of Combustion: None

5.3b Explosion Hazards in Presence of Various Substances: Non-explosive in presence of shocks

SECTION VI – ACCIDENTAL RELEASE MEASURES

6.1 Personal precautions, protective equipment and emergency procedures: Wear personal protective equipment (See section VIII). Keep unprotected persons away.

6.2 Methods and material for containment and cleaning up:

Do not allow to enter sewers/ surface or ground water. Dispose of unwanted materials and containers properly in accordance with all regulations.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

7.1 Handling

Precautions for safe handling: Ensure good ventilation/exhaustion at the workplace. DO NOT BREATHE DUST. In dusty environments, the use of an OSHA, MSHA or NIOSH approved respirator and tight fitting goggles is recommended. Wear appropriate PPE (See section 8).Do not mix with other chemical products, except as indicated by the manufacturer. Do not get in eyes, on skin or clothing. Good housekeeping is important to prevent accumulation of dust.

7.2 Storage

Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility: Not required.

Further information about storage conditions: Keep out of the reach of children. Keep container tightly closed and prevent exposure to humidity. Do not allow water to contact the product until time of use to preserve product utility.

SECTION VIII – EXPOSURE CONTROL MEASURES / PERSONAL PROTECTION

8.1 Components with limit values that require monitoring at the workplace:

Hazardous Components	CAS No.	PEL (OSHA)	TLV (ACGIH)
		mg/M ³	mg/M ³
Silica Sand, crystalline	14808-60-7	0.1	0.025 (resp)
Portland Cement	65997-15-1	5 (resp) 15 (total)	10 (resp)
Fly Ash	68131-74-8	N/A	N/A

8.2 Exposure Controls

Use ventilation adequate to keep exposures below recommended exposure limits.

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8.3 General protective and hygienic measures

Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.

8.3a Personal protective equipment

Protection of hands:

Wear gloves of adequate length to offer appropriate skin protection from splashes. Nitrile, Butyl and PVC gloves have been found to offer adequate protection for incidental contact. You cannot rely on pain to alert you to cement burns. Portland cement can cause dermatitis or sensitization.

Eye protection:

Wear approved eye protection (properly fitted dust- or splash-proof chemical safety glasses.

Respiratory protection:

Wear a NIOSH approved respirator (mask) such as N95 in poorly ventilated areas, when used for extended periods, when use is frequent, or when permissible exposure limits may be exceeded. Respirators should be selected by and used under the direction of a trained health and safety professional, following requirements found in OSHA's respirator standard (29 CFR 1910.134) and ANSI's standard for respiratory protection (Z88.2).

SECTION IX - PHYSICAL/CHEMICAL CHARACTERISTICS

General Information	
Appearance	Form: Granular Solid
	Color: Gray to gray-brown colored
	Odor: None
pH-value at 20°C (68 °F):	13 (10%)
Boiling point/Boiling range:	Not applicable
Flash point:	Not applicable
Auto igniting:	Product is not self-igniting
Vapor pressure at 21°C (70°F	Not available
Density at 25°C (77 °F):	2.6 to 3.15

Solubility in / Miscibility with	
Water:	Insoluble
VOC content:	0 g/L VOC

SECTION X – STABILITY AND REACTIVITY

10.1 Reactivity

No dangerous reaction known under conditions of normal use.

10.2 Chemical stability

Stable under normal storage conditions. Keep in dry storage.

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10.3 Possibility of hazardous reaction

No dangerous reaction known under conditions of normal use.

10.4 Thermal decomposition / conditions to be avoided

No decomposition if used according to specifications.

10.5 Incompatible materials

Contact of silica with powerful oxidizing agents such as fluorine, chlorine trifluoride, manganese trioxide, or oxygen difluoride may cause fires

10.6 Hazardous Decomposition or By-products

Silica will dissolve in Hydrofluoric Acid and produce a corrosive gas – silicon tetrafluoride.

SECTION XI – TOXICOLOGICAL INFORMATION

11.1 Exposure Routes: Skin contact, skin adsorption, eye contact, inhalation, or ingestion.

11.2 Symptoms related to physical/chemical/toxicological characteristics:

Inhalation: May cause respiratory tract irritation. Causes damage to organs through prolonged or repeated exposure. This product contains crystalline silica. Prolonged or repeated inhalation of respirable silica from this product can cause silicosis.

Skin contact: Causes severe skin burns. Handling can cause dry skin, discomfort, irritation, and dermatitis. May cause sensitization by skin contact. Product becomes extremely alkaline when exposed to moisture, and can cause alkali burns and affect the mucous membranes.

Eye Contact: Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.

Ingestion: Harmful if swallowed. Ingestion may cause discomfort and/or distress, nausea or vomiting.

11.3 Delayed, immediate and chronic effects of short-term and long-term exposure Short Term

Skin Corrosion/Irritation: Causes severe skin burns. Serious Eye Damage/Irritation: Causes severe eye damage. Respiratory Sensitization: Not available Skin Sensitization: May cause an allergic skin reaction. Specific Target Organ Toxicity-Single Exposure: (Category 3) May cause respiratory irritation. Aspiration Hazard: Not available

Long Term

Carcinogenicity: May cause cancer through chronic inhalation. Germ Cell Mutagenicity: Not available Reproductive Toxicity: Not available

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Specific Target Organ Toxicity- Repeated Exposure: (Category 1) Causes damage to lungs through prolonged/repeated exposure Synergistic/Antagonistic Effects: Not available.

SECTION XII – ECOLOGICAL INFORMATION

12.1 Ecotoxicity

May cause long-term adverse effects to the aquatic environment. Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. Must not reach bodies of water or drainage ditch undiluted or un-neutralized

12.2 Persistence and degradability

No further relevant information available.

12.3 Bioaccumulative potential:

No further relevant information available.

12.4 Mobility in soil

No further relevant information available.

12.5 Other Adverse Effects

No further relevant information available.

SECTION XIII – DISPOSAL CONSIDERATIONS

13.1 Waste Disposal Method

The packaging and material may be land filled; however, material should be covered to minimize generation of airborne dust. This product is <u>not</u> classified as a hazardous waste under the authority of the RCRA (40CFR 261) or CERCLA (40CFR 117&302). Disposal must be made in accordance with local, state and federal regulations.

13.2 Other disposal considerations Uncleaned packaging

Recommendation: Disposal must be made in accordance with local, state and federal regulations. **Recommended cleansing agent:** Water, if necessary with cleansing agents.

SECTION XIV – TRANSPORT INFORMATION				
	DOT (U.S.)	TDG (Canada)		
UN-Number	Not Regulated	Not Regulated		
UN proper shipping name	Not Regulated	Not Regulated		
Transport Hazard Class(es)	Not Regulated	Not Regulated		
Packing Group (if applicable)	Not Regulated	Not Regulated		



14.1 Environmental hazards:

Not Available

14.2 Transport in bulk according to Annex II of Marpol 73/78 and the IBC Code Not available

14.3 Special precautions for user

Do not handle until all safety precautions have been read and understood.

SECTION XV – OTHER REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislations specific for the chemical

Canada

WHMIS Classification: Considered to be a hazardous material under the Hazardous Products Act as defined by the Hazardous Products Regulations and subject to the requirements of Health Canada's Workplace Hazardous Material Information (WHMIS). This document complies with the WHMIS requirements of the Hazardous Products Act (HPA) and the HPR.

15.2 US Federal Information

SARA 302/311/312/313 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302, 311, 312 or 313.

RCRA: Crystalline silica (quartz) is not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.

CERCLA: Crystalline silica (quartz) is not classified as a hazardous substance under regulations of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 40 CFR §302.

Emergency Planning and Community Right to Know Act (SARA Title III): Crystalline silica (quartz) is not an extremely hazardous substance under Section 302 and is not a toxic chemical subject to the requirements of Section 313.

FDA: Silica is included in the list of substances that may be included in coatings used in food contact surfaces, 21 CFR §175.300(b)(3)(xxvi).

NTP: Respirable crystalline silica, primarily quartz dusts occurring in industrial and occupational settings, is classified as Known to be a Human Carcinogen.

OSHA Carcinogen: Crystalline silica (quartz) is not listed.

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15.3 State Right to Know Laws

California Prop. 65 Components

WARNING: This product can expose you to chemicals including crystalline silica which is known to the State of California to cause cancer and hexavalent chromium compounds which are known to the State of California to cause birth defects or other reproductive harm. For more information go to <u>www.P65Warnings.ca.gov</u>.

California Inhalation Reference Exposure Level (REL): California established a chronic REL of 3 µg for silica (crystalline, respirable). A chronic REL is an airborne level of a substance at or below which no adverse health effects are anticipated in individuals indefinitely exposed to the substance at that level.

Massachusetts Toxic Use Reduction Act: Silica, crystalline (respirable size, <10 microns) is "toxic" for purposes of the Massachusetts Toxic Use Reduction Act.

15.4 Global Inventories

DSL All components of this product are on the Canadian DSL list.

TSCA No.: Crystalline silica (quartz) appears on the EPA TSCA inventory under the CAS No. 14808-60-7. All constituents are listed in the TSCA inventory.

SECTION XVI – OTHER INFORMATION

Last Updated: February 7, 2018

NOTE: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to silica contained in our products.

Prepared by

The QUIKRETE Companies, LLC

End of SDS



A3: Water Based Products

SAFETY DATA SHEET (Complies with OSHA 29 CFR 1910.1200)

SECTION I: PRODUCT IDENTIFICATION

The QUIKRETE[®] Companies **One Securities Centre** 3490 Piedmont Road, Suite 1300 Atlanta, GA 30305

Emergency Telephone Number (770) 216-9580 Information Telephone Number (770) 216-9580

MSDS A3 Revision: May-15

QUIKRETE[®] Product Name

Code # CONCRETE ACRYLIC FORTIFIER 8610 CONCRETE ACRYLIC FORTIFIER, CONCENTRATED 8611

PRODUCT USE: LATEX ADDITIVE FOR MODIFYING PORTLAND CEMENT-BASED PRODUCTS

SECTION II - HAZARD IDENTIFICATION

Hazard-determining components of labeling: Acrylic polymer 2.1 Classification of the substance or mixture Eye Irritation – Category 2B Skin Sensitization – Category 1B Specific Target Organ Toxicity – Single Exposure- Category 3 Acute Oral Toxicity – Category 4

2.2a Signal word Warning

2.2b Hazard Statements

Causes eye irritation May cause an allergic skin reaction May cause respiratory, eye or gastrointestinal irritation. Prolonged or repeated exposure may cause skin irritation Harmful if swallowed.

ONE SECURITIES CENTRE, 3490 PIEDMONT ROAD, SUITE 1300, ATLANTA, GA 30305 SDS A3 TEL 404-634-9100 WWW.QUIKRETE.COM



2.2c Pictograms



2.2d Precautionary statements

Do not handle until all safety precautions have been read and understood.

Wear impervious gloves, such as nitrile. Wear eye protection, and protective clothing.

Do not eat, drink or smoke when using this product.

Wash thoroughly after handling.

Use only in a well-ventilated area.

Do not breathe vapors.

If on skin (or hair): Remove immediately all contaminated clothing and wash before re-use. Rinse skin or hair with water.

If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

If inhaled: Remove person to fresh air and keep comfortable for breathing.

If swallowed: Rinse mouth, do NOT induce vomiting.

If significant skin irritation or rash occurs: get medical advice or attention.

Immediately seek medical advice or attention if symptoms are significant or persist.

Store in a well-ventilated place. Keep container tightly closed. Dispose of contents/containers in accordance with all regulations.

2.3 Additional Information

2.3a HNOC – Hazards not otherwise classified: Not applicable

2.3b Unknown Acute Toxicity: None 2.3c WHMIS Classification Class D2B – Skin/Eye Irritant

2.3d Label Elements According To WHMIS Hazard Symbols

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Signal Word Warning

SECTION III - HAZARDOUS INGREDIENTS/IDENTITY INFORMATION

Hazardous Components Polymeric Resin Water CAS No.% by VNot Hazardous30-607732-18-540-70

<u>% by Weight</u> 30-60 40-70

Composition ranges are provided due to batch-to-batch variability. None of the constituents of this product are of unknown toxicity.

SECTION IV – FIRST AID MEASURES

General information:

Immediately remove any clothing soiled by the product.

After inhalation: In case of unconsciousness place patient stably in side position for transportation.

After skin contact: Remove immediately all contaminated clothing and wash before re-use. Rinse skin or hair with water.

After eye contact: Rinse cautiously with water for several minutes. Remove contact lenses, if present and

easy to do. Continue rinsing.

After swallowing: Treat symptomatically and supportively. Get medical attention. Never give anything by mouth to an unconscious person.

Acute/Delayed Symptoms: Immediately seek medical advice or attention if symptoms are significant or persist.

SECTION V - FIRE FIGHTING MEASURES

5.1 Flammability of the Product: This is a water-based product and presents no particular fire or explosion hazard. Dry polymer film will burn. Product contains low levels of organic volatiles which may be emitted at elevated temperatures.

5.2 Suitable extinguishing agents: Treat for surrounding material

5.3 Special hazards arising from the substance or mixture: None



5.3a Products of Combustion: None

5.3b Explosion Hazards in Presence of Various Substances: Non-explosive in presence of shocks

SECTION VI – ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures: Wear protective equipment (See section VIII). Keep unprotected persons away.

Environmental precautions: Do not allow to enter sewers/ surface or ground water.

Methods and material for containment and cleaning up:

Dispose contaminated material as waste according to item 13. Ensure adequate ventilation.

Reference to other sections

See Section 7 for information on safe handling. See Section 8 for information on personal protection equipment. See Section 13 for disposal information.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND STORAGE

Handling

Precautions for safe handling: Ensure good ventilation/exhaustion at the workplace. Wear appropriate PPE (See section 8).

Information about protection against explosions and fires: No special measures required.

Storage

Requirements to be met by storerooms and receptacles: No special requirements.

Information about storage in one common storage facility: Not required.

Further information about storage conditions: Keep receptacle tightly sealed.

Specific end use(s): No further relevant information available

SECTION VIII – EXPOSURE CONTROL MEASURES / PERSONAL PROTECTION						
8.1 Components with limit values that require monitoring at the workplace:						
Hazardous Components	CAS No.	PEL (mg/M ³	OSHA)	TLV (A) mg/M ³	CGIH)	
None				_		
ONE SECURITIES CENTRE, 3490 PIEDMONT	ROAD, SUITE 1300, A	TLANTA, GA 30305	SDS A3	TEL 404-634-9100	WWW.QUIKRETE.COM	


8.2 Exposure Controls

Use ventilation adequate to keep exposures below recommended exposure limits.

8.3 General protective and hygienic measures

Keep away from foodstuffs, beverages and feed. Immediately remove all soiled and contaminated clothing. Wash hands before breaks and at the end of work. Avoid contact with the eyes and skin.

8.3a Personal protective equipment

Protection of hands:

Wear gloves of adequate length to offer appropriate skin protection from splashes. Nitrile, Butyl and PVC gloves have been found to offer adequate protection for incidental contact.

Eye protection:

Wear approved eye protection (properly fitted dust- or splash-proof chemical safety glasses.

Respiratory protection:

Not required under typical use

SECTION IX - PHYSICAL/CHEMICAL CHARACTERISTICS

General Information	
Appearance	Form: Liquid
	Color: White
	Odor: Slight Ammonia
pH-value at 20°C (68 °F):	9.5-10.0
Boiling point/Boiling range:	>212°F (>100°C)
Auto igniting:	Product is not self-igniting.
Vapor pressure at 21°C (70°F)	<1 (water)
Density at 25°C (77 °F):	1.0 to 1.2
Solubility in / Miscibility with	
Water:	Miscible
VOC content:	18 g/L VOC

SECTION X – STABILITY AND REACTIVITY

Thermal decomposition / conditions to be avoided: Strong oxidizers, materials that react with water

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Incompatible materials: Strong oxidizing agents

Hazardous decomposition products: None

SECTION XI – TOXICOLOGICAL INFORMATION

11.1 Exposure Routes: Skin contact, skin adsorption, eye contact, inhalation, or ingestion.

11.2 Symptoms related to physical/chemical/toxicological characteristics:

Inhalation: May cause respiratory tract irritation.

Skin contact: Causes skin irritation.

Eye Contact: Causes eye irritation.

Ingestion: May cause gastrointestinal irritation

11.3 Delayed, immediate and chronic effects of short-term and long-term exposure Short Term

Skin Corrosion/Irritation: Causes skin irritation. Serious Eye Damage/Irritation: Causes eye irritation. Respiratory Sensitization: Not available Skin Sensitization: May cause an allergic skin reaction. Specific Target Organ Toxicity-Single Exposure: (Category 3) May cause respiratory irritation.

Aspiration Hazard: Not available

Long Term

Carcinogenicity: Not available

Germ Cell Mutagenicity: Not available

Reproductive Toxicity: Not available

Specific Target Organ Toxicity- Repeated Exposure: (Category 2) Prolonged or repeated exposure may cause skin irritation.

Synergistic/Antagonistic Effects: Not available.

SECTION XII – ECOLOGICAL INFORMATION

Aquatic toxicity: No further relevant information available.

Persistence and degradability: No further relevant information available.

Behavior in environmental systems:

Bioaccumulative potential: No further relevant information available.

Additional ecological information:



General notes:

Do not allow undiluted product or large quantities of it to reach ground water, water course or sewage system. Must not reach bodies of water or drainage ditch undiluted or un-neutralized

SECTION XIII – DISPOSAL CONSIDERATIONS

Waste treatment methods

Recommendation:

Do not allow product to reach waterways or storm sewers. Disposal must be made in accordance with local, state and federal regulations.

Uncleaned packaging

Recommendation: Disposal must be made in accordance with local, state and federal regulations. **Recommended cleansing agent:** Water, if necessary with cleansing agents.

SECTION XIV – TRANSPORT INFORMATION

UN-Number UN proper shipping name Transport Hazard Class(es) Packing Group (if applicable) **DOT (U.S.)** Not Regulated Not Regulated Not Regulated Not Regulated TDG (Canada) Not Regulated Not Regulated Not Regulated Not Regulated

14.1 Environmental hazards:

Not Available

14.2 Transport in bulk according to Annex II of Marpol 73/78 and the IBC Code Not available

14.3 Special precautions for user

Do not handle until all safety precautions have been read and understood.

SECTION XV – OTHER REGULATORY INFORMATION

15.1 Safety, Health and Environmental Regulations/Legislations specific for the chemical

Canada

WHMIS Classification: Considered to be a hazardous material under the Hazardous Products Act as defined by the Controlled Products Regulations and subject to the requirements of Health Canada's Workplace Hazardous Material Information (WHMIS). This document complies with the WHMIS requirements of the Hazardous Products Act (HPA) and the CPR.



15.2 US Federal Information

SARA 302/311/312/313 Components

No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302, 311, 312 or 313.

RCRA: Not classified as a hazardous waste under the Resource Conservation and Recovery Act, or its regulations, 40 CFR §261 et seq.

CERCLA: Not classified as a hazardous substance under regulations of the Comprehensive Environmental Response Compensation and Liability Act (CERCLA), 40 CFR §302.

Emergency Planning and Community Right to Know Act (SARA Title III): Not an extremely hazardous substance under Section 302 and is not a toxic chemical subject to the requirements of Section 313.

NTP: Not classified as Known to be a Human Carcinogen.

OSHA Carcinogen: Not listed.

15.3 State Right to Know Laws

California Prop. 65 Components

WARNING: This product does not contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

15.4 Global Inventories

DSL All components of this product are on the Canadian DSL list. **TSCA No.:** All constituents are listed in the TSCA inventory.

15.5 NFPA Ratings



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SECTION XVI – OTHER INFORMATION

Last Updated: May 27, 2015

NOTE: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to silica contained in our products. Prepared by The QUIKRETE[®] Companies

The QUIKRETE[®] Companies Phone (800) 282-5828 www.QUIKRETE.com

End of SDS

SAFETY DATA SHEET LIQUITEX BASICS ACRYLIC COLOURS

According to Appendix D, OSHA Hazard Communication Standard 29 CFR §1910.1200

1. Identification							
Product identifier							
roduct name LIQUITEX BASICS ACRYLIC COLOURS							
Recommended use of the chemical and restrictions on use							
plication Fine Art Painting							
Ises advised against No specific uses advised against are identified.							
Details of the supplier of the safety data sheet							
SupplierColArt Americas Inc.11 Constitution AvenuePiscatawayNew Jersey 08855 - 1396USA1-732-562-0770R.Enquiries@colart.co.uk							
Contact Person	Regulatory Manager						
Manufacturer ColArt Tianjin Art Materials Co Ltd 80 Xianyang Road Nankai District Tianjin, 300113 China +86 222736 7907 +86 222736 2015							
Emergency telephone number							
Emergency telephone	For health information only call 1-800-628-3385 Piscataway NJ 08855.						
2. Hazard(s) identification							
Classification of the substance	or mixture						
Physical hazards	Not Classified						
Health hazards	Not Classified						
Environmental hazards	Not Classified						
Label elements							
Hazard statements	NC Not Classified						
Other hazards							
This product does not contain a	any substances classified as PBT or vPvB.						
3. Composition/information on i	ingredients						
Mixtures							
Composition comments	Any hazardous ingredients are below classification limit.						
4. First-aid measures							
Description of first aid measure	IS						

General information	If in doubt, get medical attention promptly. Show this Safety Data Sheet to the medical personnel.							
Inhalation	No specific recommendations. If throat irritation or coughing persists, proceed as follows. Move affected person to fresh air and keep warm and at rest in a position comfortable for breathing. Loosen tight clothing such as collar, tie or belt. Get medical attention if any discomfort continues.							
Ingestion	No specific recommendations. If throat irritation or coughing persists, proceed as follows. Rinse mouth. Get medical attention if any discomfort continues.							
Skin Contact	No specific recommendations. Rinse with water. Get medical attention if any discomfort continues.							
Eye contact	Rinse with water. Get medical attention if any discomfort continues.							
Protection of first aiders	Use protective equipment appropriate for surrounding materials.							
Most important symptoms and	effects, both acute and delayed							
General information	The severity of the symptoms described will vary dependent on the concentration and the length of exposure.							
Inhalation	No specific symptoms known. Spray/mists may cause respiratory tract irritation.							
Ingestion	No specific symptoms known. May cause discomfort if swallowed.							
Skin contact	No specific symptoms known. May cause discomfort.							
Eye contact	No specific symptoms known. May be slightly irritating to eyes.							
Indication of immediate medica	al attention and special treatment needed							
Notes for the doctor	Treat symptomatically.							
Specific treatments	No special treatment required.							
5.Fire-fighting measures								
Extinguishing media								
Suitable extinguishing media	The product is not flammable. Extinguish with alcohol-resistant foam, carbon dioxide, dry powder or water fog. Use fire-extinguishing media suitable for the surrounding fire.							
Unsuitable extinguishing media	Do not use water jet as an extinguisher, as this will spread the fire.							
Special hazards arising from the	e substance or mixture							
Specific hazards	Containers can burst violently or explode when heated, due to excessive pressure build-up.							
Hazardous combustion products	Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors.							
Advice for firefighters								
Protective actions during firefighting	Avoid breathing fire gases or vapors. Evacuate area. Cool containers exposed to heat with water spray and remove them from the fire area if it can be done without risk. Cool containers exposed to flames with water until well after the fire is out. If a leak or spill has not ignited, use water spray to disperse vapors and protect men stopping the leak.							
Special protective equipment Wear positive-pressure self-contained breathing apparatus (SCBA) and appropriate clothing. Standard Firefighter's clothing including helmets, protective boots and glow provide a basic level of protection for chemical incidents.								
6. Accidental release measure	8							

Personal precautions, protective equipment and emergency procedures								
Personal precautions	No specific recommendations. For personal protection, see Section 8.							
Environmental precautions								
Environmental precautions	Avoid discharge into drains or watercourses or onto the ground.							
Methods and material for conta	ainment and cleaning up							
Methods for cleaning up	Reuse or recycle products wherever possible. Absorb spillage to prevent material damage. Flush contaminated area with plenty of water. Wash thoroughly after dealing with a spillage. Dispose of contents/container in accordance with national regulations.							
Reference to other sections	s For personal protection, see Section 8.							
7. Handling and storage								
Precautions for safe handling								
Usage precautions	Jsage precautionsRead and follow manufacturer's recommendations. Wear protective clothing as described in Section 8 of this safety data sheet. Keep away from food, drink and animal feeding stuffs. Handle all packages and containers carefully to minimize spills. Keep container tightly seale when not in use. Avoid the formation of mists.							
Advice on general occupational hygiene	Wash promptly if skin becomes contaminated. Take off contaminated clothing and wash before reuse. Wash contaminated clothing before reuse.							
Conditions for safe storage, inc	cluding any incompatibilities							
Storage precautions	No specific recommendations.							
Storage class	Unspecified storage.							
Specific end uses(s)								
Specific end use(s)	The identified uses for this product are detailed in Section 1.2.							
8. Exposure Controls/personal	The identified uses for this product are detailed in Section 1.2. protection							
Specific end use(s) 8. Exposure Controls/personal Ingredient comments	The identified uses for this product are detailed in Section 1.2. protection OES = Occupational Exposure Standard. MEL = Maximum Exposure Limit.							
Specific end use(s) 8. Exposure Controls/personal Ingredient comments Exposure controls	The identified uses for this product are detailed in Section 1.2. protection OES = Occupational Exposure Standard. MEL = Maximum Exposure Limit.							
Specific end use(s) 8. Exposure Controls/personal Ingredient comments Exposure controls Appropriate engineering controls	The identified uses for this product are detailed in Section 1.2. protection OES = Occupational Exposure Standard. MEL = Maximum Exposure Limit. No specific ventilation requirements.							
Specific end use(s) 8. Exposure Controls/personal Ingredient comments Exposure controls Appropriate engineering controls Eye/face protection	The identified uses for this product are detailed in Section 1.2. protection OES = Occupational Exposure Standard. MEL = Maximum Exposure Limit. No specific ventilation requirements. No specific eye protection required during normal use. Large Spillages: Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible.							
Specific end use(s) 8. Exposure Controls/personal Ingredient comments Exposure controls Appropriate engineering controls Eye/face protection Hand protection	The identified uses for this product are detailed in Section 1.2. protection OES = Occupational Exposure Standard. MEL = Maximum Exposure Limit. No specific ventilation requirements. No specific eye protection required during normal use. Large Spillages: Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. No specific hand protection recommended.							
Specific end use(s) 8. Exposure Controls/personal Ingredient comments Exposure controls Appropriate engineering controls Eye/face protection Hand protection Other skin and body protection	The identified uses for this product are detailed in Section 1.2. protection OES = Occupational Exposure Standard. MEL = Maximum Exposure Limit. No specific ventilation requirements. No specific eye protection required during normal use. Large Spillages: Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. No specific hand protection recommended. No specific recommendations							
Specific end use(s) 8. Exposure Controls/personal Ingredient comments Exposure controls Appropriate engineering controls Eye/face protection Hand protection Other skin and body protection Hygiene measures	The identified uses for this product are detailed in Section 1.2. protection OES = Occupational Exposure Standard. MEL = Maximum Exposure Limit. No specific ventilation requirements. No specific eye protection required during normal use. Large Spillages: Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. No specific hand protection recommended. No specific recommendations Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse.							
Specific end use(s) 8. Exposure Controls/personal Ingredient comments Exposure controls Appropriate engineering controls Eye/face protection Hand protection Other skin and body protection Hygiene measures Respiratory protection	The identified uses for this product are detailed in Section 1.2. protection OES = Occupational Exposure Standard. MEL = Maximum Exposure Limit. No specific ventilation requirements. No specific eye protection required during normal use. Large Spillages: Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. No specific hand protection recommended. No specific recommendations Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse. No specific recommendations. Provide adequate ventilation. Large Spillages: If ventilation is inadequate, suitable respiratory protection must be worn.							
Specific end use(s) 8. Exposure Controls/personal Ingredient comments Exposure controls Appropriate engineering controls Eye/face protection Hand protection Other skin and body protection Hygiene measures Respiratory protection Environmental exposure controls	The identified uses for this product are detailed in Section 1.2. protection OES = Occupational Exposure Standard. MEL = Maximum Exposure Limit. No specific ventilation requirements. No specific eye protection required during normal use. Large Spillages: Eyewear complying with an approved standard should be worn if a risk assessment indicates eye contact is possible. No specific hand protection recommended. No specific recommendations Wash hands thoroughly after handling. Do not eat, drink or smoke when using this product. Wash contaminated clothing before reuse. No specific recommendations. Provide adequate ventilation. Large Spillages: If ventilation is inadequate, suitable respiratory protection must be worn. Not regarded as dangerous for the environment.							

Information on basic physical a	nd chemical properties						
Appearance	Paste						
Color	Various colors.						
Odor	Characteristic.						
рН	pH (concentrated solution): 9-10						
Initial boiling point and range	> 100°C @ 760 mm Hg						
Vapour density	> 1						
Relative density	1.2 - 1.5 @ 20°C						
Solubility(ies)	Miscible with water						
10. Stability and reactivity							
Reactivity	There are no known reactivity hazards associated with this product.						
Stability	Stable at normal ambient temperatures and when used as recommended. Stable under the prescribed storage conditions.						
Possibility of hazardous reactions	No potentially hazardous reactions known.						
Conditions to avoid	There are no known conditions that are likely to result in a hazardous situation.						
Materials to avoid	No specific material or group of materials is likely to react with the product to produce a hazardous situation.						
Hazardous decomposition products	n Does not decompose when used and stored as recommended. Thermal decomposition or combustion products may include the following substances: Harmful gases or vapors.						
11. Toxicological information							
Information on toxicological eff	ects						
Toxicological effects	Not regarded as a health hazard under current legislation.						
Acute toxicity - oral Notes (oral LD₅₀)	Based on available data the classification criteria are not met.						
Acute toxicity - dermal Notes (dermal LD₅o)	Based on available data the classification criteria are not met.						
Acute toxicity - inhalation Notes (inhalation LC ₅₀)	Based on available data the classification criteria are not met.						
Skin corrosion/irritation Animal data	Based on available data the classification criteria are not met.						
Serious eye damage/irritation Serious eye damage/irritation	Based on available data the classification criteria are not met.						
Respiratory sensitization Respiratory sensitisation	Based on available data the classification criteria are not met.						
Skin sensitization Skin sensitisation	Based on available data the classification criteria are not met.						

Germ cell mutagenicity Genotoxicity - in vitro	Based on available data the classification criteria are not met.					
Carcinogenicity Carcinogenicity	Based on available data the classification criteria are not met.					
IARC carcinogenicity	None of the ingredients are listed or exempt.					
Reproductive toxicity Reproductive toxicity - fertility	Based on available data the classification criteria are not met.					
Reproductive toxicity - development	Based on available data the classification criteria are not met.					
Specific target organ toxicity -	single exposure					
STOT - single exposure	Not classified as a specific target organ toxicant after a single exposure.					
Specific target organ toxicity - I	repeated exposure					
STOT - repeated exposure	Not classified as a specific target organ toxicant after repeated exposure.					
Aspiration hazard Aspiration hazard	Based on available data the classification criteria are not met.					
General information	No specific health hazards known. The severity of the symptoms described will vary dependent on the concentration and the length of exposure.					
Inhalation	No specific symptoms known. Spray/mists may cause respiratory tract irritation.					
Ingestion	No specific symptoms known. May cause discomfort if swallowed.					
Skin Contact	No specific symptoms known. May cause discomfort.					
Eye contact	No specific symptoms known. May be slightly irritating to eyes.					
Acute and chronic health hazards	No specific health hazards known.					
Route of entry	Ingestion Inhalation Skin and/or eye contact					
Target Organs	No specific target organs known.					
Medical Symptoms	Irritation of eyes and mucous membranes.					
12. Ecological Information						
Ecotoxicity	Not regarded as dangerous for the environment. However, large or frequent spills may have hazardous effects on the environment.					
Toxicity						
Toxicity	Based on available data the classification criteria are not met.					
Acute toxicity - fish	Not determined.					
Acute toxicity - aquatic invertebrates	Not determined.					
Acute toxicity - aquatic plants	Not determined.					
Acute toxicity - microorganisms	Not determined.					
Persistence and degradability						

Persistence and degradability	The degradability of the product is not known.
Bioaccumulative potential	
Bio-Accumulative Potential	No data available on bioaccumulation.
Mobility in soil	
Mobility	No data available.
Results of PBT and vPvB asse	ssment
Results of PBT and vPvB assessment	This product does not contain any substances classified as PBT or vPvB.
Other adverse effects	
Other adverse effects	None known.
13. Disposal considerations	
Waste treatment methods	
General information	The generation of waste should be minimized or avoided wherever possible. Reuse or recycle products wherever possible. This material and its container must be disposed of in a safe way.
Disposal methods	Dispose of waste to licensed waste disposal site in accordance with the requirements of the local Waste Disposal Authority.
Waste class	08 01 12 waste paint and varnish other than those mentioned in 08 01 11
14. Transport information	
General	The product is not covered by international regulations on the transport of dangerous goods (IMDG, IATA, DoT).
UN Number	
Not relevant.	
UN proper shipping name	
Not relevant.	
Transport hazard class(es)	
Not relevant.	
Packing group	
Not relevant.	
Environmental hazards	
Environmentally Hazardous Su No.	bstance
Special precautions for user	
Not relevant.	
15. Regulatory information	

US Federal Regulations

SARA Section 302 Extremely Hazardous Substances Tier II Threshold Planning Quantities None of the ingredients are listed or exempt.

CERCLA/Superfund, Hazardous Substances/Reportable Quantities (EPA)

None of the ingredients are listed or exempt.

SARA Extremely Hazardous Substances EPCRA Reportable Quantities None of the ingredients are listed or exempt.

SARA 313 Emission Reporting None of the ingredients are listed or exempt.

CAA Accidental Release Prevention None of the ingredients are listed or exempt.

FDA - Essential Chemical None of the ingredients are listed or exempt.

FDA - Precursor Chemical None of the ingredients are listed or exempt.

SARA (311/312) Hazard Categories None of the ingredients are listed or exempt.

OSHA Highly Hazardous Chemicals None of the ingredients are listed or exempt.

US State Regulations

California Proposition 65 Carcinogens and Reproductive Toxins None of the ingredients are listed or exempt.

California Air Toxics "Hot Spots" (A-I) None of the ingredients are listed or exempt.

California Air Toxics "Hot Spots" (A-II) None of the ingredients are listed or exempt.

California Directors List of Hazardous Substances

None of the ingredients are listed or exempt.

Massachusetts "Right To Know" List

None of the ingredients are listed or exempt.

Rhode Island "Right To Know" List

None of the ingredients are listed or exempt.

Minnesota "Right To Know" List None of the ingredients are listed or exempt.

New Jersey "Right To Know" List

None of the ingredients are listed or exempt.

Pennsylvania "Right To Know" List

None of the ingredients are listed or exempt.

Inventories

US - TSCA None of the ingredients are listed or exempt.

US - TSCA 12(b) Export Notification

None of the ingredients are listed or exempt.

16. Other information							
Training advice	Read and follow manufacturer's recommendations.						
Revision date	9/17/2015						
Revision	5						
Supersedes date	3/31/2015						

This information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process. Such information is, to the best of the company's knowledge and belief, accurate and reliable as of the date indicated. However, no warranty, guarantee or representation is made to its accuracy, reliability or completeness. It is the user's responsibility to satisfy himself as to the suitability of such information for his own particular use.

COLOR INFORMATION TABLE

Information is listed in columns from left to right indicating:

Liquitex® Color Number, Liquitex® Color Name, Viscosity Availability, Series Number, Hue, Value, Chroma Lightfast Rating, Pigment Rating, and Pigment Name All Liquitex® Paints and Mediums are made with a new clear acrylic resin base. ACRA^{*} indicates a Quinacridone Color

Viscosity Availability ① = High Viscosity Artists Color ② = Medium Viscosity Concentrated Artists Color

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ASTM Lightfast Rating I = Excellent lightfastness II = Good lightfastness III = Not for permanent work **Opacity Rating** O = Opaque TL = Translucent TP = Transparen **Pigment Rating** S = Single Pigment Color M = Mixed Pigment Color

Color Numbe	Color r Name	Viscosity	Series	Hue	Value	Chroma	Lightfast Rating	Opacity	Pigment Rating	Pigment name
118	Acra Blue Violet	1	3	8.13RP	2.47	1.58	I	TP	S	Carbazole Dioxazine (PV 23), Copper Phthalocyanine (PB 15:3)
108	Acra Burnt Orange	12	3	6.5R	2.9	2.5		TL	S	Quinacridone (PR 206)
110	Acra Crimson	12	3	4.1R	3.6	9.5		TP	S	Gamma Quinacridone Red (PV 19)
117	Acra Gold	12	3	7.02R	3.04	2.64		TP	М	Quinacridone Gold (PO 48), Diarylide Yellow (PY 83)
114	Acra Magenta (Acra Violet)	12	3	0.5R	3.2	7.5		TP	S	Quinacridone Magenta (PR 122)
112	Acra Red	12	3	4.8R	4.3	9		TP	S	Quinacridone Red Gamma (PR 209)
109	Acra Red-Orange	12	3	5.3R	3.3	9	I	TP	S	Quinacridone/Pyrrolopyrrol
116	Alizarin Crimson Hue, Perm.	12	2	3.3R	2.9	4.9		TP	М	Quinacridone (PR 206), Quinacridone (PR 202)
836	Apricot	2	1	4.3YR	7.5	7		0	М	(PR 187) Diarylide Yellow (PY 83 HR70), Titanium Dioxide (PW 6)
379	Baltic Blue	2	1	1.0B	4	2	I	0	М	Titanium Dioxide (PW 6), Synthetic Hydrated Iron Oxide (PY 42), Complex Silicate of Sodium and Aluminum with Sulfur (PB 29)
835	Baltic Green	2	1	4.5G	5.8	1.6	I	0	М	Ultramarine Blue (PB 29), Calcium Carbonate (PW 18), Titanium White (PW 6), Iron Oxide Yellow (PY 42)
660	Bright Aqua Green	12	1	5.0BG	6.0	12	I	0	Μ	Chlorinated copper Phthalocyanine (PG 7), Copper Phthalocyanine (PB 15), Titanium Dioxide (PW 6)
570	Brilliant Blue	12	1A	8.0B	5.0	9	I	0	М	Copper Phthalocyanine (PB 15), Chlorinated copper Phthalocyanine (PG 7), Titanium Dioxide (PW 6)
590	Brilliant Purple	12	1	1.8P	5.0	11	II	0	М	Carbazole Dioxazine (PV 23 RS), Titanium Dioxide (PW 6)
840	Brilliant Yellow Green	1	1	6.0YG	8.0	13	II	TL	М	Phthalocyanine Green (PG 7), Titanium Dioxide (PW 6), Arylide Yellow 10G (PY 3), Arylide Yellow FGL (PY 97)
530	Bronze Yellow	12	1	0.8Y	5.0	5		0	М	Synthetic Hydrated Iron Oxide (PY 42), Natural Iron Oxide (PBr 7)
834	Burgundy	2	1	7.0R	2.9	4.7	II	0	М	Burnt Umber (PBr 7), Naphthol Crimson (PR 170 F5RK)
127	Burnt Sienna	12	1	0.9YR	3.3	4		0	S	Calcined Natural Iron Oxide (PBr 7)
128	Burnt Umber	12	1	5.3YR	2.4	1		0	S	Calcined Natural Iron Oxide Containing Manganese (PBr 7)
150	Cadmium Orange	12	4	2.9YR	6.8	15		0	S	Cadmium Orange (PO 20)
720	Cadmium Orange Hue/ Brilliant Orange	12	2	3.9YR	7.0	14	I	TL	М	Perninone Orange (PO 43 DL), Titanium White (PW 6), Diarylide Yellow HR70 (PY 83)
311	Cadmium Red Deep Hue/ Deep Brilliant Red	1	2	5.2R	3.3	8	I	0	М	Naphthol Carbamide (PR 170 F3RK), Quinacridone Violet B (PV 19)
152	Cadmium Red Light	12	5	7.9RP	5.2	14.5		0	S	Cadmium Red (PR 108)
510	Cadmium Red Light Hue/ Scarlet Red	12	2	8.0R	5.0	13	I	TL	М	Naphthol AS-OL (PR 9), Arylide Yellow 5GX (PY 74 LF), Titanium Dioxide (PW 6)
154	Cadmium Red Medium	12	5	6.3R	4.5	14		0	S	Cadmium Red (PR 108)
151	Cadmium Red Medium Hue	12	2	6.4R	4.1	14		0	М	Napthol Crimson (PR 170 F3RK), Arylide Yellow FGL (PY 97)
163	Cadmium Yellow Deep Hue	1	2	7.9Y	7.7	13		0	Μ	Diarylide Yellow (PY 83 HR 70), Arylide Yellow 5GX (PY 74 LF), Titanium Dioxide (PW 6)
160	Cadmium Yellow Light	12	3	6.5Y	8.8	12.5		0	S	Cadmium Yellow (PY 35)
159	Cadmium Yellow Light Hue/ Bismuth Yellow Light	12	3	5.7Y	8.7	12.5	I	0	S	Bismuth Vanadate (PY 184)
161	Cadmium Yellow Medium	12	3	1.8Y	8.2	13.5		0	S	Cadmium Yellow (PY 35)
830	Cadmium Yellow Medium Hue Brilliant Yellow	12	1A	2.5Y	8	13		TL	М	Arylide Yellow FGL (PY 97), Diarylide Yellow (PY 83 HR70), Titanium Dioxide (PW 6)
470	Cerulean Blue Hue	12	2	2.7BP	4.0	9	ļ	0	Μ	Complex Silicate of Sodium and Aluminum with Sulfur (PB 29), Chlorinated Copper Phthalocyanine (PG 7), Titanium Dioxide (PW 6)
164	Cerulean Blue, Chromium	12	3	2.78BP	3.9	8	I	0	S	Cobalt Chromite (PB 36)
902	Christmas Green	2	1	3.0 G	3.9	7	I	TL	М	Phthalocyanine Green (PG 7), Arylide Yellow FGL (PY 97)
166	Chromium Oxide Green	12	2	9.3YG	4.1	4		0	S	Anhydrous Chrmomium Sesquioxide (PG 17)
170	Cobalt Blue	12	4	7.1BP	3.3	12		TL	S	Oxides of Cobalt and Aluminum (PB 28)
381	Cobalt Blue Hue/ Brilliant Blue Purple	12	1A	7.6BP	3.0	12	I	0	М	Complex Silicate of Sodium and Aluminum with Sulfur (PB 29), Titanium Dioxide (PW 6)
171	Cobalt Green	1	4	4.7BG	3.6	4	I.	0		Light Green Oxide (PG 50)
172	Cobalt Teal	12	4	8.6BG	6.0	8.9	I	0		Light Green Oxide (PG 50)
169	Cobalt Turquoise	12	4	8.8BG	4.1	5.5	I	0	S	Cobalt Chromite (PB 36)
833	Dark Victorian Rose	2	1	0.8R	3.9	5.5	II	0	М	Burnt Umber (PBr 7), Naphthol Crimson (PR 170 F5RK), Titianium White (PW 6)
300	Deep Magenta	1	3	7.5RP	3.0	9		TL	Μ	Quinacridone Magenta (PR 122), Quinacridone Violet (PV 19 DL), titanium dioxide (PW 6)
838	Deep Portrait Pink	2	1	9.0R	6.8	4.5	I	0	Μ	Burnt Sienna (PBr 7), Naphthol AS (PR 188), Titianium White (PW 6)
115	Deep Violet	1	3	7.88RP	2.53	2.10	I	TL	Μ	Quinacridone Violet (PV 19 DL)

TECHNICAL DESCRIPTIONS AND REFERENCE

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Color Numb	Color er Name	Viscosity	Series	Hue	Value	Chroma	Lightfast Rating	Opacity	Pigment Rating	Pigment name
186	Dioxazine Purple	12	2	5.6P	1.5	1	11	TP	S	Carbazole Dioxazine (PV 23 RS)
450	Emerald Green	12	2	3.7G	4.2	8.1	I	0	М	Chlorinated copper Phthalocyanine (PG 7), Arylide Yellow FGL (PY 97), Titanium Dioxide (PW 6)
243	French Gray/Blue	2	1	2.38P	5.2	3	I	0		
382	French Ultramarine Blue	12	1A	9.3BP	2.0	8	<u> </u>	TL	S	Complex Silicate of Sodium and Aluminum with Sulfur (PB 29)
908	HIDISCUS	(2)	I	3.1K	4.9	13	II	IL	IVI	Arylide Yellow FGL (PY 97)
225	Hooker's Green Deep Hue Per	m. ①	1A	5.3BG	2.5	0.4	Ι	TL	М	Carbon Black (PBk 7), Phthalocyanine Green (PG 7), Arylide Yellow 5Gx (PY 74)
224	Hooker's Green Hue Perm.	12	1A	2.3G	3.0	3	I	TL	М	Carbon Black (PBk 7), Phthalocyanine Green (PG 7), Arylide Yellow 5Gx (PY 74)
242	Indo Orange Red	1	2	9.5R	5.5	14	I	TP	S	Perinone (PO 43)
244	Ivory Black	12	1	B/N	1.5		<u> </u>	0	S	Amorphous Carbon Produced by Charring Animal Bones (PBk 9)
680	Light Blue Violet	12	1A	6.5BP	6.0	9	I	0	М	Complex Silicate of Sodium and Aluminum with Sulfur (PB 29), Titanium Dioxide (PW 6)
770	Light Blue, Perm.	12	1	5.0BG	7.0	7	Ι	0	М	Copper Phthalocyanine (PB 15), Chlorinated Copper Phthalocyanine (PG 7), Titanium Dioxide (PW 6)
650	Light Emerald Green	1	3	0.41G	6.3	10.1	I	0	М	Chlorinated Copper Phthalocyanine (PG 7), Arylide Yellow FGL (PY 97), Titanium Dioxide (PW 6)
312	Light Green, Perm.	12	2	1.7G	5.1	9.8	I	0	М	Chlorinated Copper Phthalocyanine (PG 7), Arylide Yellow FGL (PY 97), Titanium Dioxide (PW 6)
700	Light Magenta	2	1	8.5RP	7	9	I	0	М	Titanium Dioxide (PW 6), Napthol AS (PR 188), Quinacridone Magenta (PR 122).
810	Light Portrait Pink	12	1A	6.5R	8.0	6	Ι	0	М	Naphthol AS (PR 188), Benzimidazolone (PO 36), Titanium Dioxide (PW 6)
790	Light Violet	2	1	0.9P	7	7	II	0	М	Carbazole Dioxazine (PV 23 RS), Copper Phthalocyanine (PB 15:3), Titanium Dioxide (PW 6)
275	Manganese Blue Hue	1	3	2.4BP	3.8	9.5	I	0	М	Copper Phthalocyanine (PB 15), Chlorinated copper Phthalocyanine (PG 7), Titanium Diaxide (PW 6)
276	Mars Black	(1)(2)	1	B/N	1.5	.1	I	0	S	Synthetic Black Iron Oxide (PBk 11)
500	Medium Magenta	12	1A	3.1RP	5.0	12	I	0	М	Quinacridone Magenta (PR 122), Titanium Dioxide (PW 6)
292	Naphthol Crimson	12	2	5.7R	3.9	12.2		TP	S	Naphthol Carbamide (PR 170 F5RK)
294	Naphthol Red Light	12	2	7.2R	4.5	13.5	I	TP	S	Naphthol AS-OL (PR 9)
601	Naples Yellow Hue	1	2	0.5Y	7.2	8	I	0	М	Benzimidozolone Yellow (PY 151), Synthetic Hydrated Iron Oxide (PY 42), Synthetic Red Iron Oxide (PR 101), Titanium Dioxide (PW 6)
832	Navy	2	1	4.38P	2.6	4.2	Ι	0	М	Phthalocyanine Blue (PB 15), Burnt Umber (PBr 7), Titanium White (PW 6)
599	Neutral Gray Value 5	12	1	G	5.0		Ι	0	М	Bone Black (PBk 9), Raw Umber (PBr 7), Titanium Dioxide (PW 6)
907	Olive	2	1	1.7YG	3.8	2	I	0	М	Raw Umber (PBr 7), Phthalocyanine Green (PG 7)
837	Pale Portrait Pink	2	1	7.8 R	8.2	3.4	I	0	М	Benzimidazolone Orange HL (PO 36), Naphthol AS (PR 188), Titanium White (PW 6)
436	Parchment	12	1	7.7Y	8.3	2	I	0	М	Carbon Black (PBk 7), Phthalocyanine Green (PG 7), Titanium Dioxide (PW 6), Iron Oxide Yellow (PY 42)
310	Payne's Gray	12	1	Ν	1.5		I	0	М	Ultramarine Blue (PB 29), Bone Black (PBk 9), Ultramarine Violet (PV 15)
350	Permanent Green Deep	1	2	6.8G	3.0	5	I	0	М	Phthaloycyanine Green (PG 7), Titanium Dioxide (PW 6), Arylide Yellow FGL (PY 97)
316	Phthalocyanine Blue	12	1A	4.0BP	1.5	7	I	TP	S	Copper Phthalocyanine (PB 15)
317	Phthalocyanine Green (Blue Shade)	12	1A	0.8B	2.5	2.5	I	TP	S	Chlorinated Copper Phthalocyanine (PG 7)
319	Phthalocyanine Green (Yellow Shade)	1	1A	3.0BG	2.6	2.1	I	TP	S	Chlorinated and Brominated Copper Phthalocyanine (PG 36)
391	Prism Violet	12	2	5.0P	3.0	7	Ш	0	М	Carbazole Dioxazine (PV 23), Titanium Dioxide (PW 6), Gamma Quinacridone (PR 122)
318	Prussian Blue	12	2	7.58PB	2.22	0.41	I	TL	S	Milori Blue (PB 27)
901	Raspberry	2	1	1.1R	3.1	9		TL	S	Quinacridone Magenta (PR 122)
330	Raw Sienna	12	1	5.9YR	4.2	5		0	S	Natural Iron Oxide (PBr 7)
331	Raw Umber	(1)(2)	1	9.4YR	2.9	1		0	S	Natural Iron Oxide Containing Manganese (PBr 7)
903	Real leal	(2)	1	3.8B	2.7	3.5		1L	IVI	Titanium White (PW 6)
335	Sandalwood	(1)(2)	1A 1	9.5K	3.9	7		0	5 	Synthetic Red from Oxide (PR 101)
215	San Groop Porm	@ 		0.50	2.0	4		ті	M	Venetian Red (PR 101), Bone Black (PBk 9)
005		02	2	0.00	3.3	4			IVI	Arylide Yellow FGL (PY 97)
905	Scariei	(2)	1	8.0K	4.9	14.5	 	11	5	Veneulan Ked (PK 101) Titanium White (PW 6) Iran Ovida Vallaw (PV 40)
904 006	Swedish Blue	2	1	4.0/ 1 2/2 PC	9.4 20	0.0	1	0	IVI	Phthalocyaning Blue (PR 15) Illtramaring Blue (PR 20)
831		<u>ن</u>	1	2.40 DF	J.9 4 5	2.2		0	M	Phthalocyanine Green (PG 7), Titanium White (PW 6) Burnt Senna (PBr 7), Burnt Imber (PBr 7), Titanium White (PW 6)
		<u>ب</u>	<u> </u>	0.211		L.I		-	111	Iron Oxide Yellow (PY 42)
432 430	Itanium White Transparent Mixing White/ Zinc White	(1)(2) (1)(2)	1	W/B W/B	9.6 9.5			0 TP	S S	Zinc White (PW 6)

TECHNICAL DESCRIPTIONS AND REFERENCE

4

Color Numb	Color er Name	Viscosity	Series	Hue	Value	Chroma	Lightfast Rating	Opacity	Pigment Rating	Pigment name
730	Turners Yellow	(1)(2)	2	1.5Y	7.0	9	11	TL	М	Arylide Yellow 10G (PY 3), Iron Oxide Yellow (PY 42)
561	Turquoise Deep	12	2	6.3BP	2.4	2	Ι	TL	М	Copper Phthalocyanine (PB 15:3), Chlorinated Copper Phthalocyanine (PG 7)
560	Turquoise Green	12	1A	3.8BG	5.0	8	I	0	Μ	Chlorinated Copper Phthalocyanine (PG 7), Copper Phthalocyanine (PB 15), Titanium Dioxide (PW 6)
910	Twilight	2	1	6.88P	3.2	4	II	0	М	Phthalocyanine Blue (PG 15), Naphthol Crimson (PR 170 F5RK), Titanium White (PW 6)
380	Ultramarine Blue (Green Shade)	12	1A	8.2PB	2.4	13.6	I	TL	S	Complex Silicate of Sodium and Aluminum with Sulfur (PB 29)
434	Unbleached Titanium	(1)(2)	1	10YR	8	3	I	0	М	Raw Sienna (PBr 7), Raw Umber (PBr 7), Titanium Dioxide (PW 6)
392	Van Dyke Red Hue	1	2	0.4YR	2.7	2.1	I	TL	S	Benzimidazolone (PBr 25)
149	Venetian Rose	2	1	9.3RP	5.5	4	Ι	0	Μ	Carbon Black (PBk 7), Quinacridone Red (PV 19), Titanium White (PW 6), Iron Oxide Yellow (PY 42)
398	Viridian Hue, Perm.	(1)(2)	1A	3.3BG	2.4	1		0	М	Raw Umber (PBr 7), Phthalocyanine Green (PG 7)
740	Vivid Lime Green	1	1A	7.6YG	7.0	10	I	0	М	Arylide Yellow FGL (PY 97), Chlorinated Copper Phthalocyanine (PG 7), Titanium Dioxide (PW 6)
620	Vivid Red Orange	(1)	3	1.3YR	6.0	12		TL	М	Diarylide Yellow (PY 38 HR 70), Naphthol AS (PR 188)
909	Wisteria	2	1	4.5P	3.5	5	11	0	М	Naphthol AS (PR 188), Dioxazine Violet (PV 23), Titanium White (PW 6)
411	Yellow Light Hansa	12	1A	8.8Y	8.9	11.5		TP	S	Arylide Yellow 10G (PY 3)
412	Yellow Medium Azo	(1)(2)	2	3.7Y	8.2	13		TP	S	Arylide Yellow 5GX (PY 74 LF)
414	Yellow Orange Azo	12	2	7.0YR	7.4	14	I	TP	S	Diarylide Yellow (PY 83 HR70)
416	Yellow Oxide	12	1	9.7YR	5.9	7	I	0	S	Synthetic Hydrated Iron Oxide (PY 42)
Met	allic Colors									
232	Iridescent Antique Bronze	12	2A				Ι	0	М	Mica Coated with Titanium Dioxide and Iron Oxide, Carbon Black (PBk 7)
231	Iridescent Antique Copper	12	2A				I	0	М	Mica Coated with Titanium Dioxide and Iron Oxide
237	Iridescent Antique Gold	12	2A				I	0	М	Mica Coated with Titanium Dioxide and Iron Oxide
240	Iridescent Antique Silver	12	2A				I	0	S	Mica Coated with Titanium Dixide
228	Iridescent Bright Bronze	(12)	2A				I	0	S	Mica Coated with Iron Oxide
233	Iridescent Bright Copper	12	2A					TL	М	Mica Coated with Titanium Dioxide and Iron Oxide
234	Iridescent Bright Gold	(12)	2A				I	TL	М	Mica Coated with Titanium Dioxide and Iron Oxide
236	Iridescent Bright Silver	(12)	2A				I	TL	М	Mica Coated with Titanium Dioxide and Iron Oxide, Stainless Steel
229	Iridescent Rich Bronze	12	2A				I	0	M	Mica Coated with Titanium Dioxide and Iron Oxide
230	Iridescent Rich Copper	(1)(2)	2A					0	M	Mica Coated with Titanium Dioxide and Iron Oxide
235	Iridescent Rich Gold	(1)(2)	2A				 	0	M	Mica Coated with Titanium Dioxide and Iron Oxide
239	Indescent Rich Silver	(1)(2)	2A						<u> </u>	Stattiless Steel Miss Costod with Titanium Divide
<u>230</u>		12	ZA				1	IF	3	
FIOL	Fluerescent Colors		0.4					ті		
904	Fluorescent Green	2	2A							
082	Fluorescent Orange	 	2A 2A					TI		
987	Fluorescent Pink	 	24					TL		
983	Fluorescent Red	 	24					TI		
981	Fluorescent Yellow	2	2A					TL		
Sne	cialty Colors									
042	Interference Blue	2	2A				I	TL	S	Mica Coated with Titanium Dioxide
083	Interference Gold	2	2A				I	TL	S	Mica Coated with Titanium Dioxide
044	Interference Green	2	2A					TL	S	Mica Coated with Titanium Dioxide
036	Interference Orange	(2)	2A					TL	S	Mica Coated with Titanium Dioxide
038	Interference Red	2	2A					TL	S	Mica Coated with Titanium Dioxide
040	Interference Violet	(2)	2A				I	TL	S	Mica Coated with Titanium Dioxide



Material Safety Data Sheet [OSHA 29 CFR 1910.1200]

The QUIKRETE[®] Companies One Securities Centre 3490 Piedmont Road, Suite 1300 Atlanta, GA 30329

Emergency Telephone Number (770) 216-9580

Information Telephone Number (770) 216-9580

Revision: February 2006

MSDS E

SECTION I: PRODUCT IDENTIFICATION

Product Types: QUIKRETE[®] DRY PACKAGED PORTLAND CEMENT BASED PRODUCTS (SERIES 4)

<u>QUIKRETE[®] Product Name</u>	Code #	<u>QUIKRETE[®] Product Name</u>	Code #	
MORTAR MIX	1102	MASON MIX	1136	
BASE COAT STUCCO	1139	EXTERIOR STUCCO	1209	
FINISH COAT STUCCO	1201	FOAM COATING	1219	
MASONRY COATING	2400	MARBLE STUCCO	1802	
QUIKWALL [®] SURFACE BONDING CEMENT	1230	HEAVY DUTY MASONRY COATING	1300	
POOL PLASTER	1319	GLASS BLOCK MORTAR	1610	
ROOF TILE MORTAR	1140	POOL FINISH	1800	
POLYMER MODIFIED SANDED TILE GROUT	1489	SANDED TILE GROUT	1156	
THIN-SET FLOOR MIX	1548	THIN-SET WALL MIX	1554	
OMNI GROUT SANDED	1490	THIN-SET MULTI-PURPOSE	1550	
PEBBLE FINISH	1806	THIN-SET SANDED	1547	
BULK MASONRY MORTARS	1162	INCA 1000 MINE SEALANT	1225-50	
VENEER STONE MORTAR	1137			
PRO FINISH QUIKRETE ® BLENDED MORTAR	MIX		1136-58	
QUIKRETE® ONE COAT FIBERGLASS REINFORCED STUCCO SANDED				
(FORMERLY KNOWN AS QUIKWALL® FIBERC	GLASS REINFORC	ED STUCCO		
QUIKRETE [®] ONE COAT FIBERGLASS REINFORCED STUCCO CONCENTRATED 1216				
(FORMERLY KNOWN AS QUIKWALL FIBERGLASS REINFORCED STUCCO CONCENTRATED)				

(ALSO APPLIES TO SPECIALTY AND/OR CUSTOM DESIGNED MORTARS & STUCCOS)

SECTIO	N II - HAZARDOUS	INGREDIENTS/IDEN	TITY INFORMATION
Hazardous Components	CAS No.	PEL (OSHA)	TLV (ACGIH)
*		mg/M^3	mg/M^3
Silica Sand, crystalline	14808-60-7	10	0.05 (respirable)
•		%SiO ₂ +2	
Portland Cement	65997-15-1	5	5
May Contain one or more of	the following ingredien	nts:	
Pulverized Limestone	01317-65-3	5	5
Iron Oxide Pigments	01309-37-1	5	5
Lime	01305-62-0	5	5
	or 39445-23-3		
Clay	01332-58-7	5	5
-			



QUIKRETE[®] MATERIAL SAFETY DATA SHEET

page # 2

Product Types: QUIKRETE[®] DRY PACKAGED PORTLAND CEMENT BASED PRODUCTS (SERIES 4) MSDS E

Other Limits: National Institute for Occupational Safety and Health (NIOSH). Recommended standard maximum permissible concentration= 0.05 mg/M^3 (respirable free silica) as determined by a full-shift sample up to 10-hour working day, 40-hour work week. See NIOSH Criteria for a Recommended Standard Occupational Exposure to Crystalline Silica.

SECTION III - PHYSICAL/CHEMICAL CHARACTERISTICS

Appearance: Gray to gray-brown colored powder. Some products contain coarse aggregate. (Quikrete Vinyl Concrete Patcher available in white)

Specific Gravity:	2.6 to 1
Vapor Pressure:	None
Solubility in Water:	Slight

to 3.15Melting PointmeVapor Density:ghtOdor:

2700 °F Boiling Point: None Evaporation Rate: None 2700 ° F None

SECTION IV - FIRE AND EXPLOSION HAZARD DATA

Flammability: Noncombustible and not explosive.

SECTION V - REACTIVITY DATA

Stability: Stable.

Incompatibility (Materials to Avoid): Contact of silica with powerful oxidizing agents such as fluorine, chlorine trifluoride, manganese trioxide, oxygen difluoride, may cause fires.

Hazardous Decomposition or By-products: Silica will dissolve in Hydrofluoric Acid and produce a corrosive gas - silicon tetrafluoride.

Hazardous Polymerization: Will Not Occur.

Condition to Avoid: Keep dry until used to preserve product utility.

SECTION VI - HEALTH HAZARD DATA

Route(s) of Entry: Inhalation, Skin, Ingestion

Carcinogenicity Listings:

Acute Exposure: Product becomes alkaline when exposed to moisture. Exposure can dry the skin, cause alkali burns and effect the mucous membranes. Dust can irritate the eyes and upper respiratory system. Toxic effects noted in animals include, for acute exposures, alveolar damage with pulmonary edema.

Chronic Exposure: Dust can cause inflammation of the lining tissue of the interior of the nose and inflammation of the cornea. Hypersensitive individuals may develop an allergic dermatitis. Respirable crystalline silica (quartz) can cause silicosis, a fibrosis (scarring) of the lungs and possibly cancer. There is evidence that exposure to respirable silica or the disease silicosis is associated with an increased incidence of Scleroderma, tuberculosis and kidney disorders.

NTP:	Known carcinogen
OSHA:	Not listed as a carcinogen
IARC Monographs:	Group 1 Carcinogen
California Proposition 65:	Known carcinogen

<u>NTP</u>: The National Toxicology Program, in its "Ninth Report on Carcinogens" (released May 15, 2000) concluded that "Respirable crystalline silica (RCS), primarily quartz dusts occurring in industrial and occupational settings, is *known to be a human carcinogen*, based on sufficient evidence of carcinogenicity from studies in humans indicating a causal relationship between exposure to RCS and increased lung cancer rates in workers exposed to crystalline silica dust (reviewed in IAC, 1997; Brown *et al.*, 1997; Hind *et al.*, 1997)

<u>IARC:</u> The International Agency for Research on Cancer ("IARC") concluded that there was "*sufficient evidence* in humans for the carcinogenicity of crystalline silica in the forms of quartz or cristobalite from occupational sources", and that there is "*sufficient evidence* in experimental animals for the carcinogenicity of quartz or cristobalite." The overall

QUIKRETE® MATERIAL SAFETY DATA SHEET

Product Types: QUIKRETE[®] DRY PACKAGED PORTLAND CEMENT BASED PRODUCTS (SERIES 4) MSDS E

IARC evaluation was that "crystalline silica inhaled in the form of quartz or cristobalite from occupational sources is *carcinogenic to humans* (Group 1)." The IARC evaluation noted that "carcinogenicity was not detected in all industrial circumstances or studies. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." For further information on the IARC evaluation, see <u>IARC Monographs on the Evaluation of carcinogenic Risks to Humans</u>, Volume 68, "Silica, Some Silicates..." (1997)

Signs and Symptoms of Exposure: Symptoms of excessive exposure to the dust include shortness of breath and reduced pulmonary function. Excessive exposure to skin and eyes especially when mixed with water can cause caustic burns as severe as third degree.

Medical Conditions Generally Aggravated by Exposure: Individuals with sensitive skin and with pulmonary and/or respiratory disease, including, but not limited to, asthma and bronchitis, or subject to eye irritation, should be precluded from exposure. Exposure to crystalline silica or the disease silicosis is associated with increased incidence of scleroderma, Tuberculosis and possibly increased incidence of kidney lesions.

Emergency First Aid Procedures:

Eyes: Immediately flush eye thoroughly with water. Continue flushing eye for at least 15 minutes, including under lids, to remove all particles. Call physician immediately.

Skin: Wash skin with cool water and pH-neutral soap or a mild detergent. Seek medical treatment if irritation or inflammation develops or persists. Seek immediate medical treatment in the event of burns.

Inhalation: Remove person to fresh air. If breathing is difficult, administer oxygen. If not breathing, give artificial respiration. Seek medical help if coughing and other symptoms do not subside. Inhalation of large amounts of portland cement require immediate medical attention.

Ingestion: Do not induce vomiting. If conscious, have the victim drink plenty of water and call a physician immediately.

SECTION VII - PRECAUTIONS FOR SAFE HANDLING AND USE

Spills: If spilled, use dustless methods (vacuum) and place into covered container for disposal or use if not contaminated or wet. Use adequate ventilation.

Waste Disposal Method: The packaging and material may be land filled; however, material should be covered to minimize generation of airborne dust. This product is <u>not</u> classified as a hazardous waste under RCRA or CERCLA.

SECTION VIII - CONTROL MEASURES/PERSONAL PROTECTION

Inhalation: DO NOT BREATE DUST. In dusty environments, the use of an OSHA, MSHA or NIOSH approved respirator is recommended. Local exhaust can be used, if necessary, to control airborne dust levels. **Eves:** Wear tight fitting goggles

Eyes: Wear tight fitting goggles.

Skin: The use of barrier creams or impervious gloves, boots and clothing to protect the skin from contact is recommended. Following work, workers should shower with soap and water. Precautions must be observed because burns occur with little warning -- little heat is sensed.

WARN EMPLOYEES AND/OR CUSTOMERS OF THE HAZARDS AND REQUIRED OSHA PRECAUTIONS ASSOCIATED WITH THE USE OF THIS PRODUCT.

NOTE: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to silica contained in our products.



TILE INSTALLATION SYSTEMS

Conforms to OSHA HazCom 2012 Standard and WHMIS 2015

SAFETY DATA SHEET

Section 1: IDENTIFICATION

1.1 PRODUCT IDENTIFIER

Product Name: Glass Tile Premium Thin-Set Mortar

Product Code: Not Available

1.2 RECOMMENDED USE OF CHEMICAL AND RESTRICTIONS ON USE

Product Use: Mortar

1.3 DETAILS OF THE SUPPLIER OF THE SAFETY DATA SHEETS

Name/Address:	Custom Building Products
	Five Concourse Parkway, Suite 1900 Atlanta, GA 30328

Telephone Number: 1-(800)-272-8786

1.4 EMERGENCY TELEPHONE NUMBER

Emergency Telephone	INFOTRAC 1-800-535-5053 (US and Canada)
Number:	INTERNATIONAL + 1-352-323-3500

Section 2: HAZARD(S) IDENTIFICATION

2.1 CLASSIFICATION OF THE CHEMICAL IN ACCORDANCE WITH PARAGRAPH (d) OF 29 CFR 1910.1200 (OSHA HAZCOM2012)

Skin Irritation	Category 2
Serious Eye Damage	Category 1
Skin Sensitization	Category 1B
Specific Target Organ Toxicity—Single Exposure	Category 3
Specific Target Organ Toxicity—Repeated Exposure	Category 1
Carcinogenicity	Category 1A

2.2 LABEL ELEMENTS ACCORDING TO OSHA HAZCOM2012

2.2a SIGNAL WORD: DANGER!

2.2b HAZARD STATEMENTS

Causes skin irritation Causes serious eye damage May cause an allergic skin reaction May cause respiratory irritation Causes damage to lungs through prolonged or repeated inhalation of dust May cause cancer through inhalation of dust



SAFETY DATA SHEET

2.2c HAZARD PICTOGRAMS



2.2d PRECAUTIONARY STATEMENTS

i.	PREVENTION	Wash hands thoroughly after handling. Do not breathe dust. Do not eat, drink or smoke when using this product. Use only outdoors or in a well-ventilated area. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Wear impervious gloves/protective clothing/eye protection.
ii.	RESPONSE	If on skin: Wash with plenty of water. Take off contaminated clothing and wash it before reuse. If skin irritation or rash occurs: Get medical advice/attention. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. If experiencing respiratory symptoms: call a poison center/doctor. If swallowed: Rinse mouth. Do NOT induce vomiting. If exposed or concerned: get medical advice/attention.
iii.	STORAGE	Store in a well-ventilated place. Store locked up. Keep container tightly closed.
iv.	DISPOSAL	Dispose of contents/containers in accordance with all local, state, provincial, and federal regulations.

2.3 ADDITIONAL INFORMATION

2.3a HNOC – HAZARDS NOT OTHERWISE CLASSIFIED Not Applicable

2.3b UNKNOWN ACUTE TOXICITY

1.3% of the mixture consists of ingredient(s) of unknown acute toxicity.

Section 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1 MIXTURES

Chemical Name	CAS Number	Weight %
Crystalline Silica, Quartz	14808-60-7	40 - 70%*
Portland Cement	65997-15-1	30 - 60%*
Calcium Aluminate Cement	65997-16-2	1 – 5%*

*Means that the component will fall into one the ranges specified due to batch-to-batch variability.

Section 4: FIRST-AID MEASURES

4.1 DESCRIPTION OF THE FIRST-AID MEASURES



SAFETY DATA SHEET

ROUTES OF EXPOSURE	DESCRIPTION
Eye Contact:	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. If easy to do, remove contact lenses, if worn. Get medical attention immediately.
Skin Contact:	In case of contact, immediately flush skin with plenty of water. Remove contaminated clothing and shoes. Wash clothing before reuse. Call a physician if irritation develops and persists.
Inhalation:	If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. Get medical advice/attention if you feel unwell.
Ingestion:	If swallowed, do NOT induce vomiting unless directed to do so by medical personnel. Never give anything by mouth to an unconscious person. Get medical advice/attention.

4.2 MOST IMPORTANT SYMPTOMS/EFFECTS, ACUTE AND DELAYED

ROUTES OF EXPOSURE	DESCRIPTION	
Eye Contact:	Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.	
Skin Contact:	Causes skin irritation. Handling can cause dry skin, discomfort, irritation, and dermatitis. May cause sensitization by skin contact.	
Inhalation:	May cause respiratory tract irritation. Causes damage to organs through prolonged or repeated exposure. This product contains crystalline silica. Prolonged or repeated inhalation of respirable crystalline silica from this product can cause silicosis, a serious disabling and fatal lung disease.	
Ingestion:	May be harmful if swallowed. Ingestion may cause discomfort and/or distress, nausea or vomiting.	
4.3 INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED		
Note to Physicians:	Symptoms may not appear immediately.	
Specific Treatments:	In case of accident or if you feel unwell, seek medical advice immediately (show the label or SDS where possible).	

Section 5: FIRE-FIGHTING MEASURES

5.1 FLAMMABILITY

Flammability: Not Flammable/Not Combustible by WHMIS/OSHA HAZCOM2012 Criteria

5.2 EXTINGUISHING MEDIA

5.2a. Suitable Extinguishing Media:

Treat for surrounding material.



SAFETY DATA SHEET

5.2b. Unsuitable Extinguishing Media: Not Available

5.3 SPECIFIC HAZARDS ARISING FROM THE CHEMICAL

- 5.3a. Products of Combustion: May include, and are not limited to: oxides of carbon and hydrogen sulfide
- 5.3b. Explosion Data
 - i. Sensitivity to Mechanical Impact: Not Available
 - ii. Sensitivity to Static Discharge: Not Available

5.4 SPECIAL PROTECTIVE EQUIPMENT AND PRECAUTIONS FOR FIRE-FIGHTERS

Keep upwind of fire. Wear full fire fighting turn-out gear(full bunker gear) and respiratory protection (SCBA).

Section 6: ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS, PROTECTIVE EQUIPMENT, AND EMERGENCY PROCEDURES Use personal protection recommended in Section 8. Isolate the hazard area and deny entry to unnecessary and unprotected personnel.

6.2 METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP

Methods for Containment:	Recover all usable material. Pick up large pieces, and then place in a suitable container. Do not flush to sewer or allow to enter waterways. Use appropriate Personal Protective Equipment (PPE).
Methods for Cleaning-Up:	Vacuum or sweep material and place in a disposal container. Dispose of unwanted material properly in accordance with all local, regional, national and international regulations.

Section 7: HANDLING AND STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING

Handling:Use in well-ventilated areas. Wear impervious gloves and eye
protection. Do not mix with other chemical products, except as
indicated by the manufacturers. Do not get in eyes. Do not get on
skin or clothing. Do not breathe dust. Do not take internally.General Hygiene Advice:Use good industrial hygiene practices and wear recommended
personal protection. Launder contaminated clothing before reuse.
Wash hands before eating, drinking, or smoking.

7.2 CONDITIONS FOR SAFE STORAGE, INCLUDING ANY INCOMPATIBILITIES



SAFETY DATA SHEET

Storage:

Keep out of the reach of children. Store locked up. Keep container tightly closed. Store at room temperature and keep containers closed when not in use. Keep dry until use.

Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1 CONTROL PARAMETER Exposure Guidelines:

Occupational Exposure Limits					
Chemical Name OSHA-PEL ACGIH-TLV					
Crystalline Silica, Quartz	0.1 mg/m³	0.025 mg/m ³ (Resp.)			
Portland Cement	5 mg/m³ (Resp.) 15 mg/m³ (Total)	10 mg/m³ (Resp.)			
Calcium Aluminate Cement	5 mg/m³ (Resp.) 15 mg/m³ (Total)	10 mg/m³ (Resp.)			

8.2 EXPOSURE CONTROLS

Engineering Controls:

Use ventilation adequate to keep exposures (airborne levels of dust, fume, vapor, etc.) below recommended exposure limits.

8.3 INDIVIDUAL PROTECTION MEASURES

- 8.3a. Personal Protective Equipment:
 - i. **Eye/Face Protection:** Wear approved eye/face protection [properly fitted dust- or splashproof chemical safety goggles/face (face shield)]
 - ii. Skin Protection:
 - **1.** Hand Protection: Wear impervious gloves, such as nitrile.
 - 2. Body Protection: Wear suitable protective clothing
- iii. Respiratory Protection: A NIOSH approved respirator or filtering face piece, such as N95, is recommended in poorly ventilated areas or when permissible exposure limits may be exceeded. Respirators should be selected by and used under the direction of a trained health and safety professional following requirements found in OSHA's respirator standard (29 CFR 1910.134) and ANSI's standard for respiratory protection (Z88.2).
- iv. General Health and Safety Measures: Handle according to established industrial hygiene and safety practices.

Appearance (physical state, color, etc.):	Solid White Powder
Odor:	Characteristic
Odor Threshold:	Not Available
pH:	10.0 – 12.5 when wet
Melting point/Freezing point:	Not Available

Section 9: PHYSICAL AND CHEMICAL PROPERTIES



THE INSTALLATION STSTEMS

Conforms to OSHA HazCom 2012 Standard and WHMIS 2015

SAFETY DATA SHEET

Initial boiling point and boiling range:	Not Available
Flash point:	>212°F(>100°C)
Evaporation rate (Water=1):	Not Available
Flammability:	Not Flammable/Not Combustible
Upper Flammability/Explosive Limit:	Not Available
Lower Flammability/Explosive Limit:	Not Available
Vapor Pressure	Not Available
Vapor Density:	Not Available
Relative Density:	2.0 – 3.0 g/mL
Solubility in Water:	Slightly Soluble
Partition coefficient: n-octanol/water:	Not Available
Auto-ignition temperature:	Not Available
Decomposition Temperature:	Not Available
Viscosity (cps):	Not Available
VOC Content:	0 g/L

Section 10: STABILITY AND REACTIVITY

10.1. REACTIVITY

No dangerous reaction known under conditions of normal use.

10.2. CHEMICAL STABILITY

Stable under normal storage conditions. Keep dry in storage.

10.3. POSSIBILITY OF HAZARDOUS REACTION No dangerous reaction known under conditions of normal use.

10.4. CONDITIONS TO AVOID

Heat. Incompatible materials.

- **10.5. INCOMPATIBLE MATERIALS** Strong acids. Strong Oxidizers.
- 10.6. HAZARDOUS DECOMPOSITION PRODUCTS

Upon decomposition, this product may yield oxides of carbon and hydrogen sulfide.

Section 11: TOXICOLOGICAL INFORMATION

11.1. LIKELY ROUTES OF EXPOSURE:

Skin contact, skin absorption, eye contact, inhalation, and ingestion.

11.2. SYMPTOMS RELATED TO PHYSICAL/CHEMICAL/TOXICOLOGICAL CHARACTERISTICS:

- **Eye Contact:** Causes serious eye damage. Symptoms may include discomfort or pain, excess blinking and tear production, with marked redness and swelling of the conjunctiva.
- **Skin Contact:** Causes skin irritation. Handling can cause dry skin, discomfort, irritation, and dermatitis. May cause sensitization by skin contact.



SAFETY DATA SHEET

- **Inhalation:** May cause respiratory tract irritation. Causes damage to organs through prolonged or repeated exposure. This product contains crystalline silica. Prolonged or repeated inhalation of respirable crystalline silica from this product can cause silicosis, a serious disabling and fatal lung disease.
- **Ingestion:** May be harmful if swallowed. Ingestion may cause discomfort and/or distress, nausea or vomiting.

Acute Toxicity(ATE _{mix} = 6,690 mg/kg)				
Chemical Name LC50 LD50				
Crystalline Silica, Quartz	Not Available	Oral: >10,000 mg/kg, rat		
Portland Cement	Not Available	Oral: >5,000 mg/kg, rat		
Calcium Aluminate Cement	Not Available	Oral: >2,000 mg/kg, rat		

Carcinogenicity		
Chemical Name Chemical Listed as Carcinogens or Potent Carcinogen (NTP,IARC,OSHA,ACGIH,CP6		
Crystalline Silica, Quartz	N-A2, I-1, O-1, ACGIH-A2, CP65	
Portland Cement	ACGIH-A4	
Calcium Aluminate Cement	Not Listed	

11.3. DELAYED, IMMEDIATE, AND CHRONIC EFFECTS OF SHORT AND LONG-TERM EXPOSURE

SHORT-TERM	
Skin Corrosion/Irritation:	Causes skin irritation
Serious Eye Damage/Irritation:	Causes severe eye damage
Respiratory Sensitization:	Not Classified
Skin Sensitization:	May cause an allergic skin reaction
STOT-Single Exposure:	May cause respiratory irritation
Aspiration Hazard:	Not Classified
LONG-TERM	
Carcinogenicity:	May cause cancer through inhalation of dust
Germ Cell Mutagenicity:	Not Classified
Reproductive Toxicity:	Not Classified
STOT-Repeated Exposure:	Causes damage to lungs through prolonged or repeated inhalation
	of dust
Synergistic/Antagonistic Effects:	Not Classified

Section 12: ECOLOGICAL INFORMATION

12.1. ECOTOXICITY

May cause long-term adverse effects to the aquatic environment. Keep from entry into sewers and waterways.

Ecotoxicity				
Chemical Name EC50/NOEC-48 Hours LC50/NOEC-96 Ho				
Crystalline Silica, Quartz	Not Available	Not Available		
Portland Cement	Not Available	Not Available		
Calcium Aluminate Cement	Not Available	Not Available		

12.2. PERSISTENCE AND DEGRADABILITY



SAFETY DATA SHEET

Not Available

- 12.3. BIOACCUMULATIVE POTENTIAL Not Available
- 12.4. MOBILITY IN SOIL

Not Available

12.5. OTHER ADVERSE EFFECTS Not Available

Section 13: DISPOSAL CONSIDERATIONS

13.1. DISPOSAL METHOD

Dispose of contents/containers in accordance with all local, state, provincial, and federal regulations

13.2. OTHER DISPOSAL CONSIDERATIONS

Not Available

Section 14: TRANSPORT INFORMATION

DOT (U.S.)	TDG (CANADA)	ΙΑΤΑ	
UN NUMBER:	UN NUMBER:	UN NUMBER:	
Not Regulated	Not Regulated	Not Regulated	
UN PROPER SHIPPING NAME:	UN PROPER SHIPPING NAME:	UN PROPER SHIPPING NAME:	
Not Regulated	Not Regulated	Not Regulated	
TRANSPORT HAZARD CLASS (ES):	TRANSPORT HAZARD CLASS (ES): TRANSPORT HAZARD CLA		
Not Regulated	Not Regulated Not Regulated		
PACKING GROUP (if applicable):	PACKING GROUP (if applicable):	PACKING GROUP (if applicable):	
Not Regulated	Not Regulated	Not Regulated	

SUMMARY: Product is NOT regulated under DOT/TDG and other transportation regulations.

14.1. ENVIRONMENTAL HAZARDS

Not Available

14.2. TRANSPORT IN BULK ACCORDING TO ANNEX II OF MARPOL 73/78 AND THE IBC CODE Not Available

14.3. SPECIAL PRECAUTIONS FOR USER

Do not handle until all safety precautions have been read and understood.



SAFETY DATA SHEET

Section 15: REGULATORY INFORMATION

15.1. SAFETY, HEALTH AND ENVIRONMENTAL REGULATIONS/LEGISLATIONS SPECIFIC FOR THE CHEMICAL

Canada: This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations and the SDS contains all the information required by the Hazardous Products Regulations.

US: SDS prepared pursuant to the Hazard Communication Standard (29 CFR 1910.1200) HazCom 2012

15.2. US FEDERAL INFORMATION:

	SARA TITLE III			
CHEMICAL NAME	SECTION 302 (EHS)	SECTION 304		SECTION 313
	IPQ (LBS)			
Crystalline Silica, Quartz	Not Listed	Not Listed	Not Listed	Not Listed
Portland Cement	Not Listed	Not Listed	Not Listed	Not Listed
Calcium Aluminate Cement	Not Listed	Not Listed	Not Listed	Not Listed

15.3. US STATE RIGHT TO KNOW LAWS:

California Proposition 65:		
•	WARNING: This product can expose you to	
	chemicals including Crystalline Silica which is known to	
	the State of California to cause cancer and Hexavalent	
	Chromium Compounds which are known to the State of	
	California to cause cancer and birth defects or other	
	reproductive harm. For more information go to	
	www.P65Warnings.ca.gov.	
Other U.S. States "Right to Know" Lists:		
New Jersey:	Silica, Quartz: CAS#14808-60-7	
	Portland Cement: CAS#65997-15-1	
	Calcium Aluminate Cement: CAS#65997-16-2	
	Gypsum: CAS#13397-24-5	
	Titanium Dioxide: CAS#13463-67-7	
Pennsylvania:	Silica, Quartz: CAS#14808-60-7	
	Portland Cement: CAS#65997-15-1	
	Calcium Aluminate Cement: CAS#65997-16-2	
	Gypsum: CAS#13397-24-5	
	Titanium Dioxide: CAS#13463-67-7	
Massachusetts:	Silica, Quartz: CAS#14808-60-7	
	Portland Cement: CAS#65997-15-1	
	Calcium Aluminate Cement: CAS#65997-16-2	
	Gypsum: CAS#13397-24-5	
	Titanium Dioxide: CAS#13463-67-7	
Minnesota:	Silica, Quartz: CAS#14808-60-7	
	Portland Cement: CAS#65997-15-1	
	Calcium Aluminate Cement: CAS#65997-16-2	
	Gypsum: CAS#13397-24-5	
	Titanium Dioxide: CAS#13463-67-7	
Florida:	Not Available	
Michigan:	Not Available	



SAFETY DATA SHEET

15.4. GLOBAL INVENTORIES

Chemical Name	USA TSCA	Canada DSL/NDSL
Crystalline Silica, Quartz	Yes	DSL
Portland Cement	Yes	DSL
Calcium Aluminate Cement	Yes	DSL

15.5. NFPA AND HMIS RATINGS:



15.6. SOURCE AGENCY CARCINOGEN CLASSIFICATIONS:

CP65	California Proposition 65			
OSHA (O)	Occupational Safety and Health Administration			
ACGIH (G)	ACGIH (G) American Conference of Governmental Industrial Hygienists			
	A1 – Confirmed human carcinogen			
	 A2 – Suspected human carcinogen 			
	A3 – Animal carcinogen			
	 A4 – Not classifiable as a human carcinogen 			
	 A5 – Not suspected a human carcinogen 			



TILE INSTALLATION SYSTEMS

Conforms to OSHA HazCom 2012 Standard and WHMIS 2015

SAFETY DATA SHEET

IARC (I)	 International Agency for Research on Cancer 1 – The agent (mixture) is carcinogenic to humans 2A – The agent (mixture) is probably carcinogenic to humans; there is limited evidence of carcinogenicity in humans and sufficient evidence of carcinogenicity in experimental animals. 2B – The agent (mixture) is possibly carcinogenic to humans; there is limited evidence of carcinogenicity in humans in the absence of sufficient evidence of carcinogenicity in experimental animals. 3 – The agent (mixture, exposure circumstance) is not classifiable
	 as to its carcinogenicity to humans. 4 – The agent (mixture, exposure circumstance) is probably not carcinogenic to humans.
NTP (N) National Toxicology Program	
	 1 – Known to be carcinogens
	2 – Reasonably anticipated to be carcinogens

Section 16: OTHER INFORMATION		
Date of Preparation:	May 29, 2015	
Version:	3.0	
Revision Date:	August 29, 2017	

Disclaimer: The information and recommendations contained herein are based upon data believed to be correct. However, no guarantee or warranty of any kind, express or implied, is made with respect to the information contained herein. We accept no responsibility and disclaim all liability for any harmful effects which may be caused by exposure to silica contained in our products.

Prepared by:

Custom Building Products Phone: (562)-968-2980 www.custombuildingproducts.com

End of Safety Data Sheet



Public Art Program Finalist Proposal

\$50,000 Award Category

Glass Mosaic Inset Seatwall

Artist: Denise Hart

Proposed Location: Jean Sweeney Park:

- Western Loop Plaza
- Western Medallion Plaza
- Eastern Medallion Plaza
- Eastern Loop Plaza

CUSTOM GLASS MOSAIC INSETS FOR SEAT WALLS JEAN SWEENEY OPEN SPACE PARK

Western Loop Plaza¹ Western Medallion Plaza² Eastern Medallion Plaza² Eastern Loop Plaza¹

¹freestanding seat wall and circular seat wall ²freestanding seat wall

> Artist: Denise Hart May 2018



This photo shows the insets in the freestanding seat wall (front) and in circular seat wall (back) at Western Loop Plaza in Jean Sweeney Open Space Park. Photo: March 2018.

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I. CONCEPT

Background

Within the new Jean Sweeney Open Space Park, there are four plazas, as noted above, that mark the intersection of various paths with places to sit.

All four of these plazas have seat walls with insets for $4^{"}x 4^{"}$ tile. In addition to the freestanding seat walls, two of the four plazas also have a matching circular seat wall, which also have insets for $4^{"}x 4^{"}$ tile. All were built during the 2017-18 winter. A construction drawing of the inset, as well as the linear feet of each seat wall, is included in Appendix I.

Custom Glass Mosaic Insets

The current plan is two include 4" x 4" tiles in the insets in all the seat walls. In the interest of making memorable places, the paving treatment in the four plazas already has been designed and completed with these themes: ocean, flowers, compass and rails. My proposal extends these themes to all the respective seat walls.

Custom glass mosaics in lieu of the proposed 4" x 4" tiles would strengthen the individual identity of each plaza.

Why Glass?

While tile it is possible to use tile in this set of mosaics, glass was chosen as the material because of its wider range of colors, textures and translucence.

Addressing the Concerns of the City of Alameda's Selection Panel

As requested, I have maintained contact with Amy Wooldridge, Director, City of Alameda's Parks and Recreation Department. She and I had a site visit in March 2018. In addition, below I address the Alameda's Selection Panel had four concerns with the conceptual proposal. These are listed and discussed below.

1. Taking up more space on the bench is better "bigger is better".

Agree. However, the benches were designed and built with the 4" high insets built prior to my involvement in the project.

2. Create specific moments in the mosaics, as opposed to flourishes. Use patterns that are less abstract, and more organic.

Agree. The conceptual plan was to give a sense, rather than the specifics, of the design. The drawings included in this display provide greater detail, specific moments, and organic shapes.

3. Break out of the line to include more organic shapes.

While possible, the constraints of the built inset make this problematic to do seamlessly. The mosaic would sit at two different levels on seat walls: in the insets and on the façade. Also, because creating mosaics is labor intensive (in fact, the labor cost is the most expensive part of the process), only a very small amount of mosaics could be added and keep project in the price range it is competing for (at the \$50,000 level). This limits any additional mosaic work to very small amounts of line work or small additions that would need to extend beyond the inset and on to the façade of each the seat wall.

On my site visit with Amy Woolridge, we discussed this issue. She noted that mosaics should not be placed above the inset; there will be metal anti-skateboard clasps at regular intervals on top edge of the seat walls.

As they are, the insets signal strong design intent, which is to keep the mosaic within them. I think a stronger case could be made to make the design less linear if the insets were not there or if they were less linear in form. It should be noted that the designs for the insets are comprised of organic forms.

If the City would really prefer to have some additional line work below the inset, I am willing to consider adding it. I did sketch some designs attempting to do add line work below the inset, but was unsatisfied with the result. The designs looked cleaner without this line work. To me the line work raised the questions: "why did the artist do make a few lines on the façade of the seat wall?" and "why did the artist only make additional lines below the inset?" I would also need to work out exactly how much could be added to keep the budget at or below \$50,000.

4. Clarify the costs of setting the mosaic – is this primarily the artist fee?

As noted in the budget (Section VI), this "setting the mosaic" is primarily the cost of labor to produce the mosaic. Creating mosaics is labor-intensive. Various tasks are needed to accomplish create a mosaic on this scale (95 square feet in total) including the time required to: purchase materials; print the design to create the template at the correct scale to work from; assemble and code the template to ensure the design is correctly completed; cut glass to create the mosaic, section the mosaic transporting; communicate with the client; organize and supervise an assistant mosaic artist(s) if available to assist; and other tasks as required. Please note that an assistant mosaic artist(s) may or may not be available on a part-time basis, depending on their own workloads.




II. THREE EXAMPLES OF MOSAICS BY DENISE HART



Seat wall façade element for private client's garden; Clayton, CA Design and executed by Denise Hart. Material: glass. Approximate height: 18".



Seat wall façade element for private client's garden; Clayton, CA. Designed and executed by Denise Hart. Material: glass. Approximate height: 14".



Glassy Rose.

Designed and executed by Denise Hart. Material: glass on wedi board and marine plywood. 24" x 24".

BUDGET

ITEM	AMOUNT	NOTES
Production		
Materials	\$4,500	Includes stained glass, high quality thinset, grout and sealant; alkali-
		resistant mesh, tile tape and other consumables. Includes printing of
		template cost (additional \$200).
Setting mosaics - studio time	\$28,500	Rate is \$300 per sq ft; total number of square feet = 95; $$300$ / sq ft *
,		95 sq ft = \$28,500. This cost includes the time required to: purchase
		materials; print the design to create the template at the correct
		scale to work from; assemble and code the template; cut glass to
		create the mosaic; section the mosaic for transporting;
		communicate with the client; organize and supervise an assistant
		mosaic artist(s) (if available to assist) and other tasks as required.
Extra studio space	3000*	Estimate @ \$500/mo for 6 months; my current studio space is not
		big enough to complete this project.
Installation		
Move mosaic sections from studio to site.	\$200	Truck rental to move mosaics from studio to site.
On-site	\$4,000	Artist and assistant mosaic artist (2) people x 4 days @\$500 per
		person; note that experienced artist rates are less expensive than
		tilesetter rate although work is comparable.
Engineering	0\$	This project does not require engineering. Seat walls are built.
Permit costs	0\$	As per Amanda Gerhke, City of Alameda, Economic Development
		Planner. The project is wholly within City of Alameda property.
Subtotal (w/o design or contingency)	\$37,200	
10% design fee	\$3,720	10% of project total is standard fee. Includes field verification of all
		measurements.
Subtotal (w/o contingency,) \$40,920	
10% contingency	\$4,092	As requested.
Tota	l \$45,012	

*increased from \$2000 to account for longer schedul**e**

III. BUDGET

IV. PRODUCT INFORMATION

The following lists the products used in creating a glass mosaic, including manufacturer and supplier. Safety and Technical Data Sheets, where available, are included in Appendix II.

Stained glass – cut pieces are known as "tesserae" and make up the mosaic Possible Manufacturers (glass not yet selected) include: Kokomo Opalescent Glass, Kokomo, Indiana Bullseye Glass Co., Emeryville Oceanside Glass and Tile (which now manufactures Spectrum and Uroboros glass), Carlsbad, CA Supplier: Franciscan Glass, 35255 Fircrest St., Newark, CA 94560

Thinset - adhesive

Product: Laticrete 254 Platinum Manufacturer: Laticrete Supplier: Daltile Service Center, 2311 Merced St, San Leandro, CA 94577

Thinset is the name given to thinly applied mortar, an adhesive used in glass and tile mosaic applications to bond the tesserae (pieces) to the substrate (the surface being mosaicked). Thinset is typically not applied in a layer greater than $3/16^{th}$ thick. It is a blend of cement, very finely graded sand, and a water retention compound that allows the cement to properly hydrate. For added strength, it may include a latex additive.

Grout

Product: Laticrete Permacolor Select Grout Manufacturer: Laticrete Supplier: Daltile Service Center, 2311 Merced St, San Leandro, CA 94577

Grout is cementitious product that fills the spaces between the tesserae. It does not provide any additional adhesive strength the mosaic.

Sealant – to seal grout

Miracle 511 Impregnator Penetrating Sealer Manufacturer: Miracle Sealants Supplier: All Natural Stone/Import Tile, 611 Hearst Ave., Berkeley, CA 94710 Fiberglass mesh – tesserae are tacked to mesh with small amount of glue Product: Parex 355 Standard Mesh Manufacturer: Parex USA Supplier: Westside Building Materials, 745 50th Ave., Oakland, CA 94601

Glue - to tack tesserae to mesh Product: Aleene's Original Tacky Glue Manufacturer: Duncan Industries Supplier: Ace Hardware, 2020 Milvia Street, Suite, Berkeley, CA 94704

Painter's plastic sheeting – goes over paper design and under fiberglass mesh Product: Husky Painter's Plastic Sheeting, 0.31 mil Manufacturer: Poly-America, L.P. Supplier: Home Depot

Plastic contact paper – goes on top of mosaic prior for transport to work site Product: Con-Tact Brand Self-Adhesive Clear Covering Acid Free Matte Manufacturer: Kittrich Corporation Supplier: Amazon.com

V. INSTALLATION PLAN

The following is an example of an installation by Rachel Rodi Mosaics. Carol Bevilacqua and myself assisted Rachel to install a seat wall mosaic at Bayview Hunters Point Park in San Francisco during 2016. The final photo is of the same team, assisting Rachel and supervising volunteers to grout a mural a Willard Middle School in Berkeley, also in 2016.

My installation would follow the same principles illustrated below.



In the studio, the tesserae (pieces), in this case tile, are carefully cut and are glued to mesh, with plastic underneath to prevent the glue from sticking to the design, which is underneath.

In the studio, just prior to installation, the mosaic is cut into sections and coded to ensure that the sections are installed in the right order.

To further secure them for handling during the installation, the mosaic sections will also have contact paper added on top of them.

The mosaic sections are then transported from studio to work site, on boards.



Prior to placing the mosaic section to project surface and into the thinset, the paper design and the plastic are removed.

The tesserae are attached to the mesh; the mesh is installed with it. The mesh is alkali resistant, which is suitable for use with thinset.



Once the mosaic section is placed into the thinset, each piece of tile (tesserae) is carefully pushed into the thinset.

This ensures that the tesserae properly adhere to the thinset, which is the adhesive.



More sections, which are coded to ensure that they are installed in the correct order, are installed into the thinset.



To ensure a perfect fit between sections, where the sections meet are left unfinished in the studio.

These unfinished places are completed on-site during installation.



Installing the mosaic sections is nearly finished.

The grout needs to be to be picked to ensure that the thinset does not show through the grout. Then we grout and seal.



In this project, volunteers from a local school assist mosaic artists to pick excess thinset from between the tile pieces.

This step is done while the thinset is still malleable.



In this project (different than the project above), volunteers assist mosaic artists to grout a large mural at Willard Middle School, Berkeley.

High-quality, cementitious grout is used. Grouting may begin 24 hours after the thinset has been applied; the thinset needs to cure.

Grout for the proposed custom glass mosaic insets for seat walls at JSOPS is Laticrete PERMACOLOR Select.

Lastly, the grout is sealed. This may occur the same day as grouting.

VI. MAINTENANCE PLAN

There are two main maintenance issues for this project: 1) preventing efflorescence; and, 2) maintaining the integrity of the grout over time. To achieve these goals, using high quality grout and sealants are recommended, as well as having experienced mosaic artists undertake the installation.

Minimal maintenance would be required. Grout may require resealing approximately every ten years. The cost would be approximately \$50-\$100 for high-quality sealant and labor cost for 2-4 hours.

Efflorescence, also known as haze, is a whitish mineral residue that may occur on colored grout. Soluble minerals that are being dissolved and transported to the surface of the grout cause it. Typically, the minerals originate in the cement slab below the tesserae or in the ground below a slab. (Source: Tile Council of America, <u>https://www.tcnatile.com/faqs/31-efflorescence.html</u>). Efflorescence tends to more commonly occur when grouting in hot weather. Efflorescence can be removed by a vinegar/water wash. Sealing (or re-sealing, if necessary) is recommended

To maintain the integrity of the grout over time, I propose to use Laticrete's

PERMACOLOR Select grout for this project. This grout is the latest in Laticrete's line of high-quality grouts and is harder, minimizes potential efflorescence, and is easier to install than its other PERMACOLOR option.

Laticrete's "Cement Grout Care & Maintenance, TDS 113" (see Appendix III) has several recommendations for regular maintenance and grout cleaning, and specifies which products to use. It is important to note that pH neutral or alkaline products are used, not acidic products. Vinegar, an acidic product, is only used in the case of efflorescence and as noted above, resealing is recommended.

As noted on TDS 113, PERMACOLOR[®] Select does not require sealing "however, if even greater protection is desired," it lists STONETECH sealing products. I propose sealing this project. Having had very good experience with the longevity (10-20 years) of Miracle Sealants 511 Impregnator in outdoor settings, mosaic artists tend to favor this brand.

Miracle Sealants Penetrating Sealants Maintenance Specifications are attached.

Warranties for both products can also be found in Appendix IV. Laticrete does not warranty the PERMACOLOR Select for exterior uses, but coastal California's mild climate and considerable use of Laticrete products in local mosaics gives me confidence that the integrity of the grout will last decades. This confidence is shared with other local mosaic artists and a local professional tile installer who I have worked with. Feel free to contact Martin Brookes, Heritage Tile, 415-383-1489.

Below are some examples of local mosaics that have successfully withstood the test of time.



Detail from Mission Creek Mural, 16th and Harrison Streets, San Francisco. Laurel True and Lillian Sizemore, 1999. Photo taken 2014.



Kefa Coffee mural, Ford and Park Streets, Jingletown, Oakland. By Laurel True, 2008. Photo taken 2018.



Lopez Pallets mural, Derby and Chapman, Jingletown, Oakland. By Laurel True, 2006. Photo taken 2018.



Close-up of mural at Jingletown Art Studios, Derby and Chapman, Jingletown, Oakland. By Laurel True, 2007. Photo taken 2018.

VII. SCHEDULE

SCHEDULE		
ltem	Week	Notes
Contract signed	Week 1	The artist will not schedule the project into her work schedule until she has a signed contract.
Complete Schematic drawings	Week 2	Will be similar to a conceptual drawing, but with more context and detail; additional work beyond what is included in my detailed proposal will be necessary. Necessary to also field verify all measurements.
Design review by City of Alameda	с.	Required? Schedule does not include time for design review by City of Alameda staff or committees, which is beyond the artist's control. The artist will comply with City requirements in a timely way.
Complete design development drawings	Week 3	Will include scale, size, and materials. Weight not relevant.
Design review by City of Alameda	с.	Required? Schedule does not include time for design review by City of Alameda staff or committees, which is beyond the artist's control. The artist will comply with City requirements in a timely way.
Procurement of materials	Week 5	Exact length of time depends on if some materials are not available from local wholesalers and must be ordered from suppliers directly, some of whom are out of
Complete template	Week 6	Print, assemble, and code template; prepare mesh and plastic for mosaiking.
Commence permit process	N/A	As per Amanda Gerhke, Planner, City of Alameda Economic Development, not applicable. This project is wholly within the Jean Sweeney Open Space Park.
Commence fabrication	Week 7	Begin cutting glass and creating mosaic.
Fabrication 50% complete	Week 15	Rate of fabrication may be faster if other experienced mosaic artist(s) are available to assist, which will depend on their own workloads.
Fabrication 100% complete	Week 23	Rate of fabrication may be faster if other experienced mosaic artist(s) are available to assist, which will depend on their own workloads.
Installation	Week 24	For technical reasons regarding the curing of thinset and grout, installation of mosaics outside cannot be done in inclement weather. Amy Woolridge, Director of the City of Alameda's Parks and Recreation Department, is aware that installation of the mosaics may occur after the official opening of Jean Sweeney Open Space Park.
This schedule is advisory only. Subject to	modification de	sending on when contract is signed and artist's obligations at that time.

APPENDIX I.

Seat Wall Inset Construction Drawing and Linear Feet of Insets



From: Amy Wooldridge

LINEAR FEET OF INSETS FOR ALL SEAT WALLS

1. Western Loop Plaza	STA 8+00	
Free Standing Seat Wa	11	Linear Feet (LF)
	North Side	25.83
	South Side	26.01
	End west	1.88
	End east	1.88
	Total	55.6
Circular Seat Well		
Circuidi Sedit Wali	Futornal Mail	27.7
		37.7
	Internal Wall	
	TOtal	37.7
2. Western Medallion	Plaza STA 16+5	0
	North Side	23.47
	South Side	23.18
	End west	1.39
	End east	1.39
	Total	49.43
3. Fastern Medallion P	1979 STA 28450	
	North Side	23.47
	South Side	23.18
	End west	1.39
	End east	1.39
	Total	49.43
4. Eastern Loop Plaza S	TA 32+00	
Free Standing Seat Wal		
	East Side	25.83
	West Side	26.01
	north end	1.88
	south end	1.88
	Total	55.6
Circular Seat Wall		
1	External Wall	37.69
	Internal Wall	0
	lotal	37.69

total LF Art Tile 285.45

McGuire And Hester Project Architects From: Amy Woolridge

4/22/18

APPENDIX II.

Safety Data Sheets and Technical Data Sheets

Bullsege Glass

SAFETY DATA SHEET

Product Name: Soda Lime Glass containing Arsenic Trioxide Glass M

Glass Made After March 1, 2016

Bullseye Glass Co., 3522 S.E. 21st, Portland, OR 97202

Emergency Phone: 1-503-232-8887

1. CHEMICAL PRODUCT and COMPANY IDENTIFICATION

Trade Name: Soda Lime Glass

000305 001858	001305 001859	001311 001932	001334	001611	001834
Confetti: 000301	001311				
C	Dullare Class (Olat. Deutland	00 07202	

Manufacturer: Bullseye Glass Co.: 3722 S.E. 21st; Portland, OR, 97202

Emergency Phones: DAY 1-503-232-8887 NIGHT 1-503-231-5266

2. HAZARD(S) IDENTIFICATION

3. HAZARDOUS INGREDIENTS

		Typical %	EXPOSURE (TWA in mg/m3)	LIMITS inless noted)
<u>COMPONENT</u>	CAS No.	by Weight	ACGIH TLV	OSHA PEL
Arsenic Trioxide	1327-53-3	.16%	0.2mg/m3	0.01 mg/m3

Soda Lime Glass

N/A

4. HEALTH HAZARD DATA - EMERGENCY/FIRST AID PROCEDURES

INHALATION: Move to fresh air, consult physician as necessary.INGESTION: If ingested in quantity - seek medical advice.EYES: Flush with water for at least 15 minutes - consult physician as necessary.SKIN: Wash with soap and water.

5. FIRE, REACTIVITY and EXPLOSION DATA

FLAMMABLE PROPERTIES: Nonflammable & Nonexplosive AUTO-IGNITION TEMPERATURE: None HAZARDOUS COMBUSTION PRODUCTS: None PRODUCTS OF DECOMPOSITION: N/A EXTINGUISHING MEDIA: N/A FIRE FIGHTING INSTRUCTIONS: N/A

6. ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: Clean up using dry procedures; avoid dusting. DISPOSAL: Dispose in approved landfill.

7. HANDLING and STORAGE

HANDLING: Precautions must be taken to avoid inhaling or ingesting dust created during abrasive cutting, grinding, or handling crushed glass. Adequate ventilation must be provided to keep employee exposures below OSHA PEL levels for arsenic and lead. (Presently 10ug/m3 & 50 ug/m3 respectively).

STORAGE: Keep away from food, drink and animal feedstuffs. Store away from Acids

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION: Use NIOSH-approved respiratory protection. VENTILATION: Have adequate ventilation. EYE PROTECTION: Safety glasses recommended to avoid direct eye contact. SKIN PROTECTION: Wear appropriate gloves to avoid direct skin contact.

9. PHYSICAL and CHEMICAL DATA

APPEARANCE & ODOR: Crushed Glass, Odorless BOILING POINT (F): N/A SOLUBILITY IN WATER: N/A VAPOR PRESSURE: N/A VAPOR DENSITY: N/A SPECIFIC GRAVITY: N/A PERCENT VOLATILE: N/A MELTING POINT: 1800 F EVAPORATION RATE: N/A

10. STABILITY & REACTIVITY

PRODUCT IS STABLE AND NON-REACTIVE.

11. HEALTH HAZARD DATA - HAZARD BY ROUTES OF EXPOSURE

INHALATION: Breathing of dusts created from grinding or handling crushed glass may irritate the nose & throat.

INGESTION: May cause mild irritation and gastrointestinal discomfort.

EYE: Direct contact with eyes can cause irritation.

SKIN CONTACT/ABSORPTION: Direct contact with skin may cause irritation.

SIGNS & SYMPTOMS ASSOCIATED WITH EXPOSURE OVER TLV:

Short Term: Irritation of Nose & Throat

Long Term: Irritation of Nose & Throat

The dust produced from grinding or handling crushed glass does present a potential chronic health hazard. Since dust may contain up to 0.6% arsenic and up to14% lead, inhalation or ingestion of these dusts can cause chronic health problems. (See section VI of attached MSDS for arsenic and lead)

MEDICAL CONDITIONS, WHICH MAY BE AGGRAVATED: None Reported

ANY OF PART 1 LISTED AS CARCINOGENS? (NTP, IARC, OSHA): Yes-Arsenic

12. ECOLOGICAL INFORMATION

N/A

13. DISPOSAL CONSIDERATIONS

N/A

14. TRANSPORTATION INFORMATION

U.S.A. DOT: Not Regulated. CANADIAN TDG HAZARD CLASS & PIN: Not regulated.

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

TSCA STATUS: All components for the hydrated aluminas listed on TSCA inventory. CERCLA HAZARDOUS SUBSTANCES: None SARA TITLE III: Section 302 Extremely Hazardous Substances: None Section 311/312 Hazardous Categories: None Section 313 Toxic Chemicals: None In reference to Title VI of the Clean Air Act of 1990, this material does not contain nor was it manufactured using ozone-depleting chemicals.

16. OTHER INFORMATION

MSDS CREATED: June 2004 UPDATED: January 2018

PREPARED BY: Bullseye Glass Co. GHS Format

Information herein is given in good faith as authoritative and valid; however, no warranty, express or implied, can be made.

Pullseye blass

SAFETY DATA SHEET

Product Name: Soda Lime Glass containing Arsenic Trioxide

Glass Made Before March 1, 2016

Bullseye Glass Co., 3522 S.E. 21st, Portland, OR 97202

Emergency Phone: 1-503-232-8887

1. CHEMICAL PRODUCT and COMPANY IDENTIFICATION

Trade Name: Soda Lime Glass

000034	000144	000145	000146	000164	000212	000216
000243	000301	000305	000312	000332	000459	001016
001108	001116	001137	001164	001215	001234	001241
001305	001311	001332	001334	001342	001408	001416
001417	001426	001437	001442	001464	001501	001514
001517	001611	001701	001707	001714	001717	001807
001823	001824	001826	001827	001831	001834	001837
001838	001841	001842	001858	001859	001864	001932
002130	002137	002164	002209	002212	002416	002941
002964	003045	003126	003212			
Confetti:						
000114	000301	001108	001311	001401		

Manufacturer: Bullseye Glass Co.: 3722 S.E. 21st; Portland, OR, 97202

Emergency Phones: DAY 1-503-232-8887 NIGHT 1-503-231-5266



3. HAZARDOUS INGREDIENTS

		Typical %	EXPOSURE L (TWA in mg/m3 un	JMITS less noted)
<u>COMPONENT</u>	CAS No.	by Weight	ACGIH TLV	OSHA PEL
Arsenic Trioxide	1327-53-3	.16%	0.2mg/m3	0.01 mg/m3
Soda Lime Glass	N/A	98-86%	N/A	N/A

4. HEALTH HAZARD DATA - EMERGENCY/FIRST AID PROCEDURES

INHALATION: Move to fresh air, consult physician as necessary.

INGESTION: If ingested in quantity - seek medical advice.

EYES: Flush with water for at least 15 minutes - consult physician as necessary.

SKIN: Wash with soap and water.

5. FIRE, REACTIVITY and EXPLOSION DATA

FLAMMABLE PROPERTIES: Nonflammable & Nonexplosive AUTO-IGNITION TEMPERATURE: None HAZARDOUS COMBUSTION PRODUCTS: None PRODUCTS OF DECOMPOSITION: N/A EXTINGUISHING MEDIA: N/A FIRE FIGHTING INSTRUCTIONS: N/A

6. ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: Clean up using dry procedures; avoid dusting. DISPOSAL: Dispose in approved landfill.

7. HANDLING and STORAGE

HANDLING: Precautions must be taken to avoid inhaling or ingesting dust created during abrasive cutting, grinding, or handling crushed glass. Adequate ventilation must be provided to keep employee exposures below OSHA PEL levels for arsenic and lead. (Presently 10ug/m3 & 50 ug/m3 respectively).

STORAGE: Keep away from food, drink and animal feedstuffs. Store away from Acids

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION: Use NIOSH-approved respiratory protection. VENTILATION: Have adequate ventilation. EYE PROTECTION: Safety glasses recommended to avoid direct eye contact.

SKIN PROTECTION: Wear appropriate gloves to avoid direct skin contact.

9. PHYSICAL and CHEMICAL DATA

APPEARANCE & ODOR: Crushed Glass, Odorless BOILING POINT (F): N/A SOLUBILITY IN WATER: N/A VAPOR PRESSURE: N/A VAPOR DENSITY: N/A SPECIFIC GRAVITY: N/A PERCENT VOLATILE: N/A MELTING POINT: 1800 F EVAPORATION RATE: N/A

10. STABILITY & REACTIVITY

PRODUCT IS STABLE AND NON-REACTIVE.

11. HEALTH HAZARD DATA - HAZARD BY ROUTES OF EXPOSURE

INHALATION: Breathing of dusts created from grinding or handling crushed glass may irritate the nose & throat.

INGESTION: May cause mild irritation and gastrointestinal discomfort.

EYE: Direct contact with eyes can cause irritation.

SKIN CONTACT/ABSORPTION: Direct contact with skin may cause irritation.

SIGNS & SYMPTOMS ASSOCIATED WITH EXPOSURE OVER TLV:

Short Term: Irritation of Nose & Throat

Long Term: Irritation of Nose & Throat

The dust produced from grinding or handling crushed glass does present a potential chronic health hazard. Since dust may contain up to 0.6% arsenic and up to14% lead, inhalation or ingestion of these dusts can cause chronic health problems. (See section VI of attached MSDS for arsenic and lead)

MEDICAL CONDITIONS, WHICH MAY BE AGGRAVATED: None Reported

ANY OF PART 1 LISTED AS CARCINOGENS? (NTP, IARC, OSHA): Yes-Arsenic

12. ECOLOGICAL INFORMATION

N/A

13. DISPOSAL CONSIDERATIONS

N/A

14. TRANSPORTATION INFORMATION

U.S.A. DOT: Not Regulated. CANADIAN TDG HAZARD CLASS & PIN: Not regulated.

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

TSCA STATUS: All components for the hydrated aluminas listed on TSCA inventory. CERCLA HAZARDOUS SUBSTANCES: None SARA TITLE III: Section 302 Extremely Hazardous Substances: None Section 311/312 Hazardous Categories: None Section 212 Toxic Chemicalue None

Section 313 Toxic Chemicals: None

In reference to Title VI of the Clean Air Act of 1990, this material does not contain nor was it manufactured using ozone-depleting chemicals.

16. OTHER INFORMATION

MSDS CREATED: June 2004 UPDATED: January 2018

PREPARED BY: Bullseye Glass Co. GHS Format

Information herein is given in good faith as authoritative and valid; however, no warranty, express or implied, can be made.

Bullseye class

SAFETY DATA SHEET

Product Name: Soda Lime Glass containing Cadmium Sulfide

Bullseye Glass Co., 3522 S.E. 21st, Portland, OR 97202 Emergency Phone: 1-503-232-8887

1. CHEMICAL PRODUCT and COMPANY IDENTIFICATION

Trade Name: Soda Lime Glass

000024 000220 000309 001022 001212 002020 003123 004224	000025 000221 000310 001025 001213 002024 003203 007211	000120 000222 000320 001119 001320 002026 004011 007212	000124 000223 000321 001120 001321 002121 002111	000125 000224 000329 001122 001322 002123 004112	000126 000225 000334 001125 001422 002124 004220	000203 000227 000337 001126 001427 002125 004223
Confetti: 000120	000124	000125	001122			

Manufacturer: Bullseye Glass Co.: 3722 S.E. 21st; Portland, OR, 97202

Emergency Phones: DAY 1-503-232-8887 NIGHT 1-503-231-5266

2. HAZARD(S) IDENTIFICATION



3. HAZARDOUS INGREDIENTS

	Ту	pical %	EXPOSURE LIMI	TS TWA in mg/m3 unless noted)
COMPONENT	CAS No.	by Weight	ACGIH TLV	OSHA PEL
Soda Lime Glass	N/A	N/A	N/A	N/A
Cadmium Sulfide	#1306-23-6	0.1 - 1.2%	0.005	0.05

4. HEALTH HAZARD DATA - EMERGENCY/FIRST AID PROCEDURES

INHALATION: Move to fresh air, consult physician as necessary.INGESTION: If ingested in quantity - seek medical advice.EYES: Flush with water for at least 15 minutes - consult a physician as necessary.SKIN: Wash with soap and water.

5. FIRE, REACTIVITY and EXPLOSION DATA

FLAMMABLE PROPERTIES: Nonflammable & Nonexplosive AUTO-IGNITION TEMPERATURE: None HAZARDOUS COMBUSTION PRODUCTS: None PRODUCTS OF DECOMPOSITION: N/A EXTINGUISHING MEDIA: N/A FIRE FIGHTING INSTRUCTIONS: N/A

6. ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: Clean up using dry procedures; avoid dusting. DISPOSAL: Dispose in approved landfill.

7. HANDLING and STORAGE

HANDLING: Avoid dusting and contact with eyes and skin. Avoid inhaling dust. STORAGE: Keep away from food, drink and animal feedstuffs. Store away from Acids.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION: Use NIOSH-approved respiratory protection. VENTILATION: Have adequate ventilation. EYE PROTECTION: Safety glasses recommended to avoid direct eye contact.

SKIN PROTECTION: Wear appropriate gloves to avoid direct skin contact.

9. PHYSICAL and CHEMICAL DATA

APPEARANCE & ODOR: Crushed Glass, Odorless BOILING POINT (F): N/A SOLUBILITY IN WATER: N/A VAPOR PRESSURE: N/A VAPOR DENSITY: N/A SPECIFIC GRAVITY: N/A PERCENT VOLATILE: N/A MELTING POINT: 1800 F EVAPORATION RATE: N/A

10. STABILITY & REACTIVITY

PRODUCT IS STABLE AND NON-REACTIVE

11. HEALTH HAZARD DATA - HAZARD BY ROUTES OF EXPOSURE

INHALATION: Breathing of dusts created from grinding or handling crushed glass may irritate the nose & throat.

INGESTION: May cause mild irritation and gastrointestinal discomfort.

EYE: Direct contact with eyes can cause irritation.

SKIN CONTACT/ABSORPTION: Direct contact with skin may cause irritation.

SIGNS & SYMPTOMS ASSOCIATED WITH EXPOSURE OVER TLV:

Short Term/Long Term:

The dust produced from grinding or handling crushed glass does present a potential chronic health hazard - since the dust may contain 0.75 - 1.2% cadmium sulfide, inhalation or ingestion of these dusts can cause chronic health problems. (see section VI of MSDS for cadmium sulfide)

MEDICAL CONDITIONS WHICH MAY BE AGGRAVATED: Long-term exposure to Cadmium may result in Cadmium being absorbed, which will have detrimental effects on lungs & kidneys.

ANY OF PART 1 LISTED AS CARCINOGENS? (NTP, IARC, OSHA): Yes - Cadmium

12. ECOLOGICAL INFORMATION

N/A

13. DISPOSAL CONSIDERATIONS

14. TRANSPORTATION INFORMATION

U.S.A. DOT: Not Regulated.

CANADIAN TDG HAZARD CLASS & PIN: Not regulated.

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

TSCA STATUS: All components for the hydrated aluminas listed on TSCA inventory. CERCLA HAZARDOUS SUBSTANCES: None SARA TITLE III: Section 302 Extremely Hazardous Substances: None Section 311/312 Hazardous Categories: None Section 313 Toxic Chemicals: None In reference to Title VI of the Clean Air Act of 1990, this material does not contain nor was it manufactured using ozone-depleting chemicals.

16. OTHER INFORMATION

MSDS CREATED: June 2004 UPDATED: February 2017

PREPARED BY: Bullseye Glass Co. GHS Format

Information herein is given in good faith as authoritative and valid; however, no warranty, express or implied, can be made.

Bullseye blass

SAFETY DATA SHEET

Product Name: Soda Lime Glass containing Lead Oxide

Bullseye Glass Co., 3522 S.E. 21st, Portland, OR 97202

Emergency Phone: 1-503-232-8887

1. CHEMICAL PRODUCT and COMPANY IDENTIFICATION

Trade Name: Soda Lime Glass

000014	000243	000301	000303	000305	000313	000332
000334	001205	001215	001232	001234	001305	001311
001332	001334	001342	001611	001701*	001707*	001714*
001717*	001823	001824	001831	002050	002302	002305
002310	002311	002971	003026	003045	003126	003328
003334*	003345	003346	003445	003446	004010	004014
004110	004114	004116	004121	004128	004215	004234
Confetti:						
000301	001311	001412				

Stringer: 000113

Manufacturer: Bullseye Glass Co.: 3722 S.E. 21st; Portland, OR, 97202

Emergency Phones: DAY 1-503-232-8887 NIGH

NIGHT 1-503-231-5266



3. HAZARDOUS INGREDIENTS

		Typical %	EXPOSURE L (TWA in mg/m3 un	IMITS less noted)
<u>COMPONENT</u>	CAS No.	by Weight	ACGIH TLV	OSHA PEL
Lead Oxide	1314-41-6	1-14%	0.15 mg/m3-8hrs	0.05 mg/m3
*Lead Oxide	1314-41-6	10-27%	0.15 mg/m3-8hrs	0.05mg/m3
Soda Lime Glass	N/A	98-86%	N/A	N/A

4. HEALTH HAZARD DATA - EMERGENCY/FIRST AID PROCEDURES

INHALATION: Move to fresh air, consult physician as necessary.

INGESTION: If ingested in quantity - seek medical advice.

EYES: Flush with water for at least 15 minutes - consult physician as necessary.

SKIN: Wash with soap and water.

5. FIRE, REACTIVITY and EXPLOSION DATA

FLAMMABLE PROPERTIES: Nonflammable & Nonexplosive AUTO-IGNITION TEMPERATURE: None HAZARDOUS COMBUSTION PRODUCTS: None PRODUCTS OF DECOMPOSITION: N/A EXTINGUISHING MEDIA: N/A FIRE FIGHTING INSTRUCTIONS: N/A

6. ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: Clean up using dry procedures; avoid dusting. DISPOSAL: Dispose in approved landfill.

7. HANDLING and STORAGE

HANDLING: Precautions must be taken to avoid inhaling or ingesting dust created during abrasive cutting, grinding, or handling crushed glass. Adequate ventilation must be provided to keep employee exposures below OSHA PEL levels for arsenic and lead. (Presently 10ug/m3 & 50ug/m3 respectively).

STORAGE: Keep away from food, drink and animal feedstuffs. Store away from Acids

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION: Use NIOSH-approved respiratory protection. VENTILATION: Have adequate ventilation. EYE PROTECTION: Safety glasses recommended to avoid direct eye contact. SKIN PROTECTION: Wear appropriate gloves to avoid direct skin contact.

9. PHYSICAL and CHEMICAL DATA

APPEARANCE & ODOR: Crushed Glass, Odorless BOILING POINT (F): N/A SOLUBILITY IN WATER: N/A VAPOR PRESSURE: N/A VAPOR DENSITY: N/A SPECIFIC GRAVITY: N/A PERCENT VOLATILE: N/A MELTING POINT: 1800 F EVAPORATION RATE: N/A

10. STABILITY & REACTIVITY

PRODUCT IS STABLE AND NON-REACTIVE

11. HEALTH HAZARD DATA - HAZARD BY ROUTES OF EXPOSURE

INHALATION: Breathing of dusts created from grinding or handling crushed glass may irritate the nose & throat.

INGESTION: May cause mild irritation and gastrointestinal discomfort.

EYE: Direct contact with eyes can cause irritation.

SKIN CONTACT/ABSORPTION: Direct contact with skin may cause irritation.

SIGNS & SYMPTOMS ASSOCIATED WITH EXPOSURE OVER TLV:

Short Term: Irritation of Nose & Throat

Long Term: Irritation of Nose & Throat

The dust produced from grinding or handling crushed glass does present a potential chronic health hazard. Since dust may contain up to 0.6% arsenic and up to14% lead, inhalation or ingestion of these dusts can cause chronic health problems. (See section VI of attached MSDS for arsenic and lead)

MEDICAL CONDITIONS, WHICH MAY BE AGGRAVATED: None Reported

ANY OF PART 1 LISTED AS CARCINOGENS? (NTP, IARC, OSHA): No

12. ECOLOGICAL INFORMATION

N/A

13. DISPOSAL CONSIDERATIONS

N/A

14. TRANSPORTATION INFORMATION

U.S.A. DOT: Not Regulated. CANADIAN TDG HAZARD CLASS & PIN: Not regulated.

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

TSCA STATUS: All components for the hydrated aluminas listed on TSCA inventory. CERCLA HAZARDOUS SUBSTANCES: None SARA TITLE III:

Section 302 Extremely Hazardous Substances: None

Section 311/312 Hazardous Categories: None

Section 313 Toxic Chemicals: None

In reference to Title VI of the Clean Air Act of 1990, this material does not contain nor was it manufactured using ozone-depleting chemicals.

16. OTHER INFORMATION

MSDS CREATED: June 2004 UPDATED: January 2018

PREPARED BY: Bullseye Glass Co. GHS Format

Information herein is given in good faith as authoritative and valid; however, no warranty, express or implied, can be made.

Bullgeye Glass

SAFETY DATA SHEET

Product Name: Soda Lime Glass

Bullseye Glass Co., 3522 S.E. 21st, Portland, OR 97202 Emergency Phone: 1-503-232-8887

1. CHEMICAL PRODUCT and COMPANY IDENTIFICATION

Trade Name: Soda Lime Glass

				000010	000046	000064
000009	000013	000016	000017	000018	000046	000064
000100	000101	000108	000111	000112	000113	000114
000116	000117	000118	000119	000127	000131	000132
000136	000137	000138	000139	000141	000142	000143
000147	000148	000206	000207	000208	000217	000236
000241	000336	000345	000349	000403	000420	000421
000920	001009	001015	001019	001100	001101	001105
001107	001109	001112	001114	001118	001128	001129
001138	001140	001141	001145	001207	001217	001226
001232	001242	001247	001401	001405	001406	001407
001409	001412	001414	001419	001428	001429	001439
001444	001449	001506	001528	001806	001808	001812
001818	001819	001820	001821	001829	001844	001857
001867	001877	001920	001934	001948	001964	001977
002037	002047	002064	002100	002105	002107	002108
002109	002112	002116	002127	002128	002129	002140
002213	002218	002229	002249	002250	002304	002537
002637	003086	003100	003116	003137	003501	004012
004100	004102	004113	004115	004117	004118	004119
004120	004122	004136	004151	004152	004158	004171
004172	004183	004200	004202	004211	004212	004216
004217	004218	004219	004229	004237	004242	004400
004402	004414	004424	004437			
001102						
Confetti:						
000100	000112	000113	000117	001128		
000100	000112					

Manufacturer: Bullseye Glass Co.: 3722 S.E. 21st; Portland, OR, 97202 Emergency Phones: DAY 1-503-232-8887 NIGHT 1-503-231-5266

2. HAZARD(S) IDENTIFICATION



3. HAZARDOUS INGREDIENTS

			Typical %	EXPOSURE LIMITS			
<u>COMPONENT</u>		CAS No.	by Weight		ACGIH TLV		OSHA PEL
Soda Lime Glass	N/A	N/A		N/A		N/A	
* Contains no Hazardous Materials above 1%							
* Contains no Carcinogenic Materials above 0.1%							

4. HEALTH HAZARD DATA - EMERGENCY/FIRST AID PROCEDURES

INHALATION: Move to fresh air, consult physician as necessary. INGESTION: N/A EYES: Flush with water. SKIN: Wash with soap and water.

5. FIRE, REACTIVITY and EXPLOSION DATA

FLAMMABLE PROPERTIES: Nonflammable & Nonexplosive AUTO-IGNITION TEMPERATURE: None HAZARDOUS COMBUSTION PRODUCTS: None PRODUCTS OF DECOMPOSITION: N/A EXTINGUISHING MEDIA: N/A FIRE FIGHTING INSTRUCTIONS: N/A

6. ACCIDENTAL RELEASE MEASURES

SMALL/LARGE SPILL: Clean up using dry procedures; avoid dusting. DISPOSAL: Normal Trash Disposal.

7. HANDLING and STORAGE

HANDLING: Avoid dusting and contact with eyes and skin. Avoid inhaling dust. STORAGE: N/A

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

RESPIRATORY PROTECTION: Use NIOSH-approved respiratory protection if potential for over exposure exists.

VENTILATION: Have adequate ventilation.

EYE PROTECTION: Safety glasses recommended to avoid direct eye contact. SKIN PROTECTION: Wear appropriate gloves to avoid direct skin contact.

9. PHYSICAL and CHEMICAL DATA

APPEARANCE & ODOR: Crushed Glass, Odorless BOILING POINT (F): N/A SOLUBILITY IN WATER: N/A VAPOR PRESSURE: N/A VAPOR DENSITY: N/A SPECIFIC GRAVITY: N/A PERCENT VOLATILE: N/A MELTING POINT: 1800 F EVAPORATION RATE: N/A

10. STABILITY & REACTIVITY

PRODUCT IS STABLE AND NON-REACTIVE

11. HEALTH HAZARD DATA - HAZARD BY ROUTES OF EXPOSURE

INHALATION: Breathing of dusts created from grinding or handling crushed glass may irritate the nose & throat & cause coughing and chest discomfort.

INGESTION: May cause mild irritation and gastrointestinal discomfort.

EYE: Direct contact with eyes can cause irritation.

SKIN CONTACT/ABSORPTION: Direct contact with skin may cause irritation.

SIGNS & SYMPTOMS ASSOCIATED WITH EXPOSURE OVER TLV:

Short Term: Irritation of Nose & Throat

Long Term: Irritation of Nose & Throat
MEDICAL CONDITIONS, WHICH MAY BE AGGRAVATED: None Reported. ANY OF PART 1 LISTED AS CARCINOGENS? (NTP, JARC, OSHA): None.

12. ECOLOGICAL INFORMATION

N/A

13. DISPOSAL CONSIDERATIONS

N/A

14. TRANSPORTATION INFORMATION

U.S.A. DOT: Not Regulated.

CANADIAN TDG HAZARD CLASS & PIN: Not regulated.

15. REGULATORY INFORMATION

U.S. FEDERAL REGULATIONS:

TSCA STATUS: All components for the hydrated aluminas listed on TSCA inventory. CERCLA HAZARDOUS SUBSTANCES: None SARA TITLE III:

Section 302 Extremely Hazardous Substances: None

Section 311/312 Hazardous Categories: None

Section 313 Toxic Chemicals: None

In reference to Title VI of the Clean Air Act of 1990, this material does not contain nor was it manufactured using ozone-depleting chemicals.

16. OTHER INFORMATION

MSDS CREATED: June 2004 UPDATED: February 2017

PREPARED BY: Bullseye Glass Co. GHS Format

Information herein is given in good faith as authoritative and valid; however, no warranty, express or implied, can be made.

Material Safety Data Sheet

May be used to comply with OSHA's Hazard Communication Standard, 29CFR 1910, 1200, Standard must be consulted for specific requirements.

	i	Kokomo
TOLET	STAIN	GLASS

HMIS

AMBER VIOLET STAIN GLAS QUICK IDENTIFIER Common Name: (ured on later and list)

1

SECTION 1 -								B 🗖
Manufacturer's Name	V 1	-lancost Cla						FLAMMABILITY
Address	1210 Mark	ALESCENC GIE	$r_{33} = 0.0.1 \text{ mm}$	·	Emergency Telephone No.	317/457-8	8136	R
City, State, and ZIP	1510 Maik	et - r. v. t			Other			PERSONAL
	Kokomo, I	N 46902-226	55		Calls	317/457-8	8136	PROTECTION NC-LSOOR @1981 NPCA
Signature of Person Responsible for Prep	Deration (Optional)				Date Prepared	March 30	, 1989	
SECTION 2 -	- HAZARDO	US INGREDI	ENTS/IDENT	YTI				
Hszardous Compone	nt(s) (chemical &	common name(s))		OSHA PEL	ACGIH	Other Exposure Limits	re loptiona	CAS II NO.
SAND	<u></u>			NA	NA		45-60	
SODA ASH					10mg/m ³		20-30	<u>497–</u> 19–8
LIMESTONE	·····				10mg/m ³		2-15	471-34-3
FELDSPAR		1	3	2	2mg/m ³	¢.	2-10	68476-2
BORAX					1mg/m ³		1-8	1303-96-
DOLOMITE					10mg/m ³	-	1-6	
					1. 2malm	3	1-6	
FLUORSPAR		CHEMICAL C	HARACTERI	STIĈS	4.5шg/ш		1-0	
ECTION 3 - P	HYSICAL &	CHEMICAL C	CHARACTERI Specif Gravit	STICS	N/A	Vapor Pressure tom	N/A	
FLUORSPAR ECTION 3 – P piling pint N/A	HYSICAL &	CHEMICAL C	CHARACTERI Specif Gravit	STICS ic iy (H,0 = 1)	N/A	Vapor Pressure (mm	N/A	
FLUORSPAR ECTION 3 - P biling bint N/A	HYSICAL & Vap Den	or sity (Air = 1) N/	CHARACTERI Specif Gravit A Reacti Water	STICS ic Ly (H,O = 1) ivity in	N/A	Vapor Pressure (mm	N/A	
FLUORSPAR ECTION 3 – P biling bint N/A	HYSICAL & Vap Den	or sity (Air = 1) N/	CHARACTERI Specif Gravi A React Water Point	STICS ic ic if (H,O = 1) ivity in	N/A N/A	Vapor Pressure Imm	N/A	
FLUORSPAR ECTION 3 - P piling pint N/A N/A Press arise o dor Solic	HYSICAL & Vap Den	or sity (Air = 1) N/	CHARACTERI Specif Gravit A React Water Meltir Point	STICS ic ty (H,0 = 1) ivity in	N/A N/A N/A	Vapor Pressure (mm	N/A	
FLUORSPAR ECTION 3 - P piling pint N/A N/A Press arise Odor Solic ECTION 4 - E	HYSICAL & Vap Den d Glass FIRE & EXE Method	or sity (Air = 1) N/	CHARACTERI Specif Gravi A Reacti Water Mettir Point CA Flammable Limit	STICS ic iy (H,O = 1) ivity in is is LEL	N/A N/A N/A	Vapor Pressure (mm	N/A	
FLUORSPAR ECTION 3 - P poling point N/A lubility Water N/A Pear arice Solice ECTION 4 - E ah nt N/A F. C.	HYSICAL & Vap Den d Glass FIRE & EXE Method Ured	or sity (Air = 1) N/ PLOSION DAT	CHARACTERI Specif Gravit A React Water Mettir Point CA Flammable Limit in Air & by Volut	STICS ic iy (H,O = 1) ivity in is s LEL ne Lower	N/A N/A N/A N/A	V «por Pressure (mm UEL Upper	NHgI N/A	
FLUORSPAR ECTION 3 - P piling pint N/A lubility Water N/A prearance OdorSolic ECTION 4 - E ah nt N/A F. C. to-Ignition mpersture N/A	HYSICAL & Vap Den d Glass FIRE & EXE Method Used	or sity (Air = 1) N/ PLOSION DAT Extinguisher Media	A Reacti Water Point CA Flammable Limit in Air & by Volu	STICS ic Ly (H,O = 1) ivity in is s LEL ne Lower	N/A N/A N/A N/A N/A	Vapor Pressure (mm UEL Upper	NH _K I N/A	
FLUORSPAR FLUORSPAR ECTION 3 - P politing point N/A lubility Water N/A peararice d'OdorSolic ECTION 4 - E ah nt N/A F. C. to-Ignition mpersture N/A cial Fire hting Procedures	HYSICAL & Vap Den d Glass FIRE & EXH Method Uned Not a f fire.	or sity (Air = 1) N/ PLOSION DAT Extinguisher Medda ire hazard,	CHARACTERI Specif Gravit A Reacti Water Nettir Point Flammable Limit in Air & by Volus Use method	STICS ic iy (H,O = 1) ivity in is s LEL ne Lower s and	N/A N/A N/A N/A N/A procedures	Vapor Pressure tom UEL Upper for comba	AHgi N/A	ounding
FLUORSPAR FLUORSPAR ECTION 3 - P poly of the second sec	HYSICAL & Vap Den d Glass FIRE & EXH Method Uned Not a f fire. N/A	or sity (Air = 1) N/ PLOSION DAT Extinguisher Media ire hazard.	CHARACTERI Specif Gravit A React Water Nettir Point TA Flammable Limit in Air & by Volut Use method	STICS ic ty (H,O = 1) ivity in s s LEL ne Lower s and	N/A N/A N/A N/A N/A procedures	Vapor Pressure imm UEL Upper for comba	AHRI N/A	ounding
FLUORSPAR ECTION 3 - P piling pint N/A lubility Water N/A peararice o Odor Solic ECTION 4 - E ah nt N/A F. C. to-Ignition npersture N/A cial Fire hting Procedures	HYSICAL & Vap Den d Glass FIRE & EXE Method Uned Not a f fire. N/A	CHEMICAL C or sity (Air = 1) N/ PLOSION DAT Extinguisher Media ire hazard.	A Reacti Water Point CA Flammable Limit in Air & by Volu Use method	STICS ic ty (H,O = 1) ivity in og s LEL ne Lower s and	N/A N/A N/A N/A N/A procedures	Vapor Pressure tmm UEL Upper for Comba	ating surr	rounding
FLUORSPAR FLUORSPAR ECTION 3 - P piling pint N/A lubility Water N/A Peararice odorSolic ECTION 4 - E ah nt N/A F. C. to-Ignition npersture N/A cial Fire hting Procedures usual Fire and losion Ifazarda	HYSICAL & Vap Den d Glass FIRE & EXH Method UNC Not a f fire. N/A	or sity (Air = 1) N/ PLOSION DAT Extinguisher Media ire hazard.	CHARACTERI Specif Gravit A React Water Nettir Point CA Flammable Limit in Air & by Volut Use method	STICS ic ty (H,O = 1) ivity in s s LEL ne Lower s and	N/A N/A N/A N/A N/A procedures	Vapor Pressure imm UEL Upper for comba	ating surr	ounding
FLUORSPAR ECTION 3 - P piling pint N/A lubility Water N/A peararice Odor. Solic ECTION 4 - E ah nt N/A F. C. Lo-Ignition npersure N/A cial Fire hting Procedures trust Fire and losion Ifszards	HYSICAL & Vap Den d Glass FIRE & EXE Method Umed Not a f fire. N/A	CHEMICAL C or sity (Air = 1) N/ PLOSION DAT Extinguisher Media ire hazard,	A Reacti Water Meltir Point TA Flammable Limit in Air & by Volut	STICS ic Ly (H,O = 1) ivity in is s LEL ne Lower s and	N/A N/A N/A N/A N/A procedures	Vapor Pressure (mm UEL Upper for comba	ating surr	ounding

	<u>N</u>
Δ	
ECTION 5- PHYSICAL HAZARDS (REACTON 1	1
stilley Unscale 2 Charmel None	
Kompatahility Isterials to Avestil	
	and the second
composition Freducts None	i g
azardous Stay Ukeur IS Control None	
SECTION 6 – HEALTH HAZARDS	
Acute Irritation to eyes, skin, nose 2. Chronic Medicard and throat NK	ed as possible carcinog
igns and ymptoms of Exposure Glass particles can cause itching irritation to skin, eyes	, nose and throat.
tedical Conditions Generally Isgravated by Exposure	2
hemical Listed as Carcinogen National Toxicology Yes D 1.A.H.C. Yes D OSHA r Potential Carcinogen Program No X Monographs No X	Yes 2 No 7
mergency and irst Aid Procedures See routes of entry.	<u> </u>
ROUTES OF J. Shint with copicus amounts of water, and consult physician -imm 3. Shint with copicus amounts of water, and consult physician -imm	lediately.
Wash affected area, and in initiation compared with the second se	
SECTION 7 - SPECIAL PRECAUTIONS AND SPILLILEAK PROCEDURES	
Precautions to be Taken n Handling and Storage Use BMP (Best, Management Practices) in the handling of gla	155.
Other Precautions N/A	
Steps to be Takén in Case Material is Released or Spilled N/A	9
Waste Disposal Methods (Consult federal, state, and local regulations) Use disposal methods that conform to Fede	ral, State and local
regulations.	241
SECTION 8 - SPECIAL PROTECTION INFORMATION/CONTROL MEASURES	
Respiratory Protection (Specify Type) If the grinding of glass is excessive, use dust mask Out	ته. بطر
Ventilation Local Mechanical Special . Exhaust X (General X	
Protective Eye Cloves Safety Dot Gloves Protoction Safety Glasses with si	de shields
Other Protective Clothing or Equipment Apron, wet grinder with back splash and safety shield, and	nd eye wash station
Work/Hygienic Practices Use good housekeeping and hygiene practices.	Algebra gla dina suarraya a sa dalaka ang a sa dana a dana da ang a sa daga ang t
IMPORTANT Do not leave any blank spaces. If required information is unavailable, unknown, or does not a	ipply, so indicate.

Material Safety Data Sheet

BLUE 600 STAIN GLASS QUICK IDENTIFIER Common Name: Lured on Indeel and list

HMIS®

			on Standa	d.					HM	15
day be used to com 19ČFR 1910, 1200, 3	ply with OSHA's Standard must be	Huzurd Communication consulted for specific	requirem	ents,			a.		H HEALTH	<u>/*</u>
SECTION 1 -									F	0
Manufacturer's Name	Kokomo O	palescent GI	ass Co)., Inc.		Emergency Telephone No.	317/457-	8136	FLAMMABIL	0
Address	1310 Mar	ket - P. O.	Box 2	265		Other			REACTIVITY	
City, State, and ZIP	5		265			Calls	317/457-	-8136	PERSONAL	IN C
()	Kokomo,	IN 46902-2.				l)ace Prepared	March 30), 1989	NC-CSUSK @196	
Signature of Person Responsible for Pre	paration (Option)	al)		TUDENTI	ГΥ					
SECTION 2	- HAZARD	OUS INGREI	DIENT	SIDERII	OSHA	ACGIH	Other Exposure	e G	ionali NC).
Hazardous Compon	ent(s) (chemical (& common name(s))				100		45-60	763	1-86-9
CAND						NA	3	20-30	497	-19-8
CODA ASH						10mg/m	3	4-8	471	-34-1
SUDA ADI						10mg/m	1	2 8	684	
LIMESIONE						2mg/n	3	1.0	130	13-96-4
FELDSPAR						lmg/1	<u>n</u>	1-0	150	<u> </u>
BORAX		jós ereketetetetetetetetetetetetetetetetetet				10mg/1	n ³	1-/		
DOLOMITE						4.3mg/:	m ³	2-6		
FLUORSPAR						.lmg/	m	< 1		
COBALT OX	IDE									
		T & CHEMICA	L CHA	RACTER	STICS					
SECTION 3	- PHYSICA	L & CHEMICO		Spec	ific ity (H,O=1)	N/A	Pressur	e (mm Hgt	N/A	
Boiling Point N/	Α	N				i				
		Density (Air = 1)	N/A	Read	tivity in					
Solubility in Water N/	A			Mell	ling	N/A				
Appearance and Odor Sc	lid Glass			Poin	1L	N/A				
SECTION 4	- FIRE &	EXPLOSION	DATA		1.51		UEL			
Flash	Method			Flammable Lin in Air & by Vo	nits LEL lume Lowe	N/A	Upper			
Point N/A F.	C. Used	Extingu	isher			N/A			aurroll	ading
Temperature N	/A	Media	rd, 1	Jse metho	ods and	procedu	ires for G	combating	Sullou	
Special Fire Fighting Procedu	re* fir	e.								
Unusual Fire and Explosion Hazard	s N/A									
			8						65	
									· · · · · · · · · · · · · · · · · · ·	
	- **					2				

CTION 5 PHYSICAL HAZARDS (REACTIVITY DATA)
bility Unstable 12 Conditions
Stable XX to Avoid None
Arrials to Avrialt None
zardous umposition Producta Non20
Lardous May (Accur 1) Conditions
ymerization Will Not Occur XX to Atina NOTE
ECTION 6 - HEALTH HAZARDS
Acute Irritation to eyes, skin, nose 2 Chronic and throat NK
ns and mptoms of Exposure Glass particles can cause itching irritation to skin, eyes, nose and thro
dical Conditions Generally
gravated by Exposure NK
National Toxicology Yes D LA.R.C. Yes D OSHA Tes D No No
emical Listed as Carcinogen Program No La construction Potential Carcinogen Program No La construction
st Aid Procedures See routes of entry.
OUTES F NTRY
/ N/A
ECTION 7 - SPECIAL PRECAUTIONS AND OT 12
ecautions to be Taken Handling and Storage Use BMP (Best Management Practices) in the handling of glass.
her ecautions N/A
eps to be Takén in Case
aterial is Released or Spineu N/A
nate Disponal
ethods (Consult lederal, wate, and waters) Use displayed
regulations.
ECTION 8 – SPECIAL PROTECTION INFORMATION/CONTINUES
expiratory Protection
entilation Local (General) y
Exhaust X Eye
Noves Safety Dot Gloves Safety Glasses with and eve wash sta
ther Protective
/ork/Hygienic Practices.
Use good nouse coping indicate.

IMPORTANT Do not leave any blank spaces. If required information is unavailable, unknown, or does not apply, so i

Material Safety Data Sheet

BLUE STAIN GLASS

QUICK IDENTIFIER Common Name: funed on takel and list

Material Safety Data Sheet	Common Name:	(uned on taket and		HMIS*
May be used to comply with OSHA's Hazard Communication Standard. 29CFR 1910, 1200, Standard must be consulted for specific requirements.				H HEALTH
SECTION 1 -			and the second	FO
Manufacturer's Name Kokomo Opalescent Glass Co., Inc.	Emergency	017/157 8	136	R
Address 1310 Market - P. O. Box 2265	Telephone No. Other	31//45/-0	1.0	REACTIVITY
City. State, and ZIP Kalcomo IN 46902-2265	Information Culls	317/457-8	136	PERSONAL PROTECTION NC-LS03A (\$1981 NPCA
Signature of Person Signature of Person	Date Prepared	March 30,	1989	
REAPONADOL OF THE ACTAR DOUS INGREDIENTS/IDENTIT	Y	Och an Exposule	- To	CAS
SECTION 2 - HAZARIDO CO	SHA ACGIH	Limits	Inplie	náll NO.
	NA		45-60	7631-86-9
SAND	10mg/m-	}	20-30	497-19-8
SODA ASH	10mg/m	3	4-8	471-34-1
LIMESTONE	2mg/m	3	2-10	68476-25-
FELDSPAR	1mg/m	3	1-8	1303-96-4
BORAX	10mg/m	3	1-5	
DOLOMITE	10mg/m	3	2-6	
FLUORSPAR	4.5mg/m	3	1-6	
COPPER	1mg/1	3	< 1	
COBALT OXIDE	. Img/ -			
	STICS	ia		
SECTION 3 - PHYSICAL & CHEMICAD ON Specific	c = 11 = N/A	Vapor Pressure in	nm Hall]	N/A
Point N/A Very				
Density (Air = 1) N/A Reacti	vity in		-	
Solubility Water N/A Meltin	N/A			
Appearance Point and Odor Solid Glass	N/A			
SECTION 4 - FIRE & EXPLOSION DATA	i Ci	UEL		
Flash Method Flammable Limit in Air & by Volu-	me Lower N/A	Upper		
Auto-Ignition Extinguisher	N/A		1	surrounding
. Temperature N/A Second Fire Not a fire hazard. Use method	ls and procedu	res for con		Surround
Fighting Procedures fire.				if
Unusual Fire and Explosion Hezards N/A				
E				

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SAN CONTRACTOR OF A CONTRACTOR	LE DAMARINS OF LA	CLIVITE DA	LAT .			and the second
SECTION 5- PHYSIC	AL HAZARDS GEL	No.		ng para din	50 - 1	8.000 CC -
Stabile XX to Acroid	None				5 g	•
ncompatability Avenut	None		1.		an a	
					، مېشى مىيەر يونە خەرد يونە	· · · · · · · · · · · · · · · · · · ·
Interdous Jecomposition Preducts	None					•.
Iszardous May Occur Folymerization Will Not Occur X	Conditions To Avoid None	-				
-		2 7 5			2	
•	WI ITAZARDS				ş	
SECTION 6 - HEALI	H HALARDS	2. Chronic	2		carcinden	
and throat NK	(Coba	lt Oxide is a	possible		nd throa
Signs and Symptoms of Exposure Glas	ss particles can o	ause itchin	e irritation t	o_skin,	eyes, nose a	··
	2		<u>t</u>			
Medical Conditions Generally		4				
ARGINATED DY DAPAGE	NK		* =		OSHA Yet D	
Chemical Listed as Carcinogen	National Toxicolo	KY Yes D No X	LA.R.C. Yes I Monographs No I	л Х	No No	
Potential Carcinogen	1.totram	8 .00				12 E)
First Aid Procedures See	routes of entry.		2			
			<u>з</u> 23			
ROUTES OF SNITRY	ith copious amound	ts of water	, and consult p	ohysician consult p	n immediatel physician.	
ROUTES OF ENTRY A Skin Wash af 4. Ingestion N/A	ith copious amoun fected area, and	ts of water if irritatio	, and consult p	ohysiciar consult p	n immediatel physician.	
ROUTES OF ENTRY A SECTION 7 - SPECIA	ith copious amount fected area, and L PRECAUTIONS AN	ts of water if irritation ND SPILL/LE	, and consult p on continues, c	ohysician consult p S	n immediatel physician.	
ROUTES OF ENTRY Skin Wash af Ingestion N/A SECTION 7 - SPECIA Precautions to be Taken in Handling and Storage Use	ith copious amount fected area, and L PRECAUTIONS AN BMP (Best Manage	ts of water if irritation ND SPILL/LE. ement Practi	, and consult p on continues, c AK PROCEDURE ces) in the har	ohysician consult p S ndling o	n immediatel physician. f glass.	ی ہے۔ ایک ایک ایک ایک ایک ایک ایک ایک ایک ایک
ROUTES OF ENTRY ENTRY SECTION 7 - SPECIA Precautions to be Taken in Handling and Storage Use	ith copious amoun fected area, and L PRECAUTIONS AN BMP (Best Manage	ts of water if irritatio ND SPILL/LE. ement Practi	, and consult p on continues, c AK PROCEDURE ces) in the har	ohysician consult p S ndling o	n immediatel ohysician. f_glass.	· · · · · · · · · · · · · · · · · · ·
ROUTES OF ENTRY ENTRY Skin Wash af Ingestion N/A SECTION 7 - SPECIA Precautions to be Taken in Handling and Storage Use	ith copious amoun fected area, and L PRECAUTIONS AN BMP (Best Manage	ts of water if irritation ND SPILL/LE. ement Practi	AK PROCEDURE	ohysician consult p S ndling o	f glass.	
ROUTES OF ENTRY A Skin Wash af Ingestion N/A SECTION 7 - SPECIA Precautions to be Taken in Handling and Storage Use Other Precautions N/A	ith copious amount fected area, and L PRECAUTIONS AN BMP (Best Manage	ts of water if irritatio ND SPILL/LE, ement Practi	AK PROCEDURE	ohysician consult p S ndling o	f glass.	
ROUTES OF ENTRY ZEves Flush w Skin Wash af Generation N/A SECTION 7 - SPECIA Precautions to be Taken in Handling and Storage Use Other Precautions N/A	ith copious amoun fected area, and L PRECAUTIONS AN BMP (Best Manage	ts of water if irritation ND SPILL/LE. ement Practi	, and consult p on continues, c AK PROCEDURE ces) in the har	ohysician consult p S ndling 0	i immediatel physician. f_glass.	
ROUTES OF ENTRY / Skin Wash af 4. Ingestion N/A SECTION 7 - SPECIA Precautions to be Taken in Handling and Storage Use Other Precautions N/A Steps to be Taken in Case Material is Released or Spilled	ith copious amoun fected area, and L PRECAUTIONS AN BMP (Best Manage N/A	ts of water if irritation ND SPILL/LE. ement Practi	AK PROCEDURE	ohysician consult p S ndling o	immediatel	
ROUTES OF ENTRY ZEves Flush w Skin Wash af General Restion N/A SECTION 7 - SPECIA Precautions to be Taken in Handling and Storage Use Other Precautions N/A Steps to be Taken in Case Material is Released or Spilled	ith copious amoun fected area, and L PRECAUTIONS AN BMP (Best Manage N/A	ts of water if irritation ND SPILL/LE. ement Practi	AK PROCEDURE	hysician consult p S ndling o form to	f glass. Federal St	
ROUTES OF ENTRY ZEVES Flush w Skin Wash af Green SECTION 7 - SPECIA Precautions to be Taken in Handling and Storage Other Precautions N/A Steps to be Taken in Case Material is Released or Spilled Waste Disposal Methods (Consult federal, state, or	ith copious amoun fected area, and L PRECAUTIONS AN BMP (Best Manage N/A and local regulationa) Use	ts of water if irritation ND SPILL/LE. ement Practi disposal me	AK PROCEDURE ces) in the har	hysician consult p S hdling o form to	f_glass. Federal, St	ate_and
ROUTES OF ENTRY / ZEyes Flush w 3. Skin Wash af 4. Ingestion N/A SECTION 7 - SPECIA Precautions to be Taken in Handling and Storage USE Other Precautions N/A Steps to be Taken in Case Material is Released or Spilled	ith copious amoun fected area, and L PRECAUTIONS AN BMP (Best Manage N/A and local regulationa) Use reg	ts of water if irritation ND SPILL/LE. ement Praction disposal me ulations.	AK PROCEDURE ces) in the har chods that con	form to	f_glass. Federal, Sta	
ROUTES OF ENTRY Skin Wash af I. Ingestion N/A SECTION 7 - SPECIA Precautions to be Taken in Handling and Storage Other Precautions N/A Steps to be Taken in Case Material is Released or Spilled Waste Disposal Material is Released or Spilled SECTION 8 - SPECI	ith copious amoun fected area, and L PRECAUTIONS Al BMP (Best Manage N/A and local regulational) Use reg AL PROTECTION I	ts of water if irritation ND SPILL/LE. ement Praction disposal me ulations. NFORMATIO	AK PROCEDURE ces) in the har thods that con	ohysician consult p S ndling o form to CASURES	i immediatel physician. f_glass. F_glass. Federal, Sta	
ROUTES OF ENTRY Skin Wash af I. Ingestion N/A SECTION 7 - SPECIA Precautions to be Taken in Handling and Storage USE Other Precautions N/A Steps to be Taken in Case Material is Released or Spilled Waste Disposal Methods (Consult Federal, state, of SECTION 8 - SPECI Respiratory Protection	ith copious amoun fected area, and L PRECAUTIONS AN BMP (Best Manage A N/A and local regulational) Use regulational AL PROTECTION IN	ts of water if irritation ND SPILL/LE. ement Practi disposal me ulations. NFORMATIO	AK PROCEDURE ces) in the har thods that con N/CONTROL ME	hysician consult p S hdling o form to CASURES	f_glass. Federal, Str	
ROUTES OF ENTRY / Skin Wash af 4. Ingestion N/A SECTION 7 - SPECIA Precautions to be Taken in Handling and Storage USE Other Precautions N/A Steps to be Taken in Case Material is Released or Spilled Waste Disposal Methods (Consult federal, state, of SECTION 8 - SPECL Respiratory Protection (Specify Typed If Ventilation	ith copious amoun fected area, and L PRECAUTIONS AN BMP (Best Manage A N/A and local regulationa) Use reg AL PROTECTION I the grinding of Local	ts of water if irritation ND SPILL/LE. ement Practi disposal me ulations. NFORMATIO glass is exe Mechanical (General)	AK PROCEDURE AK PROCEDURE ces) in the har thods that con N/CONTROL ME cessive, use du Special	ohysician consult p S ndling o form to EASURES	f_glass. F_glass. Eederal, Sta	
ROUTES OF ENTRY ENTRY Skin Wash af Ingestion N/A SECTION 7 - SPECIA Precautions to be Taken in Handling and Storage Use Other Precautions N/A Steps to be Taken in Case Material is Released or Spilled Waste Disposal Methods (Consult federal, etate, of SECTION 8 - SPECI Respiratory Protection Specify Typed If Ventilation	ith copious amoun fected area, and L PRECAUTIONS AN BMP (Best Manage A N/A and local regulational) Use reg AL PROTECTION I the grinding of Local Exhaust X	ts of water if irritation ND SPILL/LE. ement Praction disposal me ulations. NFORMATIO glass is exe Mechanical (Generall X Eye Protec	AK PROCEDURE ces) in the har ces) in the har ces) the har cessive use du Special	hysician consult p S hdling o form to EASURES Ust mask	f glass. F glass. Federal, St. Other th side shie	ate and
ROUTES OF ENTRY / Skin Wash af I. Ingestion N/A SECTION 7 - SPECIA Precautions to be Taken in Handling and Storage Use Other Precautions N/A Steps to be Taken in Case Material is Released or Spilled Waste Disposal Material is Released or Spilled SECTION 8 - SPECI Respiratory Protection (Specify Typed) Ventilation Protective Cloves Sa	ith copious amoun fected area, and L PRECAUTIONS AN BMP (Best Manage A N/A and local regulational Use reg AL PROTECTION I the grinding of Local Exhaust X ifety Dot Gloves	ts of water if irritation ND SPILL/LE. ement Praction disposal me ulations. NFORMATIO glass is exc Mechanical (Generall X Eye Protec	AK PROCEDURE AK PROCEDURE Ces) in the har ethods that con N/CONTROL ME Cessive, use du Special Align Safety Gla	bhysician consult p S ndling o form to CASURES ast mask	f glass. Federal, Sta Other th side shie d and eve to	are and a
ROUTES OF ENTRY ZEyes Flush w 3. Skin Wash af 4. Ingestion N/A SECTION 7 - SPECIA Precautions to be Taken in Handling and Storage Use Other Precautions N/A Steps to be Taken in Case Material is Released or Spilled Waste Disposal Methods (Consult federal, state, of SECTION 8 - SPECI Respiratory Protection Specify Typed If Ventilation Protective Cloves Sate Protective Clothing or Equipment Ap	ith copious amoun fected area, and L PRECAUTIONS Al BMP (Best Manage A N/A and local regulations) Use reg AL PROTECTION I the grinding of Local Exhaust X afety Dot Gloves pron, wet grinder	ts of water if irritation ND SPILL/LE. ement Praction disposal me ulations. NFORMATION glass is exer Mechanical (Generally X Eye Protection with back states of the series o	AK PROCEDURE AK PROCEDURE (a) in the har (b) in the har (c) (c) (c) (c) (c) (c) (c) (c) (c) (c)	hysician consult p S ndling o form to EASURES ust mask	f glass. Federal, Sta Conter th side shie d, and eye v	ate and a

IMPORTANT Do not leave any blank spaces. If required information is unavailable, unknown, or does not apply, so the

Material Safety Data Sheet

GREEN STAIN GLASS QUICK IDENTIFIER Common Name: (used on label and list)

May be used to comp 29CFR 1910, 1200, 2	ply with OSHA Standard must l	's Huzard Communicat be consulted for specifi	ion Standar ic requireme	d. nts.				HMIS HMIS
SECTION 1 -								E D
Manufacturer's Name	Kokomo C)palescent G	lass Co	., Inc.	Emergency Telephone No	317/457-8	3136	FLAMMABILITY
Address	1310 Mar	rket - P. O.	Box 22	65	Other	STITADI		REACTIVITY
City, State, and ZIP	-	TN (6002 2	265		Information Calls	317/457-8	3136	PERSONAL PROTECTION
Cimeture of Person	Kokomo,	IN 40902-2			Date Prepared	March 30	, 1989	NC-LS03R @1981 NPCAL
Responsible for Prep	paration (Option	nal)		TOENTITY				
SECTION 2 -	- HAZARI	DOUS INGRE	DIENIS	OSHA	ACGIH	Other Exposure	To Inplio	CAS NO.
Hazardous Compone	nt(s) (chemical	& common name(s))		PEL	ILV		15 (0)	7631-86-9
SAND				NA	NA		45-60	/07 19 8
CODA ASH					10mg/m-	3 	20-30	<u>497-</u> 19-0
DODA ADA					2mig/m-	٥ 	2-8	68470-29-
TIMESTONE			r		10mg/m		4-8	4/1-34-1
LIMEDIOND					10mg/m	3	1-5	
DOLOMITE					4.3mg/m	3	2-6	
FLUORSPAR					lmg/m	3	1-5	1303-96-4
BORAX					.05mg/m	3		7778-50-9
× FOCASOTO								and the second se
SECTION 3 -	PHYSICA	L & CHEMICA	L CHAR	ACTERISTIC Specific Gravity (H.C	CS	Vapor Pressure In	om Hgi N,	/ A
SECTION 3 - Boiling Point N/A	PHYSICA	L & CHEMICA	L CHAR	ACTERISTIC Specific Gravity IH.C	CS D=11 N/A	Vapor Pressure In	nm Hgi Ny	/ A
SECTION 3 - Boiling Point N/A	PHYSICA	L & CHEMICA Vapor Density (Air = 1)	L CHAR	ACTERISTI Specific Gravity 1H,C Reactivity i Water	D=11 N/A N/A	V&por Pressure In	om Hel N	/ <u>A</u>
SECTION 3 - Boiling Point N/A Solubility in Water N/A Appearance and Odor	PHYSICA	L & CHEMICA Vapor Density (Air = 1)	L CHAR	ACTERISTIC Specific Gravity IH,C Reactivity i Water Melting Point	CS D=11 N/A N/A N/A	Vapor Pressure (n	nm Hgi Ny	/ A
SECTION 3 - Boiling Point N/A Solubility in Water N/A Appearance and Odor Sol	PHYSICA id Glass	L & CHEMICA Vapor Density (Air = 1)	N/A DATA	ACTERISTIC Specific Gravity (H.C Reactivity i Water Netting Point	CS D=11 N/A N/A N/A	Vapor Pressure in	om Hgt N	/ <u>A</u>
SECTION 3 - Boiling Point N/A Solubility in Water N/A Appear arice and Odor Sol SECTION 4 - Flash	PHYSICA id Glass - FIRE &	L & CHEMICA Vapor Density (Air = 1) EXPLOSION	N/A DATA	ACTERISTIC Specific Gravity (H.C Reactivity i Water Nelting Point mmsble Limits L Vir & by Volume L	N/A N/A N/A	V*por Pressure in UEL Upper	nm Hgi Ny	/ A
SECTION 3 - Boiling Point N/A Solubility in Water N/A Appearance and Odor Sol SECTION 4 - Flash Point N/A F. C Auto-Ignition	PHYSICA id Glass - FIRE & C. Uned	L & CHEMICA Vapor Density (Air = 1) EXPLOSION Extinguin Media	L CHAR N/A DATA	ACTERISTIC Specific Gravity (H.C Reactivity i Water Nelting Point mmsble Limits L Nir & by Volume L	CS D=11 N/A N/A N/A EL ower N/A N/A	Vapor Pressure in UEL Upper	hoting s	/A
SECTION 3 - Boiling Point N/A Solubility in Water N/A Appearance and Odor Sol SECTION 4 - Flash Point N/A F. C Auto-Ignition Temperature N/A Special Fire Fighting Procedures	PHYSICA id Glass - FIRE & C. Used Not fire	L & CHEMICA Vapor Density (Air = 1) EXPLOSION Extinguin Media a fire hazan	N/A DATA Fla in d sher	ACTERISTIC Specific Gravity (H.C Reactivity i Water Melting Point Melting Point L Mir & by Volume L	CS D=11 N/A N/A N/A N/A N/A N/A N/A N/A	Vapor Pressure in UEL Upper es for com	bating s	/A
SECTION 3 - Boiling Point N/A Solubility in Water N/A Appearatice and Odor Sol SECTION 4 - Flash Point N/A F. C Auto-Ignition Temperature N/A Special Fire Fighting Procedures Unusual Fire and Explosion Hazards	PHYSICA id Glass - FIRE & C. Used Not fire N/A	L & CHEMICA Vapor Density (Air = 1) EXPLOSION Extinguin Media a fire hazar	N/A DATA Fla in d sher	ACTERISTIC Specific Gravity IH.C Reactivity i Water Melting Point mmable Limits L Kir & by Volume L e methods a	CS D=11 N/A N/A N/A N/A N/A N/A N/A nd procedur	Vapor Pressure in UEL Upper es for com	bating s	/A
SECTION 3 - Boiling Point N/A Solubility in Water N/A Appearance and Odor Sol SECTION 4 - Flash Point N/A F. C Auto-Ignition Temperature N/A Special Fire Fighting Procedures Unusual Fire and Explosion Hazards	PHYSICA id Glass - FIRE & C. Umed Not fire N/A	L & CHEMICA Vapor Density (Air = 1) EXPLOSION Extinguin Media a fire hazan	N/A DATA Fla cd. Us	ACTERISTIC Specific Gravity (H.C Reactivity i Water Nelting Point Melting Point Melting Point E methods a	CS N/A N/A N/A EL over N/A N/A nd procedur	Vapor Pressure in UEL Upper es for com	bating s	/A
SECTION 3 - Boiling Point N/A Solubility in Water N/A Appearatice and Odor Sol SECTION 4 - Flash Point N/A F. C Auto-Ignition Temperature N/A Special Fire Fighting Procedures Unusual Fire and Explosion Hazards	PHYSICA id Glass - FIRE & Used Not fire N/A	L & CHEMICA Vapor Density (Air = 1) EXPLOSION Extinguin Media a fire hazar	N/A DATA Fla in d	ACTERISTIC Specific Gravity (H.C Reactivity i Water Melting Point mmsble Limits L Lir & by Volume L e methods a	N/A N/A N/A N/A N/A N/A N/A nd procedur	Vapor Pressure in UEL Upper es for com	bating s	/A

	MATA)
FCTION 5- PHYSIC	AL HAZARDS (REACTIVITT DATA)
ability Unstable [] Constitution	None
Competability	None
storials in Avialt	None
tardous	Nana
composition Freducts	NOILE Conditions None
Symerization Will Not Occur X	X to Allo
ECTION 6 - HEALT	H HAZARDS
Acute Irritation to	eyes, skin, nose polassian in eyes, nose and throat.
and throat Nr	seticles can cause itching irritation to skin, cross
ymptoms of Exposure Glas	ss particites
Contrally	
regravated by Exposure	NK
	Nonography No X No
hemical Listed as Carcinogen	Program No Q
mergency and .	routes of entry.
irst Aid Procedures Jec	
1 Inhelation	mult a physician
If irr	itation continues, consult and consult physician immediately.
ROUTES Flush	with copious amounts of water, and consult physician.
OF ENTRY J.Skia	ffected area, and if irritation continues, consure 1
4. Ingestion	
/ N/A	THE AND SPILL/LEAK PROCEDURES
SECTION 7 - SPECI	AL PRECAUTIONS AND C
Precautions to be Taken	se BMP (Best: Management Practices) in the mainting
Other	
Precautions N.	/A
2	
Steps to be Taken in Case Material is Released or Spilled	N/A
	rederal State and loc
Waste Disposal	and local regulational Use disposal methods that conform to reportational
Hethoda (Consult Inderal, acat	rbgulations.
÷	TERMATION/CONTROL MEASURES
	CIAL PROTECTION INFORMATION
SECTION 8-SPE	
SECTION 8 - SPE	so the origing of glass is excessive, use dust mask Other
SECTION 8 - SPEI Respiratory Protection Specify Typed	If the grinding of glass is excessive, use dust mask Machanical Special Other Local (Conversit X
SECTION 8 - SPE Respiratory Protection Specify Typed Ventilation	If the grinding of glass is excessive, use dust mask Local General X Exhaual X From Safety Glasses with side shields
SECTION 8 - SPE Respiratory Protection Specify Typed Ventilation Protective Choren	If the grinding of glass is excessive, use dust mask Local Mochanical Special Other Exhaust X Eye Safety Dot Gloves Safety Shield, and eye wash station
SECTION 8 - SPE Kespirstory Protection ISpecily Typel Ventilation Protective Gloves Other Protective Clocking or Equipment	If the grinding of glass is excessive, use dust mask If the grinding of glass is excessive, use dust mask Local Local Other Local Other Exhaust X Other Safety Dot Gloves Protoction Safety Dot Gloves Protoction Safety Dot Gloves Protoction Safety Dot Gloves Protoction Apron, wet grinder with back splash and safety shield, and eye wash statio

IMPORTANT Do not leave any blank spaces. If required information -

		Kov	KONO
DORESS 28960 LAKELAND	BOULEVARD		
VICKLIFFE, OR	44092-0200	TRADE HANES AND STNUNTHS	
IENICAL NAME AND SYNONYHS		Cobalt Oxide (10-114 CO)	
Cobalt Oxide		(77.601)	
	101)	(HAZARD CLASS (49CFR 1/2.101)	1
TERDOUS HATERIAL DESCRIPTIO	N & PROPER SHIPPING NAME (ASCINITESTON	¥/A	1
N/k			
		FORMULA	ł
HENTCAL FARILY		Co ₁ O,	
Inorganic Ketallic Salt			
	THE COLD BY	CAS NUKBER	
ATE THIS FORK PREPARED	PREPAKED DI	1308-06-1 for Co oxide and	
February 1, 1994	4. GARDICA	1313-99-1 for HI oxide	
fear and free and fre	THE PARTY OF THE P	DIENTS	
	SECTION IT - RAZANDOUS THE	L EXPOSURE LIMITS	
ATERIAL OR COMPONENT	OSH	PEL ACGIN TWA (1993-94)	
ALEXINE ON DATA			
	a. autida () ()	mor/m ³ As Co 0.05 mg/m ³ as Co	
cobalt Orida		ma/m ³ as Wi 1.0 mg/m ³ as Wi	
Cobalt 70-71% as Cobalt 0	xide HI OXIGE I-V	Malin reality	
Histol face than 14 ac MI	ckel Oxide (CAS #1313-99-1)		
NICKEL LESS LIGH IN CS BI	SECTION III - PHYSICAL DATA	VAPOR DENSITY (AIR=1)	
THE AND DOLLY /SEY	VAPOR PRESSURE (mm HG)	1) COL D COL 4	HMIS*
UILING FUINE (72	K/A	N/ N	- UDBL
Decomposes a 043 c		Y VOLATHE BY VOLUME	OKIDE
THE PART AND LIVERS	SPECIFIC GRAVITY (WATER=1)	A ADTVITTE OF GARDIN	The second
OLUBILITY IN WATER	rande 5.2-6.1 gm/cc 8 20°C	K/A	
Insoluble		OULD ADD TY ON DITE	HEALTH
		EVAPORATION RATE	
UPPEARANCE AND OOOR		R/A	
Black, gray powder			PI ADMIRADIU ITU
	SECTION IN - FIRE AND EXPLO	SIVE DATA	Familina Apilli
	CLANNABLE LINITS LEL	UEL	
FLASH POINT (NETHOD USED)	N/i	•	
Non-flammable	R/A		REACTIVITY
· · · · · · · · · · · · · · · · · · ·		,	PERSONAL
EXTINGUISHING KEDIA			PERSONAL
EXTINGUISHING MEDIA Dry chemical, COz, water	spгау		PERSONAL PROTECTION
EXTINGUISHING MEDIA Dry chemical, CO _z , water	spгау		PERSONAL PROTECTION
EXTINGUISHING MEDIA Dry chemical, CO _z , water SPECIAL FIRE FIGHTING PROCED	spray URES	arge quantities are involved.	PERSONAL PROTECTION
EXTINGUISHING MEDIA Dry chemical, CO _z , water SPECIAL FIRE FIGHTING PROCED Not a fire hazard, wear	spray URES self-contained breathing apparatus when i	arge quantities are involved.	PERSONAL PROTECTION
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EXTINGUISHING MEDIA Dry chemical, CO ₂ , water SPECIAL FIRE FIGHTING PROCEDI Not a fire hazard, wear UNUSUAL FIRE AND EXPLOSION H Kone expected. OCCUPATIONAL EXPOSURE LIMITS See Section 11_ EFFECT OF OVEREXPOSURE Eye - Wild irrita Skin - May cause L Inhalation - A small por to cobalt of Oxide. Acc are to be I Information Ingestion - Cobalt oxid EXERGENCY AND FIRST AID PROC Eye contact Skin contact Inhalation -	Spray URES self-contained breathing apparatus when i AZARDS SECTION V - HEALTH HAZARD I second dermatitis which is relieved when r tion may result from cobalt oxide dust in ocal dermatitis which is relieved when r tion of workers may develop respiratory ixide and other cobalt dusts. This produ- cording to Hazard Communication Stendard, abeled as potential carcinogens. For de the has a low order of toxicity by this ro CEDURES Irrigate with water at least 15 minutes. Remove contaminated clothing. Wash skin Consult physician. Remove to fresh air. May give oxygen. I Induce vomiting if conscious. Consult physician.	Arge quantities are involved. DATA DATA n the eye. emoved. May cause allergic dermatities allergy with symptons of asthma on exp ct contains Nickel in excess of 0.1% of compounds containing in excess of 0. tail, please see Section IX - Addition ute. Kay cause gastrointestinal diso Consult physician. thoroughly with soap and water. Consult physician. hysician.	PERSONAL PROTECTION INCLEMENTED

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HCC-94-CO-14A REV. 5

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	N/A
POLYHERIZATION	WILL NOT OCCUR Not known to occur.
14	TOTAL OF LEAR PROFEDURES
	SECTION VII - SPILL OR LEAK PROCEDURED
TEPS TO BE TAKEN I Contain the spi	N CASE MATERIAL IS RELEASED ON SPILLED 11. Pick up the spill in an approved container for disposal. flush area with water.
ASTE DISPOSAL HETH Dispose in acco	100 Ordance with Federal, State and Local Laws.
	SECTION VIII - SPECIAL PROTECTION INFORMATION
ESPIRATORY PROTECT Use MIOSH appro	IION (SPECIFIC TYPE) oved respiratory protection where airborne level exceeds appropriate occupational exposure limit
THITS AT 104	LOCAL EXHAUST X SPECIAL N/A
ENTILATION	MECHANICAL (GENERAL) X OTHER ADOUGLE TO WATHER DECOMPTION
Vear rubber gl	oves to avoid skin contact. Vear goggles where eye contact may occur.
THER PROTECTIVE E	QUIPHENT as appropriate to avoid skin contact.
Real hinterria	PROTICILLY - SPECIAL PRECAUTIONS
	Section IA or Contraction of the section of the sec
RECAUTION TO BE T Keep container	AKEN IN HANDLING AND STOCKING Call damage. Avoid contact with skin, eyes and cooking.
OTHER PRECAUTIONS Avoid breathin should be cons	ng and use only with adequate ventilation. Wash thoroughly after handling. Wo food or beverage sumed in work area.
ADDITIONAL INFORM Cobalt has no	ATION ot been classified as a known or suspected carcinogen by NTP or OSHA. The IARC states that monounds are possible carcinogens to humans- Group 28 (Konograph 52).
NOTE: The to data i 1081-8	xicity data for Cobalt Oxide (Co ₅ O ₄) CAS #1308-06-1 is not available. However, the following s for Cobalt Oxide (CoO) CAS #1307-96-6 from the Registry of Toxic Effect of Chemical Substance 2 .
(901 0	and not in 202 mo/kg
Toxicity data	Upat fail U_{50} = Lowest Published Lethal Dose, that dose most likely to cause beaut of some of 50% of experimental animals.
According to to be possibl that they may for Research as a group by	OSHA CFR 29 Part 1910-1200 (Hazard Communication) Nickel and certain Nickel compounds are deem ose cancer hazards. This is based on assessment by the U.S. NIP (National Toxicology Program) reasonably be anticipated to be carcinogens and an assessment of IARC (International Agency on Cancer) which concluded that there was sufficient evidence that nickel and nickel compounds ut not necessarily as individual chemicals, were carcinogenic to humans. IARC could not state us which specific nickel compounds are human carcinogens and which are not.
This product requirements Planning and	contains the "COBALT DDMPOUNDS and NICKEL COMPOUNDS" toxic chemical subject to the reporting of Superfund Amendment and Reauthorization Act (SARA) of 1986, Section 313 of the Emergency Community Right to Know Act and of 40 CFR, Part 372.
Canada W-H-K	1.S.Classification - D1B
This substan	ice is listed on the Toxic Substance Control Act (TSCA) Chemical Substance Inventory.
NFF	A Hazard Ratings: HEALTH 1, FIRE 0, REACTIVITY 0
Information pre	esented herein has been compiled from sources chemical Co., but is not guaranteed to be so.
reliable to the The Company mai	kes no representations or Warranties, express or implied. Customers are successed

their own tests.

KOKOMO

High Purity Black Nickel Oxide

Blacks Nickle Duides	U 40.1
H Health F Lammability D	
R REACTIVITY D	Material Safety
PROTECTION	Date Sheat

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HAZARDOUS INGREDIENTS

Hazardous Ingredients	Calculated Composition	C.A.S. No.	PEL ¹ -mg/m ^a	TLV ² -mg/m ⁵
Nickel Oxide (NiO)	90-95	1313-99-1	1 as Ni	1.es NI
Basic Nickel Carbonate (xNi(OH) ₂ · yNiCO ₃ · zH ₂ O)		n.sv.	(9)	n.av.

(a) The oral rat LD₅₀ for NICO3 · NI(OH)2 to NICO3 · 3NI(OH)2 is 1044 mg/kg.

PHYSICAL and CHEMICAL DATA

Black, odorless powder 99% of which passes through a 325 mesh sleve.

		Specific		Sol. in H ₂ O
Ingredient	Mol. wt.	Gravity	m.p. °C	g/100ml
NIO	74.71	6.67	- 1990	q
Basic Nickel Carbonate	n.av.	n.8V.	b	O in cold water

PHYSICAL HAZARDS

None

Revised: Feanuary 14, 1991 Henro: May 31, 1988 13,

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SAFETY DATA SHEET

1. Identification			
Product identifier	LATICRETE 254 Platinum		
Other means of identification	Not available.		
Recommended use	Tile adhesive.		
Recommended restrictions	Workers (and your customers or users in the c presence of respirable dust and respirable crys Appropriate training in the proper use and han under applicable regulations.	ase of resale) should be informed of the potential stalline silica as well as their potential hazards. dling of this material should be provided as required	
Manufacturer / Importer / Supplie	r / Distributor information		
Company Name	LATICRETE International		
Address Telephone Contact person Website Emergency phone number	1 Laticrete Park, N Bethany, CT 06524 (203)-393-0010 Steve Fine www.laticrete.com Call CHEMTREC day or night		
	USA/Canada - 1.800.424.9300 Mexico - 1.800.681.9531 Outside USA/Canada 1.703.527.3887		
2. Hazard(s) identification			
Physical hazards	Not classified.		
Health hazards	Skin corrosion/irritation	Category 2	
	Serious eye damage/eye irritation	Category 1	
	Sensitization, skin	Category 1	
	Carcinogenicity	Category 1A	
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation	
	Specific target organ toxicity, repeated exposure	Category 2 (lung)	
OSHA defined hazards	Not classified.		
Label elements			
Signal word	Danger		
Hazard statement	Causes skin irritation. Causes serious eye dan cause cancer. May cause respiratory irritation. prolonged or repeated exposure.	nage. May cause an allergic skin reaction. May May cause damage to organs (lung) through	
Precautionary statement			
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear protective gloves/protective clothing/eye protection/face protection. Contaminated work clothing must not be allowed out of the workplace.		
Response	If exposed or concerned: Get medical advice/attention. If inhaled: Remove person to fresh air and keep comfortable for breathing. If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor.		
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up.		
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.		
Hazard(s) not otherwise	Not classified.		

Hazard(s) not otherwise classified (HNOC)

3. Composition/information on ingredients

Mixtures

Chemical name	CAS number	% 45 - 55	
Silica Sand	14808-60-7		
Portland Cement	65997-15-1	40 - 45	
Calcium formate	544-17-2	0.7 - 1	

Composition comments All conce

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.
Śkin contact	Wash off with soap and plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.
Eye contact	Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Rash. Coughing. Irritant effects. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Prolonged exposure may cause chronic effects.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. IF exposed or concerned: Get medical advice/attention. Wash contaminated clothing before reuse.

5. Fire-fighting measures

Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire.
Fire-fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes.
6. Accidental release meas	ures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep upwind. Avoid formation of dust. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation.
Methods and materials for containment and cleaning up	Stop the flow of material, if this is without risk. Sweep or shovel up material and place in a clearly labeled container for waste. Collect dust using a vacuum cleaner. Following product recovery, flush area with water.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.
7. Handling and storage	
Precautions for safe handling	Do not handle until all safety precautions have been read and understood. Minimize dust generation and accumulation. Wear appropriate personal protective equipment. Do not breathe dust. Avoid contact with eyes, skin, and clothing. Provide adequate ventilation. Observe good industrial hygiene practices.
Conditions for safe storage, including any incompatibilities	Keep container tightly closed. Store in a cool, dry place out of direct sunlight.

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8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Туре	Value	Form
Portland Cement (CAS 65997-15-1)	PEL	5 mg/m3	Respirable fraction.
·		15 mg/m3	Total dust.
US. OSHA Table Z-3 (29 C	FR 1910.1000)		
Components	Туре	Value	Form
Portland Cement (CAS	TWA	50 millions of	
65997-15-1) Silica Sand (CAS 14808-60-7)	TWA	particle 0.3 mg/m3	Total dust.
11000 00 1		0.1 mg/m3	Respirable.
		2.4 millions of particle	Respirable.
US. ACGIH Threshold Lim	it Values		
Components	Туре	Value	Form
Portland Cement (CAS 65997-15-1)	TWA	1 mg/m3	Respirable fraction.
Silica Sand (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable fraction.
US NIOSH Pocket Guide t	o Chemical Hazards: Recommended e	xposure limit (REL)	
Components	Туре	Value	Form
Portland Cement (CAS 65997-15-1)	TWA	.5 mg/m3	Respirable.
Silica Sand (CAS	TWA	10 mg/m3 0.05 mg/m3	Total Respirable dust.
plogical limit values	No biological exposure limits noted fr	or the ingredient(s)	
posure guidelines	Occupational exposure to nuisance of should be monitored and controlled.	dust (total and respirable) and res	spirable crystalline silica
propriate engineering ntrols	Good general ventilation (typically 10 should be matched to conditions. If a or other engineering controls to main exposure limits have not been establ eyewash station.) air changes per hour) should be pplicable, use process enclosure tain airborne levels below recom ished, maintain airborne levels to	e used. Ventilation rates es, local exhaust ventilation, mended exposure limits. If o an acceptable level. Provide
lividual protection measure	s, such as personal protective equipm	ent	
Eye/face protection	Wear safety glasses with side shields	s (or goggles).	
Skin protection			
Hand protection	Wear chemical-resistant, impervious	gloves.	
Other	Wear appropriate chemical resistant	clothing.	
Respiratory protection	Wear a dust mask if dust is generated above exposure limits.		
Thermal hazards	Wear appropriate thermal protective	clothing, when necessary.	
neral hygiene nsiderations	Always observe good personal hygie and before eating, drinking, and/or sr equipment to remove contaminants. workplace.	ne measures, such as washing a noking. Routinely wash work clo Contaminated work clothing shou	after handling the material othing and protective uld not be allowed out of the

9. Physical and chemical properties

Appearance	
Physical state	Solid.
Form	Powder.
Color	Gray or off-white.
Odor	Odorless.
Odor threshold	Not available.
рН	Not available.
Melting point/freezing point	Not available.

Initial boiling point and boiling range	Not available.
Flash point	Not flammable or combustible.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or expl	osive limits
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	1.2 - 1.5
Solubility(ies)	Insoluble
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
Other information	
VOC (Weight %)	0 %

10. Stability and reactivity

Reactivity	The product is stable and non-reactive under normal conditions of use, storage and transport.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	No dangerous reaction known under conditions of normal use.
Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Ingestion	Swallowing may cause gastrointestinal irritation.
Inhalation	Dust irritates the respiratory system, and may cause coughing and difficulties in breathing.
Skin contact	Causes skin irritation. May cause an allergic skin reaction. Prolonged contact with wet cement/mixture may cause burns.
Eye contact	Causes serious eye damage. Prolonged contact with wet cement/mixture may cause burns.
Symptoms related to the physical, chemical and toxicological characteristics	Rash. Coughing. Irritant effects. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Prolonged exposure may cause chronic effects.
Information on toxicological effe	cts
Acute toxicity	May cause respiratory irritation.
Skin corrosion/irritation	Causes skin irritation.
Serious eye damage/eye irritation	Causes serious eye damage.
Respiratory sensitization	No data available.
Skin sensitization	May cause an allergic skin reaction.
Germ cell mutagenicity	No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

May cause cancer. In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However in making the overall evaluation, IARC noted that "carcinogenicity was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.) In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk..." (SCOEL SUM Doc 94-final, June 2003)

IARC Monographs. Overall Evaluation of Carcinogenicity

	• •	
Silica Sand (CAS 14808-6 NTP Report on Carcinogens	0-7) 1 C	arcinogenic to humans.
Silica Sand (CAS 14808-6	0-7) Kno	own To Be Human Carcinogen.
Reproductive toxicity	This product is not expected to cause	se reproductive or developmental effects.
Specific target organ toxicity - single exposure	May cause respiratory irritation.	
Specific target organ toxicity - repeated exposure	May cause damage to organs (lung) through prolonged or repeated exposure.
Aspiration hazard	Due to the physical form of the product it is not an aspiration hazard.	
Chronic effects	Prolonged or repeated exposure ma	ay cause lung injury, including silicosis.

12. Ecological information

Ecotoxicity	Not expected to be harmful to aquatic organisms.	
Persistence and degradability	No data is available on the degradability of this product.	
Bioaccumulative potential	No data available for this product.	
Mobility in soil	The product is not mobile in soil.	
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.	

13. Disposal considerations

Disposal instructions	Dispose of contents/container in accordance with local/regional/national/international regulations. Do not contaminate ponds, waterways or ditches with chemical or used container.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated as a hazardous material by DOT.

ΙΑΤΑ

Not regulated as a dangerous good.

IMDG

Not regulated as a dangerous good.

Transport in bulk according to This substance/mixture is not intended to be transported in bulk. Annex II of MARPOL 73/78 and the IBC Code

15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050) Not listed.

CERCLA Hazardous Substa	nce List (40 CFR 302.4)
Not listed.	
Superfund Amendments and Re	authorization Act of 1986 (SARA)
Hazard categories	Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No
SARA 302 Extremely hazardous substance	No
SARA 311/312 Hazardous chemical	Yes
SARA 313 (TRI reporting) Not regulated.	
Other federal regulations	
Clean Air Act (CAA) Sectior	112 Hazardous Air Pollutants (HAPs) List
Not regulated. Clean Air Act (CAA) Sectior	112(r) Accidental Release Prevention (40 CFR 68.130)
Not regulated.	
Safe Drinking Water Act (SDWA)	Not regulated.
Food and Drug Administration (FDA)	Not regulated.
US state regulations	WARNING: This product contains a chemical known to the State of California to cause cancer.
US. Massachusetts RT	(- Substance List
Portland Cement (C/ Silica Sand (CAS 14 US. New Jersey Worker	३S 65997-15-1) 808-60-7) r and Community Right-to-Know Act
Not regulated.	
US. Pennsylvania RTK	- Hazardous Substances
Portland Cement (C/ Silica Sand (CAS 14	4S 65997-15-1) 808-60-7)
Not regulated	
US California Proposition 6	5
WARNING: This product cont reproductive harm.	ains a chemical known to the State of California to cause cancer and birth defects or other

US - California Proposition 65 - Carcinogens & Reproductive Toxicity (CRT): Listed substance

Silica Sand (CAS 14808-60-7)

International Inventories

Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	Yes
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical Substances (EINECS)	Yes
Europe	European List of Notified Chemical Substances (ELINCS)	No
Japan	Inventory of Existing and New Chemical Substances (ENCS)	No
Korea	Existing Chemicals List (ECL)	Yes
New Zealand	New Zealand Inventory	Yes
Philippines	Philippine Inventory of Chemicals and Chemical Substances (PICCS)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

United States & Puerto Rico Toxic Substances Control Act (TSCA) Inventory

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information, including date of preparation or last revision

Issue date

21-November-2013



References

Disclaimer

HSDB® - Hazardous Substances Data Bank Registry of Toxic Effects of Chemical Substances (RTECS)

The information in this (M)SDS was obtained from sources which we believe are reliable but cannot guarantee. Additionally, your use of this information is beyond our control and may be beyond our knowledge. Therefore, the information is provided without any representation or warranty express or implied.



LATICRETE® 254 Platinum

DS-254.0-0913

Globally Proven Construction Solutions



1. PRODUCT NAME

Laticrete 254 Platinum

2. MANUFACTURER

LATICRETE UK Speke Hall Industrial Estate Speke, Liverpool, Merseyside, L24 1YA United Kingdom Tel: 0151 486 6101 Fax: 0151 448 1982 e-mail: sales@laticrete.co.uk www.laticrete.co.uk

3. PRODUCT DESCRIPTION

The ultimate one-step, polymer fortified, thin-set mortar for interior and exterior installation of ceramic tile, stone, quarry tile, pavers and brick. 254 Platinum, designed to just mix with water, has a long open time with unsurpassed initial grab, high shear, tensile & flexural strength along with excellent workability.

NB. 254 Platinum is a LATICRETE® approved all-in-one substitute for 211 Powder mixed with 4237 Latex Additive.

Uses

This adhesive is rated excellent for all interior, exterior and underwater tile fixing applications and as well as providing superior bond strength to all commonly encountered building materials including WBP exterior glue plywood (interior only). It has been used to fix heavy & large format tile & stone in the most challenging environments. LATICRETE® 254 Platinum remains the ultimate thin-set for porcelain and glass tiles.

Advantages

- Contains Anti-fungal protection to inhibit the growth of stain causing mould and mildew in the substrate.
- Exceeds ANSI A118.4 Shear Bond Strength Requirements & ANSI A118.11.
- Conforms to EN 12004 & ISO 13007 with a classification of C2TE S1 P1.
- Ultimate adhesion for porcelain and glass tiles.
- Incredible bond to WBP exterior glue plywood and concrete*.

- Superior performance for exterior and submerged applications.
- High shear bond strength.
- Smooth creamy formula.
- 25 Year Tile & Stone System Warranty**.

See limitations.
** When used as part of the LATICRETE 25 Year Tile & Stone System Warranty DS 025.0APD.

Cement terrazzo

Gypsum wallboard*

Gypsum plaster***

Plastic laminate*

stone

Cement backer boards**

Existing ceramic tile and

Suitable Substrates

- Exterior glue WBP plywood*
- Properly prepared vinyl tile*
- Concrete/masonry
- Concrete block
- Cement mortar beds
- Non-water soluble cut-back
 - adhesive*
- * Interior use only.

Consult cement backer board manufacturer for specific installation recommendations and to verify acceptability for exterior use. * Sealed with 2 coats of NXT PRIMER

.

Packaging

20.0 kg; 54 bags per pallet

Color: Grey and White

Approximate Coverage

6.7-8.0 m²/20.0 kg bag with a 6 mm x 6 mm notched trowel.		
4.0-4.8 m²/20.0 kg bag with a 6 mm x 9 mm notched trowel.		
3.3-3.8 m²/20.0 kg bag with a 12 mm x 12 mm notched trowel.		
Coverage will vary depending on trowel notch size, type and size of tile and substrate.		

Shelf Life

Factory sealed containers of this product are guaranteed to be of first quality for one (1) year* if stored off the ground in a dry area. * High humidity will reduce the shelf life of bagged product.

Limitations

- For veneer installations using this product, consult local building code requirements regarding limitations and installation system specifications.
- Not for use directly over particle board, luan, Masonite[®] or hardwood floors.
- Adhesives/mastics, mortars and grouts for ceramic tile, pavers, brick and stone are not replacements for waterproofing membranes. When a waterproofing membrane is required, use a LATICRETE® HYDRO BAN Waterproofing Membrane.

Data Sheets are subject to change without notice. For latest revision, visit www.laticrete.com.

DS-254.0-0913

Note: Surfaces must be structurally sound, stable and rigid enough to support ceramic/stone tile, thin brick and similar finishes. Substrate deflection under all live, dead and impact loads, including concentrated loads, must not exceed L/360 for thin bed ceramic tile/brick installations or L/480 for thin bed stone installations where L=span length (except where local building codes specify more stringent deflection requirements)

Cautions

Consult MSDS for more safety information.

- Some marbles and other stone have low flexural strength and may not be suitable for installation over wood floors.
- During cold weather, protect finished work from traffic until fully cured.
- Contains portland cement and silica sand. May irritate eyes and skin. Avoid contact with eyes or prolonged contact with skin. In case of contact, flush thoroughly with water.
- Wait 14 days after the final grouting period before filling water features with water at 70°F (21°C).
- DO NOT take internally. Silica sand may cause cancer or serious lung problems. Avoid breathing dust. Wear a respirator in dusty areas.
- For white and light–colored marbles use LATICRETE[®] 254 Platinum WHITE. For green marble, resin backed tile and stone and other moisture sensitive marbles and agglomerates, use LATAPOXY[®] 300 Adhesive (refer to Data Sheet 633.0).
- Keep out of reach of children.

4. TECHNICAL DATA

VOC/LEED Product Information



This product has been certified for Low Chemical Emissions (ULCOM/GG UL2818) under the UL GREENGUARD Certification Program for Chemical Emissions for Building Materials, Finishes and Fumishings (UL 2818 Standard) by UL Environment.

Total VOC Content pounds/gallon (grams/liter) of product in unused form is 0.00 lb/gal (0.00 g/l).

Applicable Standard

ANSI A118.4, ANSI 118.11, EN 12004, ISO 13007

Physical Properties

Test	Test Method	Results	Specification
28 day Cure Porcelain Tile Shear Strength	ANSI A118.4 5.2 4	450520 psi (3.13.6 MPa)	>200 psi (1 38 MPa)
Shear Bond Porcelain Tile Water Immersion	ANSI A118.4.5.2.3	300 psi (2.1 MPa)	>150 psi (1.0 MPa)
28 day Cure Quarry Tile to Plywood Shear Bond	ANSI A118:11 4.1.2	265 psi (1.83 MPa)	>150 psi (1:0 MPa)

Data from TCA 055-55 and NAP126

Test	Test Method	EN12004 C2 Specification	Results
28 day cure tensile adhesive strength	EN 1348-8.2	> 1.0 N/mm2	2.3 - 2 6 N/mm2
7 day cure 21 day water immersion tensile adhesive strength	EN 1348 - 8.3	> 1.0 N/mm2	1.29-1.53 N/mm2
14 day cure 14 day heat age tensile adhesive strength	EN 1348-84	> 1.0 N/mm2	2.38-3.02 N/mm2
7 day cure 21 day water immersion 25 freeze/thaw cycle tensile adhesive strength	EN 1348 - 8:5	> 1.0 N/mm2	1.18-1.42 N/mm2
Open time after 30 minutes	EN 1346	> 0.5 N/mm2	1.65-1.95 N/mm2
Slip	EN1308	< 0.5 mm	0.2 mm
Transverse deformation	EN 12008	> 2.5 mm and < 5 mm	3.2-3.6 mm

254 Platinum is ISO 13007-1 C2TES1P1 & EN120004 C2TE-S1

Working Properties

Open Time	40 minutes
PotLife	2 hours
Time to Heavy Traffic	24 hours
Wet Density	1653 kg/m ³

Specifications are subject to change without notification. Results shown are typical but reflect test procedures used. Actual field performance will depend on installation methods and site conditions.

5. INSTALLATION

Surface Preparation

All surfaces should be between 40°F (4°C) and 90°F (32°C) and structurally sound, clean and free of all dirt, oil, grease, paint, concrete sealers or curing compounds. Rough or uneven concrete surfaces should be made smooth with LATICRETE® NXT LEVEL underlayment to provide a wood float (or better) finish. Dry, dusty concrete slabs or masonry should be dampened and excess water swept off. Installation may be made on a damp surface. Concrete slabs must be plumb and true to within 6 mm in 3 metres.

Note: 254 Platinum does not require a minimum cure time for concrete slabs. Movement joints shall be provided through the tile work from all existing construction or expansion joints in the substrate. Follow BS 5385–5:2009 section 8 for the design & installation of movement joints within the tiled area. Do not cover movement joints with mortar.

Minimum construction for interior plywood floors:

SUBFLOOR: minimum 15 mm thick (WBP) exterior glue plywood, either plain with all sheet edges blocked or tongue and groove, over bridged joints spaced no more than 400 mm maximum. Screw fix plywood at 150 mm (6") centres along sheet ends and 200 mm centres along intermediate supports with coated or hot galvanized screws; allow 3 mm between sheet ends and 6 mm between sheet edges at the perimeter; all sheet ends must be supported by a framing member; glue sheets to joints with construction adhesive.

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UNDERLAYMENT: WBP 15 mm thick exterior glue plywood fastened at 150 mm (6") centres along sheet ends and 8" (200 mm) centres in the panel field (both directions) with coated or hot galvanized screws; allow 3 mm to 6 mm between sheets and 6 mm between sheet edges and any abutting surfaces; offset underlayment joints from joints in subfloor and stagger joints between sheet ends; glue underlayment to subfloor with construction adhesive. Refer to Technical Data Sheet 152 "Bonding Ceramic Tile, Stone or Brick Over Wood Floors".

Mixing

Place clean, potable water into a clean pail. Add Laticrete 254 Platinum. Use approximately 4.7 ℓ of water for 20.0 kg of powder. Mix with a slow speed mixer to a smooth, trowelable consistency. Allow mortar to stand for 5–10 minutes. Remix without adding any more water or powder. During use, stir occasionally to keep mix fluffy and DO NOT temper with water.

Note: For use as a slurry bond coat; mix 6.0 ℓ water to a 20.0 kg bag of 254 Platinum. Refer to Technical Data Sheet 143 for more information.

Application

Apply mortar to the substrate with the flat side of the trowel, pressing firmly to work into surface. Comb on additional mortar with the notched side.

Note: Use an appropriately sized notched trowel to ensure full bedding of the tile. Spread as much mortar as can be covered with tile in 20–30 minutes. Use a 6mm x 6mm notch at 10mm centres for general wall tiling and 12mm x 12mm notch at 16mm centres for floor tiling.

Back butter large format tiles > 300 mm x 300 mm to provide full bedding and firm support. Place tiles into wet, sticky mortar and beat in using a beating block and rubber mallet to embed tile and adjust level. Check mortar for complete coverage by periodically removing a tile and inspecting bedding mortar transfer onto back of tile. If mortar is skinned over (not sticky), remove and replace with fresh mortar.

Grouting:

Grout all joints within the installation after a minimum of 24 hours curing time at 70°F (21°C). Cooler temperatures require a longer curing time. Grout joints with either LATICRETE® Permacolour grout or LATICRETE® SpectraLOCK® Premium PRO grout in accordance with the product instructions.

Cleaning

Clean tools with water.

6. AVAILABILITY AND COST

Availability

LATICRETE and LATAPOXY[®] materials are available worldwide. For Distributor Information, call 0151 486 6101 or visit LATICRETE UK at www.laticrete.co.uk

7. MAINTENANCE

Non-finish LATICRETE® and LATAPOXY® installation materials require no maintenance but installation performance and durability may depend on properly maintaining products supplied by other manufacturers.

8. TECHNICAL SERVICES

Technical Assistance

Information is available by calling the LATICRETE UK Technical Service Hotline: Tel: 0151 486 6101 Fax: 0151 448 1982 e-mail: sales@laticrete.co.uk

Technical and Safety Literature

To acquire technical and safety literature, please visit our website at www.laticrete.co.uk

9. DISCLAIMER

The information contained in this document is given in good faith and to the best of our knowledge is true and accurate.

This information is subject to change without notice and it is the responsibility of the user to obtain up to date and current information.

The use of this product is beyond our control and liability is assumed by the user when used incorrectly and not in accordance with LATICRETE[®] guidelines.

The manufacturer is not responsible for any loss or damage arising from incorrect usage of this product.

The specifier or other party responsible for the project must ensure that the details in this data sheet are appropriate for the intended application and that additional detailing is performed for specific design or any areas that fall outside the scope of this specification.

^A United States Invention Patent No.: 6784229 (and other Patents) † United States Invention Patent No.: 6881768 (and other Patents).

LATICRETE International, Inc. One LATICRETE Park North, Berhany, CT 06524-3423 USA - 1.800.243.4788 - + 1.203.393.0010 - vww.Jaticrete.com

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Data Sheets are subject to change without notice. For latest revision, visit www.laticrete.com.

SAFETY DATA SHEET



1. Identification

Product identifier	Permacolor Select
Other means of identification	Not available.
Recommended use	Grout.
Recommended restrictions	Workers (and your customers or users in the case of resale) should be informed of the potential presence of respirable dust and respirable crystalline silica as well as their potential hazards. Appropriate training in the proper use and handling of this material should be provided as required under applicable regulations.
Manufacturer/Importer/Supplier	/Distributor information
Company Name	LATICRETE International

Company Name	LA HORE I'L International
Address	1 Laticrete Park, N
	Bethany, CT 06524
Telephone	(203)-393-0010
Contact person	Steve Fine
Website	www.laticrete.com
Emergency phone number	Call CHEMTREC day or night
	USA/Canada - 1.800.424.9300
	Mexico - 1.800.681.9531
	Outside USA/Canada

1.703.527.3887

2. Hazard(s) identification

Physical hazards	Not classified.	
Health Hazards	Skin corrosion/irritation	Category 2
	Serious eye damage/eye irritation	Category 1
	Sensitization, skin	Category 1
	Carcinogenicity	Category 1A
	Reproductive toxicity	Category 1B
	Specific Target Organ Toxicity, Repeated Exposure	Category 2 (Lung)
OSHA defined hazards	Not classified.	
Label elements		
Signal word Hazard statement	Danger Causes skin irritation. Causes serious eye da cause cancer. May damage fertility or the unit through prolonged or repeated exposure.	mage. May cause an allergic skin reaction. May born child. May cause damage to organs (Lung)
Precautionary statement		
Prevention	Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Do not breathe dust/fume. Wear protective gloves/protective clothing/eye protection/face protection. Wash thoroughly after handling. Contaminated work clothing must not be allowed out of the workplace.	
Response	If exposed or concerned: Get medical advice/attention. If on skin: Wash with plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse. If in eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a poison center/doctor.	
Storage	Store locked up.	
Disposal	Dispose of contents/container in accordance	with local/regional/national/international regulations.
Permacolor Select		SDS US
922456 Version #: 01 Revision d	ate: - Issue date: 16-October-2014	1/8

3. Composition/information on ingredients

Mixtures

CAS number	%
14808-60-7	55 - 65
65997-16-2	22 - 25
7778-18-9	5 - 7
65997-15-1	1 - 4
26499-65-0	1 - 2
554-13-2	0.1 - 0.3
	CAS number 14808-60-7 65997-16-2 7778-18-9 65997-15-1 26499-65-0 554-13-2

Composition comments

All concentrations are in percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

Inhalation	Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a physician if symptoms develop or persist.
Skin contact	Wash off with soap and plenty of water. If skin irritation or rash occurs: Get medical advice/attention. Take off contaminated clothing and wash before reuse.
Eye contact	Do not rub eyes. Immediately flush eyes with plenty of water for at least 15 minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a physician or poison control center immediately.
Ingestion	Rinse mouth. Get medical attention if symptoms occur.
Most important symptoms/effects, acute and delayed	Rash. Coughing. Irritant effects. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Prolonged exposure may cause chronic effects.
Indication of immediate medical attention and special treatment needed	Provide general supportive measures and treat symptomatically. Symptoms may be delayed.
General information	Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. IF exposed or concerned: Get medical advice/attention.
5. Fire-fighting measures	
Suitable extinguishing media	Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).
Unsuitable extinguishing media	None known.
Specific hazards arising from the chemical	During fire, gases hazardous to health may be formed.
Special protective equipment and precautions for firefighters	Self-contained breathing apparatus and full protective clothing must be worn in case of fire. Selection of respiratory protection for firefighting: follow the general fire precautions indicated in the workplace.
Fire fighting equipment/instructions	In case of fire and/or explosion do not breathe fumes.
General fire hazards	No unusual fire or explosion hazards noted.
6 Accidental release meas	

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures	Keep unnecessary personnel away. Keep upwind. Avoid formation of dust. Wear appropriate protective equipment and clothing during clean-up. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation.
Methods and materials for containment and cleaning up	Stop the flow of material, if this is without risk. Sweep or shovel up material and place in a clearly labeled container for waste. Collect dust using a vacuum cleaner. Following product recovery, flush area with water.
Environmental precautions	Avoid discharge into drains, water courses or onto the ground.

Permacolor Select

7. Handling and storage

Precautions for safe handling

Do not handle until all safety precautions have been read and understood. Minimize dust generation and accumulation. Wear appropriate personal protective equipment. Do not breathe dust. Avoid contact with eyes, skin, and clothing. Provide adequate ventilation. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities Keep container tightly closed. Store in a cool, dry place out of direct sunlight.

8. Exposure controls/personal protection

Occupational exposure limits

US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000)

Components	Туре	Value	Form
Calcium sulfate (CAS 7778-18-9)	PEL	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.
Calcium sulfate hemihydrate (CAS 26499-65-0)	PEL	5 mg/m3	Respirable fraction.
		15 mg/m3	Total dust.
Portland Cement (CAS 65997-15-1)	PEL	5 mg/m3	Respirable fraction.
US. OSHA Table Z-3 (29 0	CFR 1910.1000)	15 mg/m3	Total dust.
Components	Туре	Value	Form
Portland Cement (CAS 65997-15-1)	TWA	50 mppcf	
Silica Sand (CAS 14808-60-7)	TWA	0.3 mg/m3	Total dust.
		0.1 mg/m3	Respirable.
		2.4 mppcf	Respirable.
US. ACGIH Threshold Lin	nit Values		
Components	Туре	Value	Form
Calcium sulfate (CAS 7778-18-9)	TWA	10 mg/m3	Inhalable fraction.
Portland Cement (CAS 65997-15-1)	TWA	1 mg/m3	Respirable fraction.
Silica Sand (CAS 14808-60-7)	TWA	0.025 mg/m3	Respirable fraction.
US. NIOSH: Pocket Guide	to Chemical Hazards		
Components	Туре	Value	Form
Calcium sulfate (CAS 7778-18-9)	TWA	5 mg/m3	Respirable.
		10 mg/m3	Total
Calcium sulfate hemihydrate (CAS 26499-65-0)	TWA	5 mg/m3	Respirable.
20.00.00.07		10 ma/m3	Total
Portland Cement (CAS 65997-15-1)	TWA	5 mg/m3	Respirable.
		10 mg/m3	Total
Silica Sand (CAS 14808-60-7)	TWA	0.05 mg/m3	Respirable dust.
logical limit values	No biological exposure limits noted f	for the ingredient(s).	
		dust (total and respirable) and re	enirable envetalling cilica

Exposure guidelines

Occupational exposure to nuisance dust (total and respirable) and respirable crystalline silica

should be monitored and controlled.

Appropriate engineering controls	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.
Individual protection measures	s, such as personal protective equipment
Eye/face protection	Wear safety glasses with side shields (or goggles).
Skin protection	
Hand protection	Wear chemical-resistant, impervious gloves.
Other	Wear appropriate chemical resistant clothing.
Respiratory protection	Wear a dust mask if dust is generated above exposure limits.
Thermal hazards	Wear appropriate thermal protective clothing, when necessary.
General hygiene considerations	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Contaminated work clothing should not be allowed out of the workplace.

9. Physical and chemical properties

Appearance	
Physical state	Solid.
Form	Powder.
Color	Colored.
Odor	Not available.
Odor threshold	Not available.
рН	Not available.
Melting point/freezing point	Not available.
Initial boiling point and boiling range	Not available.
Flash point	Not flammable or combustible.
Evaporation rate	Not available.
Flammability (solid, gas)	Not available.
Upper/lower flammability or exp	losive limits
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	Not available.
Vapor density	Not available.
Relative density	Not available.
Solubility(ies)	
Solubility (water)	Insoluble in water.
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	Not available.
10. Stability and reactivity	
Reactivity	The product is stable and non-reactive under normal
Chemical stability	Material is stable under normal conditions.

Conditions to avoid	Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents.
Hazardous decomposition products	No hazardous decomposition products are known.

11. Toxicological information

Information on likely routes of exposure

Dust irritates the respiratory system, and may cause coughing and difficulties in breathing.
Causes skin irritation. May cause an allergic skin reaction. Prolonged contact with wet cement/mixture may cause burns.
Causes serious eye damage. Prolonged contact with wet cement/mixture may cause burns.
Swallowing may cause gastrointestinal irritation.
Rash. Coughing. Irritant effects. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Permanent eye damage including blindness could result. Prolonged exposure may cause chronic effects.

Information on toxicological effects

Acute toxicity	May cause respiratory irritation	۱.	
Components	Species		Test Results
Calcium sulfate (CAS 7778-18-9)			
Acute			
Inhalation			
LC50	Rat		> 3.26 mg/l, 4 Hours
Oral			
LD50	Mouse		4704 mg/kg
	Rat		> 1581 mg/kg
Skin corrosion/irritation	Causes skin irritation.		
Serious eye damage/eye irritation	Causes serious eye damage.		
Respiratory or skin sensitization	l i i i i i i i i i i i i i i i i i i i		
Respiratory sensitization	No data available.		
Skin sensitization	May cause an allergic skin rea	ction.	
Germ cell mutagenicity	No data available to indicate p mutagenic or genotoxic.	roduct or any componen	ts present at greater than 0.1% are
Carcinogenicity	May cause cancer. In 1997, IARC (the International Agency for Research on Cancer) concluded that crystalline silica inhaled from occupational sources can cause lung cancer in humans. However in making the overall evaluation, IARC noted that "carcinogenicity was not detected in all industrial circumstances studied. Carcinogenicity may be dependent on inherent characteristics of the crystalline silica or on external factors affecting its biological activity or distribution of its polymorphs." (IARC Monographs on the evaluation of the carcinogenic risks of chemicals to humans, Silica, silicates dust and organic fibres, 1997, Vol. 68, IARC, Lyon, France.) In June 2003, SCOEL (the EU Scientific Committee on Occupational Exposure Limits) concluded that the main effect in humans of the inhalation of respirable crystalline silica dust is silicosis. "There is sufficient information to conclude that the relative risk of lung cancer is increased in persons with silicosis (and, apparently, not in employees without silicosis exposed to silica dust in quarries and in the ceramic industry). Therefore, preventing the onset of silicosis will also reduce the cancer risk" (SCOEL SUM Doc 94-final, June 2003)		
IARC Monographs. Overall E	Evaluation of Carcinogenicity		
Silica Sand (CAS 14808-6	60-7)	1 Carcinogenic to hum	ans.
NTP Report on Carcinogens			<u> </u>
Silica Sand (CAS 14808-6	00-7) d Substances (29 CER 1910 1)	Known To Be Human (01-1050)	Jarcinogen.
Not listed			
Reproductive toxicity	May damage fertility or the unt	orn child.	
Specific target organ toxicity -	Not classified.		
single exposure			

Specific target organ toxicity - repeated exposure	May cause damage to organs (Lung) through prolonged or repeated exposure.
Aspiration hazard	Due to the physical form of the product it is not an aspiration hazard.
Chronic effects	Prolonged or repeated exposure may cause lung injury, including silicosis.

12. Ecological information

Footoviaity	Not expected to be bermful to equatio ergenieme
Ecoloxicity	Not expected to be harmun to aquatic organisms.
Persistence and degradability	No data is available on the degradability of this product.
Bioaccumulative potential	No data available for this product.
Mobility in soil	The product is not mobile in soil.
Other adverse effects	No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

13. Disposal considerations

Disposal instructions	Dispose of contents/container in accordance with local/regional/national/international regulations. Do not contaminate ponds, waterways or ditches with chemical or used container.
Hazardous waste code	The waste code should be assigned in discussion between the user, the producer and the waste disposal company.
Waste from residues / unused products	Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).
Contaminated packaging	Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

Not regulated as dangerous goods.

ΙΑΤΑ

Not regulated as dangerous goods.

IMDG

Not regulated as dangerous goods.

Transport in bulk according to This substance/mixture is not intended to be transported in bulk. Annex II of MARPOL 73/78 and the IBC Code

15. Regulatory information

US federal regulations

This product is a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

Not regulated.

OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

Not listed.

CERCLA Hazardous Substance List (40 CFR 302.4)

Not listed.

Hazard categories

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Immediate Hazard - Yes Delayed Hazard - Yes Fire Hazard - No Pressure Hazard - No Reactivity Hazard - No

SARA 302 Extremely hazardous substance

Not listed.

SARA 311/312 Hazardous Yes chemical

SARA 313 (TRI reporting) Not regulated.

Other federal regulations		
Clean Air Act (CAA) Sectio	n 112 Hazardous Air Pollutants (HAPs) List	
Not regulated.		
Clean Air Act (CAA) Sectio	n 112(r) Accidental Release Prevention (40 CFR 68.130)	
Not regulated.		
Safe Drinking Water Act (SDWA)	Not regulated.	
US state regulations	WARNING: This product contains chemical(s) known to the State of defects or other reproductive harm.	of California to cause birth
US. Massachusetts RT	K - Substance List	
Calcium sulfate (CA Calcium sulfate hem Lithium Carbonate (Portland Cement (C Silica Sand (CAS 14 US. New Jersey Worke Calcium sulfate (CA Calcium sulfate hem Lithium Carbonate (Portland Cement (C Silica Sand (CAS 14 US. Pennsylvania Work Calcium sulfate hem Portland Cement (C Silica Sand (CAS 14 US. Rhode Island RTK Lithium Carbonate (S 7778-18-9) hihydrate (CAS 26499-65-0) CAS 554-13-2) AS 65997-15-1) 4808-60-7) r and Community Right-to-Know Act S 7778-18-9) hihydrate (CAS 26499-65-0) CAS 554-13-2) AS 65997-15-1) 4808-60-7) cer and Community Right-to-Know Law S 7778-18-9) hihydrate (CAS 26499-65-0) AS 65997-15-1) 4808-60-7) CAS 554-13-2)	
US. California Proposition	\$5	
US - California Proposi	tion 65 - Carcinogens & Reproductive Toxicity (CRT): Listed sub	stance
Lithium Carbonate (Silica Sand (CAS 14	CAS 554-13-2) 1808-60-7)	
International Inventories		
Country(s) or region	Inventory name	On inventory (yes/no)*
Australia	Australian Inventory of Chemical Substances (AICS)	No
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
China	Inventory of Existing Chemical Substances in China (IECSC)	Yes
Europe	European Inventory of Existing Commercial Chemical	Yes

European List of Notified Chemical Substances (ELINCS)

Inventory of Existing and New Chemical Substances (ENCS)

Philippine Inventory of Chemicals and Chemical Substances

A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing

Toxic Substances Control Act (TSCA) Inventory

*A "Yes" indicates this product complies with the inventory requirements administered by the governing country(s).

16. Other information, including date of preparation or last revision

(PICCS)

Substances (EINECS)

New Zealand Inventory

Existing Chemicals List (ECL)

Issue date	16-October-2014
Revision date	-
Version #	01

Europe

Japan

Korea

New Zealand

United States & Puerto Rico

Philippines

country(s).

No

No

Yes

Yes

No

Yes



References

Disclaimer

HSDB® - Hazardous Substances Data Bank Registry of Toxic Effects of Chemical Substances (RTECS)

The information in this (M)SDS was obtained from sources which we believe are reliable but cannot guarantee. Additionally, your use of this information is beyond our control and may be beyond our knowledge. Therefore, the information is provided without any representation or warranty express or implied.

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PERMACOLOR[®] Select[^]

DS-281.0-0817

Globally Proven Construction Solutions





1. PRODUCT NAME PERMACOLOR® Select ^

2. MANUFACTURER

LATICRETE International, Inc. 1 LATICRETE Park North Bethany, CT 06524-3423 USA

iany, 01 0002	1-0120 00/1
Telephone:	+1.203.393.0010, ext. 235
Toll Free:	1.800.243.4788, ext. 235
Fax:	+1.203.393.1684
Internet:	www.laticrete.com

3. PRODUCT DESCRIPTION

PERMACOLOR Select is an advanced high performance cement grout that offers the industry's first dispensable dry pigment solution. PERMACOLOR Select is designed for virtually all types of residential and commercial installations and offers optimum performance on the most demanding exterior or interior applications. Easy to mix, grout and clean, PERMACOLOR Select is fast setting and is suitable for joints 1/16" to $\frac{1}{2}$ " (1.5mm – 12mm) wide on floors or walls.

Advantages

- Exceeds ANSI A118.7
- Does not require sealing Equipped with STONETECH[®] Sealer Technology
- Vibrant consistent color minimizes efflorescence
- Reinforced with Kevlar[®] crack & shrink resistant
- Fast setting ready for foot traffic in as little as 3 hours
- GREENGUARD[®] certified low VOC
- Equipped with Anti-Microbial protection
- LATICRETE® Lifetime Warranty available
- PERMACOLOR Color Kit Available in all 40 colors (10 x carton) plus top competitor colors!

Packaging

Base - 25 lbs (11.3 kg) bag Base - 12.5 lbs (5.6 kg) bag Color Packs - 10 x .5 lbs (2x100 g) cartons

Shelf Life

Factory sealed containers of this product are guaranteed to be of first quality for the time period listed below if stored off the ground in a dry area.

- = 25 lbs (11.3 kg) & 12.5 lbs (5.6 kg) bags one (1) year
- 0.5 lbs (220 g) color kit five (5) years

Limitations

- Adhesives/mastics, mortars and grouts for ceramic tile, pavers, brick and stone are not replacements for waterproofing membranes. When a waterproofing membrane is required, use a LATICRETE Waterproofing Membrane (see Section 10 FILING SYSTEM).
- Use SPECTRALOCK[®] 2000 IG when chemical resistance is required.
- DO NOT use acid to clean colored grout joints.
- Job site conditions will affect the final color of colored grouts. Try a small test area to determine your results before grouting the entire installation.
- Certain types of tile are more absorbent than others and will trap color pigment during grouting. Prior to grouting, test for absorption of color pigment. Porous tiles will need to be sealed prior to grouting.
- Selecting other grouting materials: LATICRETE has grouting materials designed for every use. For installations that require high strength and chemical resistance choose SPECTRALOCK 2000 IG. This product is ideal for installations where a stain resistant colorfast grout is desired.

Note: Surfaces must be structurally sound, stable and rigid enough to support ceramic/stone tile, thin brick and similar finishes. Substrate deflection under all live, dead and impact loads, including concentrated loads, must not exceed L/360 for thin bed ceramic tile/brick installations or L/480 for thin bed stone installations where L=span length.

Cautions

Consult SDS for more safety information.

- During cold weather, protect finished work from traffic until fully cured.
- Contains portland cement and silica sand. May irritate eyes and skin. Avoid contact with eyes or prolonged contact with skin. In case of contact, flush thoroughly with water.

- Do not take internally. Silica sand may cause cancer or serious lung problems. Avoid breathing dust. Wear a respirator in dusty areas.
- Grout may scratch soft glazed or polished surfaces. Conduct a test area to verify results.
- In submerged applications or steam rooms allow PERMACOLOR[®] Select^A to cure for 14 days at 70°F (21°C) prior to filling with water or exposing to steam. See TDS 192 and TDS 172 for more information on these applications.
- Keep out of reach of children.

4. TECHNICAL DATA

VOC/LEED Product Information



This product has been certified for Low Chemical Emissions (ULCOM/GG UL2818) under the UL GREENGUARD Certification Program for Chemical Emissions for Building Materials, Finishes and Furnishings (UL 2818 Standard) by UL Environment.



Applicable Standards

(ANSI A118.6, A118.7, ISO 13007)

This product has a cradle-to-gate (with options) Product-Specific (Type III) Environmental Product Declaration. The PCR review, life cycle assessment and declaration were independently verified by UL Environment in accordance with ISO 14025, ISO 14040 and ISO 14044.

Physical Properties

Tensile Strength (28 Days)	510 psi (3.5 MPa)	
Compressive Strength (28 Days)	3500 psi (24.1 MPa)	
Flexural Strength (28 Days)	1250 psi (8.62 MPa)	
Linear Shrinkage (7 Days)	0.1 %	
Water Absorption (28 Days)	2.8%	

Working Properties

Pot Life	45-60 min at 70°F (21°C)	
Final Set	3-4 hrs	
Heavy Foot Traffic	6 hrs	

Specifications subject to change without notification. Results shown are typical but reflect test procedures used. Actual field performance will depend on installation methods and site conditions.

5. INSTALLATION

Surface Preparation

Before starting to grout, remove spacers and debris in grout joints and remove dust and dirt using a wet sponge. Do not leave water standing in joints. Note: when grouting in hot weather refer to TDS 176 Hot Weather Tiling and Grouting. Substrate temperature must be between 40°F (4°C) and 90°F (32°C). Apply grout release or sealer if necessary. Refer to TDS 400 Grout Guide for more information on grouting.

Mixing

Use approximately 2 – 2.25 quarts (1.9 L – 2.1 L) of clean potable water for 2 PERMACOLOR Select Color Packs and 25 lbs (11.3 kg) of PERMACOLOR Select Grout Base. Do not use with 1776 Grout Enhancer or any other latex additive. Place water in a clean mixing container. Remove Color Packs from the cardboard container as well as the protective plastic sleeve. The internal bag is a water-dispersible pack – when using the 25 lbs. (11.3 kg) bag of PERMACOLOR Select, drop both color packs directly to water in clean mixing container. Mix with a drill mixer until pigment is dispersed evenly in container and the dispersible pack is no longer visible. Add PERMACOLOR Select Base. Mix with a slow speed drill mixer (300 rpm) for 1 minute. Wait for 5 minutes and remix with drill for 1 minute. If using the 12.5 lbs bag, drop only one color pack into 1 – 1.1 quarts (.8L – 1.0 L) of clean water.

Application

Clean tile surface with a damp sponge. Spread with a sharp, firm rubber grout float or wall float for narrow wall joints. To remove excess grout hold the float at a 90° angle and pull it at a 45° angle diagonally across the joints to avoid pulling out the material.

Note: If the grout begins to stiffen during installation, remix with drill mixer for 10–15 seconds. DO NOT ADD MORE WATER.

Cleaning

For first cleaning wait approximately 35 – 40 minutes at 70°F (21°C). Wider joints or cooler temperatures may extend wait time. Begin initial cleaning by lightly wiping down entire area to be cleaned with a damp sponge. Wash with a damp sponge (not wet). Work diagonally to the joints. Allow to dry 3 hours at 70°F (21°C). For second cleaning use a damp sponge or dry cloth to remove remaining grout haze.

Note: Use caution when polishing soft glazed tile or polished stone. If grout is to be sealed, LATICRETE generally recommends waiting a minimum of a 72 hours at 70°F (21°C) prior to sealing PERMACOLOR Select, with a STONETECH® sealer.

6. AVAILABILITY AND COST

Availability

LATICRETE® and LATAPOXY® materials are available worldwide. For Distributor information:

Toll Free: 1.800.243.4788

Telephone: +1.203.393.0010

For on-line distributor information, visit LATICRETE at www.laticrete.com.

Cost

Contact a LATICRETE Distributor in your area.

7. WARRANTY

See 10. FILING SYSTEM:

DS 230.13:	LATICRETE [®] Product Warranty
A component of:	
DS 230.05:	LATICRETE 5 Year System
	Warranty (United States and Canada)
DS 230.10:	LATICRETE 10 Year System
	Warranty (United States and Canada)
DS 230.15:	LATICRETE 15 Year System
	Warranty for Steel or Wood Framed Exterior
	Facades (United States and Canada)
DS 025.0:	LATICRETE 25 Year System Warranty (United
	States and Canada)
DS 230.99:	LATICRETE Lifetime System Warranty

8. MAINTENANCE

LATICRETE® and LATAPOXY® grouts require routine cleaning with a neutral pH cleaner (e.g. STONETECH® Stone & Tile Cleaner) and water. Contact the cleaner manufacturer if another cleaner type will be used to ensure compatibility with the grout. Installation performance and durability may depend on properly maintaining products supplied by other manufacturers. Routine maintenance can be done with detergents and a sponge or mop. For tough or difficult to remove soil, use STONETECH KLENZALL™ Cleaner (or a bleaching cleaner) on a nylon scrubbing pad or a long handled stiff bristle brush can be used. Please note: Prior to using any cleaning material on a tile, stone, etc. installation, test a discrete area or scrap piece of tile to ensure desired results. For additional information, please refer to the Grout Guide, TDS 400 and to TDS 113- Cement Grout Care & Maintenance for more information.

9. TECHNICAL SERVICES

Technical Assistance

Information is available by calling the LATICRETE Technical Service Hotline:

Toll Free:	1.800.243.4788, ext. 235
Telephone:	+1.203.393.0010, ext. 235
Fax:	+1.203.393.1948

Technical and Safety Literature

To acquire technical and safety literature, please visit our website at www.laticrete.com.

10. FILING SYSTEM

Additional product information is available on our website at www.laticrete.com. The following is a list of related documents:

1		The follotting to a not of follator accounter.
	DS 230.13:	LATICRETE Product Warranty (United States
		and Canada)
	DS 230.05:	LATICRETE 5 Year System
		Warranty (United States and Canada)
	DS 230.10:	LATICRETE 10 Year System
		Warranty (United States and Canada)
	DS 230.15:	LATICRETE 15 Year System
		Warranty - for Steel or Wood Framed Exterior
		Facades (United States and Canada)
	DS 025.0:	LATICRETE 25 Year System
		Warranty (United States and Canada)
	DS 230.99:	LATICRETE Lifetime System
		Warranty
	DS 030.0:	SPECTRALOCK® 2000 IG
	DS 236.0:	9235 Waterproofing Membrane
	DS 663.0:	HYDRO BAN®

K20511:	STONETECH Stone & Tile Cleaner
K 20514:	STONETECH KLENZALL Cleaner
TDS 192:	Installation of Ceramic Tile in Swimming Pools
TDS 176:	Hot Weather Tiling and Grouting
TDS 400:	Grout Guide
TDS 172:	Installation of Tile or Stone in Steam Rooms
	Over Backer Board
TDS 113:	Cement Grout Care and Maintenance for More
	Information

^ United States Invention Patent No.: 6,784,229 (and other Patents)

LATICRETE International, Inc.

One LATICRETE Park North, Bethany, CT 06524-3423 USA- 1.300.243.4786 - +1.203.393.0010 - www.laticrete.com ©2017 LATICRETE International, Inc. All trademarks shown are the intellectual properties of their respective awners.



Safety Data Sheet

Issue Date: 01-Feb-2012	Revision Date:	12-Jan-2016		V	ersion 1
	1. IDENT	IFICATION			
<u>Product Identifier</u> Product Name	511 Impregnator				
Other means of identification SDS #	MSC-010R				
Product Code	OMB No. 1218-0072				
Recommended use of the chemical Recommended Use	and restrictions on use Water, Stain & Slip Prote Marble, Granite, Traverti	ction for: Quarry Tile, Cera ne, Slate, Grout, Quartz, B	amic Tile, Porcelain Tile rick, Terrazzo.	e, Glaze	d Tile,
Details of the supplier of the safety Supplier Address Miracle Sealants Company 12318 Lower Azusa Road Arcadia, CA 91006	data sheet				
Emergency Telephone Number Company Phone Number 24 Hour Emergency Phone Number Emergency Telephone (24 hr)	1-626-443-6433 (Phone) 1-626-443-1435 (Fax) 1-800-350-1901 For product spills, leaks of Infotrac 1-800-535-5053	or exposures call: (North America) or 1-352-	323-3500 (International)	
	2. HAZARDS I	DENTIFICATION			
Appearance Clear, colorless liquid	Physical s	tate Liquid		Odor	Aromatic
<u>Classification</u>					
Specific target organ toxicity (repeated Aspiration toxicity Flammable Liquids	exposure)		Category 1 Category 1 Category 3		
Hazards Not Otherwise Classified (HNOC) May be harmful in contact with skin					
<u>Signal Word</u> Danger					

+ 2

Hazard statements May be fatal if swallowed and enters airways Causes damage to organs through prolonged or repeated exposure Flammable liquid and vapor



Precautionary Statements - Prevention

Do not breathe dust/fume/gas/mist/vapors/spray Wash face, hands and any exposed skin thoroughly after handling Do not eat, drink or smoke when using this product Keep away from heat/sparks/open flames/hot surfaces. — No smoking Keep container tightly closed Ground/bond container and receiving equipment Use explosion-proof equipment Use only non-sparking tools Take precautionary measures against static discharge Wear protective gloves/protective clothing/eye protection/face protection

Precautionary Statements - Response

Get medical advice/attention if you feel unwell IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician Do not induce vomiting IN CASE OF FIRE: Use CO2, dry chemical, or foam for extinction

Precautionary Statements - Storage

Store locked up Store in a well-ventilated place. Keep cool

Precautionary Statements - Disposal

Dispose of contents/container to an approved waste disposal plant

3. COMPOSITION/INFORMATION ON INGREDIENTS

Chemical Name	CAS No.	Weight-%
Proprietary	Proprietary	Proprietary

If Chemical Name/CAS No is "proprietary" and/or Weight-% is listed as a range, the specific chemical identity and/or percentage of composition has been withheld as a trade secret.

4. FIRST AID MEASURES

First Aid Measures

General Advice	Provide this SDS to medical personnel for treatment.
Eye Contact	In case of contact, immediately flush eyes with plenty of water for at least 15 minutes.
Skin Contact	Remove contaminated clothing and launder before reuse. Wash with soap and water. Get medical attention if irritation persists.
Inhalation	If inhaled, remove to fresh air. If breathing is difficult, give oxygen. If not breathing, give artificial respiration. Seek medical attention.
Ingestion	If swallowed, do not induce vomiting. Get medical attention. Never give anything by mouth to an unconscious person. If vomiting occurs naturally, have victim lean forward to reduce risk of aspiration.

Most important symptoms and effects

Symptoms	Eyes: May cause eye irritation Skin: May cause mild skin irritation; drying of the skin. Ingestion: May cause vomiting, nausea and diarrhea. Inhalation: Excessive inhalation causes headache, dizziness, nausea and incoordination. Medical conditions aggravated: Respiratory, pulmonary, liver and kidney disorders. Central
Indication of any immediate m	redical attention and special treatment needed
Notes to Physician	Medical conditions generally aggravated by exposure- same as signs and symptoms of

over exposure. Aspiration into the lungs may occur during ingestion or vomiting, causing lung damage or even death due to chemical pneumonia.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media

Dry chemical, CO2, water fog.

Unsuitable Extinguishing Media Not determined.

Specific Hazards Arising from the Chemical

Product is flammable. Heat will cause phosgene gas.

Explosion Data

Sensitivity to Static Discharge Take precautionary measures against static discharge.

Protective equipment and precautions for firefighters

As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear. Cool exposed containers with water to prevent rupturing.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions

ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Wear protective clothing as described in Section 8 of this safety data sheet. Ventilate affected area.

Environmental precautions

Environmental precautions	See Section 12 for additional Ecological Information.			
Methods and material for containment and cleaning up				
Methods for Containment	Prevent further leakage or spillage if safe to do so.			
Methods for Clean-Up	Steps to be taken in case material is released or spilled: wipe, scrape or soak up in an inert material and put in a container for disposal. Use clean non-sparking tools to collect absorbed material. For waste disposal, see section 13 of the SDS.			
7. HANDLING AND STORAGE				
-------------------------------------	---	--	--	--
Precautions for safe handling				
Advice on Safe Handling	Handle in accordance with good industrial hygiene and safety practice. Use personal protection recommended in Section 8. Keep out of the reach of children. Wash face, hands, and any exposed skin thoroughly after handling. Keep away from heat/sparks/open flames/hot surfaces. — No smoking. Use only with adequate ventilation. Keep container tightly closed. Ground container and transfer equipment to eliminate static electric sparks. Take precautionary measures against static discharges. Use spark-proof tools and explosion-proof equipment. Keep cool. Do not breathe vapors or spray mist. Do not eat, drink or smoke when handling this product.			
Conditions for safe storage, includ	ing any incompatibilities			
Storage Conditions	Keep container tightly closed and store in a cool, dry and well-ventilated place. Precautions to be taken in handling and storing: use a ground strap. Store upright in a cool place below 77° F (25° C). Keep out of the reach of children. Store locked up.			
Incompatible Materials	Strong oxidizers.			
8. EX	POSURE CONTROLS/PERSONAL PROTECTION			
Exposure Guidelines	The following information is given as general guidance			
Appropriate engineering controls				
Engineering Controls	Local exhaust: Recommended Mechanical exhaust: General ventilation system should be provided.			
Individual protection measures, su	ch as personal protective equipment			
Eye/Face Protection	Tight fitting, splash proof safety goggles.			
Skin and Body Protection	Protective gloves: Plastic or rubber, chemical resistant Protective clothing or equipment: Chemical resistant clothing.			
Respiratory Protection	Ventilate by opening all doors and windows. If exposure above the TLV or PEL require a NIOSH approved respirator equipped for the exposure or suitable respiratory protection per 29 CFR 1910.134 is required.			
General Hygiene Consideration	IS Work hygienic practices: Wash hands thoroughly before handling foodstuffs, liquids or tobacco products. Use common sense and care around chemicals. Never mix this product with other chemicals. Consult your supervisor for all other hygienic and safety practices. All practices depend on your specific business. Directions for use normally found on label which will dictate engineering and control measures.			
	, FRI DICAL AND CREWICAL PROPERTIES			

Information on basic physical and chemical properties

Physical state Appearance Color	Liquid Clear, colorless liquid Colorless	Odor Odor Threshold	Aromatic Not determined
Property pH Melting Point/Freezing Point Boiling Point/Boiling Range Flash Point	<u>Values</u> Neutral Not available 355-395 °F / 179.44-201.66 °C 51.66 °C / 125 °F	Remarks • Method	

MSC-010R - 511 Impregnator

Evaporation Rate	<0.1		
Flammability (Solid, Gas)	Not determined		
Flammability Limits in Air			
Upper Flammability Limits	7%		
Lower Flammability Limit	1%		
Vapor Pressure	5 mmHg	@ 20 C	
Vapor Density	5.3	(Air=1)	
Relative Density	0.80		
Water Solubility	Insoluble		
Solubility in other solvents	Not determined		
Partition Coefficient	Not determined		
Auto-ignition Temperature	Not determined		
Decomposition Temperature	Not determined		
Kinematic Viscosity	Not determined		
Dynamic Viscosity	Not determined		
Explosive Properties	Not determined		
Oxidizing Properties	Not determined		
Other Information			
VOC Content	Less than or equal to 742 g/L		
Density	798 Kg/M3		
	10. STABILITY AND REAC	TIVITY	

<u>Reactivity</u> Not reactive under normal conditions.

Chemical Stability

Stable under recommended storage conditions.

Possibility of Hazardous Reactions

None under normal processing.

Hazardous Polymerization Hazardous polymerization does not occur.

Conditions to Avoid

Keep away from sources of ignition such as heat, sparks or open flames.

Incompatible Materials

Strong oxidizers.

Hazardous Decomposition Products

Carbon monoxide, carbon dioxide, silicone dioxide, fumes of xylene, aromatic and aliphatic hydrocarbons.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information	
Eye Contact	Irritating to eyes.
Skin Contact	Prolonged/repeated contact may cause defatting of the skin which can lead to dermatitis. May be harmful in contact with skin.
Inhalation	May cause irritation if inhaled.
Ingestion	May be fatal if swallowed and enters airways. May cause irritation of gastrointestinal tract.

Component Information

Chemical Name	nemical Name ATEmix (oral) ATEmix (dermal)		Inhalation LC50	
Proprietary	> 5000 mg/kg (Rat)	= 3000 mg/kg (Rabbit)	> 5.28 mg/L (Rat)4 h	

Information on physical, chemical and toxicological effects

Symptoms	Please see section 4 of this SDS for symptoms.
Delayed and immediate effects as	well as chronic effects from short and long-term exposure
Carcinogenicity	Based on the information provided, this product does not contain any carcinogens or potential carcinogens as listed by OSHA, IARC or NTP.
STOT - repeated exposure	Causes damage to organs through prolonged or repeated exposure.
Aspiration hazard	May be fatal if swallowed and enters airways.
	12. ECOLOGICAL INFORMATION

Ecotoxicity

An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

Component Information

Chemical Name	Algae/aquatic plants	Fish	Crustacea
Proprietary	450: 96 h Pseudokirchneriella	800: 96 h Pimephales prometas	100: 48 h Daphnia magna mg/L
	subcapitata mg/L EC50	mg/L LC50 static	EC50

Persistence/Degradability

Not determined.

Bioaccumulation Not determined.

Mobility Not determined

Other Adverse Effects Not determined

13. DISPOSAL CONSIDERATIONS

Waste Treatment Methods

Disposal of Wastes	Disposal should be in accordance with applicable regional, national and local laws and regulations.
Contaminated Packaging	Disposal should be in accordance with applicable regional, national and local laws and regulations.

	14. TRANSPORT INFORMATION
Note	According to 49 CFR §173.150(f)(1), this material should be reclassified as "NA1993, Combustible Liquid, N.O.S." if it is shipped in bulk. DOT Ground: Combustible liquids are not regulated in non-bulk shipments per 49 CFR 173.150(f)(2).
DOT	(If shipped in NON BULK packaging by ground transport)
IATA UN/ID No	Please contact manufacturer for most current information UN1268
IMDG UN/ID No	Please contact manufacturer for most current information UN1268

15. REGULATORY INFORMATION

International Inventories

Chemical Name	TSCA	DSL/NDSL	EINECS/E LINCS	ENCS	IECSC	KECL	PICCS	AICS
Proprietary	Х	Х	Х		Х	Present	Х	Х

Legend:

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory

DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances

ENCS - Japan Existing and New Chemical Substances

IECSC - China Inventory of Existing Chemical Substances

KECL - Korean Existing and Evaluated Chemical Substances

PICCS - Philippines Inventory of Chemicals and Chemical Substances

AICS - Australian Inventory of Chemical Substances

US Federal Regulations

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355).

SARA 311/312 Hazard Categories

Acute Health Hazard	Yes
Chronic Health Hazard	Yes
Fire Hazard	Yes
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

SARA 313

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372

CWA (Clean Water Act)

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42)

US State Regulations

U.S. State Right-to-Know Regulations

Chemical Na	me New	w Jersey Massachusetts		Pennsylvania	
Proprietary		X			
		16. OTHER INFO	RMATION		
	Health Hazards	Flammability	Instability 0	Special Hazards None	
11/115	Health Hazards 2	Flammability 2	Physical hazards 0	Personal Protection Not determined	
ssue Date: Revision Date: Revision Note:	01-Feb- 12-Jan- New for	2012 2016 mat			

Disclaimer

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet

511 Impregnator Natural Look Penetrating Sealer

Weter, Stain & Slip Protection for				
Quarry Tile Glazed Tile Travertine Quartz Uses	Ceramic Tile Marble Slate Brick	Porcelain Tile Granite Grout Terrazzo		
Interior & Exterior Restrooms Special Features	Kitchen Patios	Showers Drive Ways		
Easy-to-Use Salt Resistant Acid Resistant Slip Resistant Anti Microbial Ingredi	Weather Resistant Non Coating Non Yellowing U.V. Transparent ent	Low Toxicity Freeze/Thaw Resistant Stain Resistant Water Resistant		

PRODUCT DESCRIPTION

PRODUCT DESCRIPTION KEEP OUT OF REACH OF CHILDREN. This product is formulated for sealing concrete and masonry to provide resistance against water, alkalis, acids, ultraviolet light, staining, salt ion intrusion and freeze/thaw damage. 511 Impregnator is a unique polymentaed silicone formulation designed for the protection of all medium to dense porous tile, stone and grout surfaces. 521 Impregnator penetrates into the surface and forms an invisible barrier that is resistant to moisture and stains, while allowing vapor to escape. 511 Impregnator is not a surface coating and will not alter the natural look. All surfaces are hardrer and less slippery 511 Impregnator can be used on interior and exterior applications. 511 Impregnator is U.V. transparent, resists acid rain and will not yellow under any circum-stances, Tu: Impregnator averages five to twenty times the coverage of competitive prod-ucts. (See coverage chart). 511 products have been formulated for or applied to freshly poured concrete to retard the evaporation of water.

51 Impregnator is on the approved sources list of the United States Postal Service and is U.S.D.A. approved for incidental food contact in federal meat and poultry establishments.

Test Data

Independent laboratory tests show **511 impregnator** out performs competitive products. Test results are available upon request for Staining, Static Coefficient of Friction, Tabor Abrasion, Surface Absorption, Freeze/Thaw and Vapor Transmission.

NOTE: On more porous surfaces use sur Porous Plus as directed. For any questions con-cerning grout refer to the grout manufacturers specifications.

511 Impregnator will not stop acid etching.

Sample Testing

Due to the differences of each substrate, several inconspicuous test patches should be completed to assure maximum performance. User must determine suitability of the prod-uct for their intended use.

Color Enhancement

For added color with "TEXTURED AND NON POLISHED" surfaces, 511 Seal & Enhance or Mira Matte may be applied as directed.

Gloss Enhancement

For a higher gloss finish on POUSHED stone surfaces, use Water Ring & Etch Remover, Marble Conditioner, Mira Dust or Granite Brite. For counters and fumiture, use Stone Polish. For tile surfaces, try Tile Brite.

Slip Resistance

511 Impregnator increases the static coefficient of friction on all surfaces. 511 Impregnator has been used successfully for compliance with the American Disability Act's recommenda-tions for slip resistance (ASTM C 1028-89) on polished & honed surfaces.

Protect Neighboring Surfaces

Always protect neighboring surfaces including wood, carpet, metal, landscaping and other non masonry surfaces.

NEW INSTALLATIONS - APPLICATION INSTRUCTIONS

Read entire tabel and SDS before using, 511 Impregnator should not be diluted or thinned in any way 511 Impregnator should be used as is direct from approved container.

In any way, 511 Impregnator should be used as is direct from approved container. Before Grouting: Apply 511 Impregnator to all surfaces prior to grouting. This step will allow quick and easy cleanup after grouting. Grout can stain many surfaces if this proce-dure is not used prior to the grouting process. Apply 511 Impregnator using a Mira Brush or a clean towel. Apply enough to wet the surface. (See coverage charts) Be careful not to saturate the open grout joints. Allow 521 Impregnator to stand for approximately 3 - 5 min-utes for maximum penetration. All excess must be removed at this time by buffing surface with a clean dry towel. This is very important on polished, glazed and porcelain surfaces. Allow 511 Impregnator to cure for 6 - 12 hours before continuing with the grouting proce-dure.

For more porous substrates apply another application after the previous application has dried 2-3 hours. For very porous or difficult substrates, refer to 511 Porous Plus or 511 H2O Plus.

Pus. After Grouting: Once grouted, make sure that all grout residue is removed from the surface with a clean sponge and water. Allow grout to cure per manufacturers specification. If grout clean up is not performed effectively, an additional cleaning may be necessary to remove remaining grout residue or haze. For this procedure use Phosphoric Add Cleaner, (HDAC) Heavy Duty Addic Cleaner (Hydrochloric Add) or Epoxy Grout Film Remover following the instructions carefully. Once the area has completely dried, proceed with the sealing of the grout for water and stain resistance. Apply stal Inpregnator to all grout with a paint brush. Any excess sealer that gets on the surface should be wiped off with a clean towel before it dries. On larger jobs grout can be sealed by retreating the entire area including the tile or stone surface a second time. Be careful not to allow the sealer to puddle or dry on pre-sealed surfaces. sealed surfaces.

Existing Installation - Surface Preparation

01-2016

Surface must be dry and free of contaminants, including previously applied sealers, dirt, lime & hard water deposits, efflorescence, rust & other heavy dirt and grime.

Surface Coating/Wax Removal: To remove existing coatings and/or waxes, use Mira Strip or Finish Sealer Stripper as directed.

Heavy Duty Cleaning: To remove lime and hard water deposits, efflorescence, rust, grease and other heavy dirt and grime use HDAC (Heavy Duty Addic Cleaner) or Phosphoric Add Cleaner as directed.

MIRACLE

www.miraclesealants.com

For a non acid deep clean use Liquid Poultice as directed. Light Cleaning: Use Tile & Stone Cleaner, Porcelain & Ceramic Tile Cleaner, Linestone/Travertine Soap, Counter Kleen as directed.

Editing Installation - Application Instructions

Follow the application instructions previously mentioned, except now, seal the grout and tile or stone surfaces at the same time. When treating surfaces together, make sure that the recessed grout is saturated.

Residue Removal To remove accumulated 511 Impregnator residue, use Miracle Residue Remover as directed.

Color and Gloss Enhancement

For color & gloss enhancement, use Mira Matte or High-Gloss Finish Sealer as directed. **Care Time**

511 Impregnator will be dry to the touch in 1 - 3 hours and may be used for normal foot traffic. For optimum results the area should be kept dry and free from staining materials for 72 hours.

Countere Chart - Lised as directed

	sq.ft/sq.m.	1000 Sq.II. 90 Sq.M.	2000 SQ.IT. 180 SQ.M.	3000 SQ.IT. 270 SQ.M.	4000 sq.rr. 360 sq.m.
Sanded Grout Quarry Tile Geranic Tile Glazed Tile Porcelain Tile Polished Granite Polished Granite Polished Granite Polished Granite Brick Slate Quartz Travertine	(.06-11) (.05-09) (.03-05) (.03-05) (.03-03) (.03-03) (.03-03) (.03-03) (.03-03) (.03-09) (.03-09) (.03-05) (.03-05) (.03-05)				

Cost per sq.ft. is based on a suggested list price of \$120/gallon.1 gallon = 3.785 litters.

MAINTENANCE

For ongoing maintenance instructions please refer to Miracle Sealants Care Guide. Refer to the Miracle Sealants Product Recommendation Chart for specific product recommendations.

Storage

Store **511** Impregnator in the original container, properly sealed to avoid contamination and solvent evaporation. Stored at 77° F (25° C), **511** Impregnator will have a shelf life of 12 months.

Technical Support

For additional technical support, contact Miracle Sealants Company at 1-800-350-1901 or 626-443-6433 ext. 3013

Office Hours

Monday - Friday from 8:30 am - 5:00 pm PT. 1-626-443-6433 1-800-350-1901 • Fax: 1-626-443-1435 website: www.miraclesealants.com

Product Damaged During Transportation

If product is damaged during transportation contact Info Trac @ 1-800-535-5053

Additional Product

Miracle Sealants Company offers a complete line of water & stain repellents, sealers, cleaners, polishing compounds, diamond abrasives, machinery and accessories for the tile, stone, concrete, metal, fabric and carpet professional or do-it-yourself specialist

WARRANTY & CAUTIONS

instructions are a condensed guide and should not be considered complete. In the event of failure, the only obligation of Miracle Sealants Company shall be to reptace such products proven to be defective. Before using, user shall determine the suitability of the product for their interaded use. User assumes all risks and liability what-soever in connection therein. Neither seller nor manufacturer shall be liable for any injury or inability to use this product.

Cantion

st impregnator contains combustible petroleum distillates. All solvents must be consid-ered toxic and must be used in a well ventilated area. Good ventilation means that fresh air is flowing in such a way as to fiel a slight breeze. Open windows and use fans to circulate air. Continue to ventilate until vapors are eliminated. Exposure to high vapor concentration must be avoided. Inhaling the vapors can be harmful. Keep away from heat and open flames. Avoid prolonged contact with skin. Chemical resistant gloves should be worn at all times. Keep small children and pets out of the area until product or surface has thoroughly dridd. Refer to the MSDS for additional information. additional information.

PAREXUSA

Safety Data Sheet

Revision Date: 04/15/15

1 Identification of the substance/preparation and of the company/undertaking

04/15/15

Product details
Product category:
Trade name:
Application/preparation of the substance:
Manufacturer/Supplier:

FAÇADE PAREX USA MESH (WOVEN FIBERGLASS FABRIC) EIFS Accessories PAREXUSA, Inc. 4125 E. LA PALMA AVE SUITE 250 ANAHEIM, CA 92807 pedro.paredes@parexusa.com 800-226-2424 800-424-9300

Further information obtainable from: Contact phone number: In case of emergency, contact CHEMTREC:

2 Hazards identification

Hazard pictograms (GHS-US):	Irritant	
	Health Hazards	
Signal word (GHS-US): Hazard statement (GHS-US):	Warning H303 H320 H335 H313	Can be harmful if swallowed Causes eye irritation May cause respiratory irritation May be harmful in contact with skin
Precautionary statements (GHS-US):	P402 P280	Store in a dry place. Wear protective gloves/protective clothing/eye protection/face protection.
	P302+P352 P305+P351+P338	IF ON SKIN: Wash with plenty of soap and water IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P304+P341	IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing
HMIS codes:	P301+P310	IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician

Health

Flammability

Reactivity

Protective equipment



Information concerning particular hazards for human and environment: May be harmful if ingested.

Dust may be irritating to eyes, respiratory system, and skin. Not known to cause reproductive harm or birth defects. Keep out of reach of children.

3 Composition/information on ingredients

Chemical characterization

Dangerous components:				
CAS #	Name	Name Exposure Limit		
		OSHA Total Dust	15 mg/m3	
65997-17-3	Fiberglass*/Continuous Filament	OSHA Respirable Dust	5 mg/m3	
03337-17-3	Fibergiass / Continuous Filament	ACGIH TLV	10 mg/m3	
-		NIOSH REL TWA	3 fiber/cc	
none	Organic Polymer	none established		

Additional information: * This component is encapsulated in polyolefin resin and does not possess the same hazards as the powdered pure material.

4 First aid measures	
General information:	n/a
After inhalation:	Remove to fresh air. If not breathing, give artificial respiration. If having difficulty breathing, give oxygen. Get immediate medical attention.
After skin contact:	Wash affected area thoroughly with soap and water. Remove contaminated clothes and launder before re-use.
After eye contact:	Immediately flush eyes with plenty of water for at least 15 minutes. Get medical attention.
After swallowing:	Do not induce vomiting. Get medical attention immediately.

5	Fire-fighting measures			
	General information:	Water- based product.		
	Flash point:	n/a		
	Fire and explosion hazards:	Not a fire hazards		
	Suitable extinguishing agents:	Water is the best extinguishing media		
Hazardous combustion products:		Incomplete combustion of dried product can yield low molecular weight hydrocarbons, carbon monoxide, and carbon dioxide.		
Protective equipment: Firefighters should wear full bunker gear, including a positive pressure self contained breathing apparatus		Firefighters should wear full bunker gear, including a positive pressure self contained breathing apparatus		
	Firefighting instructions:	Respiratory equipment should be worn to avoid inhalation of combustion products. Water should not be used except as fog to keep nearby containers cool. Water may be used to cool closed containers to prevent pressure build-up and exposed to extreme heat.		
6	Accidental release measures			
	Measures for environmental protection:	Keep spilled products out of sewers, streams, and water systems.		
	Measures for cleaning/collecting:	For dry material, collect by sweeping and scooping. Transfer collected material to a container, being careful to minimize creation of dust. For wet material, scoop material up and transfer to an open container. Allow material to dry before disposal.		
	Additional information:	See section 13 and section 15 for specific regulatory information concerning this product.		

7 Handling and storage

Handling:

Handle properly to prevent the spread of fiberglass dust or fibers

Storage:

Store in proper containers to prevent the spread of dusts and fibers. Low humidity levels will increase the spread of dusts and fibers.

8	Exposure controls/personal protection				
	Additional information about design of technic	itional information about design of technical facilities: n/a			
	Additional information:	The lists valid during the making were used as a basis.			
	Personal protective equipment:				
	ventilation	Use local exhaust. General exhaust acceptable if the exposure to materials above is maintained below applicable exposure limits. Refer to OSHA Standards 1910.94, 1910.107, and 1910.108.			
	respiratory protection	If personal exposure cannot or may not be controlled below applicable limits by ventilation, wear properly fitted respirator approved by NIOSH/MSHA for protection against materials described above.			
	eye protection	Wear safety glasses to reduce the potential for eye contact.			
	skin protection	Prevent prolonged or repeated contact by using rubber gloves and appropriate protective clothing.			

9 Physical and chemical properties

General information:				
form	woven fiberglass fabric			
color	white or colored			
odor	odorless			
рН	6-8 (in water)			
Change in condition:				
melting point/melting point range	800 deg C			
boiling point/boiling point range	n/a			
evaporation rate:	n/a			
vapor density:	n/a			
Specific gravity:	0.9			
Solubility in/Miscibility with water:	n/a			
Density at 20°C:	n/a			
VOC:	0 g/L (0 lb/gal)			

10	Stability and reactivity	
	Conditions to be avoided:	None known
	Chemical stability:	Stable
	Materials to be avoided:	None known
	Hazardous polymerization:	Will not occur
	Dangerous decomposition products	

Dangerous decomposition products:

Will not spontaneously occur. By Fire- low molecular weight hydrocarbons, carbon dioxide and monoxide.

11 Toxicological information	
Acute toxicity:	
fiber toxicity	Glass fiber diameter determines whether the fiber is Respirable. NIOSH has determined that man-made mineral fibers with diameters equal or greater than 3.5 microns are non-Respirable. Respirable fibers will penetrate deep into the lungs. All E- glass continuous filament fiberglass have a fiber diameter larger than 3.5 microns and therefore are non-Respirable. The following organizations have found that the continuous fiberglass filaments are not considered to be carcinogenic based on human and animal tests conduced within the last 10 years. (IARC, ACGIH, OSHA, NTP)
Primary irritant effect:	
on the skin	Exposure of skin to product may cause chemical burns. Symptoms of exposure may take several hours to manifest.
on the eye	Exposure of eyes to product may cause chemical burns and blindness. Exposure to airborne dust can cause immediate or delayed irritation or inflammation.
through ingestion	May be harmful if ingested.
through inhalation	Dust generated during handling this product may cause irritation to the respiratory tract.
Additional toxicological information:	n/a

12	Ecological information			
	Elimination (persistence and degradability):	n/a		
	Behavior in environmental systems:	n/a	1	
	Mobility and bioaccumulation potential:	n/a		
	General notes:	n/a	8	

13	Disposal considerations	
Product recommendation:		This product must be disposed of in accordance with applicable local, state and federal regulations. Where possible, it is best to use up any excess material.
	Uncleansed packaging recommendation:	Disposal must be made according to official regulations.
14	Transport information	
	Land transport USDOT	Not classified as a dangerous good under transport regulations
	Sea transport IMDG	Not classified as a dangerous good under transport regulations
	Air transport IATA/ICAO	Not classified as a dangerous good under transport regulations

Regulatory information				
US Federal regulations				
CERCLA, section 103 (40CRF302.4)				
This product contains the following toxic chemicals that require notification of the National Response Center of releases of				
quantities of hazardous	substances equal to or greate	er than the Reportable Quantities (RQ):		
	No reporta	ble quantities are present.		
Clean Air Act, section 112				
This product contains th	e following components pres	sent at or above the minimum level and list	ed as Hazardous or Extremely	
Hazardous Air Pollutants	5:			
	No reporta	ble quantities are present.		
SARA, section 302 (40CFR355.30) and section 304 (40CFR355.	.40)		
This product contains th	e following items that require	e emergency planning based on Threshold I	Planning Quantities (TPQ) or	
release reporting based	on RQ:			
	No reportal	ble quantities are present.		
SARA, section 311/312 (40CFR37	/0.21) Hazard classification fc	or this product		
	Fire: No	Pressure generating: No	Reactivity: No	
	Acute health: No	Chronic health: No		
SARA, section 313 (40CFR372.65)			
This product contains th	This product contains the following substances subject to the reporting requirements of Section 313 of Title III of the Superfund			
Amendment and Reauth	orization Act of 1986:			
		none		
EPA VOC regulations				
	Theoretical VOC f	or this product = 0 g/L (0 lb/gal)	<u>, , , , , , , , , , , , , , , , , , , </u>	
ГSCA		· · · · · · · · · · · · · · · · · · ·		
All components of this p	roduct are listed, or are exem	npt from listing on the TSCA inventory.		
OSHA				
This Safety Data Sheet is Hazard Communication S	prepared to comply with the Standard (29 CFR1910.1200).	United States Occupational Safety and Hea Unlisted ingredients are not 'hazardous' pe	alth Administration (OSHA) Pr OSHA standards.	
In addition to items listed in Section 11, this product contains the following items that are specifically regulated by OSHA. Exposure limits may be found in Section 8.				
	nor	ne		

State regulations

California Prop65

Warning - The following chemicals are present in this coating product in small amounts. These chemicals are listed by the California EPA as materials known to the State of California to cause cancer, (and/or) birth defects, (and/or) other reproductive harm:

none

16 Other information

The information and recommendation set forth herein are believed to be accurate. Because some of the information used to prepare this document is derived from information provided to PAREXUSA, Inc. from its suppliers, and because PAREXUSA, Inc. has no control over the conditions of handling and use, PAREXUSA, Inc. makes no warranty, expressed or implied, regarding the accuracy of the data or the results to be obtained from the use thereof and assumes no responsibility from use or reliance thereon. It is the responsibility of the user of PAREXUSA, Inc. products to comply with all applicable federal, state, and local laws and regulations.

PAREXUSA

Reinforcing Meshes

	DESCRIPTION	USES
355 Standard Mesh	4.5 oz fiberglass 38 in. (96.5cm) wide mesh. Highly flexible for full walls or details. Alkali-resistant.	Standard reinforcement of Parex USA EIFS walls for impact resistance and used in Parex USA Stucco Krak-Shield assemblies.
355.48 Long Standard Mesh	4.5 oz fiberglass mesh 48 in. (121.9cm) wide. Highly flexible for details. Alkali-resistant.	Standard reinforcement of Parex USA EIFS walls for impact resistance and used in Parex USA Stucco Krak-Shield assemblies.
356 Short Detail Mesh	4.5 oz fiberglass mesh 9.5 in. (24cm) wide. Highly flexible for details. Alkali-resistant.	Backwrapping , corners, reveals and trim.
352 Adhesive Mesh	4.5 oz fiberglass mesh. Self-adhesive, facilitates the wrapping of complex contours. Highly flexible for details. Alkali-resistant.	Complex architectural details only.
358.10 Intermediate Impact Mesh	12 oz fiberglass 38 in. (96.5cm) wide mesh. Intermediate strength to enhance impact and abuse resistance. Alkali-resistant.	Use with Parex USA EIFS to achieve EIMA/ASTM medium-impact strength classification. Used in Parex USA Stucco Krak-Shield assemblies.
358.14 High Impact Mesh	15 oz fiberglass 38 in. (96.5cm) wide mesh. High strength to enhance impact and abuse resistance. Alkali resistant.	Use with Parex USA EIFS to achieve EIMA/ASTM high-impact strength classification. 355 Standard Mesh must be used in combination with 358.14 High Impact Mesh for impact resistance.
358.20 Ultra High Impact Mesh	20 oz fiberglass 38 in. (96.5cm) wide mesh. Ultra high strength to enhance impact and abuse resistance. Alkali- resistant.	Use with Parex USA EIFS to achieve EIMA/ASTM ultra-high impact strength classification. 355 Standard Mesh must be used in combination with 358.20 Ultra- High Impact Mesh for Impact Resistance.
357 Corner Mesh	7.2 oz fiberglass 9.5 in (24cm) wide mesh. Heavy duty. Factory pre-bent to fold uniformly around corners. Designed to enhance impact and abuse resistance at corners. Alkali-resistant.	Corner reinforcement
	Parex USA Reinforcing Meshes have been te compliance to Chapter 26 of the Internation	sted within the Parex USA EIFS Systems for al Building Code.

Alkali resistant is defined as 120 pli (21 dN/cm) retained tensile strength per ASTM E2098 after 28 days soaked in 5% sodium hydroxide solution.

PAREXUSA

	Product	Nominal Weight	Coverage per Roll	Width	Length	Packaging
	355 Standard Mesh	4.5 oz/yd² (153g/m²)	475 ft ² (43.6 m ²)	38 in (96.5cm)	150'	4 rolls/box
	355.48 Long Standard Mesh	4.5 oz/yd² (153g/m²)	600 ft ² (55.7 m ²)	48 in (122cm)	150'	4 rolls/box
	356 Short Detail Mesh	4.5 oz/yd² (153g/m²)	119 ft² (11 m²)	9.5 in (24cm)	150'	16 rolls/box
	352 Adhesive Mesh	4.5 oz/yd² (153g/m²)	237 ft² (21.7m²)	19 in (48.2cm)	150'	8 rolls/box
Impact	358.10 Intermediate Impact Mesh	12 oz/yd² (407g/m²)	237 ft² (21.7m²)	38 in (96.5cm)	75'	4 rolls/box
	358.14 High Impact Mesh	15 oz/yd² (509g/m²)	237 ft² (21.7m²)	38 in (96.5cm)	75'	2 rolls/box
	358.20 Ultra High Impact Mesh	20 oz/yd² (692g/m²)	237 ft² (21.7m²)	38 in (96.5cm)	75'	2 roll/box
Specialty	357 Corner Mesh	7.2. oz/yd² (244g/m²)	119 ft² (11 m²)	9.5 in (24cm)	150'	4 rolls/box

APPLICATION:

- 355 Standard, 355.48 Long Standard and 356 Short Detail Mesh: The fiberglass mesh must be embedded into a Parex USA basecoat and be smoothed with a trowel until mesh is fully embedded and the basecoat, thickness is approximately 1/16 in. (1.5mm). The color of the reinforcing mesh should not be visible at the surface of the Parex USA basecoat material. A slight pattern of the mesh is acceptable, due to shrinkage of the cementitious basecoat upon drying. Install mesh taking care to avoid wrinkles. The mesh must be continuous at all corners and must be lapped a minimum of 2-1/2 in. (63.5mm) at the mesh seams.
- <u>352 Adhesive Mesh</u>: 352 Adhesive Mesh is adhered to the EPS board before the basecoat is applied. Apply the basecoat and smooth it with a trowel until the mesh color is not visible. A slight pattern of the mesh is acceptable, due to shrinkage of the cementitious basecoat. The mesh must be continuous at all corners and must be lapped a minimum of 2-1/2 in. (63.5 mm) at the mesh seams.
- 358.10 Intermediate Impact, 358.14 High Impact, and 358.20 Ultra High Impact Mesh: The fiberglass mesh must be embedded into the wet basecoat and be smoothed with a trowel until fully embedded with the mesh color not visible. Tightly butt mesh edges but do not overlap them. Install Parex USA 357 Corner Mesh at all edges. 358.10 Intermediate

ASTM E2486 Impact Classification (formerly EIMA 101.86)

- A. Standard Impact Resistance, 25-49 in-lbs (2.8 5.6 J) Impact Range
- B. Medium Impact Resistance, 50-89 in-Ibs (5.7-10.1 J) Impact Range
- C. High Impact Resistance, 90-150 in-Ibs (10.2-17.0 J) Impact Range
- D. Ultra High Impact Resistance, >150 in-lbs (> 17.0 J) Impact Range

Impact: Where mesh edges butt together, the joint has to be covered with a layer of Standard or Detail mesh with a minimum lap of 4 in. (102mm). For 358.14 High Impact Mesh and 358.20 Ultra High Impact Mesh, a second layer of 355 Standard Mesh must be applied on the whole surface.

- 357 Corner Mesh: The fiberglass mesh must be embedded into the wet base coat and be smoothed with a trowel until fully embedded with the mesh color not visible. A slight pattern of the mesh is acceptable, due to shrinkage of the cementitious basecoat. Tightly butt mesh edges but do not overlap them. Install mesh taking care to avoid wrinkles. Where mesh edges butt together, the joint has to be covered with a layer of Standard or Detail mesh with a minimum lap of 6 in. (152mm)
- For all mesh overlaps: When overlapping reinforcing mesh, special care must be taken to ensure the basecoat mesh is flat, level and free from bumps. Basecoat should be feathered onto either side of the overlap. The mesh overlaps should be reviewed to ensure they are acceptably flat before proceeding. Refer to Technical Bulletin 61 for more information.

Parex USA, Inc. 4125 E. La Palma Ave., Suite 250 Anaheim, CA 92807 (866) 516-0061 Tech Support: (800) 226-2424



EIFS SOLUTIONS . STUCCO ASSEMBLIES . TILE AND STONE SYSTEMS PAREXUSA ENVISION IT ALL

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iLOVETOCREATE[®] A DUNCAN ENTERPRISES COMPANY

Safety **Data Sheet**



1. COMPANY AND PRODUCT IDENTIFICATION

iLoveToCreate

A Duncan Enterprises Company 5673 East Shields Avenue Fresno, CA 93727 559-291-4444 559-291-9444 (Fax)

EMERGENCY TELEPHONE NUMBERS Health Emergencies: 559-291-4444 7:00 am - 3:30 pm Pacific Std. Time Spill and Off-Hour Health Emergencies: 800-424-9300 U.S. and Canada 703-527-3887 Outside U.S. and Canada (Collect)

Product Name:

ALEENE'S ORIGINAL TACKY GLUE Product Description: Water-Based Adhesive

2. HAZARDS IDENTIFICATION

HMIS Hazard Ratings	Rating Scale:	
Health	1	0 = Minimal
Flammability	0	1 = Slight
Reactivity	0	2 = Moderate
Personal Protection	See Section 8	3 = Serious 4 = Severe * = Chronic Effects

Emergency Overview	Not considered as hazardous
Eye Contact:	Slight / mild irritant
Skin Contact:	Repeated or prolonged skin contact may result in mild irritation
Inhalation:	Vapor may be an irritant to respiratory tract
Ingestion:	Ingestion may cause irritation of the gastrointestinal tract

3. COMPOSITION / INGREDIENT INFORMATION

Chemical Family:	Water based polymer emulsion	
Component	CAS Number	Concentration %
None Hazardous		

4. FIRST AID MEASURES

Eye	Flush eyes with large amounts of water until irritation subsides. Consult a physician		
Contact:	if irritation persists.		
Skin Contact:	Wash affected skin areas thoroughly with soap and water. Consult a physician if irritation persists.		
Inhalation:	Move subject to fresh air. Consult a physician if symptoms persist.		
Ingestion:	Treat symptomatically and supportively. Get medical attention. DO NOT attempt to give anything by mouth to an unconscious person.		

iLoveToCreate Safety Data Sheet - Aleene's Original Tacky Glue

Autoignition Temperature:	Not Available
Flash Point:	> 212° F
Upper Explosive Limit (%):	Not Applicable
Lower Explosive Limit (%):	Not Applicable
Extinguisher Media:	CO2, Dry Chemical, Foam – Use extinguishing media appropriate for surrounding fire
Special Firefighting Procedures:	Fire fighters should be equipped with self- contained breathing apparatus to protect against potentially toxic and irritating fumes.
Fire & Explosion Hazards:	This is a water-based product and presents no particular fire or explosion hazard. Dry polyme film will burn. Product contains low level of organic volatiles which may be emitted at elevated temperatures.
NFPA Flammability Hazard Class:	0 = Insignificant

6. ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures: Absorb spillages onto sand, earth or any suitable absorbent material. Sweep up and shovel into waste drums. Wash the spillage area with water. Washings must be prevented from entering surface water drains. Disposal should be in accordance with local, state or national legislation.

For safety and environmental precautions, please review entire Safety Data Sheet for necessary information.

7. HANDLING AND STORAGE

 Storage
 40° - 100°F

 Temperature:
 Handling /

 Handling /
 Avoid extreme temperatures. Protect from freezing. This material should not be spilled, discharged, or flushed into sewers or public waterways. Product contains low level of organic volatiles which could accumulate in the unvented headspace of drums or bulk storage vessels. Open drums in well ventilated area. Avoid breathing vapors.

 Ventilation
 General

 Requirements:
 For the second second

8. EXPOSURE CONTROL AND PERSONAL PROTECTION

Conditions Under Which Personal	
Protective Equipment Required:	Normal work conditions, maintenance / repair
Eye Protection Requirements:	Wear safety glasses with side shields: protect against splashing
Glove Requirements:	The use of chemically resistant gloves is recommended.
Clothing Requirements:	Uniforms, coveralls, or a lab coat should be worn. Rubber boots and apron should be worn if exposure is severe.
Change / Removal of Clothing:	Remove contaminated clothing and launder before reuse.
Wash Requirements:	Wash before eating, drinking, or using toilet facilities.
Respirator Requirements:	None required under normal handling conditions. Use NIOSH approved respirator if vapor or mist levels are irritating.
Ventilation Requirements:	General

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iLoveToCreate Safety Data Sheet - Aleene's Original Tacky Glue

9. PHYSICAL AND CHEMICAL PROPERTIES

Pure Material or Mixture:	Mixture
Physical Form:	Liquid
Appearance / Physical Description:	White liquid, slight sweet odor
pH:	4-5
Boiling Point:	> 100° C (> 212°F)
Melting / Freezing Point:	Approx. 0°C (32°F)
Odor Threshold:	Not Available
Solubility in Water:	Miscible
Partition Coefficient (n-octanol/water):	Not Applicable
Specific Gravity (Water = 1):	1.08
Bulk Density:	9.0 lb / gal
Volatiles:	Approx. 50% / wt
Vapor Pressure:	17.5 mm Hg @ 20°C (68°F)
Evaporation Rate (Water = 1):	
Vapor Density (Air = 1):	0.62
Volatile Organic Compounds:	Estimated 0.045 lb/gal
Autoignition Temperature:	Unknown
Flash Point:	> 100° C (> 212°F)
Oxidizing Properties:	Not Applicable

10. STABILITY AND REACTIVITY

Stability:	Stable
Materials to Avoid:	Strong oxidizers, materials that react with water
NFPA Reactivity Class:	0 = Insignificant
Conditions to Avoid:	Protect from temperatures below 40° F
Hazardous Polymerization:	Will not occur

11. TOXICOLOGICAL INFORMATION

Acute (Short-Term) Effects of Exposure		
Route of Entry	Eye contact, skin contact, inhalation, ingestion	
Acute Effects – Eye:	Slight, transient	
Acute Effects – Skin Contact:	No known signs or symptoms associated with exposure to product	
Acute Effects – Inhalation:	No known signs or symptoms associated with exposure to product	
Acute Effects - Ingestion:	No known signs or symptoms associated with exposure to product	

Chronic (Long-Term) Effects of Exposure		
Effect of Chronic Exposure:	The toxicological properties of this product have not been fully evaluated. Use of good industrial hygiene practices is required. Avoid direct contact with skin or eyes. Do not ingest or inhale. Product is unlikely to cause harmful effects under recommended conditions of handling and use.	
Target Organs: Carcinogenicity:	Not applicable None	

12. ECOLOGICAL INFORMATION

Potential to Bioaccumulate:UnknownAquatic toxicity:None established

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iLoveToCreate Safety Data Sheet - Aleene's Original Tacky Glue

	13. DISPOSAL CONSIDERATIONS
Waste Disposal Methods:	Waste disposal should be in accordance with existing Federal, State,
Empty Container Warnings:	Empty containers may contain product residue; follow SDS and label warnings even after they have been emptied

14. TRANSPORT INFORMATION

U.S. Department o	f Transportation Information
DOT Shipping Name:	Adhesive Glues, NOI 4620 Sub. 5
DOT Hazard Class:	Non-hazardous
DOT Reportable Quantity	: None

United Nations Information

U.N. Number: U.N. Class:

None None

The information provided herein may not include the impact of additional regulatory requirements (e.g., for materials meeting the definition of a hazardous waste under RCRA, hazardous substances under CERCLA, and/or marine pollutants under CWA or other similar federal, state or local laws) or any associated exceptions or exemptions under regulations applicable to the transport of this material.

15. REGULATORY INFORMATION

TSCA:	All components are on the TSCA Inventory
FDA:	21CFR175.105
SARA/Title III:	This product contains no substances at or above the reported threshold under Section 313, based on available data.
CONFORMS TO NONTOXIC ASTM D-4236	Products bearing the Nontoxic Product Seal are certified in a program of toxicological evaluation by a nationally recognized toxicologist to contain no materials in sufficient quantities to be toxic or injurious to humans or to cause acute or chronic health problems. These products are certified to be labeled in accordance with the voluntary chronic hazard labeling standard ASTM D-4236. In addition, there is no physical hazard as defined within 29 CFR Part 1910.1200(c).
WARNING: This	product contains the following chemicals that are known to the State of Colifernia to
cause cancer, bir	th defects, or other reproductive harm.
Component Formaldehyde (CAS Number gas) 50-00-0
Unless a concent amounts.	ration is specified in Section 2 of the SDS, the above chemical(s) are present in trace
	16. OTHER INFORMATION

Table of Abbreviations		
ACGIH	American Conference of Governmental Industrial Hygienists	
ANSI	American National Standards Institute	
ASTM	American Society for Testing Materials	
°C	Degrees Centigrade	
CAS	Chemical Abstract Service	
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act	

iLoveToCreate Safety Data Sheet -- Aleene's Original Tacky Glue

16. OTHER INFORMATION (Continued)

	Table of Abbreviations (Continued)
CFR	Code of Federal Regulations
CPR	Controlled Products Regulations
DOT	Department of Transportation
EPA	Environmental Protection Agency
°F	Degrees Fahrenheit
FDA	Food & Drug Administration
g/l	Grams per liter
DOT	Department of Transportation
EPA	Environmental Protection Agency
°F	Degrees Fahrenheit
FDA	Food & Drug Administration
g/l	Grams per liter
Hg	Mercury
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
LD	Lethal Dose
mg/kg	Milligram per kilogram
mm	Millimeter
SDS	Safety Data Sheet
MSHA	Mine Safety and Health Administration
N/A	Not Applicable
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
ppm	Parts per million
SARA	Superfund Amendment and Reauthorization Act
STEL	Short-Term Exposure Limit
TSCA	Toxic Substances Control Act
TWA	Time - Weighted Average
U.N.	United Nations
WHMIS	Workplace Hazardous Materials Information System
>	Greater Than
<	Less Than

Creation Date:	04/06/93
Revision Date:	01/18/13
Technical Contact:	Frank Peters
	Research & Development Manager
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iLoveToCreate Safety Data Sheet – Aleene's Original Tacky Glue

Disclaimer

The information given and the recommendations made herein apply to our product(s) alone and not combined with any other product(s). Such are based on our research and on data from other reliable sources and are believed to be accurate. No guarantee of accuracy is made. It is the purchaser's responsibility before using any product to verify this data under their own operating conditions and to determine whether the product is suitable for their purposes.

Duncan MATERIAL SAFETY DATA SHEET

	1. COMPA	NY AND PRODUCT	IDENTIFI	CATION		
DUNCAN ENTERPRISE	S	EMERGENCY TE			RS	
5673 Fast Shields Avenue		Health Emergency	559-	291-4444	7:00 am - 3:30 pm	
Fresho CA 93727	100	riounn Enlorgonoy	. 000	201 1111	Pacific Standard Time	
559_201_ <i>AAAA</i>		Spill and Off-Hour				
559-291-4444 559 291 9444 (Eax)		Hoalth Emergencie	800.	424-9300	ILS and Canada	
559-291-9444 (Fax)		Health Enlergencie	-3. 000- 703-	527-3887	Outside U.S. and	
			105-	527-5007	Canada (Collect)	
Product Name:					Canada (Conect)	
Synonym Mamo(c):	ALEENE 3 0	Adhasiva				
Synonym Mame(s).	valer-Daseu	Adhesive				
2	2. COMPOSI	ION / INFORMATIO	N ON ING	REDIENT	S	
Chemical Family:	Nater based	oolymer emulsion				
Component (CAS Number	Concentra	tion %			
None Hazardous						
	3	HAZARDS IDENTIE				
Emergency Overview	Not co	onsidered as hazardo	us			
Eye Contact:	Slight	/ mild irritant				
Skin Contact:	Repea	ated or prolonged skir	n contact r	nay result	in mild irritation	
Inhalation:	Vapor	may be an irritant to	respirator	y tract		
Ingestion:	Ingest	tion may cause irritati	on of the g	gastrointes	tinal tract	
		4 FIRST AID MEAS				
Eye Contact:	rrigate with ev	vewash solution or cle	ean water	until pain i	s relieved. Obtain	
r	nedical attent	ion.				
Skin Contact:	Nash skin wit	h soap and water. If	symptoms	develop, d	obtain medical attention.	
Inhalation:	Remove to fre	sh air. Get medical a	attention if	irritation p	persists.	
Ingestion:	Freat sympton	atically and supportively. Get medical attention. DO NOT				
A	Attempt to aiv	e anything by mouth	anything by mouth to an unconscious person.			
-						
	5.	FIRE FIGHTING ME	ASURES			
Autoignition Temperate	Ire'	Not Available				
Elash Doint		> 212° F				
Extinguisher Media:		Water spray or fog		Chemical	Foam	
Extinguisher Media: Special Firefighting Procedures:		Fire fighters should	bo couir	onemical and with as	, i valli	
		Fire fighters should be equipped with self-contained breathing apparatus to protect against potentially toxic and irritating fumes				
Fire & Explosion Hazards:		This is a water-bas	ed product	t and prese	ents no particular fire or	
		explosion hazard	Dry polym	er film will	burn. Product contains	
		low level of organic	volatilee	which may	be emitted at elevated	
		temperatures				
Harardous Compution Draductor		temperatures. Carbon monovido, carbon diovido, unknown hydrocarbono.				
mazardous Compustion Products:						
upper Explosive Limit (%):		Not Applicable				
Lower Explosive Limit (%):						
NFPA Flammability Hazard Class:		U = Insignificant				

	6. ACCIDENTAL RELEASE MEASURES
Spill or Leak Procedures:	Absorb spillages onto sand, earth or any suitable absorbent material. Sweep up and shovel into waste drums. Wash the spillage area with water. Washings must be prevented from entering surface water drains
The second	Disposal should be in accordance with local, state or national legislation
For safety and environmenta information.	I precautions, please review entire Material Safety Data Sheet for necessar
	7. HANDLING AND STORAGE
Storage Temperature:	40° - 100°F
Handling / Storage: should	Avoid extreme temperatures. Protect from freezing. This material
	not be spilled, discharged, or flushed into sewers or public waterways. Product contains low level of organic volatiles which could accumulate in the unvented headspace of drums or bulk storage vessels. Open drums in well ventilated area. Avoid breathing vapors.
8. EXF	OSURE CONTROL AND PERSONAL PROTECTION
Ventilation Requirements:	General
Eve Protection Requireme	Its: Wear safety glasses with side shields Protect against
splashing	tion whom surery glasses with side sincids. Thoreet against
Glove Requirements:	The use of chemically resistant gloves is recommended
Clothing Requirements:	Uniforms coveralls or a lab coat should be worn. Rubber boot
	and apron should be worn if exposure is severe
Change / Removal of Cloth	ing: Remove contaminated clothing and launder before reuse
Wash Requirements:	Wash before eating, drinking, or using toilet facilities
Respirator Requirements:	None required under normal handling conditions. Use NIOSH
	approved respirator if vapor or mist levels are irritating.
	9. PHYSICAL AND CHEMICAL PROPERTIES
Pure Material or Mixture:	Mixture
Physical Form:	Liquid
Color:	White
Odor:	Slight
Odor Threshold:	Not Available
pH:	Approximately 4.5
pH in 1% Solution:	Not applicable
Oxidizing Properties:	Not applicable
Boiling Point:	> 212°F
Melting / Freezing Point:	Approximately 32°F
Solubility in Water:	Miscible

> 212°F Page 2 of 11

Not available

Not applicable

17.5 mm Hg @ 20°C (68°F)

Estimated to be 0.045 lb/gal

Approximately 50% / wt

9.0 lb / gal

1.08

> 1.0

1

Partition Coefficient (n-octanol/water):

Specific Gravity (Water = 1):

Evaporation Rate (Water = 1):

Volatile Organic Compounds:

Autoignition Temperature:

Bulk Density:

Volatiles:

Flash Point:

Vapor Pressure:

Vapor Density (Air = 1):

10. STABILITY AND REACTIVITY

Stability: Materials to Avoid: Conditions to Avoid: NFPA Reactivity Hazard Clas Hazardous Polymerization:	Stable Strong oxidizers, materials that react with water Protect from temperatures below 40° F 0 = Stable Hazardous polymerization will not occur.
	11. TOXICOLOGICAL INFORMATION
Route of Entry Chronic (Long Term)	Eye contact; skin contact; inhalation; ingestion
Effects of Exposure: evaluated.	The toxicological properties of this product have not been fully
contact	Use of good industrial hygiene practices is required. Avoid direct
Target Organs: Carcinogen: Product Toxicology	with skin or eyes. Do not ingest or inhale. Not applicable No
Product Information:	Unlikely to cause harmful effects under recommended conditions of handling and use.
	12. ECOLOGICAL INFORMATION
Potential to Bioaccumulate: Aquatic Toxicity:	Unknown None Established
	13. DISPOSAL CONSIDERATIONS
Waste Disposal Methods:	Waste disposal should be in accordance with existing federal, state,
Empty Container Warnings:	Empty containers may contain product residue; follow MSDS and label warnings even after they have been emptied.
	14. TRANSPORT INFORMATION
<u>U.S</u> DOT Shipping Name: DOT Hazard Class: DOT Reportable Quantity:	<u>. Department of Transportation Information</u> Adhesive Glues, NOI 4620 Sub. 5 Non-hazardous None
U.N. Number: None U.N. Class: None	United Nations Information

The information provided herein may not include the impact of additional regulatory requirements (e.g., for materials meeting the definition of a hazardous waste under RCRA, hazardous substances under CERCLA, and/or marine pollutants under CWA or other similar federal, state or local laws) or any associated exceptions or exemptions under regulations applicable to the transport of this material.

15. REGULATORY INFORMATION

TSCA:	All components are on the TSCA Inventory
FDA:	21CFR175.105
SARA/Title III:	This product contains no substances at or above the reported threshold under
	Section 313, based on available data.

CALIFORNIA PROPOSITION 65

WARNING: This product contains the following chemicals that are known to the State of California to cause cancer, birth defects, or other reproductive harm:

Component CAS Number

Formaldehyde (gas) 50-00-0

Unless a concentration is specified in Section 2 of the MSDS, the above chemical(s) are present in trace amounts.



Products bearing the Nontoxic Product Seal are certified in a program of toxicological evaluation by a nationally recognized toxicologist to contain no materials in sufficient quantities to be toxic or injurious to humans or to cause acute or chronic health problems. These products are certified to be labeled in accordance with the voluntary chronic hazard labeling standard ASTM D-4236. In addition, there is no physical hazard as defined within 29 CFR Part 1910.1200(c).

16. OTHER INFORMATION

Table of Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
ANSI	American National Standards Institute
ASTM	American Society for Testing Materials
°C	Degrees Centigrade
CAS	Chemical Abstract Service
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CPR	Controlled Products Regulations
DOT	Department of Transportation
EPA	Environmental Protection Agency
°F	Degrees Fahrenheit
FDA	Food & Drug Administration
Hg	Mercury
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
LD	Lethal Dose
mg / kg	Milligram per kilogram
mm	Millimeter
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
N / A	Not Applicable
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
ppm	Parts per million
SARA	Superfund Amendment and Reauthorization Act
STEL	Short-Term Exposure Limit

16. OTHER INFORMATION (Continued)

Table of Abbreviations (Continued)

TSCA	Toxic Substances Control Act
TWA	Time - Weighted Average
U.N.	United Nations
WHMIS	Workplace Hazardous Materials Information System
>	Greater Than
<	Less Than

559-291-4444 559-291-9444 (Fax)

Creation Date: 04/06/93 Revision Date: 07/23/07 Technical Contact: Frank Peters Senior R&D Chemist Duncan Enterprises 5673 East Shields Avenue Fresno, CA 93727

Disclaimer

The information given and the recommendations made herein apply to our product(s) alone and not combined with any other product(s). Such are based on our research and on data from other reliable sources and are believed to be accurate. No guarantee of accuracy is made. It is the purchaser's responsibility before using any product to verify this data under their own operating conditions and to determine whether the product is suitable for their purposes.

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MATERIAL SAFETY DATA SHEET

1. COMPANY AND PRODUCT IDENTIFICATION DUNCAN ENTERPRISES EMERGENCY TELEPHONE NUMBERS 5673 East Shields Avenue Health Emergency: 559-291-4444 7:00 am - 3:30 pm Fresno, CA 93727 Pacific Standard Time 559-291-4444 Spill and Off-Hour 559-291-9444 (Fax) Health Emergencies: 800-424-9300 U.S. and Canada 703-527-3887 Outside U.S. and Canada (Collect) Product Name: ALEENE'S ORIGINAL TACKY BRUSH ON GLUE Synonym Name(s): Water-Based Adhesive 2. COMPOSITION / INFORMATION ON INGREDIENTS **Chemical Family:** Water based polymer emulsion Component CAS Number **Concentration %** None Hazardous **3. HAZARDS IDENTIFICATION Emergency Overview** Not considered as hazardous Eye Contact: Slight / mild irritant Skin Contact: Repeated or prolonged skin contact may result in mild irritation Inhalation: Vapor may be an irritant to respiratory tract Ingestion: Ingestion may cause irritation of the gastrointestinal tract 4. FIRST AID MEASURES Eye Contact: Irrigate with eyewash solution or clean water until pain is relieved. Obtain medical attention. Skin Contact: Wash skin with soap and water. If symptoms develop, obtain medical attention. Inhalation: Remove to fresh air. Get medical attention if irritation persists. Ingestion: Treat symptomatically and supportively. Get medical attention, DO NOT attempt to give anything by mouth to an unconscious person. 5. FIRE FIGHTING MEASURES **Autoignition Temperature:** Not Available Flash Point: > 212° F **Extinguisher Media:** Water spray or fog, CO₂, Dry Chemical, Foam Fire fighters should be equipped with self-contained breathing **Special Firefighting Procedures:** apparatus to protect against potentially toxic and irritating fumes. Fire & Explosion Hazards: This is a water-based product and presents no particular fire or explosion hazard. Dry polymer film will burn. Product contains low level of organic volatiles which may be emitted at elevated temperatures.

Hazardous Combustion Products: Upper Explosive Limit (%): Lower Explosive Limit (%):

Page 6 of 11

Not Applicable

Not Applicable

Carbon monoxide, carbon dioxide, unknown hydrocarbons

NFPA Flammability Hazard Class: 0 = Insignificant

6. ACCIDENTAL RELEASE MEASURES

Spill or Leak Procedures: Absorb spillages onto sand, earth or any suitable absorbent material. Sweep up and shovel into waste drums. Wash the spillage area with water. Washings must be prevented from entering surface water drains. Disposal should be in accordance with local, state or national legislation.

For safety and environmental precautions, please review entire Material Safety Data Sheet for necessary information.

7. HANDLING AND STORAGE

 Storage Temperature:
 40° - 100°F

 Handling / Storage:
 Avoid extreme temperatures. Protect from freezing. This material

 should
 not be spilled, discharged, or flushed into sewers or public waterways.

 Product contains low level of organic volatiles which could accumulate in

 the unvented headspace of drums or bulk storage vessels. Open drums

in well ventilated area. Avoid breathing vapors.

8. EXPOSURE CONTROL AND PERSONAL PROTECTION

Ventilation Requirements: Eye Protection Requirements: Glove Requirements: Clothing Requirements:

Change / Removal of Clothing:

Wash Requirements: Respirator Requirements:

General

Wear safety glasses with side shields. Protect against splashing.
The use of chemically resistant gloves is recommended.
Uniforms, coveralls, or a lab coat should be worn. Rubber boots and apron should be worn if exposure is severe.
Remove contaminated clothing and launder before reuse.
Wash before eating, drinking, or using toilet facilities.
None required under normal handling conditions. Use NIOSH approved respirator if vapor or mist levels are irritating.

9. PHYSICAL AND CHEMICAL PROPERTIES

Pure Material or Mixture:	Mixture
Physical Form:	Liquid
Color:	White
Odor:	Slight
Odor Threshold:	Not Available
pH:	Approximately 4.5
pH in 1% Solution:	Not applicable
Oxidizing Properties:	Not applicable
Boiling Point:	> 212°F
Melting / Freezing Point:	Approximately 32°F
Solubility in Water:	Miscible
Partition Coefficient (n-octanol/water):	Not applicable
Specific Gravity (Water = 1):	1.08
Bulk Density:	9.0 lb / gal
Evaporation Rate (Water = 1):	1
Vapor Pressure:	17.5 mm Hg @ 20°C (68°F)
Vapor Density (Air = 1):	> 1.0
Volatiles:	Approximately 50% / wt
Volatile Organic Compounds:	Estimated to be 0.045 lb/gal
Autoignition Temperature:	Not available
Flash Point:	> 212°F

Page 8 of 11

10. STABILITY AND REACTIVITY		
Stability: Materials to Avoid: Conditions to Avoid: NFPA Reactivity Hazard Clas Hazardous Polymerization:	Stable Strong oxidizers, materials that react with water Protect from temperatures below 40° F 0 = Stable Hazardous polymerization will not occur.	
	11. TOXICOLOGICAL INFORMATION	
Route of Entry	Eye contact; skin contact; inhalation; ingestion	
Chronic (Long Term) Effects of Exposure: evaluated.	The toxicological properties of this product have not been fully	
contact	with skin or eyes. Do not ingest or inhale.	
Carcinogen:	No	
Product Toxicology Product Information:	Unlikely to cause harmful effects under recommended conditions of handling and use.	
	12. ECOLOGICAL INFORMATION	
Potential to Bioaccumulate: Aquatic Toxicity:	Unknown None Established	
	13. DISPOSAL CONSIDERATIONS	
Waste Disposal Methods:	Waste disposal should be in accordance with existing federal, state, or local legislation.	
Empty Container Warnings:	Empty containers may contain product residue; follow MSDS and label warnings even after they have been emptied.	
	14. TRANSPORT INFORMATION	
U.S DOT Shipping Name: DOT Hazard Class: DOT Reportable Quantity:	5. Department of Transportation Information Adhesive Glues, NOI 4620 Sub. 5 Non-hazardous None	
U.N. Number: None U.N. Class: None	United Nations Information	

The information provided herein may not include the impact of additional regulatory requirements (e.g., for materials meeting the definition of a hazardous waste under RCRA, hazardous substances under CERCLA, and/or marine pollutants under CWA or other similar federal, state or local laws) or any associated exceptions or exemptions under regulations applicable to the transport of this material.

	15. REGULATORY INFORMATION
TSCA:	All components are on the TSCA Inventory
FDA:	21CFR175.105
SARA/Title III:	This product contains no substances at or above the reported threshold under Section 313, based on available data.

CALIFORNIA PROPOSITION 65

WARNING: This product contains the following chemicals that are known to the State of California to cause cancer, birth defects, or other reproductive harm:

Component CAS Number

Formaldehyde (gas) 50-00-0

Unless a concentration is specified in Section 2 of the MSDS, the above chemical(s) are present in trace amounts.



Products bearing the Nontoxic Product Seal are certified in a program of toxicological evaluation by a nationally recognized toxicologist to contain no materials in sufficient quantities to be toxic or injurious to humans or to cause acute or chronic health problems. These products are certified to be labeled in accordance with the voluntary chronic hazard labeling standard ASTM D-4236. In addition, there is no physical hazard as defined within 29 CFR Part 1910.1200(c).

16. OTHER INFORMATION

Table of Abbreviations

ACGIH	American Conference of Governmental Industrial Hygienists
ANSI	American National Standards Institute
ASTM	American Society for Testing Materials
°C	Degrees Centigrade
CAS	Chemical Abstract Service
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CPR	Controlled Products Regulations
DOT	Department of Transportation
EPA	Environmental Protection Agency
°F	Degrees Fahrenheit
FDA	Food & Drug Administration
Hg	Mercury
HMIS	Hazardous Materials Identification System
IARC	International Agency for Research on Cancer
LD	Lethal Dose
mg / kg	Milligram per kilogram
mm	Millimeter
MSDS	Material Safety Data Sheet
MSHA	Mine Safety and Health Administration
N/A	Not Applicable
NFPA	National Fire Protection Association
NIOSH	National Institute for Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
ppm	Parts per million
SARA	Superfund Amendment and Reauthorization Act
STEL	Short-Term Exposure Limit

16. OTHER INFORMATION (Continued)

Table of Abbreviations (Continued)

TSCA	Toxic Substances Control Act
TWA	Time - Weighted Average
U.N.	United Nations
WHMIS	Workplace Hazardous Materials Information System
>	Greater Than
<	Less Than

559-291-4444 559-291-9444 (Fax)

Creation Date: 02/08/06 Revision Date: 07/23/07 Technical Contact: Frank Peters Senior R&D Chemist Duncan Enterprises 5673 East Shields Avenue Fresno, CA 93727

Disclaimer

The information given and the recommendations made herein apply to our product(s) alone and not combined with any other product(s). Such are based on our research and on data from other reliable sources and are believed to be accurate. No guarantee of accuracy is made. It is the purchaser's responsibility before using any product to verify this data under their own operating conditions and to determine whether the product is suitable for their purposes.

CONTACT PAPER

MATERIAL SAFETY DATA SHEET

KITTRICH CORPORATION 1585 W. MISSION BLVD. POMONA, CA 91766 (714) 736-1000 HEALTH0FLAMMABLITY1REACTIVITY0PERSONAL PROTECTIONNONE

I. Product Information

PRODUCT NAME: VINYL FILM - PRINTED PVC COMMON NAME OR SYNONYM: FLEXIBLE OR RIGID VINYL FILM AND SHEET CHEMICAL NAME: FLEXIBLE OR RIGID PVC CALENDERED FILM OR SHEET CAS REGISTRY NO.: NONE CHEMICAL FAMILY: NONE CHEMICAL FORMULA: NONE

I. Health Data

FIRST AID MEASURES: The product has no significant toxic hazard. Hazardous fumes are produced by combustion or high temperature decomposition.

If exposed to fumes:

SKIN:

- Flush skin thoroughly with cool water for at least five minutes.
- EYES: Immediately flush eyes with a directed stream of water for at least 15 minutes, while forcibly holding eyelids apart to ensure complete irrigation of all eye and lid tissue. GET MEDICAL ATTENTION
- INHALATION: Remove to fresh air. If breathing is difficult, administer oxygen. If respiration stops, give mouth-to-mouth resuscitation. GET MEDICAL ATTENTON

NOTE TO PHYSICIAN: Material has no significant toxic hazard. Hazardous fumes (HCl, C0, C0₂) are produced by combustion and may be produced by decomposition at processing temperatures.

EFFECTS OF OVEREXPOSURE:

- Acute: Material has no significant toxic hazard. Substance decomposes at high temperatures, producing irritating and toxic fumes.
- Chronic: No significant toxic hazard.

Route: Fumes from high temperature decomposition are toxic when inhaled and irritating to skin and mucous membranes.

TOXICITY: Material has not significant toxic hazard.

Page 1 of 3

III. Fire and Explosion Hazard Data

FLASH POINT:	About 500°F	FLAMMABLE LIMITS:	AUTO INGINITION TEMPERTU	RE
METHOD:	ASTM-D-1929	(In Air % by Vol.)	About 600°F	
	(9)	Lower: N/A* Upper: N/A*		

EXTINGUISHING MEDIA: Carbon dioxide, dry chemical

SPECIAL FIRE FIGHTING
PROCEDURE & PERSONAL
PROTECTION:IN CASE OF FIRE:Use water or other extinguishing media appropriate
for surrounding fires. Use self-contained breathing apparatus and full protective
equipment. All fires liberate toxic gases.

UNUSUAL FIRE AND EXPLOSION HAZARDS:

Decomposition by burning in open flame may yield toxic Hydrogen Chloride Gas

N/A* (Not Applicable)

IV. Special Protection

VENTILATION: Local exhaust in the vicinity of hot processing

REPIRATORY: None

GLOVES: None

EYE PROTECTION: None

OTHER PROTECTIVE EQUIPMENT: None

V. Physical Data

BOILING POINT:	Not applicable	SPECIFIC GRAVITY: (Water = 1)	1.20 - 1.80
VAPOR PRESSURE:	Not applicable	pH:	Not applicable
VAPOR DENSITY:	Not Applicable	PERCENT VOLATILE:	Nonvolatile
SOLUBILITY IN WATER:	Negligible	EVAPORATION RATE: (Butyl Acetate = 1)	Less than 1

APPEARANCE AND COLOR:

Clear or colored film

Page 2 of 3

VI.Health Hazard

INGREDIENTS PRESENTING A SIGNIFICANT HAZARD:

This material is an "article" under the definitions of the OSHA Hazard Communication Standard (29 C.F.R. § 1910.1200). As such, it does not release, or otherwise result in exposure to, a hazardous chemical under normal conditions of use.

THRESHOLD LIMIT VALUE: (See Section XI)

VII. Hazardous Reactivity

INCOMPATIBILITY: Nonreactive

HAZARDOUS DECOMPOSITION PRODUCTS: HCl, CO, CO2

CONDITIONS TO AVOID: Keep away from heat for prolonged periods.

VIII. Handling and Storage

HANDLING AND STORAGE PRECAUTIONS: Store in cool, dry place.

IX. Environmental Protection

PROCEDURE IN CASE OF SPILL OR RELEASE: None

WASTE DISPOSAL METHOD: Submit for disposal in accordance with local, state and federal regulations.

X. Regulatory Status

Not classified as a hazardous waste under RCRA

XI. Additional Information

None

Date: 01-04-16

IMPORTANT: The information presented herein while not guaranteed, was prepared by competent technical personnel and is true and accurate to the best of our knowledge. NO WARRANTY, OR GUARANTEE, EXPRESSED OR IMPLIED IS MADE REGARDING PERFORMANCE, STABILITY OR OTHERWISE. This information is not intended to be all inclusive as to the manner and condition of use, handling and storage. Other factors may involve other or additional safety or performance considerations. While our technical personnel will be happy to respond to questions regarding safe handling and use procedures, safe handling and use remains the responsibility of the customer. No suggestions for use are intended as and nothing herein shall be construed as a recommendation or which is in violation of any federal, state or local laws.

Page 3 of 3

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HUSKY PLASTIC SHEETING

PRODUCT SAFETY DATA SHEET

The product referenced in this PSDS document is a consumer product. Under OSHA regulations polyethylene sheeting is considered an "article" and is not subject to OSHA Hazard Communication Standard MSDS/SDS requirements which apply for "hazardous chemicals in the workplace." Additionally, polyethylene sheeting is considered an "article" under the Global Harmonized System and is exempted from the GHS labeling and SDS classification criteria.

Section 1	Product and Company Identification
Product Description:	Polyethylene Sheeting
Stock:	Various
Formula:	Various
Company:	Poly-America, LP 2000 W Marshall Drive Grand Prairie, TX 75051
Emergency Phone Number:	1-800-527-3322 ext. 7411
Notice:	This product is not FDA, CPSC or NSF compliant. It is unsuitable for use in applications such as direct or indirect food contact, toys, medical device or pharmaceutical applications or for potable water application.
Section 2	Composition/Information on Ingredients
	% by wt.
Polyethylene	95 -100
Section 3	Hazards Identification

This product is an inert, non-hazardous solid article.

Exposure to vapors and fumes from heating the polymer to decomposition may cause eye, mucous membrane and respiratory irritation.

Plastic sheeting can create a suffocation hazard when placed over the nose and mouth.

KEEP OUT OF REACH OF CHILDREN

Section 4	First Aid Measures
Swallowing:	No adverse effects are expected, however, if this material is swallowed call a physician or poison control center.
Skin:	No adverse effects are expected from normal contact. Molten or heated sheeting may cause serious burns. For contact with molten material, flush area with large amounts of cold water. Do not attempt to remove material that adheres to the skin. Get prompt medical attention.
Inhalation:	No adverse effects are expected from normal use of this product. Breathing vapors and fumes from heating the polymer to decomposition may cause eye, mucous membrane and respiratory irritation. If exposure to decomposition of

product occurs and irritation develops, remove to fresh air. If irritation persists, seek medical attention.

Eyes:No adverse effects are expected from contact but any foreign body in the eye
may cause irritation. No first aid is normally needed.

Contion E	Cine Cighting Measures		그 같은 것 같은 것 같은 것 같은 것이 같이 같이 같이 같이 많이
Sections	Fire Fighting Measures		en la fille d'Alera de

The flash point of this material is over 600^o F. If a fire should occur, Carbon Monoxide (CO) and irritating smoke may be produced. Wear NIOSH approved self-contained breathing apparatus when fighting fires in enclosed areas. Fight fire with water, CO₂, or dry chemicals. Use flooding quantities of water until well after the fire is out.

Section 6	Accidental Release Measures	
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Clean up material promptly to avoid a slipping hazard. As a matter of good practice; prevent material from entering storm drains, surface waters. Collect for use or disposal.

· · · · · · · · · · · · · · · · · · ·				
Section 7	Handling and Storage			

Keep sheeting away from excessive heat and flames.

Store in a cool, dry area away from excessive heat

Section 8	Exposure Controls and Personal Protection
Ventilation:	General ventilation should be adequate for normal use.
Hand Protection:	None needed under normal use conditions.
Eye Protection:	None needed under normal use conditions.
Respiratory Protection:	None needed under normal use conditions.
Section 9	Physical and Chemical Properties

Density will vary depending on color, scent, and processing components. Therefore, the product can sink or float in water depending on the properties. The product is not soluble in water and may have a fragrant odor at ambient temperature.

Section 10	Stability and Reactivity			

This product is stable and non-reactive. Hazardous decomposition of products can occur if overheated or ignited.

Section 11 Ecological Information

No data is available at this time. This material is an inert plastic product. No adverse environmental effects are expected from normal use or disposal.

Section 12	Disposal Measures	이는 이 것 아름이는 것이	

Dispose in accordance with federal, state and local regulations as ordinary trash

Section 13 Transportation

This product is not a regulated substance under the Department of Transportation (DOT) regulations.

Section 14 Regulatory Information

Notice: The information herein is presented in good faith and believed to be accurate as of the effective date shown. However, no warranty, express or implied is given. Regulatory requirements are subject to change and may differ from one location to another; it is the buyers' responsibility to ensure that its activities comply with federal, state, and local laws. The following specific information is made for purpose of complying with numerous federal, state and local law regulations. See other sections for health and safety information.

Sara 313 Information: To the best of our knowledge, this product contains no chemical subject to SARA Title III Section 313 supplier notification requirements.

SARA Hazard Category: This product has been reviewed according to the EPA "Hazard Categories" (SARA Title III) and is considered, under applicable conditions to meet the following categories: Not to have met any hazard category.

Toxic Substances Control Act (TSCA): All ingredients are on the TSCA inventory or are not required to be listed on the TSCA inventory.

State Right-to-Know: This product is not known to contain any substances subject to disclosure requirements of New Jersey, Pennsylvania and California.

OSHA Hazard Communication Standard: This product is not a "Hazardous Chemical" as defined by the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

	1			and the second
Section 15	Rating			
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National Fire Protection Association (NFPA) ratings:

Health - 0 Flammability - 1 Reactivity - 0

Section 16 Other Information

Last Revision Date: 6/6/16

Preparation Date: 6/19/15
APPENDIX III.

Laticrete and Miracle Sealant Maintenance Recommendations



Cement Grout Care & Maintenance TDS 113

The quality of cement based grouts continues to improve throughout the tile, stone and adhered masonry veneer industries. New technologies mean that grouts get harder, minimize efflorescence and are easier to install than previous technologies. PERMACOLOR[®] Select provides the latest advancement to cement based grouts – one universal grout powder with pigment added to the mix water prior to blending.

However, it is important to note that no cement based grout is self-cleaning or absolutely stain-resistant. Regular and routine maintenance is required to maintain the long term beauty of the grout, and, wiping up spills quickly and thoroughly will help minimize the possibility of staining the grout. The following information will help to maintain the grout for many years.

Regular Maintenance

PERMACOLOR[®] Select offers enhanced protection from stains. For routine, everyday maintenance cleaning a clear, pH neutral cleaner (e.g. STONETECH[®] Stone & Tile Cleaner) is recommended. For soiling from grease, use an alkaline cleaner (e.g. STONETECH[®] KLENZALL[™] Cleaner). For mold or soap scum use a cleaner specifically designed to remove these organisms and deposits (e.g. STONETECH[®] Mold & Mildew Stain Remover and STONETECH[®] Soap Scum Remover). For hard water deposits and other inorganic stains use STONETECH[®] RESTORE[™] to remove these residues and stains.

Some floor cleaning procedures, such as damp mopping, will deposit dirt residue in the grout joint. If the grout appears to be becoming soiled, mop a solution of STONETECH[®] Stone & Tile Cleaner onto the surface and scrub gently with a nylon brush or scrub pad. It is recommended that the mop water be removed by vacuum from the grout and tile surfaces before it dries. Rinse well, vacuum and allow the surface to dry.

Grout Cleaning

Spills should be wiped up immediately with a paper towel or cloth. If a stain remains, scrub the grout surface with warm water and a white nylon scrubbing pad, for at least 60 seconds. For stubborn grout stains on tile installations, dampen the grout and apply a solution of STONETECH[®] KLENZALLTM Cleaner on the surface and let it sit for 3 - 4 minutes, then scrub with a white nylon scrubbing pad for at least 60 seconds and rinse. If a second cleaning is required, repeat the STONETECH[®] KLENZALLTM soaking and scrubbing process on the affected area. For more deeply set or especially stubborn grout stains contact LATICRETE Technical Support for more specific instructions at 1.888.786.6343 or 1.800.243.4788.

Note: Before using any cleaning product on tile or grout, always test clean a small inconspicuous area and allow to dry to ensure compatibility of the cleaner with the surface to be cleaned. Powdered cleanser is not recommended for cleaning unsealed or unglazed tile, and many types of stone. Acid based products are not recommended for polished marble and other types of stone. This information has been prepared in good faith on the basis of information available at the time of publication. It is intended to provide users with information about and guidelines for the proper use and application of the covered LATICRETE brand product(s) under normal environmental and working conditions. Because each project is different, LATICRETE is not responsible for the consequences of variations in such conditions, or for unforeseen conditions.

Grout Sealing Information

PERMACOLOR[®] Select does not require sealing, however, if even greater protection is desired, the following STONETECH[®] products listed below may be used. Note - for maximum stain protection and performance, use SPECTRALOCK[®] PRO Premium Grout. Follow specific installation instructions indicated for each STONETECH[®] Professional Sealer.

- STONETECH[®] BULLETPROOF[®] (for natural stone & cement grout installations)
- STONETECH® Advanced Grout Sealer
- STONETECH[®] Heavy Duty Grout Sealer

Technical Data Sheets are subject to change without notice. For latest revision, check our website at <u>www.laticrete.com</u> TDS 113.doc R 9 October 2015



Miracle 511 Renetrating Sealer - Maintenauce

Maintenance Specifications

SECTION 09782

HARD SURFACE FLOOR, BASE AND WALL - MAINTENANCE AND RESTORATION

Note to specifier: Use this section to specify proper restoration products and procedures for hard surfaces. This section is intended to be used in conjunction with 09781 for finishing, protection after restoration. Increasingly sophisticated clients require existing floors in rehabilitation, renovation or remodel projects be restored to their original beautiful condition while leaving the floor durable and maintenance friendly for years to come. The maintenance products a janitorial service selects could ultimately determine the aesthetics of the floor you designed, particularly on natural stones. Your involvement in the selection of advanced systems for restoration, finishing, protection and maintenance is critical to satisfying your client. Miracle Sealants would enjoy being a part of your successful project.

All tile, stone, grout and masonry surfaces benefit by having a natural look impregnator / penetrating sealer. Impregnators penetrate into the substrate creating a barrier resistant to water penetration, oil penetration, stains, decrease surface absorption, reduce wear, allow 100% vapor transmission, increase static coefficient of friction, without altering the natural look. Stone has many variables and because stone care is not an exact science, test every situation should to assure expected results.

This specification can be used as a stand-alone supplement cross-referenced by your hard surfaces specification sections or you may elect to cut and paste these articles into the appropriate specification section.

PART 1 GENERAL

1.01 SECTION INCLUDES

- A. Maintenance and Restoration of Honed, Textured, Unpolished Natural and Cast Stones
- B. Maintenance and Restoration of Polished Stone.
- C. Maintenance and Restoration of Brick and Masonry Surfaces.
- D. Maintenance and Restoration of Terre Cotta, Saltillo, Cataluna & Other Clay Type Pavers
- E. Maintenance and Restoration of Quarry, Ceramic, Mosaic, & Porcelain Tile.
- F. Maintenance and Restoration of Limestone.

1.02 RELATED SECTIONS

- A. 02515 Stone Pavers
- B. 04200 Unit Masonry
- C. 04400 Stone
- D. 04500 Masonry Restoration and Cleaning
- E. 07180 Water Repellents
- F. 09300 Tile
- G. 09450 Stone Facing
- H. 09600 Stone Flooring
- I. 09630 Unit Masonry Flooring
- J. 09790 Slip Resistant Finishes
- K. 11016 Floor Cleaning Equipment

1.03 REFERENCES

- A. TCA (Tile Council of America) Handbook for Ceramic Tile Installation.
- B. Marble Institute of America handbook "Care and Cleaning for Natural Stone Surfaces".
- C. Limestone Institute Handbook
- D. Ceramic Tile Institute Stain Test (CTI-T-72)
- E. American National Standards Institute (ANSI Z 124.3 Para 5.2 Stain Resistance)
- F. American Society of Testing Methods ASTM C373 and ASTM C 501 Surface Water Absorption Tests and Tabor Abrasion

- G. American Society of Testing Methods ASTM C97 (modified) Surface Water Absorption
- H. American Society of Testing Methods ASTM E 96-92 Water Vapor Transmission
- I. American Society of Testing Methods ASTM C 1028-89 Static Coefficient of Friction (American Disabilities Act -Slip Resistance)

1.04 QUALITY ASSURANCE

- A. Conform to ANSI/TCA A137.1
- B. Conform to TCA Handbook for Ceramic Tile Installation.

1.05 DELIVERY, STORAGE AND HANDLING

A. Handle and store all materials in a manner to avoid damage or contamination to materials and products by water, moisture, freezing, excessive heat, foreign matter.

B. Store Penetrating Sealers at 77 deg F.

1.06 MOCK-UPS

A. Perform four test areas for each substrate.

1.07 TOLERANCES

A. Polished marbles should achieve a gloss of 80 to 90 dynes minimum as measured by a Miracle Sealants Gloss meter.

1.08 ENVIRONMENTAL REQUIREMENTS

- A. Install adhesives, grout releases, tile sealer or grout sealer in an open ventilated environment.
- B. Maintain environmental condition and protect work during installation. Comply with trade standards and manufacturer's printed recommendations.
- C. Maintain temperature in tiled areas of no less than +50 degrees Fahrenheit and no more than 104 degrees Fahrenheit for 7 days after installation.

PART 2 PRODUCTS

2.01 MANUFACTURERES OF CLEANERS, SEALERS, COLOR AND GLOSS ENHANCEMENT

A. Manufactured by Miracle Sealants Company. 1 (800) 350-1901 as represented by:

Note to Specifier: List the appropriate rep for both your office location and the job site location. This will ensure continued excellent service of your account.

2.02 CEMENTITIOUS GROUT REPAIR FOR SHADED MOTTLED OR BLEACHED OUT GROUT

- A. Miracle Grout Pens as manufactured by Miracle Sealants Company.
- B. For uniformly bleached out grout use 511 Seal & Enhance Color Enhancement

2.03 CLEANING

- A. Cementitious grout haze removal: "HDAC" Heavy Duty Acidic Cleaner or Phosphoric Acid Cleaner manufactured by Miracle Sealants Company.
- B. Epoxy grout haze removal: "Epoxy Grout Film Remover" manufactured by Miracle Sealants Company.

2.04 WATER, STAIN AND SLIP PROTECTION

A. Miracle Sealants 511 Porous Plus Natural Looking Penetrating Sealer. Vapor permeable, not a topical coating, making surfaces harder and less slippery. UV resistant, resists acid rain, and non-yellowing. Meets former USDA R1 guidelines for incidental contact for meat and poultry.

Note to Specifier: Test results vary from stone to stone. Please request test reports from Miracle Sealants for your application if your desire is to write a performance specification. Fill in the following data as is appropriate for your project. We appreciate you using Miracle Sealants test data as your benchmark.

- 1. Stain Test:
- 2. Static Coefficient of Friction Test:
- 3. Tabor Abrasion Test, Surface Absorption Test:
- 4. Freeze/Thaw Test :
- 5. Vapor Transmission:

2.05 COLOR ENHANCEMENT

- A. Textured Non-Polished Surfaces 511 Seal & Enhance
- B. Porous Type Pavers 511 Seal & Enhance

2.06 GROUT RELEASE, GROUT AND TILE SEALING

A. Grout Release & Tile Sealer: 511 Impregnator manufactured by Miracle Sealants Company. Grout Sealer: 511 Porous Plus manufactured by Miracle Sealants Company.

PART 3 EXECUTION

3.01 PREPARATION

- A. Floor Surface to be dry and free of contaminants, including previously applied sealers, dirt, lime and hard water deposits, efflorescence, and rust.
- B. Remove existing coatings and waxes using Mira Strip or Finish Sealer Stripper.
- C. Remove lime and hard water deposits, efflorescence, rust and other heavy dirt and grime using Miracle Sealants "HDAC" Heavy Duty Acidic Cleaner. Not for acid sensitive materials including but not limited to marble.
- D. Deep Cleaning non-acid use Miracle Sealants Liquid Poultice.
- E. Thoroughly rinse with clean water and allow to dry.

3.02 INSTALLATION

- A. Keep expansion and control joints free of sealers which may inhibit bonding of gun-applied sealant.
- B. Protect all adjacent surfaces and finishes.

3.03 GROUTING

- A. Allow tile to set for a minimum of 24 hours before treating with 511 Impregnator as a grout release.
- B. Remove all paper and glue from the face of the mounted tile. Remove all spacers, strings, ropes and pegs.
- C. Apply 511 Impregnator per manufacturer's printed instructions and allow curing 12 to 24 hrs before grouting. Keep sealer out of open joints.
- D. Mix and install grout materials to requirements of TCA Handbook, ANSI 108.10 and manufacturer's printed instructions.
- E. Force grout into joint to fill joint flush, leaving no voids.
- F. Promptly remove excess grout from tile surfaces with damp sponge or cloth and polish tile surface with a clean cloth to avoid heavy duty clean up.
- G. Allow grout to cure minimum 72 hours or as required by grout manufacturer prior to application of additional sealers or finishes.

3.04 CLEANING

- A. Clean tile surfaces and adjoining surfaces of any residue of setting adhesive or grout. Grout residue may be cleanable with clean sponges and clean water.
- B. Any excess grout haze or residue must be removed using Miracle Sealants Company "HDAC", diluted according to the manufacturer's printed instructions.
- C. For moderate stains, use Miracle Sealants Company Liquid Poultice, diluted according to the manufacturer's printed instructions
- D. For stubborn stains use Miracle Sealants Company Poultice Powder mixed with the appropriate chemical.

3.05 SEALING

- A. Apply 511 Porous Plus to grout joints using a brush or clean cloth. Allow to dwell a minimum of 3-5 minutes before wiping away any excess sealer from adjacent tile surfaces.
- B. Use Miracle Sealants 511 Impregnator, 511 H2O Plus, 511 Porous Plus as indicated in schedule.

Note to Specifier: Acid Polishing Powders utilize oxalic acid, polishing agents, and micro-abrasives to remove scratches, etch marks, traffic patterns, and water rings. A high shine is restored to calcium based stone surfaces.

3.06 ACID POLISHING

- A. Treat the surface with an impregnator / penetrating sealer and allow to cure.
- B. Use Miracle Sealants Mira Dust polishing powder with water to create a milky solution.
- C. Buff with low RPM machine and neutralize with water when desired finish is achieved.

Note to Specifier: Recrystallization is necessary to rejuvenate a floor to an outstanding shine while making the surface less slippery. It is an acid and magnesium flourisilicates polishing process. Acid, steel wool, and stone react to create a shine. Periodically, a surface being maintained with recrystallization will need a light honing. Honing removes scratches, etch marks and traffic patterns. Honing will also open pores and remove fluorite surface crystals. Recrystallization changes the surface of the stone from calcium carbonate to calcium fluorite which is harder and more resistant to scratches and traffic.

3.07 RECRYSTALLIZATION

- A. Treat surface with Impregnator and allow to cure.
- B. Using a floor buffing machine, use Miracle Sealants Marble Conditioner with a steel wool pad. Do not allow formula to stand on floor because it will etch.
- C. Final buff with dry steel wool pad to remove residue and five final polish.

3.08 HIGH POLISH MAINTENANCE

A. Alternate days with Miracle Sealants Tile & Stone Cleaner.

Note to Specifier: All polished stones become dull because of normal use. Restoration is the process of removing lippage, scratches, etch marks, water rings and traffic patterns by grinding, sanding, or honing the surface of the stone. Bricks with grit abrasives have been used historically but are cumbersome in the field and ineffective on smaller 12 x 12 tiles. Abrasive Screens or Paper are easy to use but they aren't aggressive enough to remove lippage. Diamond Abrasives are the preferred method.

3.09 RESTORATION

- A. Use a slow RPM floor machine like the Miracle Sealants Marble Master, large quantities of water and protect adjacent surfaces using a wet dry vacuum constantly.
- B. Select the grit based on the depth of the scratches and tile lippage. Use all grits in succession,
- C. After achieving desired finish, rinse with neutral cleaner like Tile & Stone Cleaner.
- D. Seal with Miracle Sealants 511 Impregnator.

3.10 COLOR/GLOSS ENHANCEMENT USING TOPICAL COATINGS

A. Use 511 Seal & Enhance to enhance gloss. Because the coating may be softer than the stone, protect the 511 Seal & Enhance with a sacrificial layer like Miracle Sealants High Gloss Finish or Matte Finish Sealer.

3.11 PROTECTION

- A. Protect finished installation from construction traffic until protection products and setting and grouting materials are fully cured.
- B. Do not permit traffic over finished floor surface. If traffic is necessary, protect the floor with a layer of ½ " plywood for full length of traffic pattern; tape joints; use large rubber tired dollies for moving heavy items or equipment.
- C. Protect neighboring surfaces including but not limited to wood, carpet, metal, landscaping, and other non-masonry surfaces.

Note To Specifier: Acidic Cleaners will burn and dissolve calcium in organic stones like marble, travertine or limestone thus causing etch marks. Conversely, acid polishing compounds may be used to polish these calcareous stones. When in doubt, call Miracle Sealants Co.

Siliceous stones like granite, slate, sandstone, and bluestone are durable and easy to clean with mild acidic cleaners. Restoration may be required for stains that are Oil Based (grease, tar, cosmetics), Organic (coffee, tea, fruit, food), Metal (rust from iron, oxidized copper or bronze), Biological (algae, mildew, fungi, moss), Ink (magic marker, pen), Water Spots (hard water stains), Fire and Smoke, Etch Marks, Efflorescence or Scratches and Nicks.

A stone polish will enhance the beautiful luster of the stone while hiding light scratches and etch marks. Stone Soap will react with the calcium in the stone and leave a protective layer.

3.12 SCHEDULE		
Material	Routine Maintenance	Heavy Duty Cleaning
Marble - Polished	Tile & Stone Cleaner	Liquid Poultice, 511 Seal & Enhance, Mira Strip,
		Finish Sealer Stripper
Marble - Honed	Tile & Stone Cleaner, HDAC	Liquid Poultice, 511 Seal & Enhance, Mira Strip,
		Finish Sealer Stripper
Marble - Textured	Tile & Stone Cleaner,	Liquíd Poultice, HDAC, Mira Strip,
	Limestone & Travertine Stone Soap	Finish Sealer Stripper
Granite - Polished	Tile & Stone Cleaner,	Liquid Poultice, Mira Strip, Finish Sealer Stripper
	Porcelain & Ceramic Tile Cleaner	
Granite - Honed	Tile & Stone Cleaner,	Liquid Poultice, HDAC, Mira Strip,
	Porcelain & Ceramic Tile Cleaner	Finish Sealer Stripper
Granite - Textured	Tile & Stone Cleaner	Liquid Poultice, HDAC, Mira Strip,
		Finish Sealer Stripper
Limestone - Polished	Tile & Stone Cleaner, Limestone & Travertine	Liquid Poultice, Mira Strip,
	Stone Soap, Stone Cleaner Preserver	Finish Sealer Stripper
Limestone - Honed	Tile & Stone Cleaner, Limestone & Travertine	Liquid Poultice, HDAC, Mira Strip,
	Stone Soap, Porcelain & Ceramic Tile Cleaner	Finish Sealer Stripper
Limestone - Textured	Tile & Stone Cleaner, Limestone &	Liquid Poultice, HDAC, Mira Strip,
	Travertine Stone Soap	Finish Sealer Stripper
Travertine - Polished	Tile & Stone Cleaner, Stone Cleaner Preserver	Liquid Poultice, Mira Strip,
		Finish Sealer Stripper

– Travertine Honed, Unfilled	Tile & Stone Cleaner, Limestone & Travertine Stone Soap, Porcelain & Ceramic Tile Cleaner	Liquid Poultice, HDAC, Mira Strip, Finish Sealer Stripper
Slate	Tile & Stone Cleaner	Liquid Poultice, HDAC, Mira Strip, Finish Sealer Stripper
Sandstone	Tile & Stone Cleaner	Liquid Poultice, HDAC, Mira Strip, Finish Sealer Stripper
Flagstone	Tile & Stone Cleaner	Liquid Poultice, HDAC, Mira Strip, Finish Sealer Stripper
Cantera	Tile & Stone Cleaner, Limestone & Travertine Stone Soap	Liquid Poultice, HDAC, Mira Strip, Finish Sealer Stripper
Terre Cotta	Tile & Stone Cleaner	Liquid Poultice, HDAC, Mira Strip, Finish Sealer Stripper
Mexican Saltillo Tile	Tile & Stone Cleaner	Liquid Poultice, HDAC, Mira Strip, Finish Sealer Stripper
Ceramic Tile	Tile & Stone Cleaner, Tile & Grout Cleaner, Porcelain & Ceramic Tile Cleaner	Liquid Poultice, HDAC, Mira Strip, Finish Sealer Stripper
Quarry Tile	Tile & Stone Cleaner, Tile & Grout Cleaner, Porcelaín & Ceramic Tile Cleaner	Liquid Poultice, HDAC, Mira Strip, Finish Sealer Stripper
Porcelain Tile	Tile & Stone Cleaner, Tile & Grout Cleaner, Porcelain & Ceramic Tile Cleaner	Liquid Poultice, HDAC, Mira Strip, Finish Sealer Stripper
Brick	Tile & Stone Cleaner	Liquid Poultice, HDAC, Mira Strip, Finish Sealer Stripper
Concrete	Tíle & Stone Cleaner	Liquid Poultice, HDAC, Mira Strip, Finish Sealer Stripper
Cementitious Grout	Tile & Stone Cleaner, Grout Cleaner, Tile & Grout Cleaner	Liquid Poultice, HDAC, Mira Strip, Finish Sealer Stripper
Epoxy Grout	t Tile & Stone Cleaner, Grout Cleaner, Tile & Grout Cleaner	Liquid Poultice, Epoxy Grout Haze Remover

APPENDIX IV.

Laticrete and Miracle Sealant Warranties

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25 Year System Warranty (United States and Canada)

DS-025.0-0218

Globally Proven Construction Solutions

APPLICATION	PRODUCTS	
Undorlayment	DRYTEK*UEVEEEX** PAis DRYTEKIEVEEX PR DRYTEK** LEVELEX Primer NXT* Primer NXT * Primer NXT Level Plus	
Floor Warming ^A	Floor Heat Wat (Mat Only) Floor Heat Wire (Vine Only) STRATA HEAT STRATA HEAT STRATA, HEAT STRATA, HEAT HEATSACKS 114-20.Twith STRATA, HEAT Thormal Packs	
Vapor Reduction	DRYTEK Molecture Vapor Berner NXT Vapor Reduction Cooling	
Waterproofing/ Anti-Fracture	HYDRO BAN® 9235 Waterproofing Membrane	
Waterproofing	HYDRO BAN Sheet Nembrane LATAPOXY® Waterphoef Flashing Motar	
Exterior Veneer Waterproofing/ Anti- Fracture	MVIST# Air & Water Barrier	
shower-System	HYDRO BAN Pre-Sloped Shower Pan (and applicable accessories) HYDRO BAN Linear (Tre Sloped Shower Pan (and applicable accessories) HYDRO BAN Linear Drain HYDRO BAN Boning Hange Dran HYDRO BAN Brain Cover HYDRO BAN Board HYDRO BAN Board HYDRO BAN Board Tab Witstor	
Sound Control/ Anti-Fracture	125 Sound & Crack Adhesive 170 Sound & Crack Solation Mat Fracture Ban ^m 40 Fracture Ban ^m 40 Eracture Ban 90 Eracture Ban Dinag	
Plaza & Deck	Plaza and Deck System	
Uncoulotino	STRATA, MAT	
Thick Bed Method	STRATA MAT XI: 3707 Formed Mortar Bid	
Shiny Bond Cost	ANY AS PTEMILIAN AVAILABLE	
Thin Bed / Adhesive Method	257 Tranion 254 Platnum (regular or rapid version) 255 MULTINAX** Unded States Invention Patent No:: 6,784,229 (and other Patents) TRELITE?* EATAPOXY 300 Adhesive Class Tile Adhesive MVIS Hi-Bond Venaer Montar (regular or rapid version) MVIS Veneer Montar MVIS Veneer Montar	
Carge, Heavy Tile Method	United States Invention Patient No.: 6;764;229 (and other Patents) TRALTEE RMS Veriaer: Nota	
Spot Bonding	LATAPOXY 310 Stone Adhesive - Standard and Rapid Grade	
Grouting (Pointing	SPECTRALOCK® PBO Prendum Grout (non-industrial applications) United States Invention Patent No. 5837766 (and other Patents). SPECTRALOCK PBO Grout (provindustrial applications) United States Invention Patent No. 5681766 (and other Patents) PERNACCI OR® Grout United States Patent No. 5 784,229 (and other Patents) PERNACCICICR® States United States Patent No. 5 784,229 (and other Patents) MVIS Premium Pointing Morta	
Spalant	LATASE MIL	

† Use of suitable flexible sealant is required per Tile Council of North America Detail EJ171 for use in expansion joints, coves, comers, changes in plane and other joints or wherever tile or stone abuts dissimilar materials or restraining surfaces.

A 4-XLT for use to install HYDRO BAN® Pre-Sloped Shower Pans to substrate only.

A Floor Warming Thermostat and STRATA_HEAT™ Thermostat sold by LATICRETE International, Inc., warrants parts and materials for one (1) year from the date of purchase. The sole remedy for the Floor Warming Thermostats and STRATA_HEAT™ Thermostats is product replacement (see DS 230.13 for full details on the LATICRETE* Product Warranty).

TT4-XLT with STRATA_HEAT Thermal Packs when used as a large & heavy tile adhosive mortar.

Subject to the conditions and limitations stated below, LATICRETE INTERNATIONAL, INC. ("LATICRETE") warrants that the products listed on this document will be free from manufacturing defects and will not break down or deteriorate under normal usage for a period of twenty-five (25) years from the date of purchase when installed in accordance with the written specifications of LATICRETE and industry standard guidelines. For this limited warranty to apply, the applications that comprise the installation must be performed with the products listed in this document for each application (refer to chart). Please refer to individual product data sheets for specific guidelines. Notwithstanding the previous paragraph, exterior facades with ceramic tile, stone, adhered masonry veneer, or thin brick installed over substrates with steel or wood framing do not qualify for this limited warranty—see Data Sheet 230. 15 for such applications. Notwithstanding the previous paragraph, ceramic tile, stone or quary/packing house tile installed in commercial and industrial kitchens do not qualify for this limited warranty—see Data Sheet 230. 10IG for such applications.

DISCLAIMER

THIS LIMITED WARRANTY IS GIVEN IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED. THERE ARE NO WARRANTIES, EXPRESS OR IMPLIED, INCLUDING WARRANTIES BASED ON SAMPLES OR ORAL STATEMENTS, WHICH EXTEND BEYOND THE DESCRIPTION ON THE FACE OF THIS DOCUMENT. IMPLIED WARRANTIES OF MERCHANTABILITY AND OF FITNESS FOR A PARTICULAR PURPOSE ARE EXCLUDED.

EXCLUSIVE REMEDY

The sole and exclusive remedy for a breach of this limited warranty is replacement of only the specific portion of the installation that is proven to be defective**. LATICRETE will pay for replacement of its own products and replacement of finishing materials, as well as for labor for the replacement installation, but LATICRETE will not pay more, calculated on a square-fool (squaremeter) basis, for the replacement than the original purchase price of the portion being replaced. LATICRETE will not pay for replacement of any portion of the installation that is not proven to be defective.

In the event that the sole and exclusive remedy described above fails of its essential purpose, the lability of LATICRETE is limited to the monetary value, on a square-foot (square-meter) basis, of the original purchase price of the portion being replaced.

**NOTE: Efflorescence is a normal condition of portland cement mortars and is not a defective condition.

EXCLUSIONS

LATICRETE is not responsible for workmanship not in accordance with the instructions of LATICRETE and industry standard guidelines. Cracking due to structural movement, excessive deflection or other failure in the substrate is also not covered.

LATICRETE IS NOT LIABLE FOR ANY INCIDENTAL DAMAGES OR CONSEQUENTIAL DAMAGES, INCLUDING LOSSES DUE TO DELAYS, INCURRED BY THE PURCHASER OR ANY OTHER PARTY.

NO ASSIGNMENT

This limited warranty is not transferable or assignable.

HOW TO MAKE A CLAIM

To make a claim under this timited warranty, you must notify LATICRETE in writing within thirty (30) days of the discovery of the alleged manufacturing defect. At the option of LATICRETE, you may be required, as a condition of this limited warranty, to provide proof of product purchase and use.

Address your claim to:

LATICRETE International, Inc. 1 LATICRETE Park North Bethany, CT 06524-3423 USA Attn.: Technical Services Department

TECHNICAL INFORMATION

Technical assistance and information is available by calling the LATICRETE Technical Services Line:

Toll Free:	1.800.243.4788, ext. 235
Telephone:	+1.203.393.0010, ext. 235
Fax:	+1.203.393.1948

LATICRETE International, Inc.

Gris LANCRETE Park Herth, Bathony, CT 06524-3423 USA - 1.300.243.4788 - +1.203.393.0010 • www.hitcreta.com @2017 tANCRETE International, Inc. Alt trademarks shown me the intellectual properties of their respective owners

Miracle Seal zur ~

Warranty Information

511 Impregnator, 511 Porous Plus, 511 Seal & Enhance

Satisfaction guaranteed up to 20 years from the date of purchase to the original purchaser. If not completely satisfied with product performance, when used as directed, contact Miracle Sealants Company for product replacement or at its option, refund of the purchase price upon return of unused portion with the original dated receipt.

511 H2O Plus

Satisfaction guaranteed up to 10 years from the date of purchase to the original purchaser. If not completely satisfied with product performance, when used as directed, contact Miracle Sealants Company for product replacement or at its option, refund of the purchase price upon return of unused portion with the original dated receipt.

Exclusions:

1. Replacement costs for labor and installation materials such as tile, natural stone, grout, setting materials,

under floor heating, electrical, plumbing and any other costs associated with the installation.

- 2. Improper installation.
- 3. Improper use of maintenance and household products.
- 4. Ordinary wear and tear.
- 5. Grout related issues including but not limited to staining, color variation, discoloration, cracking, chalking, mildew or mold.
- 6. Any item which might be expected to damage the product including but not limited to: abuse, negligence, falling objects, fire, earthquake, tornado or other natural disaster, exposure to extreme heat or accident.
- 7. Commercial use which constitutes store, office or other place of business.
- 8. Outdoor use.
- 9. Variations between field and trim, tile and stone.
- 10. Natural variations from design and color samples or photos.
- 11. Any color or shade variations, different markings, holes, pits, inclusions, veining, density and any

element inherent to natural stone and tile surfaces.

Procedure for Making a Claim:

The original purchaser must notify Miracle Sealants Company of the defect in writing within 30 days of discovery. Original Purchaser must supply unused product and the original purchase receipt. Failure to produce documentation renders warranty null and void in its entirety. No claim will be honored unless Miracle Sealants Company is given an opportunity to inspect the allegedly defective product. Failure to produce product for inspection renders the warranty null and void in its entirety. After inspection, Miracle Sealants Company will replace product or at its option, refund of the purchase price of the product.

Some states do not allow exclusion or limitation of incidental or consequential damages.

Miracle Grout Shield New & Improved - LIFETIME LIMITED WARRANTY

Miracle Sealants Company (MSC) offers a lifetime limited warranty on this product when installed in accordance with MSC printed specifications and applicable industry standards and building codes. MSC warrants to the original owner that the product will be free from manufacturing defects, will resist stains and will not deteriorate under normal use for the lifetime of the grout. This lifetime limited warranty does not cover normal wear and tear of the product, nor does it eliminate the need for routine maintenance and cleaning. This lifetime limited warranty covers the Miracle Grout Shield New & Improved product only and excludes all claims related to grout defects and/or grout installation errors, as well as claims related to the tile or stone.

EXCLUSIONS TO LIMITED WARRANTY:

MSC is not responsible for structural failure, misuse of product or workmanship not in accordance with manufacturer's instructions and applicable industry standards and building codes. MSC is also not responsible for damage caused by heavy use and/or traffic, abusive conditions or accidents, including, but not limited to, scratching and scuffing. ALL OTHER WARRANTIES DISCLAIMED. THE WARRANTY STATED ABOVE IS IN PLACE OF ALL OTHER WARRANTIES, EXPRESS OR IMPLIED TO THE EXTENT OF THE LAW. MSC EXPRESSLY DISCLAIMS OR LIMITS ALL OTHER WARRANTIES INCLUDING WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

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WARRANTY CLAIMS:

Owner shall notify MSC, in writing, within 15 days of the discovery of the alleged defect or stain. Mail written claim along with proof of purchase to the following address: Miracle Sealants Company, 12318 Lower Azusa Road, Arcadia, CA 91006 Attn: Customer Service