



MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI, Canadian WHMIS, Australian NOHSC, New Zealand, Japanese, and European Union Standards

1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

TRADE NAME (AS LABELED): COLORJUICE™
CHEMICAL NAMES: Silicate Solution
SYNONYMS: Polysilicate Solution
PRODUCT USE: Concrete Colorant
UN IDENTIFICATION NUMBER: Not Applicable/Not Dangerous Goods
SUPPLIER OF THE SAFETY DATA SHEET: AMERICAN DECORATIVE CONCRETE SUPPLY COMPANY
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EMAIL ADDRESS/COMPETENT PERSON FOR MSDS:

DATE OF PREPARATION: May 12, 2011

DATE OF REVISION: New

NOTE: ALL United States Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent Standards, Canadian WHMIS [Controlled Products Regulations], Directives [67/548/EEC], European Union Regulations [(EC) 1272/2008 and subsequent amendments to the regulation], Australian [NOHSC:2011 (2003)], New Zealand HSN0 CoP-8.1, and Japanese Industrial Standard (JIS Z 7250: 2000) required information is included in appropriate sections based on the U.S. ANSI Z400.1-2010 format. This product has been classified in accordance with the hazard criteria of the countries listed above and all subsequent amendments to cited regulations, as required.

2. HAZARD IDENTIFICATION

GLOBAL HARMONIZATION AND EU CLP REGULATION (EC) 1272/2008 LABELING AND CLASSIFICATION: This product has been classified per CLP Regulation (EC) 1272/2008, New Zealand HSN0 CoP 8-1 09-06 and the New Zealand Hazardous Substance Classifications Standard 2001 and Japanese Industrial Standard Z 7251:2006.
Classification: Skin Irritant Cat. 2, Eye Irritant Cat. 2, STOT-SE Respiratory System Cat. 3 Signal Word: Warning
Hazard Statement Codes: H315, H319, H335
Precautionary Statement Codes: P261, P264, p271, P280, P302 + P352, P305 + P351 + P338, P321, P332 + P313, P337 + P313, P362, P304 + P340, P312, P403 + P233, P405, P501
Hazard Symbol/Pictograms: GHS07



EU/AUSTRALIAN LABELING AND CLASSIFICATION: This product has been classified per European Union Council Directive 67/548/EEC and subsequent Directives and Australian National Occupational Health and Safety Commission [NOHSC(1008:2004)].

Classification: Irritant

Risk Phrases: R36/37/38; R66

Safety Phrases: S2, S36/37

Hazard Symbol: Xi



See Section 16 for full text of Risk Phrases/Hazard and Precautionary Statements

NEW ZEALAND CLASSIFICATION UNDER THE HAZARDOUS SUBSTANCES AND NEW ORGANISMS ACT (1996):

Product Group Standard: HSR002670: Surface Coatings and Colourants (Subsidiary Hazard)

Classification: 6.3B: Substances which are mildly irritating to the skin.

6.4A (8.3): Substances which are irritating to the eye.

EMERGENCY OVERVIEW: Product Description: This product is a clear to opalescent, odorless liquid that comes in a variety of colors. **Health Hazards:** This product can irritate the eyes, respiratory tract, and gastrointestinal system and may irritate the skin.

2. HAZARD IDENTIFICATION (Continued)

EMERGENCY OVERVIEW (continued): Health Hazards (continued): This product contains a lithium silicate salt, which is a soluble lithium compound. Some soluble lithium compounds have data indicating reproductive toxic effects by the oral route of exposure; this compound has no specific data. See Section 11 (Toxicological Information) for additional information. **Flammability Hazards:** If involved in a fire, this product will release smoke, acrid vapors and toxic gases (e.g., silicon oxides and lithium oxides). **Reactivity Hazards:** When mixed with acids, this product generates heat; may react with ammonia salts and generate ammonia gas; and can react with aluminum, tin, lead, and zinc and produce flammable hydrogen gas. This product may absorb carbon dioxide from the air. **Environmental Hazards:** Large quantities released to the environment may have an adverse effect. **Emergency Considerations:** Emergency responders should wear appropriate protection for the situation to which they respond. **Shipping Classification:** This product is not classified as Dangerous Goods under any jurisdiction. See Section 14 (Transportation Information) for more details.

3. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	EU EINECS #	Japanese ENCS#	Australian AICS	New Zealand NZIoC	% w/w	EU Classification (67/548/EEC) GHS & EU Classification (1272/2008 EC)
Proprietary Silicate Salt						7-13	SELF-CLASSIFICATION EU 67/548: Classification: Irritant Risk Phrase Codes: R36/37/38, R66 GHS & EU 1272/2008: Classification: Skin Irritant Cat. 2, Eye Irritant Cat. 2, STOT-SE Respiratory System, Cat. 3 Hazard Statement Codes: H315, H319, H335
Proprietary Pigment Mixture						10-30	EU 67/548 HAZARD CLASSIFICATION: Not Applicable. GHS & EU 1272/2008 CLASSIFICATION: Not Applicable.
Black Oxide	Proprietary						
Red Oxide	Proprietary						
Yellow Oxide	Proprietary		Not listed	Proprietary			
Titanium Dioxide	13463-67-7	236-675-5	1-558	Listed	Listed		
Proprietary Acrylic Copolymer						15-40	EU 67/548 HAZARD CLASSIFICATION: Not Applicable. GHS & EU 1272/2008 CLASSIFICATION: Not Applicable.
Water and other components. Each of the other components is present in less than 1 percent concentration (0.1% concentration for potential carcinogens, reproductive toxins, respiratory tract sensitizers, and mutagens).						Balance	EU 67/548 HAZARD CLASSIFICATION: Not Applicable. GHS & EU 1272/2008 CLASSIFICATION: Not Applicable.

See Section 16 for full text of Risk Phrases/Hazard and Precautionary Statements

4. FIRST-AID MEASURES

PROTECTION OF FIRST AID RESPONDERS: Rescuers should be taken for medical attention if necessary.

Remove or cover gross contamination to avoid exposure to rescuers.

WORKPLACE FACILITIES: As when working with all products that contain chemicals, ensure proper decontamination equipment (e.g., eyewash/safety shower stations) are available near areas where this product is used as necessary.

DESCRIPTION OF FIRST AID MEASURES: Contaminated individuals must seek medical attention if any adverse effect occurs. Take a copy of label and MSDS to physician or health professional with the contaminated individual.

Skin Exposure: If adverse skin effects occur, discontinue use and flush contaminated area. Seek medical attention if adverse effect occurs after flushing.

Eye Exposure: If this product contaminates the eyes, rinse eyes under gently running water. Use sufficient force to open eyelids and then "roll" eyes while flushing. Minimum flushing is for 20 minutes. The contaminated individual must seek medical attention if any adverse effect continues after rinsing.

Inhalation: If mists or sprays of this product are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions. Seek medical attention if adverse effect continues after removal to fresh air.

Ingestion: If this product is swallowed, CALL PHYSICIAN OR POISON CONTROL CENTER FOR MOST CURRENT INFORMATION. If professional advice is not available, DO NOT INDUCE VOMITING. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow. If victim is convulsing, maintain an open airway and obtain immediate medical attention.

IMPORTANT SYMPTOMS AND EFFECTS: See Sections 3 (Hazard Identification) and 11 (Toxicological Information).

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Pre-existing respiratory conditions, dermatitis, and other skin disorders may be aggravated by overexposures to this product.

IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT NEEDED: Treat symptoms and eliminate overexposure.

5. FIRE-FIGHTING MEASURES

FLASH POINT: Not flammable.

AUTOIGNITION TEMPERATURE: Not applicable.

FLAMMABLE LIMITS (in air by volume, %): Not applicable.

FIRE EXTINGUISHING MEDIA: In the event of a fire, use suppression methods for surrounding materials (e.g., water spray, dry chemical, halon, carbon dioxide, foam, any "ABC" class extinguisher).

UNSUITABLE EXTINGUISHING MEDIA: None known.

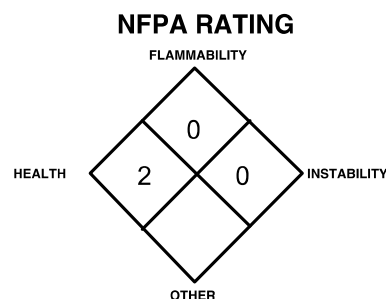
SPECIAL FIRE AND EXPLOSION HAZARDS: This material can irritate contaminated tissue. When involved in a fire, this material can produce irritating vapors and toxic gases (e.g., silicon oxides and lithium oxides). This material can produce flammable hydrogen gas on contact with aluminum, tin, lead, and zinc.

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

ADVICE FOR FIREFIGHTERS: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus (SCBA) and full protective equipment. Chemical resistant clothing may be necessary. Move containers from fire area if it can be done without risk to personnel. Water spray can be used to cool fire-exposed containers. Water fog or spray can also be used by trained firefighters to disperse this product's vapors and to protect personnel. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

HAZCHEM CODE (Australia): Not applicable.



Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate
3 = Serious 4 = Severe

6. ACCIDENTAL RELEASE MEASURES

PERSONAL PRECAUTIONS: In the event of a spill, clear the area and protect people. Trained personnel using pre-planned procedures should respond to uncontrolled releases. The atmosphere must have levels of components lower than those listed in Section 8, (Exposure Controls and Personal Protective Equipment) if applicable, and have at least 19.5 percent oxygen before personnel can be allowed into the area without Self-Contained Breathing Apparatus (SCBA). Monitor area and confirm levels are below exposure limits given in Section 8 (Exposure Controls-Personal Protection), if applicable, before non-response personnel are allowed into the spill area.

PROTECTIVE EQUIPMENT:

Small Spills: For incidental spills (e.g., 1 bottle), wear lightweight gloves, a lab coat, and eye protection.

Large Spills: For large spills (e.g., a case of bottles), protective apparel should be Level C: triple-gloves (rubber gloves and nitrile gloves over latex gloves), chemical resistant suit and boots, hardhat, and Air-Purifying respirator with organic vapor cartridge. Self-Contained Breathing Apparatus must be selected if release occurs in confined or poorly ventilated areas or in situations in which the level of oxygen is below 19.5%.

METHODS FOR CLEANUP AND CONTAINMENT:

Small Spills: Absorb spilled liquid with paper towels.

Large Spills: Absorb spilled liquid with polypads or other suitable absorbent materials. Dike or otherwise contain spill and remove with vacuum truck or pump to storage/salvage vessels.

All Spills: Decontaminate the area of the spill thoroughly using detergent and water. Place all spill residue in an appropriate container and seal. Do not mix with wastes from other materials. If necessary, discard contaminated response equipment or rinse with soapy water before returning such equipment to service. Dispose of in accordance with applicable international, national, state, and local procedures (see Section 13, Disposal Considerations).

ENVIRONMENTAL PRECAUTIONS: Prevent material from entering sewer or confined spaces, waterways, soil or public waters. Do not flush to sewer. For spills on water, contain, minimize dispersion and collect.

7. HANDLING and USE

PRECAUTIONS FOR SAFE HANDLING: All employees who handle this product should be trained to handle it safely. Read instructions provided with these products prior to use. As with all chemicals, avoid getting this product ON YOU or IN YOU. Open containers slowly on a stable surface. Avoid splashing or spraying this product. Avoid breathing vapors, mists, or sprays generated by this product. Do not eat or drink while handling this product. Wash thoroughly after handling this product. Avoid contact with incompatible metals, which can generate flammable hydrogen (See Section 10. Stability and Reactivity) for additional information.

CONDITIONS FOR SAFE STORAGE: Store containers as directed in the product use and handling information. Store away from incompatible materials. Material should be stored in secondary containers, as appropriate. Post warning and "NO SMOKING" signs in storage and use areas, as appropriate. Have appropriate extinguishing equipment in the storage area (i.e., sprinkler system, portable fire extinguishers). Keep containers tightly closed when not in use. In New Zealand, refer to HSNOCop 16-1, Code of Practice for Hazardous Substance Storage Compatibility for additional guideline on storage.

PACKAGING: Ensure containers of these products are properly labeled. Inspect containers containing these products for leaks or damage.

7. HANDLING and USE (Continued)

SPECIFIC USE(S): This product is for use as a colorant in concrete coatings. Follow industry standards for use of this product.

PROTECTIVE PRACTICES DURING MAINTENANCE OF CONTAMINATED EQUIPMENT: Follow practices indicated in Section 6 (Accidental Release Measures). Make certain that application equipment is locked and tagged-out safely, if necessary. Collect all rinsates and dispose of according to applicable International, National, State, and local procedures.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

EXPOSURE LIMITS/CONTROL PARAMETERS:

Workplace/Occupational Exposure Limits:

CHEMICAL NAME	CAS #	EXPOSURE LIMITS IN AIR							
		ACGIH-TLV		OSHA-PEL		NIOSH-RELS		NIOSH	OTHER
		TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	TWA mg/m ³	STEL mg/m ³	IDLH mg/m ³	mg/m ³
Pigment Mixture		NE	NE	NE	NE	NE	NE	NE	NE
Black Oxide		NE	NE	NE	NE	NE	NE	NE	NE
Red Oxide	Proprietary	5 (resp. fract.)	NE	10 (fume)	NE	10 (Dust and Fume as Fe)	NE	NE	DFG MAK: TWA = 1.5 (Respirable fraction), 4 (Inhalable fraction) Carcinogen: IARC-3, TLV-A4
Yellow Oxide	Proprietary	NE	NE	NE	NE	NE	NE	NE	NE
Titanium Dioxide	13463-67-7	10	NE	15 (total dust)	NE	See NIOSH Pocket Guide Appendix A	NE	5000 Carcinogen	Carcinogen: IARC-2B, MAK-3A, NIOSH-Ca, TLV-A4
Proprietary Acrylic Copolymer		NE	NE	NE	NE	NE	NE	NE	NE
Proprietary Silicate Salt		NE	NE	NE	NE	NE	NE	NE	NE

NE = Not Established. See Section 16 for Definitions of Terms Used.

Workplace Exposure Standards (New Zealand): None established. Refer to the Hazardous Substances (Classes 6, 8 and 9 Controls) Regulations 2001 (Regulations 29-30).

Exposure Standards Outside the Workplace (New Zealand): Currently, there are no other exposure limits, such as TELS and EELS (See Section 12 [Ecological Information] for EEL information) established for components of this product.

International Occupational Exposure Limits: In addition to the exposure limit values cited in this section, other exposure limits have been established by various countries for the components of this product. The exposure limits given may not be the most current; individual country authorities should be contacted to check on more current limits.

RED IRON OXIDE:

ARAB Republic of Egypt: TWA = 3 ppm (5 mg/m³) (fume), JAN 1993
 Australia: TWA = 0.1 mg(Fe)/m³, JUL 2008
 Australia: TWA = 5 mg(Fe)/m³ (fume), JUL 2008
 Belgium: TWA = 2 ppm (5 mg(Fe)/m³) (fume), MAR2002
 Denmark: TWA = 3.5 mg(Fe)/m³, OCT 2002
 Finland: TWA = 5 mg(Fe)/m³, fume, SEP 2009
 France: VME = 5 mg(Fe)/m³ (fume), FEB 2006
 Germany: MAK = 1.5 mg(Fe)/m³ (respirable), 2005
 Hungary: TWA = 6 mg/m³ (resp), SEP2000
 Japan: OEL = 1 mg/m³ (respirable), 4 mg/m³ (total), APR 2007
 Korea: TWA = 10 mg/m³, 2006
 Korea: TWA = 5 mg/m³, 2006
 Mexico: TWA = 10 mg/m³; STEL = 20 mg/m³, 2004
 The Netherlands: MAC-TGG = 5 mg(Fe)/m³, 2003
 The Netherlands: MAC-TGG = 10 mg/m³, 2003
 New Zealand: TWA = 5 mg(Fe)/m³ (dust and fume), JAN 2002
 New Zealand: TWA = 10 mg/m³ (inspirable dust), JAN 2002

IRON OXIDE RED (continued):

Norway: TWA = 3 mg/m³, JAN 1999
 The Philippines: TWA = 10 mg/m³ (fume), JAN 1993
 Poland: MAC(TWA) fume = 5 mg/m³, MAC(STEL) = 10 mg/m³, JAN 1999
 Russia: TWA = 6 mg/m³, JUN 2003
 Sweden: TWA = 3.5 mg(Fe)/m³ (resp. dust), JUN 2005
 Switzerland: MAK-W = 3 mg/m³, DEC 2006
 Thailand: TWA = 10 mg/m³ (fume), JAN1993
 Turkey: TWA = 10 mg/m³ (fume), JAN 1993
 United Kingdom: TWA = 4 mg/m³ (respirable), 2005
 United Kingdom: TWA = 10 mg/m³ (inhalable), 2005
 United Kingdom: TWA = 5 mg(Fe)/m³; STEL = 10 mg(Fe)/m³, 2005
 In Argentina, Bulgaria, Colombia, Jordan, Singapore, Vietnam check ACGIH TLV

TITANIUM DIOXIDE:

ARAB Republic of Egypt: TWA = 15 mg/m³, JAN 1993
 Belgium: TWA = 10 mg/m³, MAR 2002
 Denmark: TWA = 6 mg(Ti)/m³, OCT 2002
 France: VME = 10 mg/m³, FEB 2006

TITANIUM DIOXIDE (continued):

Germany: MAK = 1.5 mg/m³ (respirable), 2005
 Japan: OEL = 1 mg/m³ (respirable), 4 mg/m³ (total), APR 2007
 Korea: TWA = 10 mg/m³, 2006
 Mexico: TWA = 10 mg(Ti)/m³; STEL = 20 mg(Ti)/m³, 2004
 The Netherlands: MAC-TGG = 10 mg/m³, 2003
 New Zealand: TWA = 10 mg/m³ (inspirable dust), JAN 2002
 Norway: TWA = 5 mg/m³, JAN 1999
 Poland: MAC(TWA) = 10 mg(Ti)/m³, MAC(STEL) = 30 mg(Ti)/m³, JAN 1999
 Russia: TWA = 10 mg/m³, JUN 2003
 Sweden: TWA = 5 mg/m³ (total dust), JUN 2005
 Switzerland: MAK-W = 3 mg/m³, DEC 2006
 Turkey: TWA = 15 mg/m³, JAN 1993
 United Kingdom: TWA = 10 mg/m³ (inhalable), 2005
 United Kingdom: TWA = TWA 4 mg/m³ (respirable), 2005
 In Argentina, Bulgaria, Colombia, Jordan, Singapore, Vietnam check ACGIH TLV

ENGINEERING CONTROLS:

Ventilation: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided below. Exhaust directly to the outside, taking necessary precautions for environmental protection. If necessary, refer to Australian National Code of Practice for the Control of Workplace Hazardous Substances [NOHSC: 2007 (1994)] for further information.

PERSONAL PROTECTIVE EQUIPMENT: The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132), equivalent standards of Canada (including CSA Standard Z94.4-02 and CSA Standard Z94.3-07), standards of EU member states (including EN 529:2005 for respiratory PPE, CEN/TR 15419:2006 for hand/body protection, and CR 13464:1999 for face/eye protection), standards of Australia (including AS/NZS 1715:1994 for respiratory PPE, AS/NZS 4501.2:2006 for protective clothing, AS/NZS 2161.1:2000 for glove selection, and AS/NZS 1336:1997 for eye protection), or standards of Japan (including JIS T 8116:2005 for glove selection, JIS T 8150:2006 for respiratory PPE, JIS T 8147:2003 for eye protectors, and JIS T 8030:2005 for protective clothing). Please reference applicable regulations and standards for relevant details.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

PERSONAL PROTECTIVE EQUIPMENT (continued):

Respiratory Protection: If mists, sprays or vapors from this product are created during use, use appropriate respiratory protection. Use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, Canadian CSA Standard Z94.4-02, the European Standard EN 529:2005, and EU member state standards, Australian Standard 1716-Respiratory Protective Devices and Australian Standard 1715-Selection, Use, and Maintenance of Respiratory Protective Devices, New Zealand standards, or Japanese standards. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under U.S. Federal OSHA's Respiratory Protection Standard (1910.134-1998).

Eye Protection: Wear safety glasses with side shields (or goggles) and a face shield. If necessary, refer to U.S. OSHA 29 CFR 1910.133, Canadian CSA Standard Z94.3-07, European Standard CR 13464:1999, Australian Standard 1337-Eye Protection for Industrial Applications and Australian Standard 1336-Recommended Practices for Eye Protection in the Industrial Environment, New Zealand standards, or Japanese standards.

Hand Protection: Wear impervious rubber gloves. Check gloves for leaks. Wash hands before putting on gloves and after removing gloves. If necessary, refer to U.S. OSHA 29 CFR 1910.138, appropriate Standards of Canada, Australian Standard 2161-Industrial Safety Gloves and Mittens, European Standard CEN/TR 15419:2006, New Zealand standards, or Japanese standards.

Body Protection: Use body protection appropriate for task (e.g., coveralls or apron). If necessary, refer to appropriate Standards of Canada, European Standard CEN/TR 15419:2006, Australian Standard 3765-Clothing for Protection Against Hazardous Chemicals, New Zealand standards, or Japanese standards. If a hazard of injury to the feet exists due to falling objects, rolling objects, where objects may pierce the soles of the feet or where employee's feet may be exposed to electrical hazards, use foot protection, as described in U.S. OSHA 29 CFR 1910.136 and the Canadian CSA Standard Z195-02, *Protective Footwear*.

9. PHYSICAL and CHEMICAL PROPERTIES

MOLECULAR WEIGHT (single entity only): Not applicable.

COLOR: Variety.

APPEARANCE: Clear to opalescent.

RELATIVE VAPOR DENSITY (air = 1): Not established.

FLASH POINT: Not applicable.

UPPER EXPLOSIVE LIMIT: Not established.

AUTOIGNITION TEMPERATURE: Not established.

EXPLOSIVE PROPERTIES: Not explosive.

BOILING POINT: Not established.

MELTING/FREEZING POINT: Not established.

DENSITY/SPECIFIC GRAVITY: Not established.

VISCOSITY: Not established.

PARTITION COEFFICIENT (n-octanol/water): Not established

HOW TO DETECT THIS SUBSTANCE: There are no specific warning properties associated with these products.

VOC CONTENT: >40 g/L VOCs.

PHYSICAL STATE: Liquids.

ODOR: Odorless.

pH: 9.8–10.2

VAPOR PRESSURE: Not established.

FLAMMABILITY: Not flammable.

LOWER EXPLOSIVE LIMIT: Not established.

DECOMPOSITION TEMPERATURE: Not established.

OXIDIZING PROPERTIES: Not oxidizers.

EVAPORATION RATE (n-BuAc = 1): Not established.

% VOLATILITY: Not established.

ODOR THRESHOLD: Not established.

SOLUBILITY: Not established.

10. STABILITY and REACTIVITY

REACTIVITY/CHEMICAL STABILITY: This product gels and generates heat when mixed with acids and may react with ammonia salts and generate ammonia gas. This product can also react with aluminum, tin, lead, and zinc and produce flammable hydrogen gas. This product absorbs carbon dioxide.

POSSIBILITY OF HAZARDOUS POLYMERIZATION: Will not polymerize.

CONDITIONS TO AVOID: Avoid exposure to or contact with extreme temperatures and incompatible chemicals.

INCOMPATIBLE MATERIALS: This product is incompatible with acids; absorbs carbon dioxide; may react with ammonia salts, aluminum, tin, lead, and zinc. See above for additional information.

DECOMPOSITION PRODUCTS:

Combustion: Silicon oxides and lithium oxides.

Hydrolysis: None known.

11. TOXICOLOGICAL INFORMATION

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The health hazard information provided below is pertinent to employees using this product in an occupational setting. The following paragraphs describe the symptoms of exposure by route of exposure.

INHALATION: Inhalation overexposures to mists and sprays of this product can irritate the nose, throat, and lungs and cause sneezing, coughing, and irritation.

SKIN CONTACT: Skin contact may be mildly irritating. Prolonged or repeated skin overexposures may cause dermatitis (dry red skin).

EYES CONTACT: Eye contact can cause immediate irritation, redness, and tearing and may cause reversible eye damage.

SKIN ABSORPTION: The components of this product are not known to be absorbed through intact skin.

11. TOXICOLOGICAL INFORMATION (Continued)

INGESTION: Ingestion is not a significant route of occupational overexposure and is unlikely to occur. If this product is swallowed, it may irritate the mouth, throat, esophagus and other tissues of the digestive system and cause nausea, vomiting, and diarrhea. Chronic ingestion of gram quantities of silicates can cause kidney stones and other urinary problems. See 'Reproductive Toxicity Information' further in this Section for additional potential reproductive hazards from chronic ingestion of this product.

INJECTION: Accidental injection of this product, via laceration or puncture by a contaminated object may cause redness at the site of injection.

SYNERGISTIC/ANTAGONISTIC EFFECTS: None known.

HEALTH EFFECTS OR RISKS FROM EXPOSURE: An Explanation in Lay Terms.

Acute: Overexposures to this product may irritate the eyes, skin, gastrointestinal tract, and respiratory tract.

Chronic: Prolonged or repeated skin overexposures can cause dermatitis (dry red skin). Chronic ingestion may result in harm to fetus.

TARGET ORGANS: Acute: Skin, eyes, respiratory system. Chronic: Skin, fetus.

TOXICITY DATA: The following toxicological data are available for components of this product in 1% or greater concentration. Only LD₅₀ (Oral-Rat/Mouse), LD₅₀ (Skin-Rabbit), LC₅₀ (Inhalation-Rat/Mouse), Skin/Eye Irritancy and Human data are presented in this MSDS. Contact American Decorative for information on additional data available.

TITANIUM DIOXIDE:

Standard Draize Test (Skin-Human) 300 µg/3 days-intermittent: Mild

IRRITANCY OF PRODUCT: This product can irritate contaminated tissue.

SENSITIZATION OF PRODUCT: This product is not currently known to cause allergic skin or respiratory reaction.

CARCINOGENIC POTENTIAL OF COMPONENTS: Carcinogenic data from testing is given earlier in this section under 'Toxicity Data'. Components of these products listed by CAS# in Section 3 (Composition and Information on Ingredients) are listed by agencies tracking the carcinogenic potential of chemical compounds as follows:

IRON OXIDE RED: ACGIH TLV-A4 (Not Classifiable as a Human Carcinogen); IARC-3 (Not Classifiable as to Carcinogenicity to Humans).

TITANIUM DIOXIDE: ACGIH TLV-A4 (Not Classifiable as a Human Carcinogen); IARC-2B (Possibly Carcinogenic to Humans); MAK-3A (Substances Which Cause Concern that They Could Be Carcinogenic for Man, But Cannot Be Assessed Conclusively Because of Lack of Data); NIOSH-Ca (Potential occupational carcinogen)

It cannot be confirmed that the proprietary components of this product are not found on the following lists: U.S. EPA, U.S. NTP, U.S. OSHA, U.S. NIOSH, GERMAN MAK, IARC, or ACGIH.

REPRODUCTIVE TOXICITY INFORMATION: No component of this product is reported to cause mutagenic, embryotoxic, teratogenic, or reproductive effects in humans. The Lithium Silicate Salt component is a soluble lithium compound. Some soluble lithium compounds have been shown to cause reproductive effects and potential harm to the fetus through chronic ingestion. No specific data are available on reproductive toxicity of this component; however, all exposure by this route must be avoided, especially in pregnant women. The following mutagenic data are available for some components:

RED IRON OXIDE:

DNA Damage (Human Lung) 40 µg/disk/4 hours

TITANIUM DIOXIDE:

DNA Damage (Human Lung) 100 µg/plate

DNA Damage (Human Lung) 20 µg/disk/4 hours

TITANIUM DIOXIDE (continued):

Sister Chromatid Exchange (Human

Lymphocyte) 2 µmol/L/72 hours

Micronucleus Test (Human Lymphocyte) 5

µmol/L/72 hours

Micronucleus Test (Hamster Ovary) 5 µmol/L

TITANIUM DIOXIDE (continued):

Micronucleus Test (Intraperitoneal-Mouse) 3



gm/kg/3 days-continuous

DNA Inhibition (Hamster Lung) 500 mg/L

Sister Chromatid Exchange (Hamster Ovary) 1

µmol/L

ACGIH BIOLOGICAL EXPOSURE INDICES (BEIs): Currently, there are no ACGIH Biological Exposure Indices (BEIs) determined for components of this product.

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM			
HEALTH HAZARD	(BLUE)	1	
FLAMMABILITY HAZARD	(RED)	0	
PHYSICAL HAZARD	(YELLOW)	0	
PROTECTIVE EQUIPMENT			
EYES	RESPIRATORY	HANDS	BODY
	SEE SECTION 8		SEE SECTION 8
For Routine Industrial Use and Handling Applications			

Hazard Scale: 0 = Minimal 1 = Slight 2 = Moderate
3 = Serious 4 = Severe * = Chronic hazard

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

MOBILITY IN SOIL: This product has not been tested for mobility in soil.

PERSISTENCE AND BIODEGRADABILITY: This product has not been tested for persistence or biodegradability. It is expected that it will not persist in aquatic systems.

BIOACCUMULATION POTENTIAL: This product has not been tested for bioaccumulation potential.

ECOTOXICITY: This product has not been tested for aquatic or animal toxicity. The pH of this material may alter the pH of bodies of water when released and harm aquatic life. All releases to terrestrial, atmospheric and aquatic environments should be avoided. Data for components of this product are available as follows:

IRON OXIDE YELLOW:

LC₀ (*Leuciscus idus*) 48 hours = > 1000 mg/L

12. ECOLOGICAL INFORMATION (Continued)

OTHER ADVERSE EFFECTS: This product does not contain any component with known ozone depletion potential.

ENVIRONMENTAL EXPOSURE CONTROLS: Controls should be engineered to prevent release to the environment, including procedures to prevent spills, atmospheric release and release to waterways.

RESULTS OF PBT AND vPvB ASSESSMENT (EU): No data available. PBT and vPvB assessments are part of the chemical safety report required for some substances in European Union Regulation (EC) 1907/2006, Article 14.

ENVIRONMENTAL EXPOSURE LIMITS (New Zealand): Currently, there are no EELS established for components of this product.

13. DISPOSAL CONSIDERATIONS

WASTE TREATMENT/DISPOSAL METHODS: Do NOT dispose of these products by pouring down the drain. It is the responsibility of the generator to determine at the time of disposal whether these products meet the criteria of a hazardous waste per regulations of the area in which the waste is generated and/or disposed of. Waste disposal must be in accordance with appropriate Federal, State, and local regulations. These products, if unaltered by use, may be disposed of by treatment at a permitted facility or as advised by your local hazardous waste regulatory authority. Shipment of wastes must be done with appropriately permitted and registered transporters.

DISPOSAL CONTAINERS: Waste materials must be placed in and shipped in appropriate 5-gallon or 55-gallon poly pails or drums. Reactions with some metals can occur; containers made of these metals may not be an appropriate choice; see 'Section 10. Stability and Reactivity' for more information. Permeable cardboard containers are not appropriate and should not be used. Ensure that any required marking or labeling of the containers be done to all applicable regulations.

PRECAUTIONS TO BE FOLLOWED DURING WASTE HANDLING: Wear proper protective equipment when handling waste materials.

U.S. EPA WASTE NUMBER: Not applicable.

EWG WASTE CODE: 08 WASTES FROM THE MANUFACTURE, FORMULATION, SUPPLY AND USE (MFSU) OF COATINGS (PAINTS, VARNISHES AND VITREOUS ENAMELS), ADHESIVES, SEALANTS AND PRINTING INKS: 08 04 99: Wastes from MFSU of adhesives and sealants (including waterproofing products); wastes not otherwise specified

14. TRANSPORTATION INFORMATION

These products are not classified under any jurisdiction as Dangerous Goods and have no UN Number, Hazard Class, Packing Group, or Special Precautions for User.

U.S. DEPARTMENT OF TRANSPORTATION: These products are NOT classified as dangerous goods, per U.S. DOT regulations, under 49 CFR 172.101.

TRANSPORT CANADA: These products are NOT classified as Dangerous Goods, per the Transportation of Dangerous Goods regulations.

INTERNATIONAL AIR TRANSPORT ASSOCIATION/ICAO (IATA/ICAO): These products are NOT classified as dangerous goods, per rules of IATA.

INTERNATIONAL MARITIME ORGANIZATION (IMO): These products are NOT dangerous goods, per the rules of IMO.

UNITED NATIONS ECONOMIC COMMISSION FOR EUROPE (UNECE): These products are NOT classified as dangerous goods, per the European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR).

AUSTRALIAN FEDERAL OFFICE OF ROAD SAFETY: These products are NOT classified dangerous goods, per the Code for the Transportation of Dangerous Goods by Road or Rail.

NEW ZEALAND MINISTRY OF TRANSPORT: These products are NOT classified dangerous goods, per Land Transport Rule: Dangerous Goods Rule 2005 and Standard 5433:2007 Transport of Dangerous Goods on Land.

ENVIRONMENTAL HAZARDS: These products are neither environmentally hazardous according to the criteria of the UN Model Regulations (as reflected in the IMDG Code, ADR, RID, and ADN) nor a marine pollutant according to the IMDG Code.

15. REGULATORY INFORMATION

UNITED STATES REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: The components of this product are not subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

U.S. SARA HAZARD CATEGORIES (SECTION 311/312, 40 CFR 370-21):

Acute: No. Chronic: No. Fire: No. Reactive: No. Sudden Release: No.

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for the components of these products listed by CAS# in Section 3 (Composition and Information on Ingredients). The default Federal MSDS submission and inventory requirement filing threshold of 10,000 lb (4,540 kg) may apply, per 40 CFR 370.20.

U.S. CERCLA REPORTABLE QUANTITY (RQ): Not applicable for components listed by CAS# in Section 3 (Composition and Information on Ingredients).

15. REGULATORY INFORMATION (Continued)**UNITED STATES REGULATIONS (continued):**

U.S. TSCA INVENTORY STATUS: According to the manufacturers/importers of the proprietary components of this product, one component is regulated under FIFRA when used as a biocide and all other components are listed on, registered with, compliant with, or exempt from TSCA.

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): The components of this product listed by CAS# in Section 3 (Composition and Information on Ingredients) are not on the California Proposition 65 lists.

CANADIAN REGULATIONS:

CANADIAN DSL/NDL INVENTORY STATUS: The components of this product listed by CAS# in Section 3 (Composition and Information on Ingredients) are on the DSL Inventory.

OTHER CANADIAN REGULATIONS: Not applicable.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITIES SUBSTANCES LISTS: It cannot be confirmed that the proprietary components of this product are not on the CEPA Priorities Substances Lists.

CANADIAN WHMIS CLASSIFICATION and SYMBOLS:

Class D2B: Toxic Material Causing Other Toxic Effect: Irritation

**EUROPEAN UNION REGULATIONS:**

SAFETY, HEALTH, AND ENVIRONMENTAL REGULATIONS/LEGISLATION SPECIFIC FOR THE PRODUCT:

Currently, there is no specific legislation pertaining to these products.

CHEMICAL SAFETY ASSESSMENT: No data available. The chemical safety assessment is required for some substances according to European Union Regulation (EC) 1907/2006, Article 14.

AUSTRALIAN REGULATIONS:

HAZARDOUS SUBSTANCES INFORMATION SYSTEM (HSIS): No component of this product listed by CAS# in Section 3 (Composition and Information on Ingredients) is listed in the HSIS.

AUSTRALIAN INVENTORY OF CHEMICAL SUBSTANCES (AICS) STATUS: The components listed by CAS# are listed. It cannot be confirmed that the proprietary components of this product are listed on the AICS. Any chemical not included in AICS is regarded as a new industrial chemical unless it is outside the scope of the Industrial Chemicals (Notification and Assessment) Act 1989 OR is otherwise exempt from notification. New industrial chemicals must be notified and assessed before being manufactured or imported into Australia.

STANDARD FOR THE UNIFORM SCHEDULING OF MEDICINES AND POISONS (SUSMP): Not applicable.

NEW ZEALAND REGULATIONS:

NEW ZEALAND INVENTORY OF CHEMICALS (NZIoC): The components listed by CAS# in Section 3 (Composition and Information of Ingredients) are listed on the NZIoC. It cannot be confirmed that the proprietary components of this product are listed on the NZIoC.

NEW ZEALAND CLASSIFICATION UNDER THE HAZARDOUS SUBSTANCES AND NEW ORGANISMS ACT (HSNO) [1996]: No individual component of this product as listed by CAS# in Section 3 (Composition and Information of Ingredients) has been given a specific hazard under HSNO. The product is classified as follows under the regulation:

Product Group Standard: HSR002670-Surface Coatings and Colourants (Subsidiary Hazard)

Classification: 6.3B: Substances which are mildly irritating to the skin.

6.4A (8.3): Substances which are irritating to the eye.

No component of this product listed by CAS# in Section 3 (Composition and Information on Ingredients) is registered as a hazardous substance with the Environmental Risk Management Authority. The Proprietary Acrylic Copolymer requires chemical inventory notification under ERMA.

JAPANESE REGULATIONS:

JAPANESE ENCS: The components listed by CAS# in Section 3 (Composition and Information of Ingredients) are listed on the ENC Inventory. The Proprietary Acrylic Copolymer component of this product requires chemical inventory notification.

OTHER JAPANESE LAWS and REGULATIONS: The Law Concerning the Examination and Regulation of Manufacture, etc., of Chemical Substances may be applicable to this product. The Chemical Substances Control Law is applicable to the Black Iron Oxide, Red Iron Oxide, Lithium Silicate, and Titanium Dioxide components of this product and so may be applicable to the product itself. The Industrial Safety and Health Act is applicable to the Red Iron Oxide and Titanium Dioxide components of this product and so may be applicable to the product itself. It is prudent practice to check for local regulations applicable to this product.

16. OTHER INFORMATION

U.S. ANSI LABELING (Z129.1): **WARNING!** CAUSES EYE AND RESPIRATORY TRACT IRRITATION. PROLONGED OR REPEATED CONTACT MAY DRY SKIN AND CAUSE IRRITATION. CHRONIC INGESTION MAY CAUSE ADVERSE REPRODUCTIVE EFFECTS. CONTACT WITH SOME METALS LIBERATES HYDROGEN GAS. CONTACT WITH SOME ACIDS AND AMMONIA SALTS MAY RELEASE AMMONIA GAS. Avoid contact with skin, eyes, and clothing. Avoid breathing vapors, mists, or sprays. Do not taste or swallow. Keep container closed. Use only with adequate ventilation. Wash thoroughly after handling. Wear appropriate eye, hand, and body protection. Avoid exposure to elevated temperatures. **FIRST-AID:** In case of contact, immediately flush skin or eyes with plenty of water for at least 20 minutes while removing contaminated clothing and shoes. Get medical attention if irritation develops or persists. If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If swallowed, do not induce vomiting. Get medical attention. **IN CASE OF FIRE:** Use water fog, foam, dry chemical, or CO₂. **IN CASE OF SPILL:** Absorb spill with polypads and place in suitable container. Place residual in appropriate container and seal. Dispose of in accordance with international, national, state, and local hazardous waste disposal regulations. Consult Material Safety Data Sheet for additional information.

GLOBAL HARMONIZATION AND EU CLP REGULATION (EC) 1272/2008 LABELING AND CLASSIFICATION FULL TEXT:

Classification: Skin Irritant Category 2, Eye Irritant Category 2, Specific Target Organ Toxicity (Respiratory System) Single Exposure Category 3

Signal Word: Warning

Hazard Statements: H315: Causes skin irritation. H319: Causes serious eye irritation. H335: May cause respiratory irritation.

Precautionary Statements:

Prevention: P261: Avoid breathing mists, sprays, fume. P264: Wash thoroughly after handling. P271: Use only outdoors or in a well-ventilated area. P280: Wear protective gloves and eye/face protection.

Response: P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. P321: Specific treatment (remove from exposure and treat symptoms). P332 + P313: If skin irritation occurs, get medical attention. P337 + P313: If eye irritation persists: Get medical advice/attention. P362: Take off all contaminated clothing and wash before reuse. P304 + P340: If inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing. P312: Call a POISON CENTER or doctor/physician if you feel unwell.

Storage: P403 + P233: Store in a well-ventilated place. Keep container tightly closed.

Disposal: P501: Dispose of contents/containers in accordance with all local, regional, national and international regulations.

Hazard Symbols/Pictograms: GHS07

EU LABELING/CLASSIFICATION FULL TEXT UNDER 67/548/EEC AND 2001/59/EC AUSTRALIAN NATIONAL OCCUPATION HEALTH AND SAFETY COMMISSION LABELING/CLASSIFICATION FULL TEXT:

Classification: Irritant

Risk Phrases: R36/37/38: Irritating to eyes, respiratory system and skin. R66: Repeated exposure may cause skin dryness or cracking.

Safety Phrases: S2: Keep out of reach of children. (*This safety phrase can be omitted from the label when the substance or preparation is sold for industrial use only.*) S36/37: Wear suitable protective clothing and gloves.

COMPONENT FULL TEXT CLASSIFICATION:GLOBAL HARMONIZATION, EU CLP REGULATION (EC) 1272/2008, AND JAPAN JIS Z7250:2005:

Lithium Silicate Salt:

Classification: Skin Irritant Category 2, Eye Irritant Category 2, Specific Target Organ Toxicity (Respiratory System) Single Exposure Category 3

Hazard Statements: H315: Causes skin irritation. H319: Causes serious eye irritation. H335: May cause respiratory irritation.

EU 67/548/EEC AND AUSTRALIA NATIONAL OCCUPATION HEALTH AND SAFETY COMMISSION:

Lithium Silicate Salt:

Classification: Irritant

Risk Phrases: R36/37/38: Irritating to eyes, respiratory system and skin. R66: Repeated exposure may cause skin dryness or cracking.

REVISION DETAILS: New.

REFERENCES AND DATA SOURCES: Contact the supplier for information.

METHODS OF EVALUATING INFORMATION FOR THE PURPOSE OF CLASSIFICATION: Bridging principles were used to classify this product.

PREPARED BY:

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May 16, 2011

DATE OF PRINTING:

DEFINITION OF TERMS

A large number of abbreviations and acronyms appear on a MSDS. Some of these, which are commonly used, include the following:

CAS #: This is the Chemical Abstract Service Number that uniquely identifies each constituent.

EXPOSURE LIMITS IN AIR:

CEILING LEVEL: The concentration that shall not be exceeded during any part of the working exposure.

DFG MAKs: Federal Republic of Germany Maximum Concentration Values in the workplace. Exposure limits are given as TWA (Time-Weighted Average) or PEAK (short-term exposure) values.

DFG MAK Germ Cell Mutagen Categories: 1: Germ cell mutagens that have been shown to increase the mutant frequency in the progeny of exposed humans. 2: Germ cell mutagens that have been shown to increase the mutant frequency in the progeny of exposed mammals. 3A: Substances that have been shown to induce genetic damage in germ cells of human or animals, or which produce mutagenic effects in somatic cells of mammals *in vivo* and have been shown to reach the germ cells in an active form. 3B: Substances that are suspected of being germ cell mutagens because of their genotoxic effects in mammalian somatic cell *in vivo*; in exceptional cases, substances for which there are no *in vivo* data, but that are clearly mutagenic *in vitro* and structurally related to known *in vivo* mutagens. 4: Not applicable (Category 4 carcinogenic substances are those with non-genotoxic mechanisms of action. By definition, germ cell mutagens are genotoxic. Therefore, a Category 4 for germ cell mutagens cannot apply. At some time in the future, it is conceivable that a Category 4 could be established for genotoxic substances with primary targets other than DNA [e.g. purely aneugenic substances] if research results make this seem sensible.) 5: Germ cell mutagens, the potency of which is considered to be so low that, provided the MAK value is observed, their contribution to genetic risk for humans is expected not to be significant.

DFG MAK Pregnancy Risk Group Classification: **Group A:** A risk of damage to the developing embryo or fetus has been unequivocally demonstrated. Exposure of pregnant women can lead to damage of the developing organism, even when MAK and BAT (Biological Tolerance Value for Working Materials) values are observed. **Group B:** Currently available information indicates a risk of damage to the developing embryo or fetus must be considered to be probable. Damage to the developing organism cannot be excluded when pregnant women are exposed, even when MAK and BAT values are observed. **Group C:** There is no reason to fear a risk of damage to the developing embryo or fetus when MAK and BAT values are observed. **Group D:** Classification in one of the groups A–C is not yet possible because, although the data available may indicate a trend, they are not sufficient for final evaluation.

IDLH: Immediately Dangerous to Life and Health. This level represents a concentration from which one can escape within 30-minutes without suffering escape-preventing or permanent injury.

LOQ: Limit of Quantitation.

NE: Not Established. When no exposure guidelines are established, an entry of NE is made for reference.

NIC: Notice of Intended Change.

NIOSH CEILING: The exposure that shall not be exceeded during any part of the workday. If instantaneous monitoring is not feasible, the ceiling shall be assumed as a 15-minute TWA exposure (unless otherwise specified) that shall not be exceeded at any time during a workday.

NIOSH RELs: NIOSH's Recommended Exposure Limits.

PEL: OSHA's Permissible Exposure Limits. This exposure value means exactly the same as a TLV, except that it is enforceable by OSHA. The OSHA Permissible Exposure Limits are based in the 1989 PELs and the June, 1993 Air Contaminants Rule (Federal Register: 58: 35338-35351 and 58: 40191). Both the current PELs and the vacated PELs are indicated. The phrase, "Vacated 1989 PEL" is placed next to the PEL that was vacated by Court Order.

SKIN: Used when there is a danger of cutaneous absorption.

STEL: Short Term Exposure Limit, usually a 15-minute time-weighted average (TWA) exposure that should not be exceeded at any time during a workday, even if the 8-hr TWA is within the TLV-TWA, PEL-TWA or REL-TWA.

TLV: Threshold Limit Value. An airborne concentration of a substance that represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour.

TWA: Time Weighted Average exposure concentration for a conventional 8-hr (TLV, PEL) or up to a 10-hr (REL) workday and a 40-hr workweek.

WEEL: Workplace Environmental Exposure Limits from the AIHA.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS:

This rating system was developed by the National Paint and Coating Association and has been adopted by industry to identify the degree of chemical hazards.

HEALTH HAZARD: 0 Minimal Hazard: No significant health risk, irritation of skin or eyes not anticipated. *Skin Irritation:* Essentially non-irritating. Mechanical irritation may occur. PII or Draize = 0. *Eye Irritation:* Essentially non-irritating, minimal effects clearing in < 24 hours. Mechanical irritation may occur. Draize = 0. *Oral Toxicity LD₅₀ Rat.* > 5000 mg/kg. *Dermal Toxicity LD₅₀ Rat or Rabbit.* > 2000 mg/kg. *Inhalation Toxicity 4-hrs LC₅₀ Rat.* > 20 mg/L. **1 Slight Hazard:** Minor reversible injury may occur; may irritate the stomach if swallowed; may defat the skin and exacerbate existing dermatitis. *Skin Irritation:* Slightly or mildly irritating. PII or Draize > 0 < 5. *Eye Irritation:* Slightly to mildly irritating, but reversible within 7 days. Draize > 0 ≤ 25. *Oral Toxicity LD₅₀ Rat.* > 500–5000 mg/kg. *Dermal Toxicity LD₅₀ Rat or Rabbit.* > 1000–2000 mg/kg. *Inhalation Toxicity LC₅₀ 4-hrs Rat.* > 2–20 mg/L. **2 Moderate Hazard:** Temporary or transitory injury may occur; prolonged exposure may affect the CNS. *Skin Irritation:* Moderately irritating; primary irritant; sensitizer. PII or Draize ≥ 5, with no destruction of dermal tissue. *Eye Irritation:* Moderately to severely irritating; reversible corneal opacity; corneal involvement or irritation clearing in 8–21 days. Draize = 26–100, with reversible effects. *Oral Toxicity LD₅₀ Rat.* > 50–500 mg/kg. *Dermal Toxicity LD₅₀ Rat or Rabbit.* > 200–1000 mg/kg. *Inhalation Toxicity LC₅₀ 4-hrs Rat.* > 0.5–2 mg/L.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued):

HEALTH HAZARD (continued): 3 Serious Hazard: Major injury likely unless prompt action is taken and medical treatment is given; high level of toxicity; corrosive. *Skin Irritation:* Severely irritating and/or corrosive; may cause destruction of dermal tissue, skin burns, and dermal necrosis. PII or Draize > 5–8, with destruction of tissue. *Eye Irritation:* Corrosive, irreversible destruction of ocular tissue; corneal involvement or irritation persisting for more than 21 days. Draize > 80 with effects irreversible in 21 days. *Oral Toxicity LD₅₀ Rat.* > 1–50 mg/kg. *Dermal Toxicity LD₅₀ Rat or Rabbit.* > 20–200 mg/kg. *Inhalation Toxicity LC₅₀ 4-hrs Rat.* > 0.05–0.5 mg/L. **4 Severe Hazard:** Life-threatening; major or permanent damage may result from single or repeated exposures; extremely toxic; irreversible injury may result from brief contact. *Skin Irritation:* Not appropriate. Do not rate as a 4, based on skin irritation alone. *Eye Irritation:* Not appropriate. Do not rate as a 4, based on eye irritation alone. *Oral Toxicity LD₅₀ Rat.* ≤ 1 mg/kg. *Dermal Toxicity LD₅₀ Rat or Rabbit.* ≤ 20 mg/kg. *Inhalation Toxicity LC₅₀ 4-hrs Rat.* ≤ 0.05 mg/L.

FLAMMABILITY HAZARD: 0 Minimal Hazard: Materials that will not burn in air when exposure to a temperature of 815.5°C (1500°F) for a period of 5 minutes. **1 Slight Hazard:** Materials that must be pre-heated before ignition can occur. Material requires considerable pre-heating, under all ambient temperature conditions before ignition and combustion can occur. This usually includes the following: Materials that will burn in air when exposed to a temperature of 815.5°C (1500°F) for a period of 5 minutes or less; Liquids, solids and semisolids having a flash point at or above 93.3°C (200°F) (i.e. OSHA Class IIIB); and Most ordinary combustible materials (e.g. wood, paper, etc.). **2 Moderate Hazard:** Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not, under normal conditions, form hazardous atmospheres in air, but under high ambient temperatures or moderate heating may release vapor in sufficient quantities to produce hazardous atmospheres with air. This usually includes the following: Liquids having a flash-point at or above 37.8°C (100°F); Solid materials in the form of coarse dusts that may burn rapidly but that generally do not form explosive atmospheres; Solid materials in a fibrous or shredded form that may burn rapidly and create flash fire hazards (e.g. cotton, sisal, hemp); and Solids and semisolids (e.g. viscous and slow flowing as asphalt) that readily give off flammable vapors. **3 Serious Hazard:** Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures, or, unaffected by ambient temperature, are readily ignited under almost all conditions. This usually includes the following: Liquids having a flash point below 22.8°C (73°F) and having a boiling point at or above 38°C (100°F) and those liquids having a flash point at or above 22.8°C (73°F) and below 37.8°C (100°F) (i.e. OSHA Class IB and IC); Materials that on account of their physical form or environmental conditions can form explosive mixtures with air and are readily dispersed in air (e.g., dusts of combustible solids, mists or droplets of flammable liquids); and Materials that burn extremely rapidly, usually by reason of self-contained oxygen (e.g. dry nitrocellulose and many organic peroxides). **4 Severe Hazard:** Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air, and that will burn readily. This usually includes the following: Flammable gases; Flammable cryogenic materials; Any liquid or gaseous material that is liquid while under pressure and has a flash point below 22.8°C (73°F) and a boiling point below 37.8°C (100°F) (i.e. OSHA Class IA); and Materials that ignite spontaneously when exposed to air at a temperature of 54.4°C (130°F) or below (pyrophoric).

PHYSICAL HAZARD: 0 Water Reactivity: Materials that do not react with water. *Organic Peroxides:* Materials that are normally stable, even under fire conditions and will not react with water. *Explosives:* Substances that are Non-Explosive. *Compressed Gases:* No Rating. *Pyrophorics:* No Rating. *Oxidizers:* No 0 rating. *Unstable Reactives:* Substances that will not polymerize, decompose, condense, or self-react.). **1 Water Reactivity:** Materials that change or decompose upon exposure to moisture. *Organic Peroxides:* Materials that are normally stable, but can become unstable at high temperatures and pressures. These materials may react with water, but will not release energy violently. *Explosives:* Division 1.5 & 1.6 explosives. Substances that are very insensitive explosives or that do not have a mass explosion hazard. *Compressed Gases:* Pressure below OSHA definition. *Pyrophorics:* No Rating. *Oxidizers:* Packaging Group III oxidizers; Solids: any material that in either concentration tested, exhibits a mean burning time less than or equal to the mean burning time of a 3:7 potassium bromate/cellulose mixture and the criteria for Packing Group I and II are not met. Liquids: any material that exhibits a mean pressure rise time less than or equal to the pressure rise time of a 1:1 nitric acid (65%)/cellulose mixture and the criteria for Packing Group I and II are not met. *Unstable Reactives:* Substances that may decompose, condense, or self-react, but only under conditions of high temperature and/or pressure and have little or no potential to cause significant heat generation or explosion hazard. Substances that readily undergo hazardous polymerization in the absence of inhibitors. **2 Water Reactivity:** Materials that may react violently with water. *Organic Peroxides:* Materials that, in themselves, are normally unstable and will readily undergo violent chemical change, but will not detonate. These materials may also react violently with water. *Explosives:* Division 1.4 explosives. Explosive substances where the explosive effects are largely confined to the package and no projection of fragments of appreciable size or range are expected. An external fire must not cause virtually instantaneous explosion of almost the entire contents of the package. *Compressed Gases:* Pressurized and meet OSHA definition but < 514.7 psi absolute at 21.1°C (70°F) [500 psig]. *Pyrophorics:* No Rating. *Oxidizers:* Packing Group II oxidizers. Solids: any material that, either in concentration tested, exhibits a mean burning time of less than or equal to the mean burning time of a 2:3 potassium bromate/cellulose mixture and the criteria for Packing Group I are not met. Liquids: any material that exhibits a mean pressure rise time less than or equal to the pressure rise of a 1:1 aqueous sodium chlorate solution (40%)/cellulose mixture and the criteria for Packing Group I are not met. *Reactives:* Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure, but have a low potential (or low risk) for significant heat generation or explosion. Substances that readily form peroxides upon exposure to air or oxygen at room temperature.

DEFINITION OF TERMS (Continued)

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued):

PHYSICAL HAZARD (continued): 3 Water Reactivity: Materials that may form explosive reactions with water. **Organic Peroxides:** Materials that are capable of detonation or explosive reaction, but require a strong initiating source or must be heated under confinement before initiation; or materials that react explosively with water. **Explosives:** Division 1.3 explosives. Explosive substances that have a fire hazard and either a minor blast hazard or a minor projection hazard or both, but do not have a mass explosion hazard. **Compressed Gases:** Pressure \geq 514.7 psi absolute at 21.1°C (70°F) [500 psig]. **Pyrophorics:** No Rating. **Oxidizers:** Packing Group I oxidizers. Solids: any material that, in either concentration tested, exhibits a mean burning time less than the mean burning time of a 3:2 potassium bromate/cellulose mixture. Liquids: any material that spontaneously ignites when mixed with cellulose in a 1:1 ratio, or which exhibits a mean pressure rise time less than the pressure rise time of a 1:1 perchloric acid (50%)/cellulose mixture. **Unstable Reactives:** Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure and have a moderate potential (or moderate risk) to cause significant heat generation or explosion. **4 Water Reactivity:** Materials that react explosively with water without requiring heat or confinement. **Organic Peroxides:** Materials that are readily capable of detonation or explosive decomposition at normal temperature and pressures. **Explosives:** Division 1.1 & 1.2 explosives. Explosive substances that have a mass explosion hazard or have a projection hazard. A mass explosion is one that affects almost the entire load instantaneously. **Compressed Gases:** No Rating. **Pyrophorics:** Add to the definition of Flammability 4. **Oxidizers:** No 4 rating. **Unstable Reactives:** Substances that may polymerize, decompose, condense, or self-react at ambient temperature and/or pressure and have a high potential (or high risk) to cause significant heat generation or explosion.

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS:

HEALTH HAZARD: 0 Materials that, under emergency conditions, would offer no hazard beyond that of ordinary combustible materials. Gases and vapors with an LC₅₀ for acute inhalation toxicity greater than 10,000 ppm. Dusts and mists with an LC₅₀ for acute inhalation toxicity greater than 200 mg/L. Materials with an LD₅₀ for acute dermal toxicity greater than 2000 mg/kg. Materials with an LD₅₀ for acute oral toxicity greater than 2000 mg/kg. Materials essentially non-irritating to the respiratory tract, eyes, and skin. **1** Materials that, under emergency conditions, can cause significant irritation. Gases and vapors with an LC₅₀ for acute inhalation toxicity greater than 5,000 ppm but less than or equal to 10,000 ppm. Dusts and mists with an LC₅₀ for acute inhalation toxicity greater than 10 mg/L but less than or equal to 200 mg/L. Materials with an LD₅₀ for acute dermal toxicity greater than 1000 mg/kg but less than or equal to 2000 mg/kg. Materials that slightly to moderately irritate the respiratory tract, eyes and skin. Materials with an LD₅₀ for acute oral toxicity greater than 500 mg/kg but less than or equal to 2000 mg/kg. **2** Materials that, under emergency conditions, can cause temporary incapacitation or residual injury. Gases with an LC₅₀ for acute inhalation toxicity greater than 3,000 ppm but less than or equal to 5,000 ppm. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than one-fifth its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 5000 ppm and that does not meet the criteria for either degree of hazard 3 or degree of hazard 4. Dusts and mists with an LC₅₀ for acute inhalation toxicity greater than 2 mg/L but less than or equal to 10 mg/L. Materials with an LD₅₀ for acute dermal toxicity greater than 200 mg/kg but less than or equal to 1000 mg/kg. Compressed liquefied gases with boiling points between -30°C (-22°F) and -55°C (-66.5°F) that cause severe tissue damage, depending on duration of exposure. Materials that are respiratory irritants. Materials that cause severe, but reversible irritation to the eyes or are lachrymators. Materials that are primary skin irritants or sensitizers. Materials whose LD₅₀ for acute oral toxicity is greater than 50 mg/kg but less than or equal to 500 mg/kg. **3** Materials that, under emergency conditions, can cause serious or permanent injury. Gases with an LC₅₀ for acute inhalation toxicity greater than 1,000 ppm but less than or equal to 3,000 ppm. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 3000 ppm and that does not meet the criteria for degree of hazard 4. Dusts and mists with an LC₅₀ for acute inhalation toxicity greater than 0.5 mg/L but less than or equal to 2 mg/L. Materials with an LD₅₀ for acute dermal toxicity greater than 40 mg/kg but less than or equal to 200 mg/kg. Materials that are corrosive to the respiratory tract. Materials that are corrosive to the eyes or cause irreversible corneal opacity. Materials corrosive to the skin. Cryogenic gases that cause frostbite and irreversible tissue damage. Compressed liquefied gases with boiling points below -55°C (-66.5°F) that cause frostbite and irreversible tissue damage. Materials with an LD₅₀ for acute oral toxicity greater than 5 mg/kg but less than or equal to 50 mg/kg. **4** Materials that, under emergency conditions, can be lethal. Gases with an LC₅₀ for acute inhalation toxicity less than or equal to 1,000 ppm. Any liquid whose saturated vapor concentration at 20°C (68°F) is equal to or greater than ten times its LC₅₀ for acute inhalation toxicity, if its LC₅₀ is less than or equal to 1000 ppm. Dusts and mists whose LC₅₀ for acute inhalation toxicity is less than or equal to 0.5 mg/L. Materials whose LD₅₀ for acute dermal toxicity is less than or equal to 40 mg/kg. Materials whose LD₅₀ for acute oral toxicity is less than or equal to 5 mg/kg.

FLAMMABILITY HAZARD: 0 Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes in according with Annex D of NFPA 704. **1** Materials that must be preheated before ignition can occur. Materials in this degree require considerable preheating, under all ambient temperature conditions, before ignition and combustion can occur. Materials that will burn in air when exposed to a temperature of 816°C (1500°F) for a period of 5 minutes in according with Annex D of NFPA 704. Liquids, solids, and semisolids having a flash point at or above 93.4°C (200°F) (i.e. Class IIIB liquids). Liquids with a flash point greater than 35°C (95°F) that do not sustain combustion when tested using the *Method of Testing for Sustained Combustibility*, per 49 CFR 173, Appendix H or the UN *Recommendations on the Transport of Dangerous Goods, Model Regulations* (current edition) and the related *Manual of Tests and Criteria* (current edition).

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

FLAMMABILITY HAZARD (continued): 1 (continued): Liquids with a flash point greater than 35°C (95°F) in a water-miscible solution or dispersion with a water non-combustible liquid/solid content of more than 85% by weight. Liquids that have no fire point when tested by ASTM D 92, *Standard Test Method for Flash and Fire Points by Cleveland Open Cup*, up to the boiling point of the liquid or up to a temperature at which the sample being tested shows an obvious physical change. Combustible pellets with a representative diameter of greater than 2 mm (10 mesh). Most ordinary combustible materials. Solids containing greater than 0.5% by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **2** Materials that must be moderately heated or exposed to relatively high ambient temperatures before ignition can occur. Materials in this degree would not under normal conditions form hazardous atmospheres with air, but under high ambient temperatures or under moderate heating could release vapor in sufficient quantities to produce hazardous atmospheres with air. Liquids having a flash point at or above 37.8°C (100°F) and below 93.4°C (200°F) (i.e. Class II and Class IIIA liquids.) Solid materials in the form of powders or coarse dusts of representative diameter between 420 microns (40 mesh) and 2 mm (10 mesh) that burn rapidly but that generally do not form explosive mixtures with air. Solid materials in fibrous or shredded form that burn rapidly and create flash fire hazards, such as cotton, sisal, and hemp. Solids and semisolids that readily give off flammable vapors. Solids containing greater than 0.5% by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **3** Liquids and solids that can be ignited under almost all ambient temperature conditions. Materials in this degree produce hazardous atmospheres with air under almost all ambient temperatures or, though unaffected by ambient temperatures, are readily ignited under almost all conditions. Liquids having a flash point below 22.8°C (73°F) and having a boiling point at or above 37.8°C (100°F) and those liquids having a flash point at or above 22.8°C (73°F) and below 37.8°C (100°F) (i.e. Class IB and IC liquids). Materials that on account of their physical form or environmental conditions can form explosive mixtures with air and are readily dispersed in air. Flammable or combustible dusts with representative diameter less than 420 microns (40 mesh). Materials that burn with extreme rapidity, usually by reason of self-contained oxygen (e.g. dry nitrocellulose and many organic peroxides). Solids containing greater than 0.5% by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **4** Materials that will rapidly or completely vaporize at atmospheric pressure and normal ambient temperature or that are readily dispersed in air and will burn readily. Flammable gases. Flammable cryogenic materials. Any liquid or gaseous materials that is liquid while under pressure and has a flash point below 22.8°C (73°F) and a boiling point below 37.8°C (100°F) (i.e. Class IA liquids). Materials that ignite when exposed to air. Solids containing greater than 0.5% by weight of a flammable or combustible solvent are rated by the closed cup flash point of the solvent. **INSTABILITY HAZARD: 0** Materials that in themselves are normally stable, even under fire conditions. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) below 0.01 W/mL. Materials that do not exhibit an exotherm at temperatures less than or equal to 500°C (932°F) when tested by differential scanning calorimetry. **1** Materials that in themselves are normally stable, but that can become unstable at elevated temperatures and pressures. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 0.01 W/mL and below 10 W/mL. **2** Materials that readily undergo violent chemical change at elevated temperatures and pressures. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 10 W/mL and below 100W/mL. **3** Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction, but that require a strong initiating source or that must be heated under confinement before initiation. Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 100 W/mL and below 1000 W/mL. Materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures. **4** Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures. Materials that are sensitive to localized thermal or mechanical shock at normal temperatures and pressures. Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) of 1000 W/mL or greater.

FLAMMABILITY LIMITS IN AIR:

Much of the information related to fire and explosion is derived from the National Fire Protection Association (NFPA). **Flash Point:** Minimum temperature at which a liquid gives off sufficient vapor to form an ignitable mixture with air near the surface of the liquid or within the test vessel used. **Autoignition Temperature:** Minimum temperature of a solid, liquid, or gas required to initiate or cause self-sustained combustion in air with no other source of ignition. **LEL:** Lowest concentration of a flammable vapor or gas/air mixture that will ignite and burn with a flame. **UEL:** Highest concentration of a flammable vapor or gas/air mixture that will ignite and burn with a flame.

TOXICOLOGICAL INFORMATION:

Human and Animal Toxicology: Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. **LD₅₀:** Lethal Dose (solids & liquids) that kills 50% of the exposed animals. **LC₅₀:** Lethal Concentration (gases) that kills 50% of the exposed animals. **ppm:** Concentration expressed in parts of material per million parts of air or water. **mg/m³:** Concentration expressed in weight of substance per volume of air. **mg/kg:** Quantity of material, by weight, administered to a test subject, based on their body weight in kg. **TDLo:** Lowest dose to cause a symptom. **TCLo:** Lowest concentration to cause a symptom. **TD₀, LDLo, and LDo, or TC, TCo, LCLo, and LCo:** Lowest dose (or concentration) to cause lethal or toxic effects. **Cancer Information:** **IARC:** International Agency for Research on Cancer. **NTP:** National Toxicology Program. **RTECS:** Registry of Toxic Effects of Chemical Substances. IARC and NTP rate chemicals on a scale of decreasing potential to cause human cancer with rankings from 1 to 4. Subrankings (2A, 2B, etc.) are also used.

DEFINITION OF TERMS (Continued)

TOXICOLOGICAL INFORMATION (continued):

Other Information: BEI: ACGIH Biological Exposure Indices, represent the levels of determinants which are most likely to be observed in specimens collected from a healthy worker who has been exposed to chemicals to the same extent as a worker with inhalation exposure to the TLV.

REPRODUCTIVE TOXICITY INFORMATION:

Mutagen: A chemical that causes permanent changes to genetic material (DNA) such that the changes will propagate through generation lines. Embryotoxin: A chemical that causes damage to a developing embryo (i.e., within the first eight weeks of pregnancy in humans), but the damage does not propagate across generational lines. Teratogen: A chemical that causes damage to a developing fetus, but the damage does not propagate across generational lines. Reproductive Toxin: Any substance that interferes in any way with the reproductive process.

ECOLOGICAL INFORMATION:

EC: Effect concentration in water. BCE: Bioconcentration Factor, which is used to determine if a substance will concentrate in life forms that consume contaminated plant or animal matter. TLm: Median threshold limit. log K_{ow} or log K_{oc}: Coefficient of Oil/Water Distribution is used to assess a substance's behavior in the environment.

REGULATORY INFORMATION: This section explains the impact of various laws and regulations on the material.

U.S.:

EPA: U.S. Environmental Protection Agency. ACGIH: American Conference of Governmental Industrial Hygienists, a professional association that establishes exposure limits. OSHA: U.S. Occupational Safety and Health Administration. NIOSH: National Institute of Occupational Safety and Health, which is the research arm of OSHA. DOT: U.S. Department of Transportation. IC: Transport Canada. SARA: Superfund Amendments and Reauthorization Act. TSCA: U.S. Toxic Substance Control Act. CERCLA: Comprehensive Environmental Response, Compensation, and Liability Act. Marine Pollutant status according to the DOT; CERCLA or Superfund; and various state regulations. This section also includes information on the precautionary warnings that appear on the material's package label.

CANADA:

WHMIS: Canadian Workplace Hazardous Materials Information System. IC: Transport Canada. DSL/NDL: Canadian Domestic/Non-Domestic Substances List.

EUROPE:

EU: European Union (formerly known as the EEC, European Economic Community). EINECS: European Inventory of Now-Existing Chemical Substances. ARD: European Agreement Concerning the International Carriage of Dangerous Goods by Road. RID: International Regulations Concerning the Carriage of Dangerous Goods by Rail.

REGULATORY INFORMATION (continued):

AUSTRALIA:

ASCC: Australian Safety and Compensation Council. AICS: Australian Inventory of Chemical Substances. NOHSC: National Occupational Health & Safety Code. HAZCHEM Code: Emergency Action Code of numbers and letters which give information to emergency services for dangerous goods in bulk quantities. Refer to National Code of Practice for the Preparation of Material Safety Data Sheets 2nd Edition [NOHSC:2011(2003)] and subsequent revisions and Australian Dangerous Goods Code.

JAPAN:

METI: Ministry of Economy, Trade and Industry.

NEW ZEALAND:

ERMA: Environmental Risk Management Authority. EEL: Environmental Exposure Limit. In New Zealand, this is the limit on the concentration of a substance (or any element or compound making up the substance) with eco-toxic properties in an environmental medium, as set out in Part 3 of the New Zealand Hazardous Substances (Classes 6, 8 and 9 Controls) regulations, 2001. HAZCHEM Code: Emergency Action Code of numbers and letters which give information to emergency services for dangerous goods in bulk quantities. Refer to NZS 5433: 1999 Transport of Dangerous Goods on Land and subsequent revisions. NZIoC: New Zealand Inventory of Chemicals. TEL: Tolerable Exposure Limit. In New Zealand, Tolerable exposure limits (TELS) limit public exposure to toxic substances. They do not apply to a place of work if the public does not have access to that place. Toxic substances are those with a HSNO classification in Class 6. A TEL is the maximum concentration of a hazardous substance legally allowable in a particular environmental medium, such as air, water, soil or a surface that the substance may be deposited onto. TELs are derived from potential daily exposure (PDE) values, which in turn are derived from acceptable daily exposure (ADE)/reference dose (RfD) values. The circumstances under which TELs are set are described in the Hazardous Substances (Classes 6, 8 and 9 Controls) Regulations 2001 (Part 2). WES: Workplace Exposure Limit: In New Zealand, a workplace exposure standard (WES) is designed to protect persons in the workplace from the adverse effects of toxic substances. A WES is an airborne concentration of a substance (expressed as milligrams of substance per cubic metre of air or parts per million in air), which must not be exceeded in a workplace and only applies to places of work to which the public does not have access. The circumstances under which WESs are set are described in the Hazardous Substances (Classes 6, 8 and 9 Controls) Regulations 2001 (regulations 29-30).

END OF MSDS