804 N. Killingsworth Ct.
Portland, Oregon 97217
Tel: (503) 286-5328
Fax: (503) 286-3689
CCB#167903, WA#FINEPPA940BZ

Apollo, Inc. December 4, 2012
Attn: Mike Hodgson

Re: O&M Wenatchee WWTP
Sections: 9905 – Painting and protective coatings

Materials, Location and Color

Tnemec Series L69 Epoxoline
- Drain Pipe in Screenings Building Basement; Color: Coffee Grounds 77BR (Tnemec)
- Wet Well Piping in Clarifier #1; Color: Coffee Grounds 77BR (Tnemec)
- Clarifier Mechanism #2; Color: Spider Web BF42A (Tnemec)

Tnemec Series 73 Endura-Shield
- All Exterior Overhead doors, Man doors, Structural Steel; Color: Dark Bronze 86 BRA (Tnemec)
- Bollards; Color: Safety Yellow
- Exterior of Digester Lid #2; Color: Utterly Beige K7217 (Tnemec)

Tnemec Series 156 Enviro-Crete
- All Exterior Buildings, Exterior of all Digester walls and lids #1 and #3; Color: Utterly Beige K7217 (Tnemec)
- Color on Digester #1 and 1 accent wall building exterior is; Color: Realistic Beige K6987 (Tnemec)

Tnemec Series 158 Bio-Lastic
- Interior GWB walls; Color: Albatross 06WH (Tnemec)

Life-last Dura-shield 310
- Clarifier Launders #1 and #2 and Screenings Channel; Color: Yellow

If you have any questions please feel free to call me at any time.

Sincerely,

Raymond Clevenger
Executive Manager
Fine Painting and Allied Services, LLC.
A Minority Business Enterprise

LIFELAST™
Innovation Through Formulation

MATERIAL SAFETY DATA SHEET

Prepared to U.S. OSHA, CMA, ANSI and Canadian WHMIS Standards

PART I *What is the material and what do I need to know in an emergency*

1. PRODUCT IDENTIFICATION

TRADE NAME (AS LABELED):	**DURASHIELD 310**
CHEMICAL NAME/CLASS:	Polyol/Crystalline Silica Mixture
SYNONYMS:	Not Applicable
PRODUCT USE:	Curing Agent for Chemical Resistant Coating
SUPPLIER/MANUFACTURER'S NAME:	**LifeLast Incorporated**
Address:	1301 NE 144th Street, Suite 125 Vancouver, WA 98685
Business Phone:	1-360-254-0563
EMERGENCY PHONE:	(Chemtrec) 1-800/424-9300 (United States/Canada/Puerto Rico) 24-hrs 1-703-527-3887 (International) 24-hrs
DATE OF PREPARATION:	November 1, 2007
DATE OF REVISION:	November 29, 2011

NOTE: ALL United States Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent Standards, and Canadian WHMIS [Controlled Products Regulations] required information is included in appropriate sections based on the U.S. ANSI Z400.1-2004 format.

2. HAZARD IDENTIFICATION

EMERGENCY OVERVIEW: Product Description: This is a somewhat viscous liquid with a faint odor that comes in almond, black, gray, and yellow. **Health Hazards:** Overexposures to this product may irritate the eyes, skin, and mucous membranes. Components of this product are suspect carcinogens, based on animal data. **Flammability Hazards:** This product must be substantially pre-heated before ignition becomes a potential hazard. **Reactivity Hazards:** This product may initiate polymerization when mixed with monomers. **Environmental Hazards:** Negligible. **Emergency Recommendations:** Emergency responders must wear the personal protective equipment (and have fire protection) suitable for the situation to which they are responding.

3. COMPOSITION and INFORMATION ON INGREDIENTS

CHEMICAL NAME	CAS #	% v/v
Polyol		50–60
Crystalline Silica	14808-60-7	30–40
Titanium Dioxide (in Almond and Gray formulations)	13463-67-7	3–7
Molecular Sieve		1–5
Titanium Dioxide (in Safety Yellow formulation)	13463-67-7	1–5
Carbon Black (in Black formulation)	1333-86-4	1–2
Diamine		1–2
Aliphatic Amine		0.5–1.5
Carbon Black (in Gray formulation)	1333-86-4	0.1–1
Triol		0.1–1
Red Pigment		0.1–1
Yellow Pigment		0.1–1
Other Trace Components in Less than 1%. The remaining components do not contribute any significant additional hazards. All pertinent information has been provided in this document, per the requirements of the Federal Occupational Safety and Health Administration Standard (29 CFR 1910.1200), U.S. State equivalent Standards, and Canadian Workplace Hazardous Materials Identification System Standards (CPR 4).		Balance

PART II *What should I do if a hazardous situation occurs?*

4. FIRST-AID MEASURES

Victims must seek medical attention if any adverse effect occurs. Rescuers should be taken for medical attention, if necessary. Take a copy of label and MSDS to physician or health professional with the victim.

SKIN EXPOSURE: If this product contaminates the skin, begin decontamination with copious amounts of running water. Minimum flushing is for 20 minutes. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Contaminated clothing must be removed and laundered before re-use. The victim must seek medical attention if any adverse effect develops after the area is flushed.

EYE EXPOSURE: If this product's liquid or vapors enter the eyes, open the victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 20 minutes. Victim must seek immediate medical attention.

4. FIRST-AID MEASURES (Continued)

INHALATION: If vapors, mists, or sprays of this product are inhaled, remove the victim to fresh air. If necessary, use artificial respiration to support vital functions. Remove or cover gross contamination to avoid exposure to rescuers. 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. DO NOT INDUCE VOMITING unless directly by medical personnel. Have victim rinse mouth with water if conscious. Never induce vomiting or give diluents (milk or water) to someone who is unconscious, having convulsions, or unable to swallow. If vomiting occurs, lean patient forward or place on left side (head-down position if possible) to maintain an open airway and prevent aspiration. If contaminated individual is convulsing, maintain an open airway and obtain immediate medical attention.

MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Dermatitis and other skin disorders may be aggravated by exposure to this product.

RECOMMENDATIONS TO PHYSICIANS: Treat symptoms and eliminate overexposure.

5. FIRE-FIGHTING MEASURES

FLASH POINT: > 226°C (440°F).

AUTOIGNITION TEMPERATURE: Not established.

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

FIRE EXTINGUISHING MEDIA: In the event of a fire, use suppression methods for surrounding materials, including water spray (for cooling), dry extinguishing media, carbon dioxide, foam.

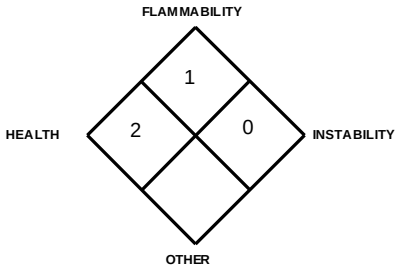
UNSUITABLE FIRE EXTINGUISHING MEDIA: None known.

UNUSUAL FIRE AND EXPLOSION HAZARDS: This product must be substantially pre-heated for ignition to become a potential hazard. When involved in a fire, this material may decompose and produce irritating vapors and toxic gases (e.g., carbon oxides, nitrogen oxides, silicon oxides, and titanium oxides).

Explosion Sensitivity to Mechanical Impact: Not sensitive.

Explosion Sensitivity to Static Discharge: Not sensitive.

NFPA RATING



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

ADVICE TO FIRE-FIGHTERS: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Use water spray for cooling exposed containers of this product. Move fire-exposed containers if it can be done without risk to firefighters. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas. If necessary, rinse contaminated fire-response equipment with soapy water before returning to service.

6. ACCIDENTAL RELEASE MEASURES

SPILL AND LEAK RESPONSE: Trained personnel using pre-planned procedures should respond to uncontrolled releases. Proper protective equipment should be used. In case of a spill, clear the affected area and protect people. The atmosphere must have levels of constituents 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).

Small Spills: Rubber gloves, a lab coat, and eye protection should be worn. Absorb spilled liquid with suitable absorbent material.

Large Spills: Minimum Personal Protective Equipment should be **lab gloves, chemical resistant apron, boots, and splash goggles. Respiratory protection should not be necessary.** 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. Decontaminate the area thoroughly. Prevent material from entering sewer or confined spaces, waterways, soil or public waters. Monitor area and confirm levels are bellow exposure limits given in Section 8 (Exposure Controls-Personal Protection), if applicable, before non-response personnel are allowed into the spill area.

Place all spill residue in a double plastic bag or other containment and seal. Decontaminate the area thoroughly. Do not mix with wastes from other materials. Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations). For spills on water, contain, minimize dispersion and collect. Dispose of recovered material and report spill per regulatory requirements.

PART III *How can I prevent hazardous situations from occurring*

7. HANDLING and STORAGE

SAFE WORK AND HYGIENE PRACTICES: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat, drink, smoke, or apply cosmetics while handling this product. Avoid breathing vapors or mists generated by this product. Use in a well-ventilated location. Remove contaminated clothing immediately.

STORAGE AND HANDLING PRACTICES: All employees who handle this material should be trained to handle it safely. Keep away from heat, sparks, and other sources of ignition. Keep container tightly closed when not in use. Use non-sparking tools. Bond and ground containers during transfers of material. If this product is transferred into another container, only use portable containers and dispensing equipment (faucet, pump, drip can) approved for combustible liquids.

7. HANDLING and STORAGE (Continued)

STORAGE AND HANDLING PRACTICES (continued): Store containers in a cool, dry location, away from direct sunlight, sources of intense heat, or where freezing is possible. Material should be stored in secondary containers or in a diked area, as appropriate. Store containers away from incompatible chemicals (see Section 10, Stability and Reactivity). Containers should be separated from oxidizing materials by a minimum distance of 20 ft. or by a barrier of non-combustible material at least 5 ft. high having a fire-resistance rating of at least 0.5 hours. Storage areas should be made of fire resistant materials. Post warning and "NO SMOKING" signs in storage and use areas, as appropriate. Have appropriate extinguishing equipment in the storage area (e.g., sprinkler system, portable fire extinguishers). Inspect all incoming containers before storage to ensure containers are properly labeled and not damaged. Refer to NFPA 30, *Flammable and Combustible Liquids Code*, for additional information on storage. Empty containers may contain residual liquid or vapors that are combustible; therefore, empty containers should be handled with care. Never perform any welding, cutting, soldering, drilling, or other hot work on an empty container or piping until all liquid, vapors, and residue have been cleared.

SPECIFIC USE(S): This product is for use as an industrial coating. Follow all 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 Federal, State, and local procedures standards.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

VENTILATION, ENGINEERING, AND OCCUPATIONAL EXPOSURE CONTROLS: Use with adequate ventilation to ensure exposure levels are maintained below the limits provided in this Section if applicable. Use a non-sparking, grounded, explosion-proof ventilation system separate from other exhaust ventilation systems. Exhaust directly to the outside, taking necessary precautions for environmental protection. Ensure eyewash/safety shower stations and appropriate fire protection is available near areas where this product is used.

EXPOSURE LIMITS/GUIDELINES:

CHEMICAL NAME	CAS #	EXPOSURE LIMITS IN AIR							
		ACGIH-TLVs		OSHA-PELs		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
Carbon Black	1333-86-4	3 (inhal. fract.)	NE	3.5	NE	3.5 (0.1 in presence of PAHs, as PAH; 10-hr TWA)	NE	1750	DFG MAK: As inhalable dust Carcinogen: IARC-2B, MAK-3B, NIOSH-Ca (in presence of PAHs), TLV-A3
Crystalline Silica	14808-60-7	0.025 (resp. frac.)	NE	30 mg/m^3 / % SiO_2 + 2 (total dust) 250 mppcf / % SiO_2 + 5 ; 10 mg/m^3 / % SiO_2 + 2 Respirable dust		0.05 (resp. dust)	NE	NE	DFG MAK; Respirable fraction Carcinogen: IARC-1, MAK-1 (resp. fraction), NIOSH-Ca, NTP-K (resp. fraction), TLV-A2
Titanium Dioxide	13463-67-7	10	NE	15 (total dust)	NE	Lowest feasible concentration (LOQ = 0.2)		NE	DFG MAKs: TWA = 1.5 (inhalable fraction) Pregnancy Risk Group: C Carcinogen: IARC-2B, MAK-3A, NIOSH-Ca, TLV-A4
Diamine		NE	NE	NE	NE	NE	NE	NE	NE
Aliphatic Amine		NE	NE	NE	NE	NE	NE	NE	NE
Molecular Sieve		NE	NE	NE	NE	NE	NE	NE	NE
Polyol		NE	NE	NE	NE	NE	NE	NE	NE
Red Pigment		NE	NE	NE	NE	NE	NE	NE	NE
Triol		10 NIC = Withdraw TLV	NE	15 (total dust) 5 (resp. frac.) 10 (total dust) 5 (resp. frac.) [vacated 1989 PEL]	NE	NE	NE	NE	DFG MAKs: TWA = 50 (inhalable fraction) PEAK = 2 MAK 15 min, average value Pregnancy Risk Group: C
Yellow Pigment		NE	NE	NE	NE	NE	NE	NE	Carcinogen: IARC-3

NE = Not Established NIC = Notice of Intended Change PAHs = Polyaromatic Hydrocarbons See Section 16 for Definitions of Terms Used.

RESPIRATORY PROTECTION: Maintain airborne contaminant concentrations below limits listed in this Section. In instances where inhalable mists or sprays of product may be generated, and respiratory protection is necessary, use only respiratory protection authorized in the U.S. Federal OSHA Respiratory Protection Standard (29 CFR 1910.134), equivalent U.S. State standards, or Canadian CSA Standard Z94.4-02. 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, SAR with auxiliary self-contained air supply is required under OSHA's Respiratory Protection Standard (1910.134-1998).

EYE PROTECTION: Splash goggles may be worn. A face shield is recommended when operations can generate splashes, sprays, or mists of this product. If necessary, refer to U.S. OSHA 29 CFR 1910.133 or the Canadian CSA Standard Z94.3-02, *Industrial Eye and Face Protectors*.

HAND PROTECTION: Wear chloroprene rubber, nitrile rubber, chlorinated polyethylene, polyvinylchloride, butyl rubber, or fluoro-elastomer gloves for routine industrial use. If necessary, refer to U.S. OSHA 29 CFR 1910.138 or appropriate Standards of Canada.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION (Continued)

BODY PROTECTION: Use body protection appropriate for task (e.g., Tyvek suit, rubber apron). Wear chemical resistant boots when operations can generate splashes, sprays, or mists of this product. If necessary, refer appropriate Standards of Canada. 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

APPEARANCE, ODOR AND COLOR: This is a somewhat viscous liquid with a faint odor that comes in almond, black, gray, and yellow.

HOW TO DETECT THIS SUBSTANCE (warning properties): The color and odor may be distinguishing characteristics of this product.

BOILING POINT: > 232°C (450°F)
MELTING/FREEZING POINT: Not established.
FLASH POINT: > 226°C (440°F)
FLAMMABILITY: Combustible.
EXPLOSIVE PROPERTIES: Not explosive.
OXIDIZING PROPERTIES: Not an oxidizer.
VAPOR PRESSURE: Not established.
SPECIFIC GRAVITY: 1.2–1.4
SOLUBILITY: Not established.
SOLUBILITY IN WATER: Insoluble.
VISCOSITY: Not established.
RELATIVE VAPOR DENSITY (air = 1): Not established.
EVAPORATION RATE (n-BuAc = 1): Not established.
ODOR THRESHOLD: Not established.
LOG WATER/OIL DISTRIBUTION COEFFICIENT: Not available.
pH: Not applicable.

10. STABILITY and REACTIVITY

REACTIVITY/CHEMICAL STABILITY: Stable under circumstances of normal handling. This product reacts with monomers and may produce some heat.

DECOMPOSITION PRODUCTS:

Combustion: Carbon oxides, nitrogen oxides, silicon oxides, and titanium oxides.

Hydrolysis: None known.

MATERIALS WITH WHICH SUBSTANCE IS INCOMPATIBLE: Acids, bases, strong oxidizers, magnesium, manganese trifluoride, sodium, and xenon hexafluoride.

HAZARDOUS POLYMERIZATION: May occur on contact with water and other materials that react with isocyanates.

CONDITIONS TO AVOID: Exposure to or contact with extreme temperatures, sources of ignition, incompatible chemicals.

PART IV *Is there any other useful information about this material?*

11. TOXICOLOGICAL INFORMATION

SYMPTOMS OF OVEREXPOSURE BY ROUTE OF EXPOSURE: The main routes of overexposure to this product are inhalation and contact with skin or eyes. The symptoms of overexposure to this product are as follows:

INHALATION: Inhalation of mists or sprays of this product may irritate the nose, throat, and other tissues of the respiratory system. Symptoms of overexposure may include coughing, sore throat, and shortness of breath.

CONTACT WITH SKIN or EYES: Depending on the duration and concentration of skin overexposure, contact with this product may irritate contaminated skin. Symptoms can include redness and discomfort. Prolonged or repeated skin contact may cause dermatitis (dry, red skin).

SKIN ABSORPTION: The Polyol component of this product can be absorbed through intact skin. Absorption of large quantities may cause nausea, vomiting, stomach cramps, and diarrhea.

INGESTION: Ingestion is not anticipated to be a significant route of overexposure for this product. If this product is swallowed, it can irritate the mouth, throat, and other tissues of the digestive system. Symptoms can include sore throat, nausea, vomiting, stomach cramps, and diarrhea.

INJECTION: Injection is not anticipated to be a significant route of overexposure for this product. If this product is injected, via puncture by a contaminated object, local irritation and swelling can occur in addition to the wound.

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

Acute: Skin absorption of large quantities and ingestion may cause nausea, vomiting, stomach cramps, and diarrhea.

Chronic: Prolonged or repeated skin contact may cause dermatitis (dry, red skin).

HAZARDOUS MATERIAL IDENTIFICATION SYSTEM

HEALTH HAZARD	(BLUE)	2
FLAMMABILITY HAZARD	(RED)	1
PHYSICAL HAZARD	(YELLOW)	1

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

11. TOXICOLOGICAL INFORMATION (Continued)

HEALTH EFFECTS OR RISKS FROM EXPOSURE (continued):

TARGET ORGANS:

Acute: Respiratory system, skin, eyes. Chronic: Skin.

IRRITANCY OF PRODUCT: Overexposures to this product may irritate the eyes, skin, and mucous membranes.

SENSITIZATION TO THE PRODUCT: This product not known to cause sensitization.

TOXICITY DATA: Specific toxicology information for components of this product present in greater than 1% concentration is provided below.

CARBON BLACK:

Mutation in microorganisms (*Salmonella typhimurium*, bacteria) = 1 mg/plate

DNA adduct (inhalation, mouse) = 6200 µg/m^3/16 hours/12 weeks/intermittent

TCLo (inhalation, rat) = 50 mg/m^3/6 hours/90 days/intermittent; Lungs, Thorax, or Respiration: other changes

TCLo (inhalation, rat) = 11600 µg/m^3/18 hours/2 years/intermittent; Tumorigenic: Carcinogenic by RTECS criteria; Lungs, Thorax: tumor

POLYOL:

Standard Draize Test (Skin-Man) 50 mg/48 hours: Mild

Standard Draize Test (Skin-Rat) 100 mg/24 hours: Mild

Standard Draize Test (Skin-Rabbit) 100 mg/24 hours: Severe

Standard Draize Test (Eye-Rabbit) 500 mg: Mild

Standard Draize Test (Skin-Guinea Pig) 100 mg/24 hours: Mild

CRYSTALLINE SILICA:

TCLo (Inhalation-Human) 16 mppcf/8 hours/17.9 years-intermittent: Lungs, Thorax, or Respiration: fibrosis, focal (pneumoconiosis), cough, dyspnea

LCLo (Inhalation-Human) 300 µg/m^3/10 years-intermittent: Liver: other changes

LDLo (Intravenous-Rat) 90 mg/kg

LDLo (Intravenous-Mouse) 40 mg/kg

LDLo (Intravenous-Dog) 20 mg/kg

LDLo (Intratracheal-Rat) 200 mg/kg: Lungs, Thorax, or Respiration: fibrosis, focal (pneumoconiosis)

LDLo (Intratracheal-Rat) 250 mg/kg: Lungs, Thorax, or Respiration: fibrosis, focal (pneumoconiosis), other changes

LD (Intratracheal-Mouse) > 20 mg/kg: Lungs, Thorax, or Respiration: other changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: phosphatases

TCLo (Inhalation-Rat) 200 mg/kg: Lungs, Thorax, or Respiration: fibrosis, focal (pneumoconiosis), other changes; Nutritional and Gross Metabolic: changes in iron

TCLo (Inhalation-Rat) 1 mg/kg: Lungs, Thorax, or Respiration: other changes; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TCLo (Inhalation-Rat) 80 mg/m^3/26 weeks-intermittent: Lungs, Thorax, or Respiration: fibrosis, focal (pneumoconiosis); Blood: changes in spleen; Immunological Including Allergic: decrease in cellular immune response

TCLo (Inhalation-Rat) 108 mg/m^3/6 hours/3 days-intermittent: Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: phosphatases, other oxidoreductases, Metabolism (Intermediary): other proteins

TCLo (Inhalation-Rat) 58 mg/m^3/13 weeks-intermittent: Lungs, Thorax, or Respiration: other changes; Endocrine: changes in thymus weight; Blood: changes in leukocyte (WBC) count

TCLo (Inhalation-Rat) 15 mg/m^3/26 weeks-intermittent: Lungs, Thorax, or Respiration: other changes

TCLo (Inhalation-Rat) 0.74 mg/m^3/2 years-intermittent: Lungs, Thorax, or Respiration: other changes

TCLo (Inhalation-Rat) 10 mg/m^3/75 days-intermittent: Lungs, Thorax, or Respiration: other changes

TCLo (Inhalation-Rat) 50 mg/m^3/6 hours/71 weeks-intermittent: Tumorigenic: carcinogenic by RTECS criteria; Liver: tumors

TCLo (Inhalation-Mouse) 1475 µg/m^3/8 hours/21 weeks-intermittent: Lungs, Thorax, or Respiration: other changes

TCLo (Inhalation-Mouse) 4932 µg/m^3/24 hours/39 weeks-continuous: Endocrine: changes in spleen weight; Immunological Including Allergic: decrease in humoral immune response

TCLo (Inhalation-Mouse) 40 mg/kg: Lungs, Thorax, or Respiration: other changes

TCLo (Inhalation-Mouse) 40 mg/kg: Immunological: decrease in cellular immune response

TCLo (Inhalation-Mouse) 160 mg/kg/2 weeks-intermittent: Blood: changes in serum composition (e.g. TP, bilirubin, cholesterol); Immunological Including Allergic: autoimmune

CRYSTALLINE SILICA (continued):

TCLo (Inhalation-Guinea Pig) 28 mg/m^3/3 weeks-intermittent: Lungs, Thorax, or Respiration: other changes, changes in lung weight; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: other Enzymes

TCLo (Inhalation-Hamster) 3 mg/m^3/6 hours/78 weeks-intermittent: Lungs, Thorax, or Respiration: fibrosis (interstitial), changes in lung weight

TCLo (Inhalation-Monkey) 10 mg/m^3/818 days-intermittent: Lungs, Thorax, or Respiration: other changes

TCLo (Inhalation-Mammal-Domestic) 1000 gm/m^3/10 days-intermittent: Lungs, Thorax, or Respiration: other changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases

TDLo (Oral-Rat) 120 gm/kg: Gastrointestinal: hypermotility, diarrhea, other changes

TDLo (Intratracheal-Rat) 240 mg/kg/1 hour: Lungs, Thorax, or Respiration: other changes, changes in lung weight; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: phosphatases

TDLo (Intratracheal-Rat) 1.5 mg/kg: Lungs, Thorax, or Respiration: fibrosis (interstitial)

TDLo (Intratracheal-Rat) 15.69 mg/kg: Lungs, Thorax, or Respiration: other changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: other Enzymes

TDLo (Intratracheal-Rat) 150 mg/kg: Lungs, Thorax, or Respiration: other changes; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases

TDLo (Intratracheal-Rat) 25 mg/kg: Lungs, Thorax, or Respiration: cough, other changes, other changes

TDLo (Intratracheal-Rat) 10 mg/kg: Lungs, Thorax, or Respiration: fibrosis, focal (pneumoconiosis); Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: dehydrogenases

TDLo (Intratracheal-Rat) 2.88 mg/kg/12 weeks-intermittent: Blood: other changes, changes in leukocyte (WBC) count

TDLo (Intratracheal-Rat) 11.52 mg/kg/12 weeks-intermittent: Lungs, Thorax, or Respiration : other changes; Blood: other changes, changes in leukocyte (WBC) count

TDLo (Intratracheal-Rat) 240 µg/kg/12 weeks-intermittent: Lungs, Thorax, or Respiration: sputum; Immunological Including Allergic: decrease in cellular immune response

TDLo (Intratracheal-Rat) 960 µg/kg/12 weeks-intermittent: Lungs, Thorax, or Respiration: sputum; Immunological: decrease in cellular immune response; Biochemical: Enzyme inhibition, induction, or change in blood or tissue levels: multiple enzyme effects

TDLo (Intratracheal-Rat) 111 mg/kg: Tumorigenic: carcinogenic by RTECS criteria; Lungs, Thorax, or Respiration: tumors

TDLo (Intratracheal-Rat) 100 mg/kg/19 weeks-intermittent: Tumorigenic: equivocal tumorigenic agent by RTECS criteria; Lungs, Thorax, or Respiration: tumors

TDLo (Intratracheal-Mouse) 80 mg/kg: Lungs, Thorax, or Respiration: fibrosis (interstitial); Immunological Including Allergic: increase in cellular immune response; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TDLo (Intratracheal-Mouse) 16.7 mg/kg: Lungs, Thorax, or Respiration: acute pulmonary edema

TDLo (Intratracheal-Mouse) 80 mg/kg: Lungs, Thorax, or Respiration: other changes; Biochemical: Metabolism (Intermediary) - effect on inflammation or mediation of inflammation

TDLo (Intratracheal-Mouse) 100 mg/kg: Tumorigenic: increased incidence of tumors in susceptible strains

TDLo (Implant-Rat) 900 mg/kg: Tumorigenic: neoplastic by RTECS criteria; Gastrointestinal: tumors; Tumorigenic: tumors at site of application

TDLo (Implant-Rat) 4554 mg/kg: Tumorigenic: equivocal tumorigenic agent by RTECS criteria, tumors at site of application

CRYSTALLINE SILICA (continued):

TDLo (Implant-Mouse) 4000 mg/kg: Tumorigenic: equivocal tumorigenic agent by RTECS criteria; Kidney/Ureter/Bladder: tumors

TDLo (Implant-Mouse) 20 mg/kg: Lungs, Thorax, or Respiration: fibrosing alveolitis; Immunological: increase in cellular immune response; Biochemical: Metabolism (Intermediary): effect on inflammation or mediation of inflammation

TDLo (Intraperitoneal-Rat) 45 mg/kg: Tumorigenic: carcinogenic by RTECS criteria, tumors at site of application

TDLo (Intraperitoneal-Rat) 90 mg/kg/4 weeks-intermittent: Tumorigenic: equivocal tumorigenic agent by RTECS criteria; Blood: lymphoma, including Hodgkin's disease

TDLo (Intraperitoneal-Rat) 450 mg/kg/4 weeks-intermittent: Tumorigenic: neoplastic by RTECS criteria; Gastrointestinal: tumors

TDLo (Intravenous-Rat) 90 mg/kg: Tumorigenic: equivocal tumorigenic agent by RTECS criteria; Blood: lymphoma, including Hodgkin's disease

TDLo (Intrapleural-Rat) 90 mg/kg: Tumorigenic: carcinogenic by RTECS criteria; Blood: lymphoma, including Hodgkin's disease

TDLo (Intrapleural-Hamster) 83 mg/kg: Tumorigenic: neoplastic by RTECS criteria, tumors at site of application

TD (Intrapleural-Rat) 200 mg/kg: Tumorigenic: equivocal tumorigenic agent by RTECS criteria; Lungs, Thorax: bronchiogenic carcinoma

TD (Intrapleural-Rat) 100 mg/kg: Tumorigenic: carcinogenic by RTECS criteria; Blood: lymphoma, including Hodgkin's disease; Lungs, Thorax, or Respiration: tumors

TD (Intrapleural-Rat) 100 mg/kg: Tumorigenic: equivocal tumorigenic agent by RTECS criteria; Lungs, Thorax, or Respiration: fibrosis, focal (pneumoconiosis), tumors

TD (Intrapleural-Rat) 100 mg/kg: Tumorigenic: neoplastic by RTECS criteria; Lungs, Thorax, or Respiration: tumors

Micronucleus Test (Human-Lung) 40 µg/cm^2

Micronucleus Test (Hamster-Lung) 160 µg/cm^2

DNA Damage (Intratracheal-Rat) 3 mg/kg

ALIPHATIC AMINE:

Standard Draize Test (Eye-Rabbit) 10 µL/24 hours: Severe

LC_{50} (Inhalation-Mouse) 400 mg/m^3/4 hours

LDLo (Oral-Rat) 670 mg/kg: Behavioral: somnolence (general depressed activity); Lungs, Thorax, or Respiration: dyspnea; Nutritional and Gross Metabolic: weight loss or decreased weight gain

TDLo (Oral-Dog) 20,175 mg/kg/1.5 years-intermittent: Gastrointestinal: changes in structure or function of salivary glands; Liver: fatty liver degeneration; Kidney/Ureter/Bladder: interstitial nephritis

MOLECULAR SIEVE:

Currently, there are no toxicological data available for this component.

DIAMINE:

LD (Oral-Rat) > 500 mg/kg

LD (Intravenous-Rat) > 500 mg/kg

LD_{50} (Unreported-Mammal-Species Unspecified) 3900 mg/kg

TITANIUM DIOXIDE:

Standard Draize Test (skin, human) = 300 mg/3 days/intermittent; Mild irritation effects

TCLo (inhalation, rat) = 250 mg/m^3/6 hours/2 years/intermittent; Carcinogenic by RTECS criteria: Lungs, Thorax, or Respiration: tumors

TC (inhalation, rat) = 10 mg/m^3/18 hours/2 years/intermittent; Carcinogenic by RTECS criteria; Lungs, Thorax, or Respiration: tumors

TDLo (intramuscular, rat) = 360 mg/kg/ 2 years/intermittent; Neoplastic effects

TD (intramuscular, rat) = 260 mg/kg/84 weeks/intermittent; Equivocal tumorigenic agent

Micronucleus Test (intraperitoneal, mouse) = 3 g/kg/3 days/continuous

DNA Inhibition (lung, hamster) = 500 mg/L

CARCINOGENIC POTENTIAL OF COMPONENTS: The components of this product are listed by agencies tracking the carcinogenic potential of chemical compounds, as follows:

CARBON BLACK: ACGIH-TLV-A3 (Confirmed Animal Carcinogen); IARC-2B (Possibility Carcinogenic to Humans), MAK-3B (Substances for Which in vitro Tests or Animal Studies Have Yielded Evidence of Carcinogenic Effects That is Not Sufficient for Classification of the Substance in One of the Other Categories); NIOSH-Ca (Potential occupational carcinogen, with no further categorization),

11. TOXICOLOGICAL INFORMATION (Continued)

CARCINOGENIC POTENTIAL OF COMPONENTS (continued):

CRYSTALLINE SILICA: ACGIH-TLV-A2 (Suspected Human Carcinogen); IARC-1 (Carcinogenic to Humans); MAK-1 (Substances That Cause Cancer in Man); NIOSH-Ca (Potential Occupational Carcinogen, with No Further Categorization); NTP-K (Known to be a Human Carcinogen)

YELLOW PIGMENT: IARC-3 (Unclassifiable as to Carcinogenicity in Humans).

TITANIUM DIOXIDE: ACGIH-TLV-A4 (Not Classifiable as a Human Carcinogen); IARC-2B (Possibility Carcinogenic to Humans), MAK-3A (Substances for Which the Criteria for Classification in Category 4 or 5 are fulfilled, but for which the database is insufficient for the establishment of a MAK value); NIOSH-Ca (Potential Occupational Carcinogen, with No Further Categorization)

The remaining 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 and therefore are neither considered to be nor suspected to be cancer-causing agents by these agencies.

REPRODUCTIVE TOXICITY INFORMATION: The components of this product are not reported to cause mutagenic, embryotoxic, teratogenic or reproductive toxicity effects in humans.

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

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

MOBILITY: This material has not been tested for mobility in soil.

PERSISTENCE AND BIODEGRADABILITY: This material will degrade upon exposure to light. It is expected that some biodegradation will occur to this product; however, no specific information is known.

BIO-ACCUMULATION POTENTIAL: This material has not been tested for bio-accumulation potential.

ECOTOXICITY: This product has not been tested for aquatic or animal toxicity. All release to terrestrial, atmospheric, and aquatic environments should be avoided.

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

OTHER ADVERSE EFFECTS: This material is not listed as a compound having ozone depletion potential.

13. DISPOSAL CONSIDERATIONS

DISPOSAL METHODS: Do NOT dispose of this product by pouring down the drain. It is the responsibility of the generator to determine at the time of disposal whether the product meets 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. This product, 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 or metal waste pails or drums. 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.

14. TRANSPORTATION INFORMATION

U.S. DEPARTMENT OF TRANSPORTATION REGULATIONS: This product is NOT classified as dangerous goods, per U.S. DOT regulations, under 49 CFR 172.101.

TRANSPORT CANADA, TRANSPORTATION OF DANGEROUS GOODS REGULATIONS: This product is NOT classified as dangerous goods, per regulations of Transport Canada.

15. REGULATORY INFORMATION

ADDITIONAL UNITED STATES REGULATIONS:

U.S. SARA REPORTING REQUIREMENTS: The components of this product are subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act, as follows:

COMPONENT	SARA 302 (40 CFR 355, Appendix A)	SARA 304 (40 CFR Table 302.4)	SARA 313 (40 CCR 372.65)
Yellow Pigment	No	No	Yes

U.S. SARA THRESHOLD PLANNING QUANTITY: There are no specific Threshold Planning Quantities for the components of this product. 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.

U.S. TSCA INVENTORY STATUS: The components of this product are listed on the TSCA Inventory.

OTHER U.S. FEDERAL REGULATIONS: Not applicable.

CALIFORNIA SAFE DRINKING WATER AND TOXIC ENFORCEMENT ACT (PROPOSITION 65): The Carbon Black (airborne, unbound particles of respirable size), Crystalline Silica (airborne particles of respiratory size) and Yellow Pigment components of this product are on the Proposition 65 lists as. WARNING! This product contains chemicals known to the State of California to cause cancer.

15. REGULATORY INFORMATION (Continued)

ADDITIONAL CANADIAN REGULATIONS:

CANADIAN DSL/NDSL INVENTORY STATUS: The components of this product are listed on the DSL Inventory.

OTHER CANADIAN REGULATIONS: Not applicable.

CANADIAN ENVIRONMENTAL PROTECTION ACT (CEPA) PRIORITY SUBSTANCES LISTS: The components of this product are not on the CEPA Priority Substances Lists.

WHMIS CLASSIFICATION AND SYMBOLS: **D1B:** Materials Causing Other Toxic Effects (Material contains two D2A materials in greater than 1%).

16. OTHER INFORMATION

ANSI LABELING [Z129.1] (Precautionary Statements): **WARNING!** MAY CAUSE SKIN, EYE, AND RESPIRATORY TRACT IRRITATION. CONTAINS COMPONENTS THAT ARE SUSPECT CARCINOGENS. Avoid breathing mists or sprays. Avoid prolonged or repeated contact with skin. Avoid contact with eyes. Do not taste or swallow. Use only with adequate ventilation. Keep container closed. Wash thoroughly after handling. Wear appropriate eye, face, hand, body, and respiratory protection. FIRST-AID: In case of contact, immediately flush skin or eyes for at least 15 minutes. If inhaled, move to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. If ingested, do not induce vomiting. Get medical attention. IN CASE OF FIRE: Use water spray, foam, dry chemical or CO_2. IN CASE OF SPILL: Absorb spill with inert material (e.g., polypads) then place in suitable container. Refer to Material Safety Data Sheet for additional information on this product.

REVISION DETAILS: November 2011: Review and up-date MSDS, for current compliance and format. Up-date of exposure limits, Section 8.

PREPARED BY: CHEMICAL SAFETY ASSOCIATES, Inc.
PO Box 1961, Hilo, HI 96721 • (800) 441-3365

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 of 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 a 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.

EXPOSURE LIMITS IN AIR (continued):

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.

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 LD_{50} Rat*: > 5000 mg/kg. *Dermal Toxicity LD_{50} Rat or Rabbit*: > 2000 mg/kg. *Inhalation Toxicity 4-hrs LC_{50} 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 LD_{50} Rat*: > 500–5000 mg/kg. *Dermal Toxicity LD_{50} Rat or Rabbit*: > 1000–2000 mg/kg. *Inhalation Toxicity LC_{50} 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 LD_{50} Rat*: > 50–500 mg/kg. *Dermal Toxicity LD_{50} Rat or Rabbit*: > 200–1000 mg/kg. *Inhalation Toxicity LC_{50} 4-hrs Rat*: > 0.5–2 mg/L. **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 LD_{50} Rat*: > 1–50 mg/kg. *Dermal Toxicity LD_{50} Rat or Rabbit*: > 20–200 mg/kg. *Inhalation Toxicity LC_{50} 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 LD_{50} Rat*: ≤ 1 mg/kg. *Dermal Toxicity LD_{50} Rat or Rabbit*: ≤ 20 mg/kg. *Inhalation Toxicity LC_{50} 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 course 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.

DEFINITION OF TERMS (Continued)

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued):

FLAMMABILITY HAZARD (continued): **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. **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 ≥ 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 LC_{50} for acute inhalation toxicity greater than 10,000 ppm. Dusts and mists with an LC_{50} for acute inhalation toxicity greater than 200 mg/L. Materials with an LD_{50} for acute dermal toxicity greater than 2000 mg/kg. Materials with an LD_{50} 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 LC_{50} for acute inhalation toxicity greater than 5,000 ppm but less than or equal to 10,000 ppm. Dusts and mists with an LC_{50} for acute inhalation toxicity greater than 10 mg/L but less than or equal to 200 mg/L. Materials with an LD_{50} 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 LD_{50} for acute oral toxicity greater than 500 mg/kg but less than or equal to 2000 mg/kg.

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

HEALTH HAZARD (continued): **2** Materials that, under emergency conditions, can cause temporary incapacitation or residual injury. Gases with an LC_{50} 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 LC_{50} for acute inhalation toxicity, if its LC_{50} 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 LC_{50} for acute inhalation toxicity greater than 2 mg/L but less than or equal to 10 mg/L. Materials with an LD_{50} 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 LD_{50} 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 LC_{50} 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 LC_{50} for acute inhalation toxicity, if its LC_{50} 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 LC_{50} for acute inhalation toxicity greater than 0.5 mg/L but less than or equal to 2 mg/L. Materials with an LD_{50} 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 LD_{50} 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 LC_{50} 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 LC_{50} for acute inhalation toxicity, if its LC_{50} is less than or equal to 1000 ppm. Dusts and mists whose LC_{50} for acute inhalation toxicity is less than or equal to 0.5 mg/L. Materials whose LD_{50} for acute dermal toxicity is less than or equal to 40 mg/kg. Materials whose LD_{50} 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). 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.

DEFINITION OF TERMS (Continued)

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

INSTABILITY HAZARD (continued): **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. LD_{50}: Lethal Dose (solids & liquids) that kills 50% of the exposed animals. LC_{50}: 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/m^3: 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. TDo, LDLo, and LDo, or TC, TCo, LCLo, and LCo: Lowest dose (or concentration) to cause lethal or toxic effects.

TOXICOLOGICAL INFORMATION (continued):

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. **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:

A mutagen is a chemical that causes permanent changes to genetic material (DNA) such that the changes will propagate through generational lines. An embryotoxin is 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. A teratogen is a chemical that causes damage to a developing fetus, but the damage does not propagate across generational lines. A reproductive toxin is any substance that interferes in any way with the reproductive process.

ECOLOGICAL INFORMATION:

EC: Effect concentration in water. BCF: 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:

U.S. and CANADA:

This section explains the impact of various laws and regulations on the material. 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. WHMIS: Canadian Workplace Hazardous Materials Information System. DOT: U.S. Department of Transportation. TC: Transport Canada. SARA: Superfund Amendments and Reauthorization Act. DSL/NDSL: Canadian Domestic/Non-Domestic Substances List. 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.

Material Safety Data Sheet

Print Date 28-May-2011 **Revision Date** 20-May-2011 **Revision Number** 2

1. PRODUCT AND COMPANY IDENTIFICATION

Common name	SERIES 73 PART A
Product code	F073-00WHA
Trade name	ENDURA-SHIELD TNEMEC WHITE
Product Class	ACRYLIC PAINT
Manufacturer	Tnemec Company, Inc. 6800 Corporate Drive, Kansas City, MO 64120-1372
Emergency telephone	800-535-5053 (INFOTRAC) - TNEMEC REGULATORY DEPT: 816-474-3400

2. HAZARDS IDENTIFICATION

Emergency Overview

DANGER!

FLAMMABLE LIQUID AND VAPOR.
HARMFUL OR FATAL IF SWALLOWED.
HARMFUL IF INHALED.
MAY AFFECT THE BRAIN OR NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA.
MAY CAUSE EYE, SKIN, NOSE, THROAT AND RESPIRATORY TRACT IRRITATION.
MAY BE HARMFUL IF ABSORBED THROUGH SKIN.

Potential health effects

Principle Routes of Exposure Eye contact, Inhalation, Skin contact.

Acute effects

Eyes	Moderately irritating to the eyes.
Skin	Irritating to skin.
Inhalation	Irritating to respiratory system. Respirable crystalline silica (quartz) can cause silicosis, a fibrosis (scarring) of the lungs.
Ingestion	May be harmful if swallowed.

Chronic effects
NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions Central nervous system. Gastrointestinal tract. Kidney disorders. Liver disorders. Skin disorders. Respiratory disorders.

Interactive effects Use of alcoholic beverages may enhance toxic effects.

Potential environmental effects See Section 12 for additional Ecological Information

Target Organ Effects Blood, Central nervous system, Gastrointestinal tract, Eyes, Kidney, Liver, Lungs, Respiratory system, Skin

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Components

Component	CAS-No	Weight %
TITANIUM DIOXIDE (TOTAL DUST)	13463-67-7	10 - 30
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE	108-65-6	10 - 30
CRYSTALLINE SILICA (QUARTZ)	14808-60-7	10 - 30
METHYL ETHYL KETONE	78-93-3	1 - 5
AMORPHOUS SILICA	7631-86-9	1 - 5
ALUMINUM OXIDES	1344-28-1	1 - 5
XYLENE	1330-20-7	1 - 5
ETHYL BENZENE	100-41-4	0.1 - 1

4. FIRST AID MEASURES

Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes.

Skin contact: Wash off immediately with soap and plenty of water.

Ingestion: If swallowed, do not induce vomiting. Get medical attention immediately.

Inhalation: Move to fresh air. Oxygen or artificial respiration if needed.

5. FIRE-FIGHTING MEASURES

Flammable properties Flammable.

Suitable extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Contact with water may cause violent frothing. Use: Carbon dioxide (CO2) - Foam - Dry chemical

Hazardous decomposition products Oxides of carbon, hydrocarbons.

Specific hazards arising from the chemical
Thermal decomposition can lead to release of irritating gases and vapours. In the event of fire and/or explosion do not breathe fumes.

Protective equipment and precautions for firefighters
Use water spray to cool unopened containers. In the event of fire, wear self-contained breathing apparatus. Keep away from heat/sparks/open flames/hot surfaces. May cause heat and pressure build-up in closed containers. Solvent vapors are heavier than air and may spread along floors. Flash back possible over considerable distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition.

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

Methods for cleaning up If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Other information Not applicable

7. HANDLING AND STORAGE

Handling

Close container after each use. Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke when using this product. If splashes are likely to occur, wear goggles. Wear protective gloves/clothing. Do not burn, or use a cutting torch on, the empty drum. When used in a mixture, read the labels and safety data sheets of all components. Wash thoroughly after handling.

Storage

Keep away from heat, sparks and flame. VAPORS MAY CAUSE FLASH FIRE. Use only in an area containing flame proof equipment. Extinguish all flames and pilot lights, and turn off stoves, heaters, electric motors and other sources of ignition during use and until all vapors are gone. Prevent build-up of vapors by opening all windows and doors to achieve cross ventilation.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	Quebec TWAEV	Ontario TWAEV	Mexico OEL (TWA)
TITANIUM DIOXIDE (TOTAL DUST)	: 10 mg/m^3 TWA	: 10 mg/m^3 TWA (total dust) : 15 mg/m^3 TWA (total dust)	TWA: 10 mg/m^3 TWAEV (total dust, containing no asbestos and less than 1% crystalline silica)	TWA: 10 mg/m^3 TWA (total dust)	: 10 mg/m^3 TWA (as Ti) : 20 mg/m^3 STEL (as Ti)
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE				TWA: 50 ppm TWA; 270 mg/m^3 TWA	
CRYSTALLINE SILICA (QUARTZ)	: 0.025 mg/m^3 TWA (respirable fraction)	: 0.1 mg/m^3 TWA (respirable dust)	TWA: 0.1 mg/m^3 TWAEV (respirable dust)	TWA: 0.10 mg/m^3 TWA (designated substance regulation, respirable)	: 0.1 mg/m^3 TWA (respirable fraction)
METHYL ETHYL KETONE	: 200 ppm TWA : 300 ppm STEL	: 200 ppm TWA; 590 mg/m^3 TWA : 300 ppm STEL; 885 mg/m^3 STEL	TWA: 50 ppm TWAEV; 150 mg/m^3 TWAEV STEL: 100 ppm STEV; 300 mg/m^3 STEV	TWA: 200 ppm TWA STEL: 300 ppm STEL	: 200 ppm TWA; 590 mg/m^3 TWA : 300 ppm STEL; 885 mg/m^3 STEL
ALUMINUM OXIDES	TWA: 1 mg/m^3	: 10 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction) : 15 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction)	TWA: 10 mg/m^3 TWAEV (total dust, containing no asbestos and less than 1% crystalline silica, as Al)	TWA: 10 mg/m^3	: 10 mg/m^3 TWA
XYLENE	: 100 ppm TWA : 150 ppm STEL	: 100 ppm TWA; 435 mg/m^3 TWA : 150 ppm STEL; 655 mg/m^3 STEL	TWA: 100 ppm TWAEV; 434 mg/m^3 TWAEV STEL: 150 ppm STEV; 651 mg/m^3 STEV	TWA: 100 ppm TWA STEL: 150 ppm STEL	: 100 ppm TWA; 435 mg/m^3 TWA : 150 ppm STEL; 655 mg/m^3 STEL
ETHYL BENZENE	: 100 ppm TWA : 125 ppm STEL	: 100 ppm TWA; 435 mg/m^3 TWA : 125 ppm STEL; 545 mg/m^3 STEL	TWA: 100 ppm TWAEV; 434 mg/m^3 TWAEV STEL: 125 ppm STEV; 543 mg/m^3 STEV	TWA: 100 ppm TWA STEL: 125 ppm STEL	: 100 ppm TWA; 435 mg/m^3 TWA : 125 ppm STEL; 545 mg/m^3 STEL

Engineering measures Ensure adequate ventilation, especially in confined areas

Personal Protective Equipment

Skin protection Lightweight protective clothing, Apron, Impervious gloves

Eye/face protection If splashes are likely to occur, wear Goggles.

Respiratory protection **Use only with adequate ventilation.** Do not breathe dust, vapors or spray mist. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates vapor/mist levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH approved) during and after application. Follow respirator manufacturer's directions for respirator use.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. Avoid breathing dust created by cutting, sanding, or grinding.

9. PHYSICAL AND CHEMICAL PROPERTIES

Flash point	13°C / 55.0°F
Boiling range	78 - 142°C / 172.0 - 288.0°F
Upper explosion limit	No information available
Lower explosion limit	No information available
Evaporation rate	No information available
Vapor pressure	No information available
Vapor density	No information available
Specific Gravity	1.52660 g/cm3
Density	12.70358 lbs/gal
Volatile organic compounds (VOC) content	3.081 lbs/gal
Volatile by weight	24.2510 %
Volatile by volume	40.3148 %

10. STABILITY AND REACTIVITY

Chemical stability Stable.

Conditions to avoid Heat, flames and sparks. Reacts with air to form peroxides.

Incompatible products Strong oxidizing agents. Acids.

Possibility of hazardous reactions None under normal processing

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
TITANIUM DIOXIDE (TOTAL DUST)	10000 mg/kg (Rat)		
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE	8532 mg/kg (Rat)	5000 mg/kg (Rabbit)	
CRYSTALLINE SILICA (QUARTZ)	500 mg/kg (Rat)		
METHYL ETHYL KETONE	2737 mg/kg (Rat)	6480 mg/kg (Rabbit)	
AMORPHOUS SILICA	5000 mg/kg (Rat)	2000 mg/kg (Rabbit)	2.2 mg/L (Rat) 1 h
ALUMINUM OXIDES	5000 mg/kg (Rat)		
XYLENE	4300 mg/kg (Rat)	1700 mg/kg (Rabbit)	5000 ppm (Rat) 4 h 47635 mg/L (Rat) 4 h
ETHYL BENZENE	3500 mg/kg (Rat)	15354 mg/kg (Rabbit)	17.2 mg/L (Rat) 4 h

Irritation No information available

Corrosivity No information available
Sensitization No information available

Chronic toxicity

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen

Component	ACGIH	IARC	NTP	OSHA	Mexico
TITANIUM DIOXIDE (TOTAL DUST)		Group 2B		X	
CRYSTALLINE SILICA (QUARTZ)	A2	Group 1	Known	X	
ETHYL BENZENE	A3	Group 2B		X	

Mutegenicity No information available
Reproductive effects No information available
Developmental effects No information available
Teratogenicity No information available
Target Organ Effects Blood, Central nervous system, Gastrointestinal tract, Eyes, Kidney, Liver, Lungs, Respiratory system, Skin.
Endocrine Disruptor Information No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

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Component	Toxicity to algae	Toxicity to fish	Toxicity to microorganisms	Toxicity to daphnia
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE		LC50= 161 mg/L Pimephales promelas 96 h		EC50 > 500 mg/L 48 h
METHYL ETHYL KETONE		LC50 3130-3320 mg/L Pimephales promelas 96 h	EC50 = 3426 mg/L 5 min EC50 = 3403 mg/L 30 min	EC50 4025 - 6440 mg/L 48 h EC50 = 5091 mg/L 48 h EC50 > 520 mg/L 48 h
AMORPHOUS SILICA	EC50 = 440 mg/L 72 h	LC50= 5000 mg/L Brachydanio rerio 96 h		EC50 = 7600 mg/L 48 h
XYLENE		LC50= 13.4 mg/L Pimephales promelas 96 h LC50 2.661-4.093 mg/L Oncorhynchus mykiss 96 h LC50 13.5-17.3 mg/L Oncorhynchus mykiss 96 h LC50 13.1-16.5 mg/L Lepomis macrochirus 96 h LC50= 19 mg/L Lepomis macrochirus 96 h LC50 7.711-9.591 mg/L Lepomis macrochirus 96 h LC50 23.53-29.97 mg/L Pimephales promelas 96 h LC50= 780 mg/L Cyprinus carpio 96 h LC50> 780 mg/L Cyprinus carpio 96 h LC50 30.26-40.75 mg/L Poecilia reticulata 96 h	EC50 = 0.0084 mg/L 24 h	EC50 = 3.82 mg/L 48 h LC50 = 0.6 mg/L 48 h

Component	Toxicity to algae	Toxicity to fish	Toxicity to microorganisms	Toxicity to daphnia
ETHYL BENZENE	EC50 = 4.6 mg/L 72 h EC50 > 438 mg/L 96 h EC50 2.6 - 11.3 mg/L 72 h EC50 1.7 - 7.6 mg/L 96 h	LC50 11.0-18.0 mg/L Oncorhynchus mykiss 96 h LC50= 4.2 mg/L Oncorhynchus mykiss 96 h LC50 7.55-11 mg/L Pimephales promelas 96 h LC50= 32 mg/L Lepomis macrochirus 96 h LC50 9.1-15.6 mg/L Pimephales promelas 96 h LC50= 9.6 mg/L Poecilia reticulata 96 h	EC50 = 9.68 mg/L 30 min EC50 = 96 mg/L 24 h	EC50 1.8 - 2.4 mg/L 48 h

13. DISPOSAL CONSIDERATIONS

Waste disposal methods Keep container tightly closed. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal

14. TRANSPORT INFORMATION

DOT Ground Transportation Only. Call TNEMEC Traffic Department - 816-474-3400 for other modes of Transportation.

Proper shipping name UN1263,PAINT,3,PGIII,ERG 128

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Does not Comply
CHINA	Complies
ENCS	Does not Comply
KECL	Complies
PICCS	Does not Comply
AICS	Complies

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):

Component
XYLENE
ETHYL BENZENE

United States of America Federal Regulations

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values
METHYL ETHYL KETONE	78-93-3	1 - 5	1.0
ALUMINUM OXIDES	1344-28-1	1 - 5	1.0 % de minimis concentration (fibrous forms)
XYLENE	1330-20-7	1 - 5	1.0 % de minimis concentration
ETHYL BENZENE	100-41-4	0.1 - 1	0.1 % de minimis concentration

SARA 311/312 Hazardous Categorization

Chronic Health Hazard	yes
Acute Health Hazard	yes
Fire Hazard	yes
Sudden Release of Pressure Hazard	no
Reactive Hazard	no

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
XYLENE	100 lb RQ			X
ETHYL BENZENE	1000 lb RQ	X	X	X

CERCLA

United States of America State Regulations

California Prop. 65

This product contains the following Proposition 65 chemicals:

Component	CAS-No	California Prop. 65
CRYSTALLINE SILICA (QUARTZ)	14808-60-7	Carcinogen
ETHYL BENZENE	100-41-4	Carcinogen

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
TITANIUM DIOXIDE (TOTAL DUST)	X	X	X		X
CRYSTALLINE SILICA (QUARTZ)	X	X	X		X
METHYL ETHYL KETONE	X	X	X	X	X
AMORPHOUS SILICA	X		X		
ALUMINUM OXIDES	X	X	X		X
XYLENE	X	X	X	X	X
ETHYL BENZENE	X	X	X	X	X

Other international regulations

Canada

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

WHMIS Classification

B2 Flammable liquid

D2A Very toxic materials

Component	NPRI
PROPYLENE GLYCOL MONOMETHYL ETHER ACETATE	Part 5 Substance
METHYL ETHYL KETONE	Part 1, Group 1 Substance; Part 5 Substance
ALUMINUM OXIDES	Part 1, Group 1 Substance (fibrous form)
XYLENE	Part 1, Group 1 Substance; Part 5 Substance

ETHYL BENZENE	Part 1, Group 1 Substance

Legend
NPRI - National Pollutant Release Inventory

16. OTHER INFORMATION

Revision Date 20-May-2011

Revision Note No information available

HMIS (Hazardous Material Information System) **Health** 2* **Flammability** 3 **Reactivity** 1

Disclaimer
For specific information regarding occupational safety and health standards, please refer to the Code of Federal Regulations, Title 29, Part 1910.
To the best of our knowledge, the information contained herein is accurate. However, neither the Tnemec Company or any of its subsidiaries assume any liability whatsoever for the accuracy of completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

End of MSDS

Material Safety Data Sheet

Print Date 19-May-2011 **Revision Date** 19-May-2011 **Revision Number** 2

1. PRODUCT AND COMPANY IDENTIFICATION

Common name	SERIES 73 PART B
Product code	F073-0073B
Trade name	ENDURA-SHIELD CONVERTER
Product Class	POLYISOCYANATE PAINT
Manufacturer	Tnemec Company, Inc. 6800 Corporate Drive, Kansas City, MO 64120-1372
Emergency telephone	800-535-5053 (INFOTRAC) - TNEMEC REGULATORY DEPT: 816-474-3400

2. HAZARDS IDENTIFICATION

Emergency Overview

DANGER!

COMBUSTIBLE LIQUID AND VAPOR.
HARMFUL OR FATAL IF SWALLOWED.
HARMFUL IF INHALED.
MAY CAUSE ALLERGIC SKIN REACTION; EFFECTS MAY BE PERMANENT.
MAY CAUSE ALLERGIC RESPIRATORY REACTION; EFFECTS MAY BE PERMANENT.
MAY CAUSE LUNG INJURY.
MAY AFFECT THE BRAIN OR NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA.
MAY CAUSE EYE, SKIN, NOSE, THROAT AND RESPIRATORY TRACT IRRITATION.

Potential health effects

Principle Routes of Exposure Eye contact, Inhalation, Skin contact.

Acute effects

Eyes	Moderately irritating to the eyes. Risk of serious damage to eyes.
Skin	Irritating to skin. May cause sensitization by skin contact.
Inhalation	Irritating to respiratory system. May cause allergic respiratory reaction.
Ingestion	May be harmful if swallowed.

Chronic effects

NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. Contains isocyanate monomer. If subject to spray application, engineering and administrative controls must be instituted to maintain an exposure level below .005ppm. If these controls are not adequate, the use of an air-supplied respirator is mandatory.

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions No information available

Interactive effects No information available

Potential environmental effects See Section 12 for additional Ecological Information

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Components

Component	CAS-No	Weight %
HEXAMETHYLENE DIISOCYANATE (HDI) POLYMER	28182-81-2	30 - 60
P-CHLOROBENZOTRIFLUORIDE	98-56-6	30 - 60
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER	822-06-0	0.1 - 1

4. FIRST AID MEASURES

Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes.

Skin contact: Wash off immediately with soap and plenty of water.

Ingestion: If swallowed, do not induce vomiting. Get medical attention immediately.

Inhalation: Move to fresh air. Oxygen or artificial respiration if needed.

5. FIRE-FIGHTING MEASURES

Flammable properties Combustible material.

Suitable extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Contact with water may cause violent frothing. Use: Carbon dioxide (CO2) - Foam - Dry chemical

Hazardous decomposition products Oxides of carbon, hydrocarbons. Oxides of nitrogen. Hydrogen cyanide. Chlorine. Fluorine.

Specific hazards arising from the chemical
Keep product and empty container away from heat and sources of ignition

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.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition.

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

Methods for cleaning up If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Other information Not applicable

7. HANDLING AND STORAGE

Handling

Use only with adequate ventilation. Avoid contact with skin, eyes and clothing. Handle in accordance with good industrial hygiene and safety practice. Remove and wash contaminated clothing before re-use. Do not eat, drink or smoke when using this product. When used in a mixture, read the labels and safety data sheets of all components. Wash thoroughly after handling.

Storage

Close container after each use. Keep away from heat, sparks and flame. Use only in an area containing flame proof equipment. Prevent build-up of vapors by opening all windows and doors to achieve cross ventilation.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	Quebec TWAEV	Ontario TWAEV	Mexico OEL (TWA)
P-CHLOROBENZOTRIFLUORIDE	TWA: 2.5 mg/m^3		TWA: 2.5 mg/m^3	TWA: 2.5 mg/m^3	
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER	: 0.005 ppm TWA		TWA: 0.005 ppm TWAEV; 0.034 mg/m^3 TWAEV	TWA: 0.005 ppm TWA (designated substance regulation, listed under Isocyanates, organic compounds); 0.005 ppm TWA (applies to workplaces to which the designated substance regulation does not apply) CEV: 0.02 ppm Ceiling (designated substances regulation)	

Engineering measures Ensure adequate ventilation, especially in confined areas

Personal Protective Equipment

Skin protection Lightweight protective clothing, Apron, Impervious gloves

Eye/face protection Safety glasses with side-shields

Respiratory protection INDIVIDUALS WITH LUNG OR BREATHING PROBLEMS OR PRIOR REACTION TO ISOCYANATES MUST NOT BE EXPOSED TO VAPOR OR SPRAY MIST. Do not breathe vapor or spray mist. Wear an appropriate, properly fitted respirator (NIOSH/MSHA approved) during and after application unless air monitoring demonstrates vapor/mist levels are below applicable limits. An airline respirator (TC 19C NIOSH/MSHA) is recommended. A vapor-particulate respirator (TC 23C NIOSH/MSHA) may be appropriate where air monitoring demonstrates vapors are less than ten times the applicable exposure limits and the isocyanate concentration is less than its applicable exposure limit. The use of an air-supplied respirator is mandatory whenever the airborne concentration of isocyanate monomer is unknown.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. Avoid breathing dust created by cutting, sanding, or grinding.

9. PHYSICAL AND CHEMICAL PROPERTIES

Flash point	40°C / 104.0°F
Boiling range	139 - 139°C / 282.0 - 282.0°F
Upper explosion limit	No information available
Lower explosion limit	No information available
Evaporation rate	No information available
Vapor pressure	No information available
Vapor density	No information available

9. PHYSICAL AND CHEMICAL PROPERTIES

Specific Gravity	1.23332 g/cm3
Density	10.26311 lbs/gal
Volatile organic compounds (VOC) content	.000 lbs/gal
Volatile by weight	49.0030 %
Volatile by volume	44.9040 %

10. STABILITY AND REACTIVITY

Chemical stability	Stable.	**Conditions to avoid**	Heat, flames and sparks. Amines.
Incompatible products	Strong oxidizing agents. Water, alcohols, amines, strong bases, metal components, surface active materials.	**Possibility of hazardous reactions**	None under normal processing

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
HEXAMETHYLENE DIISOCYANATE (HDI) POLYMER			18500 mg/m^3 (Rat) 1 h
P-CHLOROBENZOTRIFLUORIDE	13 g/kg (Rat)	2 mg/kg (Rabbit)	33 mg/L (Rat) 4 h
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER	710 mg/kg (Rat)	570 mg/kg (Rabbit)	0.15 mg/L (Rat) 4 h 0.29 mg/L (Rat) 1 h

Irritation	No information available
Corrosivity	No information available
Sensitization	No information available

Chronic toxicity

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen

Mutegenicity	No information available
Reproductive effects	No information available
Developmental effects	No information available
Teratogenicity	No information available
Target Organ Effects	No information available
Endocrine Disruptor Information	No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

.

Component	Toxicity to algae	Toxicity to fish	Toxicity to microorganisms	Toxicity to daphnia
P-CHLOROBENZOTRIFLUORIDE			EC50 = 11.1 mg/L 5 min EC50 = 13.4 mg/L 15 min EC50 = 14.3 mg/L 30 min	EC50 = 3.68 mg/L 48 h

Component	Toxicity to algae	Toxicity to fish	Toxicity to microorganisms	Toxicity to daphnia
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER		LC50= 26.1 mg/L Brachydanio rerio 96 h	EC50 = 53.2 mg/L 5 min EC50 = 25.5 mg/L 15 min EC50 = 15.7 mg/L 30 min	

13. DISPOSAL CONSIDERATIONS

Waste disposal methods Keep container tightly closed. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal

14. TRANSPORT INFORMATION

DOT Ground Transportation Only. Call TNEMEC Traffic Department - 816-474-3400 for other modes of Transportation.

Proper shipping name PAINT IN OIL

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
CHINA	Complies
ENCS	Does not Comply
KECL	Complies
PICCS	Complies
AICS	Complies

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):
Component
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER

United States of America Federal Regulations

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER	822-06-0	0.1 - 1	1.0 % de minimis concentration (listed under Chemical Category N120, Diisocyanates)

SARA 311/312 Hazardous Categorization

Chronic Health Hazard	yes
Acute Health Hazard	yes
Fire Hazard	yes
Sudden Release of Pressure Hazard	no
Reactive Hazard	no

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
P-CHLOROBENZOTRIFLUORIDE		X		

CERCLA

United States of America State Regulations

California Prop. 65
This product contains the following Proposition 65 chemicals:

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
P-CHLOROBENZOTRIFLUORIDE		X	X		X
HEXAMETHYLENE DIISOCYANATE (HDI) MONOMER	X	X		X	

Other international regulations

Canada

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

WHMIS Classification
B3 Combustible liquid
D2A Very toxic materials

Legend
NPRI - National Pollutant Release Inventory

16. OTHER INFORMATION

Revision Date 19-May-2011

Revision Note No information available

HMIS (Hazardous Material Information System) **Health** 2* **Flammability** 2 **Reactivity** 1

Disclaimer
For specific information regarding occupational safety and health standards, please refer to the Code of Federal Regulations, Title 29, Part 1910.
To the best of our knowledge, the information contained herein is accurate. However, neither the Tnemec Company or any of its subsidiaries assume any liability whatsoever for the accuracy of completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

End of MSDS

Material Safety Data Sheet

Print Date 24-Jun-2011 **Revision Date** 24-Jun-2011 **Revision Number** 1

1. PRODUCT AND COMPANY IDENTIFICATION

Common name	SERIES L69F PART A
Product code	L-69-11WHA
Trade name	HB EPOXOLINE II WHITE
Product Class	POLYAMINE AMIDO AMINE PAINT
Manufacturer	Tnemec Company, Inc. 6800 Corporate Drive, Kansas City, MO 64120-1372
Emergency telephone	800-535-5053 (INFOTRAC) - TNEMEC REGULATORY DEPT: 816-474-3400

2. HAZARDS IDENTIFICATION

Emergency Overview

DANGER!

COMBUSTIBLE LIQUID AND VAPOR.
CAUSES SKIN AND EYE BURNS.
HARMFUL OR FATAL IF SWALLOWED.
HARMFUL IF INHALED.
MAY CAUSE ALLERGIC SKIN REACTION; EFFECTS MAY BE PERMANENT.
MAY AFFECT THE BRAIN OR NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA.
MAY CAUSE EYE, SKIN, NOSE, THROAT AND RESPIRATORY TRACT IRRITATION.
MAY BE HARMFUL IF ABSORBED THROUGH SKIN.

Potential health effects

Principle Routes of Exposure Eye contact, Inhalation, Skin contact.

Acute effects

Eyes	Causes burns.
Skin	Causes burns. May cause sensitization by skin contact.
Inhalation	Irritating to respiratory system. Respirable crystalline silica (quartz) can cause silicosis, a fibrosis (scarring) of the lungs.
Ingestion	May be harmful if swallowed.

Chronic effects

Cancer hazard. Contains crystalline silica which can cause cancer. (Risk of cancer depends on duration and level of exposure).

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions Central nervous system. Skin disorders. Respiratory disorders.

Interactive effects Use of alcoholic beverages may enhance toxic effects.

Potential environmental effects See Section 12 for additional Ecological Information

Target Organ Effects Central nervous system, Central Vascular System (CVS), Eyes, Lungs, Respiratory system, Skin

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Components

Component	CAS-No	Weight %
TALC (RESPIRABLE DUST)	14807-96-6	10 - 30
TITANIUM DIOXIDE (TOTAL DUST)	13463-67-7	10 - 30
P-CHLOROBENZOTRIFLUORIDE	98-56-6	10 - 30
CRYSTALLINE SILICA (QUARTZ)	14808-60-7	10 - 30
BENZYL ALCOHOL	100-51-6	5 - 10
N-BUTANOL (SKIN)	71-36-3	1 - 5
ISOPHORONE DIAMINE	2855-13-2	1 - 5
AMORPHOUS SILICA	7631-86-9	1 - 5
ALUMINUM OXIDES	1344-28-1	1 - 5
XYLENE	1330-20-7	0.1 - 1
1,2,4-TRIMETHYLBENZENE	95-63-6	0.1 - 1
1,3,5-TRIMETHYLBENZENE	108-67-8	0.1 - 1

4. FIRST AID MEASURES

Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes.

Skin contact: Wash off immediately with soap and plenty of water.

Ingestion: If swallowed, do not induce vomiting. Get medical attention immediately.

Inhalation: Move to fresh air. Oxygen or artificial respiration if needed.

5. FIRE-FIGHTING MEASURES

Flammable properties Combustible material.

Suitable extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Contact with water may cause violent frothing. Use: Carbon dioxide (CO2) - Foam - Dry chemical

Hazardous decomposition products Oxides of carbon, hydrocarbons. Oxides of nitrogen. Aldehydes. Chlorine. Fluorine.

Specific hazards arising from the chemical
Thermal decomposition can lead to release of irritating gases and vapours. In the event of fire and/or explosion do not breathe fumes.

Protective equipment and precautions for firefighters
Use water spray to cool unopened containers. In the event of fire, wear self-contained breathing apparatus. Keep away from heat/sparks/open flames/hot surfaces. May cause heat and pressure build-up in closed containers. Solvent vapors are heavier than air and may spread along floors. Flash back possible over considerable distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition.

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

Methods for cleaning up If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Other information Not applicable

7. HANDLING AND STORAGE

Handling

Close container after each use. Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke when using this product. If splashes are likely to occur, wear goggles. Wear protective gloves/clothing. Do not burn, or use a cutting torch on, the empty drum. When used in a mixture, read the labels and safety data sheets of all components. Wash thoroughly after handling.

Storage

Keep away from heat, sparks and flame. Use only in an area containing flame proof equipment. Prevent build-up of vapors by opening all windows and doors to achieve cross ventilation.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	Quebec TWAEV	Ontario TWAEV	Mexico OEL (TWA)
TALC (RESPIRABLE DUST)	: 2 mg/m^3 TWA (particulate matter containing no asbestos and <1% crystalline silica, respirable fraction)	: 2 mg/m^3 TWA (<1% Crystalline silica, containing no Asbestos, respirable dust)	TWA: 3 mg/m^3 TWAEV (respirable dust)	TWA: 2 mg/m^3 TWA (containing no Asbestos and <1% Crystalline silica, respirable)	: 2 mg/m^3 TWA (respirable fraction)
TITANIUM DIOXIDE (TOTAL DUST)	: 10 mg/m^3 TWA	: 10 mg/m^3 TWA (total dust) : 15 mg/m^3 TWA (total dust)	TWA: 10 mg/m^3 TWAEV (total dust, containing no Asbestos and <1% Crystalline silica)	TWA: 10 mg/m^3 TWA (total dust)	: 10 mg/m^3 TWA (as Ti) : 20 mg/m^3 STEL (as Ti)
P-CHLOROBENZOTRIFLUORIDE	TWA: 2.5 mg/m^3		TWA: 2.5 mg/m^3	TWA: 2.5 mg/m^3	
CRYSTALLINE SILICA (QUARTZ)	: 0.025 mg/m^3 TWA (respirable fraction)	: 0.1 mg/m^3 TWA (respirable dust)	TWA: 0.1 mg/m^3 TWAEV (respirable dust)	TWA: 0.10 mg/m^3 TWA (designated substance regulation, respirable)	: 0.1 mg/m^3 TWA (respirable fraction)
N-BUTANOL (SKIN)	: 20 ppm TWA	Skin : 50 ppm Ceiling; 150 mg/m^3 Ceiling : 100 ppm TWA; 300 mg/m^3 TWA	Ceiling: 50 ppm Ceiling; 152 mg/m^3 Ceiling Skin	TWA: 20 ppm TWA	: 50 ppm Peak; 150 mg/m^3 Peak
ALUMINUM OXIDES	TWA: 1 mg/m^3	: 10 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction) : 15 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction)	TWA: 10 mg/m^3 TWAEV (total dust, containing no Asbestos and <1% Crystalline silica, as Al)	TWA: 10 mg/m^3	: 10 mg/m^3 TWA
XYLENE	: 100 ppm TWA : 150 ppm STEL	: 100 ppm TWA; 435 mg/m^3 TWA : 150 ppm STEL; 655 mg/m^3 STEL	TWA: 100 ppm TWAEV; 434 mg/m^3 TWAEV STEL: 150 ppm STEV; 651 mg/m^3 STEV	TWA: 100 ppm TWA STEL: 150 ppm STEL	: 100 ppm TWA; 435 mg/m^3 TWA : 150 ppm STEL; 655 mg/m^3 STEL
1,2,4-TRIMETHYLBENZENE	TWA: 25 ppm		TWA: 25 ppm TWA: 123 mg/m^3	TWA: 25 ppm TWA: 123 mg/m^3	TWA: 125 mg/m^3 TWA: 25 ppm STEL: 170 mg/m^3 STEL: 35 ppm
1,3,5-TRIMETHYLBENZENE	TWA: 25 ppm		TWA: 25 ppm TWA: 123 mg/m^3	TWA: 25 ppm TWA: 123 mg/m^3	TWA: 125 mg/m^3 TWA: 25 ppm STEL: 170 mg/m^3 STEL: 35 ppm

Engineering measures Ensure adequate ventilation, especially in confined areas

Personal Protective Equipment

Skin protection Lightweight protective clothing, Apron, Impervious gloves

Eye/face protection If splashes are likely to occur, wear Goggles.

Respiratory protection **Use only with adequate ventilation.** Do not breathe dust, vapors or spray mist. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates vapor/mist levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH approved) during and after application. Follow respirator manufacturer's directions for respirator use.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. Avoid breathing dust created by cutting, sanding, or grinding.

9. PHYSICAL AND CHEMICAL PROPERTIES

Flash point	41°C / 105.0°F
Boiling range	116 - 139°C / 241.0 - 282.0°F
Upper explosion limit	No information available
Lower explosion limit	No information available
Evaporation rate	No information available
Vapor pressure	No information available
Vapor density	No information available
Specific Gravity	1.75845 g/cm3
Density	14.63294 lbs/gal
Volatile organic compounds (VOC) content	1.254 lbs/gal
Volatile by weight	24.3440 %
Volatile by volume	36.8585 %

10. STABILITY AND REACTIVITY

Chemical stability Stable.

Conditions to avoid Heat, flames and sparks. Epoxy constituents.

Incompatible products Strong oxidizing agents. Bases. Acids. Cleaning solutions such as Chromerge and Aqua Regia.

Possibility of hazardous reactions None under normal processing

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
TITANIUM DIOXIDE (TOTAL DUST)	>10000 mg/kg (Rat)		
P-CHLOROBENZOTRIFLUORIDE	13 g/kg (Rat)	>2 mg/kg (Rabbit)	33 mg/L (Rat) 4 h
CRYSTALLINE SILICA (QUARTZ)	500 mg/kg (Rat)		
BENZYL ALCOHOL	1230 mg/kg (Rat)	2000 mg/kg (Rabbit)	8.8 mg/L (Rat) 4 h
N-BUTANOL (SKIN)	790 mg/kg (Rat)	3400 mg/kg (Rabbit)	>17.7 mg/L (Rat) 4 h 8000 ppm (Rat) 4 h
ISOPHORONE DIAMINE	1030 mg/kg (Rat)		
AMORPHOUS SILICA	>5000 mg/kg (Rat)	>2000 mg/kg (Rabbit)	>2.2 mg/L (Rat) 1 h
ALUMINUM OXIDES	>5000 mg/kg (Rat)		
XYLENE	4300 mg/kg (Rat)	>1700 mg/kg (Rabbit)	5000 ppm (Rat) 4 h 47635 mg/L (Rat) 4 h

11. TOXICOLOGICAL INFORMATION

1,2,4-TRIMETHYLBENZENE	3400 mg/kg (Rat)	>3160 mg/kg (Rabbit)	18 g/m^3 (Rat) 4 h
1,3,5-TRIMETHYLBENZENE	5000 mg/kg (Rat)		24 g/m^3 (Rat) 4 h

Irritation No information available
Corrosivity No information available
Sensitization No information available

Chronic toxicity

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen

Component	ACGIH	IARC	NTP	OSHA	Mexico
TITANIUM DIOXIDE (TOTAL DUST)		Group 2B		X	
CRYSTALLINE SILICA (QUARTZ)	A2	Group 1	Known	X	

Mutegenicity No information available
Reproductive effects No information available
Developmental effects No information available
Teratogenicity No information available
Target Organ Effects Central nervous system, Central Vascular System (CVS), Eyes, Lungs, Respiratory system, Skin.
Endocrine Disruptor Information No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

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Component	Toxicity to algae	Toxicity to fish	Toxicity to microorganisms	Toxicity to daphnia
TALC (RESPIRABLE DUST)		LC50> >100 g/L Brachydanio rerio 96 h		
P-CHLOROBENZOTRIFLUORIDE			EC50 = 11.1 mg/L 5 min EC50 = 13.4 mg/L 15 min EC50 = 14.3 mg/L 30 min	EC50 3.68 mg/L 48 h
BENZYL ALCOHOL	EC50 35 mg/L 3 h	LC50 460 mg/L Pimephales promelas 96 h LC50 10 mg/L Lepomis macrochirus 96 h	EC50 = 63.7 mg/L 5 min EC50 = 63.7 mg/L 15 min EC50 = 71.4 mg/L 30 min EC50 = 50 mg/L 5 min	EC50 23 mg/L 48 h
N-BUTANOL (SKIN)	EC50 > >500 mg/L 96 h EC50 > >500 mg/L 72 h	LC50 1730-1910 mg/L Pimephales promelas 96 h LC50 1740 mg/L Pimephales promelas 96 h LC50 100000-500000 µg/L Lepomis macrochirus 96 h LC50 1910000 µg/L Pimephales promelas 96 h	EC50 = 2041.4 mg/L 5 min EC50 = 2186 mg/L 30 min EC50 = 4400 mg/L 17 h EC50 = 3980 mg/L 24 h	EC50 1983 mg/L 48 h EC50 1897 - 2072 mg/L 48 h
ISOPHORONE DIAMINE	EC50 37 mg/L 72 h	LC50 110 mg/L Leuciscus idus 96 h		EC50 42 mg/L 24 h EC50 14.6 - 21.5 mg/L 48 h
AMORPHOUS SILICA	EC50 440 mg/L 72 h	LC50 5000 mg/L Brachydanio rerio 96 h		EC50 7600 mg/L 48 h

Component	Toxicity to algae	Toxicity to fish	Toxicity to microorganisms	Toxicity to daphnia
XYLENE		LC50 13.4 mg/L Pimephales promelas 96 h LC50 2.661-4.093 mg/L Oncorhynchus mykiss 96 h LC50 13.5-17.3 mg/L Oncorhynchus mykiss 96 h LC50 13.1-16.5 mg/L Lepomis macrochirus 96 h LC50 19 mg/L Lepomis macrochirus 96 h LC50 7.711-9.591 mg/L Lepomis macrochirus 96 h LC50 23.53-29.97 mg/L Pimephales promelas 96 h LC50 780 mg/L Cyprinus carpio 96 h LC50> >780 mg/L Cyprinus carpio 96 h LC50 30.26-40.75 mg/L Poecilia reticulata 96 h	EC50 = 0.0084 mg/L 24 h	EC50 3.82 mg/L 48 h LC50 0.6 mg/L 48 h
1,2,4-TRIMETHYLBENZENE		LC50 7.72 mg/L Pimephales promelas 96 h LC50 7.19-8.28 mg/L Pimephales promelas 96 h		EC50 6.14 mg/L 48 h
1,3,5-TRIMETHYLBENZENE		LC50 3.48 mg/L Pimephales promelas 96 h LC50 7.72 mg/L Pimephales promelas 96 h		EC50 50 mg/L 24 h

13. DISPOSAL CONSIDERATIONS

Waste disposal methods Keep container tightly closed. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal

14. TRANSPORT INFORMATION

DOT Ground Transportation Only. Call TNEMEC Traffic Department - 816-474-3400 for other modes of Transportation.

Proper shipping name PAINT IN OIL

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Complies
CHINA	Complies
ENCS	Does not Comply
KECL	Does not Comply
PICCS	Does not Comply
AICS	Complies

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):
Component
XYLENE

United States of America Federal Regulations

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values
N-BUTANOL (SKIN)	71-36-3	1 - 5	1.0 % de minimis concentration
ALUMINUM OXIDES	1344-28-1	1 - 5	1.0 % de minimis concentration (fibrous forms)
XYLENE	1330-20-7	0.1 - 1	1.0 % de minimis concentration
1,2,4-TRIMETHYLBENZENE	95-63-6	0.1 - 1	1.0 % de minimis concentration

SARA 311/312 Hazardous Categorization

Chronic Health Hazard	yes
Acute Health Hazard	yes
Fire Hazard	yes
Sudden Release of Pressure Hazard	no
Reactive Hazard	no

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
P-CHLOROBENZOTRIFLUORIDE		X		
XYLENE	100 lb RQ			X

CERCLA

United States of America State Regulations

California Prop. 65

This product contains the following Proposition 65 chemicals:

Component	CAS-No	California Prop. 65
CRYSTALLINE SILICA (QUARTZ)	14808-60-7	Carcinogen

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
TALC (RESPIRABLE DUST)	X	X	X		X
TITANIUM DIOXIDE (TOTAL DUST)	X	X	X		X
P-CHLOROBENZOTRIFLUORIDE		X	X		X
CRYSTALLINE SILICA (QUARTZ)	X	X	X		X
BENZYL ALCOHOL	X		X		
N-BUTANOL (SKIN)	X	X	X		X
ISOPHORONE DIAMINE		X			
AMORPHOUS SILICA	X		X		
ALUMINUM OXIDES	X	X	X		X
XYLENE	X	X	X	X	X
1,2,4-TRIMETHYLBENZENE	X	X	X	X	X
1,3,5-TRIMETHYLBENZENE	X	X	X	X	X

Other international regulations

Canada

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

WHMIS Classification
B3 Combustible liquid
D2B Toxic materials
E Corrosive material

Component	NPRI
N-BUTANOL (SKIN)	Part 1, Group 1 Substance
ALUMINUM OXIDES	Part 1, Group 1 Substance (fibrous form)
XYLENE	Part 1, Group 1 Substance; Part 5 Substance
1,2,4-TRIMETHYLBENZENE	Part 1, Group 1 Substance; Part 5 Substance

Legend
NPRI - National Pollutant Release Inventory

16. OTHER INFORMATION

Revision Date 24-Jun-2011

Revision Note No information available

HMIS (Hazardous Material Information System) **Health** 2* **Flammability** 2 **Reactivity** 1

Disclaimer
For specific information regarding occupational safety and health standards, please refer to the Code of Federal Regulations, Title 29, Part 1910.
To the best of our knowledge, the information contained herein is accurate. However, neither the Tnemec Company or any of its subsidiaries assume any liability whatsoever for the accuracy of completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

End of MSDS

Material Safety Data Sheet

Print Date 19-May-2011 **Revision Date** 19-May-2011 **Revision Number** 1

1. PRODUCT AND COMPANY IDENTIFICATION

Common name	SERIES L69 PART B
Product code	L-69-0069B
Trade name	HB EPOXOLINE II CONVERTER
Product Class	EPOXY PAINT
Manufacturer	Tnemec Company, Inc. 6800 Corporate Drive, Kansas City, MO 64120-1372
Emergency telephone	800-535-5053 (INFOTRAC) - TNEMEC REGULATORY DEPT: 816-474-3400

2. HAZARDS IDENTIFICATION

Emergency Overview

DANGER!

FLAMMABLE LIQUID AND VAPOR.
HARMFUL OR FATAL IF SWALLOWED.
HARMFUL IF INHALED.
MAY CAUSE ALLERGIC SKIN REACTION; EFFECTS MAY BE PERMANENT.
MAY AFFECT THE BRAIN OR NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA.
MAY CAUSE EYE, SKIN, NOSE, THROAT AND RESPIRATORY TRACT IRRITATION.

Potential health effects

Principle Routes of Exposure Eye contact, Inhalation, Skin contact.

Acute effects

Eyes	Moderately irritating to the eyes.
Skin	Irritating to skin. May cause sensitization by skin contact.
Inhalation	Irritating to respiratory system. Respirable crystalline silica (quartz) can cause silicosis, a fibrosis (scarring) of the lungs.
Ingestion	May be harmful if swallowed.

Chronic effects
NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal. Cancer hazard. Contains crystalline silica which can cause cancer. (Risk of cancer depends on duration and level of exposure).

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions Central nervous system. Skin disorders. Respiratory disorders.

Interactive effects Use of alcoholic beverages may enhance toxic effects.

Potential environmental effects See Section 12 for additional Ecological Information

Target Organ Effects Central nervous system, Central Vascular System (CVS), Eyes, Lungs, Respiratory system, Skin

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Components

Component	CAS-No	Weight %
TALC (RESPIRABLE DUST)	14807-96-6	30 - 60
EPOXY RESIN (LER)	25085-99-8	10 - 30
P-CHLOROBENZOTRIFLUORIDE	98-56-6	10 - 30
EPOXY RESIN	25036-25-3	10 - 30
CRYSTALLINE SILICA (QUARTZ)	14808-60-7	5 - 10
tert-BUTYL ACETATE	540-88-5	1 - 5
1,2,4-TRIMETHYLBENZENE	95-63-6	0.1 - 1
XYLENE	1330-20-7	0.1 - 1
1,3,5-TRIMETHYLBENZENE	108-67-8	0.1 - 1

4. FIRST AID MEASURES

Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes.

Skin contact: Wash off immediately with soap and plenty of water.

Ingestion: If swallowed, do not induce vomiting. Get medical attention immediately.

Inhalation: Move to fresh air. Oxygen or artificial respiration if needed.

5. FIRE-FIGHTING MEASURES

Flammable properties Flammable.

Suitable extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Contact with water may cause violent frothing. Use: Carbon dioxide (CO2) - Foam - Dry chemical

Hazardous decomposition products Oxides of carbon, hydrocarbons. Aldehydes. Chlorine. Fluorine.

Specific hazards arising from the chemical
Thermal decomposition can lead to release of irritating gases and vapours. In the event of fire and/or explosion do not breathe fumes.

Protective equipment and precautions for firefighters
Use water spray to cool unopened containers. In the event of fire, wear self-contained breathing apparatus. Keep away from heat/sparks/open flames/hot surfaces. May cause heat and pressure build-up in closed containers. Solvent vapors are heavier than air and may spread along floors. Flash back possible over considerable distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition.

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

Methods for cleaning up If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Other information Not applicable

7. HANDLING AND STORAGE

Handling

Close container after each use. Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke when using this product. If splashes are likely to occur, wear goggles. Wear protective gloves/clothing. Do not burn, or use a cutting torch on, the empty drum. When used in a mixture, read the labels and safety data sheets of all components. Wash thoroughly after handling.

Storage

Keep away from heat, sparks and flame. VAPORS MAY CAUSE FLASH FIRE. Use only in an area containing flame proof equipment. Extinguish all flames and pilot lights, and turn off stoves, heaters, electric motors and other sources of ignition during use and until all vapors are gone. Prevent build-up of vapors by opening all windows and doors to achieve cross ventilation.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	Quebec TWAEV	Ontario TWAEV	Mexico OEL (TWA)
TALC (RESPIRABLE DUST)	: 2 mg/m^3 TWA (particulate matter containing no asbestos and <1% crystalline silica, respirable fraction)	: 2 mg/m^3 TWA (<1% Crystalline silica, containing no Asbestos, respirable dust)	TWA: 3 mg/m^3 TWAEV (respirable dust)	TWA: 2 mg/m^3 TWA (containing no Asbestos and <1% Crystalline silica, respirable)	: 2 mg/m^3 TWA (respirable fraction)
P-CHLOROBENZOTRIFLUORIDE	TWA: 2.5 mg/m^3		TWA: 2.5 mg/m^3	TWA: 2.5 mg/m^3	
CRYSTALLINE SILICA (QUARTZ)	: 0.025 mg/m^3 TWA (respirable fraction)	: 0.1 mg/m^3 TWA (respirable dust)	TWA: 0.1 mg/m^3 TWAEV (respirable dust)	TWA: 0.10 mg/m^3 TWA (designated substance regulation, respirable)	: 0.1 mg/m^3 TWA (respirable fraction)
tert-BUTYL ACETATE	: 200 ppm TWA	: 200 ppm TWA; 950 mg/m^3 TWA	TWA: 200 ppm TWAEV; 950 mg/m^3 TWAEV	TWA: 200 ppm TWA	: 200 ppm TWA; 950 mg/m^3 TWA : 250 ppm STEL; 1190 mg/m^3 STEL
1,2,4-TRIMETHYLBENZENE	TWA: 25 ppm		TWA: 25 ppm TWA: 123 mg/m^3	TWA: 25 ppm TWA: 123 mg/m^3	TWA: 125 mg/m^3 TWA: 25 ppm STEL: 170 mg/m^3 STEL: 35 ppm
XYLENE	: 100 ppm TWA : 150 ppm STEL	: 100 ppm TWA; 435 mg/m^3 TWA : 150 ppm STEL; 655 mg/m^3 STEL	TWA: 100 ppm TWAEV; 434 mg/m^3 TWAEV STEL: 150 ppm STEV; 651 mg/m^3 STEV	TWA: 100 ppm TWA STEL: 150 ppm STEL	: 100 ppm TWA; 435 mg/m^3 TWA : 150 ppm STEL; 655 mg/m^3 STEL
1,3,5-TRIMETHYLBENZENE	TWA: 25 ppm		TWA: 25 ppm TWA: 123 mg/m^3	TWA: 25 ppm TWA: 123 mg/m^3	TWA: 125 mg/m^3 TWA: 25 ppm STEL: 170 mg/m^3 STEL: 35 ppm

Engineering measures Ensure adequate ventilation, especially in confined areas

Personal Protective Equipment

Skin protection Lightweight protective clothing, Apron, Impervious gloves

Eye/face protection If splashes are likely to occur, wear Goggles.

Respiratory protection **Use only with adequate ventilation.** Do not breathe dust, vapors or spray mist. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates vapor/mist levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH approved) during and after application. Follow respirator manufacturer's directions for respirator use.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. Avoid breathing dust created by cutting, sanding, or grinding.

9. PHYSICAL AND CHEMICAL PROPERTIES

Flash point	35°C / 95.0°F
Boiling range	98 - 139°C / 208.0 - 282.0°F
Upper explosion limit	No information available
Lower explosion limit	No information available
Evaporation rate	No information available
Vapor pressure	No information available
Vapor density	No information available
Specific Gravity	1.47309 g/cm3
Density	12.25828 lbs/gal
Volatile organic compounds (VOC) content	.289 lbs/gal
Volatile by weight	25.9040 %
Volatile by volume	31.6473 %

10. STABILITY AND REACTIVITY

Chemical stability	Stable.	**Conditions to avoid**	Heat, flames and sparks. Amines.
Incompatible products	Strong oxidizing agents. Bases. Acids. Amines.	**Possibility of hazardous reactions**	None under normal processing

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
P-CHLOROBENZOTRIFLUORIDE	13 g/kg (Rat)	2 mg/kg (Rabbit)	33 mg/L (Rat) 4 h
CRYSTALLINE SILICA (QUARTZ)	500 mg/kg (Rat)		
tert-BUTYL ACETATE	4100 mg/kg (Rat)	2 g/kg (Rabbit)	2230 mg/m^3 (Rat) 4 h
1,2,4-TRIMETHYLBENZENE	3400 mg/kg (Rat)	3160 mg/kg (Rabbit)	18 g/m^3 (Rat) 4 h
XYLENE	4300 mg/kg (Rat)	1700 mg/kg (Rabbit)	5000 ppm (Rat) 4 h 47635 mg/L (Rat) 4 h
1,3,5-TRIMETHYLBENZENE	5000 mg/kg (Rat)		24 g/m^3 (Rat) 4 h

Irritation	No information available
Corrosivity	No information available
Sensitization	No information available

Chronic toxicity

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen

Component	ACGIH	IARC	NTP	OSHA	Mexico
CRYSTALLINE SILICA (QUARTZ)	A2	Group 1	Known	X	

Mutegenicity	No information available
Reproductive effects	No information available
Developmental effects	No information available
Teratogenicity	No information available
Target Organ Effects	Central nervous system, Central Vascular System (CVS), Eyes, Lungs, Respiratory system, Skin.

Endocrine Disruptor Information No information available

Component	EU - Endocrine Disrupters Candidate List	EU - Endocrine Disruptors - Evaluated Substances	Japan - Endocrine Disruptor Information
EPOXY RESIN (LER)	Group III Chemical		
EPOXY RESIN	Group III Chemical		

12. ECOLOGICAL INFORMATION

Ecotoxicity

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Component	Toxicity to algae	Toxicity to fish	Toxicity to microorganisms	Toxicity to daphnia
TALC (RESPIRABLE DUST)		LC50> 100 g/L Brachydanio rerio 96 h		
P-CHLOROBENZOTRIFLUORIDE			EC50 = 11.1 mg/L 5 min EC50 = 13.4 mg/L 15 min EC50 = 14.3 mg/L 30 min	EC50 = 3.68 mg/L 48 h
tert-BUTYL ACETATE		LC50 296-362 mg/L Pimephales promelas 96 h	EC50 = 6.38 mg/L 5 min EC50 = 8.04 mg/L 15 min EC50 = 11.1 mg/L 30 min	
1,2,4-TRIMETHYLBENZENE		LC50 7.19-8.28 mg/L Pimephales promelas 96 h LC50= 7.72 mg/L Pimephales promelas 96 h		EC50 = 6.14 mg/L 48 h
XYLENE		LC50= 13.4 mg/L Pimephales promelas 96 h LC50 2.661-4.093 mg/L Oncorhynchus mykiss 96 h LC50 13.5-17.3 mg/L Oncorhynchus mykiss 96 h LC50 13.1-16.5 mg/L Lepomis macrochirus 96 h LC50= 19 mg/L Lepomis macrochirus 96 h LC50 7.711-9.591 mg/L Lepomis macrochirus 96 h LC50 23.53-29.97 mg/L Pimephales promelas 96 h LC50= 780 mg/L Cyprinus carpio 96 h LC50> 780 mg/L Cyprinus carpio 96 h LC50 30.26-40.75 mg/L Poecilia reticulata 96 h	EC50 = 0.0084 mg/L 24 h	EC50 = 3.82 mg/L 48 h LC50 = 0.6 mg/L 48 h
1,3,5-TRIMETHYLBENZENE		LC50= 3.48 mg/L Pimephales promelas 96 h LC50= 7.72 mg/L Pimephales promelas 96 h		EC50 = 50 mg/L 24 h

13. DISPOSAL CONSIDERATIONS

Waste disposal methods Keep container tightly closed. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal

14. TRANSPORT INFORMATION

DOT Ground Transportation Only. Call TNEMEC Traffic Department - 816-474-3400 for other modes of Transportation.

Proper shipping name UN1263,PAINT,3,PGIII,ERG 128

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Does not Comply
CHINA	Complies
ENCS	Does not Comply
KECL	Complies
PICCS	Complies
AICS	Complies

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):
Component
XYLENE

United States of America Federal Regulations

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values
1,2,4-TRIMETHYLBENZENE	95-63-6	0.1 - 1	1.0 % de minimis concentration
XYLENE	1330-20-7	0.1 - 1	1.0 % de minimis concentration

SARA 311/312 Hazardous Categorization

Chronic Health Hazard	no
Acute Health Hazard	yes
Fire Hazard	yes
Sudden Release of Pressure Hazard	no
Reactive Hazard	no

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
P-CHLOROBENZOTRIFLUORIDE		X		
tert-BUTYL ACETATE				X
XYLENE	100 lb RQ			X

CERCLA

United States of America State Regulations

California Prop. 65
This product contains the following Proposition 65 chemicals:

Component	CAS-No	California Prop. 65
CRYSTALLINE SILICA (QUARTZ)	14808-60-7	Carcinogen

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
TALC (RESPIRABLE DUST)	X	X	X		X

P-CHLOROBENZOTRIFLUORIDE		X	X		X
CRYSTALLINE SILICA (QUARTZ)	X	X	X		X
tert-BUTYL ACETATE	X	X	X		X
1,2,4-TRIMETHYLBENZENE	X	X	X	X	X
XYLENE	X	X	X	X	X
1,3,5-TRIMETHYLBENZENE	X	X	X	X	X

Other international regulations

Canada

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

WHMIS Classification
B2 Flammable liquid
D2B Toxic materials

Component	NPRI
1,2,4-TRIMETHYLBENZENE	Part 1, Group 1 Substance; Part 5 Substance
XYLENE	Part 1, Group 1 Substance; Part 5 Substance

Legend
NPRI - National Pollutant Release Inventory

16. OTHER INFORMATION

Revision Date 19-May-2011

Revision Note No information available

HMIS (Hazardous Material Information System) **Health** 2 **Flammability** 3 **Reactivity** 1

Disclaimer
For specific information regarding occupational safety and health standards, please refer to the Code of Federal Regulations, Title 29, Part 1910.
To the best of our knowledge, the information contained herein is accurate. However, neither the Tnemec Company or any of its subsidiaries assume any liability whatsoever for the accuracy of completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

End of MSDS

Material Safety Data Sheet

Print Date 28-May-2011 **Revision Date** 27-May-2011 **Revision Number** 2

1. PRODUCT AND COMPANY IDENTIFICATION

Common name	SERIES 156
Product code	0156-W6673
Trade name	ENVIRO-CRETE WHITE SOLITUDE
Product Class	STYRENATED ACRYLIC
Manufacturer	Tnemec Company, Inc. 6800 Corporate Drive, Kansas City, MO 64120-1372
Emergency telephone	800-535-5053 (INFOTRAC) - TNEMEC REGULATORY DEPT: 816-474-3400

2. HAZARDS IDENTIFICATION

Emergency Overview

WARNING!

HARMFUL IF INHALED.
HARMFUL IF SWALLOWED.
MAY AFFECT THE BRAIN OR NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA.
MAY CAUSE EYE, SKIN, NOSE, THROAT AND RESPIRATORY TRACT IRRITATION.

Potential health effects

Principle Routes of Exposure Eye contact, Inhalation, Skin contact.

Acute effects

Eyes	Irritating to eyes.
Skin	Irritating to skin.
Inhalation	Irritating to respiratory system. Respirable crystalline silica (quartz) can cause silicosis, a fibrosis (scarring) of the lungs.
Ingestion	May be harmful if swallowed.

Chronic effects

NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions Skin disorders. Respiratory disorders.

Interactive effects No information available

Potential environmental effects See Section 12 for additional Ecological Information

Target Organ Effects Eyes, Lungs, Respiratory system, Skin

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Components

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component	CAS-No	Weight %
CELESTITE		10 - 30
TITANIUM DIOXIDE (TOTAL DUST)	13463-67-7	5 - 10
ZINC COMPOUNDS	1314-13-2	1 - 5
ALUMINUM SILICATE (TOTAL DUST)	1332-58-7	1 - 5
BARIUM SULFATE (TOTAL DUST)	7727-43-7	1 - 5
GLASS OXIDE	65997-17-3	1 - 5
CARBONIC ACID CALCIUM SALT		1 - 5
ALUMINUM OXIDES	1344-28-1	1 - 5
MINERAL OIL MIST		1 - 5
BARIUM SULFATE (TOTAL DUST)	7727-43-7	0.1 - 1
FERRIC SESQUIOXIDE		0.1 - 1
CRYSTALLINE SILICA (QUARTZ)	14808-60-7	0.1 - 1

4. FIRST AID MEASURES

Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes.

Skin contact: Wash off immediately with soap and plenty of water.

Ingestion: If swallowed, do not induce vomiting. Get medical attention immediately.

Inhalation: Move to fresh air. Oxygen or artificial respiration if needed.

5. FIRE-FIGHTING MEASURES

Flammable properties No information available.

Suitable extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Contact with water may cause violent frothing. Use: Carbon dioxide (CO2) - Foam - Dry chemical

Hazardous decomposition products Oxides of carbon, hydrocarbons. Oxides of nitrogen. Oxides of sulphur. Hydrogen chloride.

Specific hazards arising from the chemical
Thermal decomposition can lead to release of irritating gases and vapours. In the event of fire and/or explosion do not breathe fumes.

Protective equipment and precautions for firefighters
Use water spray to cool unopened containers. In the event of fire, wear self-contained breathing apparatus. Keep away from heat/sparks/open flames/hot surfaces. May cause heat and pressure build-up in closed containers. Solvent vapors are heavier than air and may spread along floors. Flash back possible over considerable distance.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition.

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

Methods for cleaning up If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Other information Not applicable

7. HANDLING AND STORAGE

Handling

Close container after each use. Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke when using this product. If splashes are likely to occur, wear goggles. Wear protective gloves/clothing. Do not burn, or use a cutting torch on, the empty drum. When used in a mixture, read the labels and safety data sheets of all components. Wash thoroughly after handling.

Storage

Prevent build-up of vapors by opening all windows and doors to achieve cross ventilation.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	Quebec TWAEV	Ontario TWAEV	Mexico OEL (TWA)
TITANIUM DIOXIDE (TOTAL DUST)	: 10 mg/m^3 TWA	: 10 mg/m^3 TWA (total dust) : 15 mg/m^3 TWA (total dust)	TWA: 10 mg/m^3 TWAEV (total dust, containing no asbestos and less than 1% crystalline silica)	TWA: 10 mg/m^3 TWA (total dust)	: 10 mg/m^3 TWA (as Ti) : 20 mg/m^3 STEL (as Ti)
ZINC COMPOUNDS	: 2 mg/m^3 TWA (respirable fraction) : 10 mg/m^3 STEL (respirable fraction)	: 5 mg/m^3 TWA (fume); 10 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction) : 10 mg/m^3 STEL (fume) : 5 mg/m^3 TWA (fume); 15 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction)	TWA: 5 mg/m^3 TWAEV (fume); 10 mg/m^3 TWAEV (total dust, containing no asbestos and less than 1% crystalline silica) STEL: 10 mg/m^3 STEV (fume)	TWA: 2 mg/m^3 TWA (respirable) STEL: 10 mg/m^3 STEL (respirable)	: 5 mg/m^3 TWA (fume); 10 mg/m^3 TWA (dust) : 10 mg/m^3 STEL (fume)
ALUMINUM SILICATE (TOTAL DUST)	: 2 mg/m^3 TWA (particulate matter containing no asbestos and <1% crystalline silica, respirable fraction)	: 10 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction) : 15 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction)	TWA: 5 mg/m^3 TWAEV (respirable dust, containing no asbestos and less than 1% crystalline silica)	TWA: 2 mg/m^3 TWA (containing no Asbestos and <1% Crystalline silica, respirable)	: 10 mg/m^3 TWA : 20 mg/m^3 STEL
BARIUM SULFATE (TOTAL DUST)	: 10 mg/m^3 TWA : 0.5 mg/m^3 TWA (as Ba)	: 10 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction) : 15 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction)	TWA: 10 ppm TWAEV (total dust, containing no asbestos and less than 1% crystalline silica); 5 ppm TWAEV (respirable dust, containing no asbestos and less than 1% crystalline silica) TWA: 0.5 mg/m^3 TWAEV (as Ba)	TWA: 10 mg/m^3 TWA (total dust) TWA: 0.5 mg/m^3 TWA (as Ba)	TWA: 0.5 mg/m^3
GLASS OXIDE	: 1 fiber/cm3 TWA (respirable fibers: length >5 µm, aspect ratio >=3:1, as determined by the membrane filter method at 400-450X magnification [4-mm objective], using phase-contrast illumination, listed under Synthetic vitreous fibers); 5 mg/m^3 TWA (inhalable fraction, listed under Synthetic vitreous fibers)		TWA: 10 mg/m^3 TWAEV (total dust, respirable, containing no asbestos and less than 1% crystalline silica, listed under Fibres - Artificial vitreous mineral fibres)	TWA: 1 fibre/cm3 TWA (length>5 microns, aspect ratio>= 3.1, respirable); 5 mg/m^3 TWA (inhalable)	

CARBONIC ACID CALCIUM SALT			TWA: 10 mg/m^3 TWAEV (total dust) TWA: 10 mg/m^3 TWAEV (Limestone, total dust, containing no asbestos and less than 1% crystalline silica)	TWA: 10 mg/m^3	TWA: 10 mg/m^3 STEL: 20 mg/m^3
ALUMINUM OXIDES	TWA: 1 mg/m^3	: 10 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction) : 15 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction)	TWA: 10 mg/m^3 TWAEV (total dust, containing no asbestos and less than 1% crystalline silica, as Al)	TWA: 10 mg/m^3	: 10 mg/m^3 TWA
BARIUM SULFATE (TOTAL DUST)	: 10 mg/m^3 TWA : 0.5 mg/m^3 TWA (as Ba)	: 10 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction) : 15 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction)	TWA: 10 ppm TWAEV (total dust, containing no asbestos and less than 1% crystalline silica); 5 ppm TWAEV (respirable dust, containing no asbestos and less than 1% crystalline silica) TWA: 0.5 mg/m^3 TWAEV (as Ba)	TWA: 10 mg/m^3 TWA (total dust) TWA: 0.5 mg/m^3 TWA (as Ba)	TWA: 0.5 mg/m^3
FERRIC SESQUIOXIDE	: 5 mg/m^3 TWA (respirable fraction)	: 10 mg/m^3 TWA (fume)	TWA: 5 mg/m^3 TWAEV (dust and fume, as Fe)	TWA: 5 mg/m^3 TWA (respirable)	: 5 mg/m^3 TWA : 10 mg/m^3 STEL (as Fe)
CRYSTALLINE SILICA (QUARTZ)	: 0.025 mg/m^3 TWA (respirable fraction)	: 0.1 mg/m^3 TWA (respirable dust)	TWA: 0.1 mg/m^3 TWAEV (respirable dust)	TWA: 0.10 mg/m^3 TWA (designated substance regulation, respirable)	: 0.1 mg/m^3 TWA (respirable fraction)

Engineering measures Ensure adequate ventilation, especially in confined areas

Personal Protective Equipment

Skin protection Lightweight protective clothing, Apron, Impervious gloves

Eye/face protection Safety glasses with side-shields

Respiratory protection **Use only with adequate ventilation.** Do not breathe dust, vapors or spray mist. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates vapor/mist levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH approved) during and after application. Follow respirator manufacturer's directions for respirator use.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. Avoid breathing dust created by cutting, sanding, or grinding.

9. PHYSICAL AND CHEMICAL PROPERTIES

Flash point	Not applicable
Boiling range	100 - 100°C / 212.0 - 212.0°F
Upper explosion limit	No information available
Lower explosion limit	No information available
Evaporation rate	No information available
Vapor pressure	No information available
Vapor density	No information available
Specific Gravity	1.43572 g/cm3
Density	11.94738 lbs/gal
Volatile organic compounds (VOC) content	.407 lbs/gal
Volatile by weight	33.9260 %
Volatile by volume	49.0679 %

10. STABILITY AND REACTIVITY

Chemical stability Stable.

Conditions to avoid Heat, flames and sparks.

Incompatible products Strong oxidizing agents. Bases. Acids. Alkalines. Amines. Reducing agents.

Possibility of hazardous reactions None under normal processing

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
WATER	90 mL/kg (Rat)		
TITANIUM DIOXIDE (TOTAL DUST)	10000 mg/kg (Rat)		
ZINC COMPOUNDS	5000 mg/kg (Rat)		
CARBONIC ACID CALCIUM SALT	6450 mg/kg (Rat)		
ALUMINUM OXIDES	5000 mg/kg (Rat)		
FERRIC SESQUIOXIDE	10000 mg/kg (Rat)		
CRYSTALLINE SILICA (QUARTZ)	500 mg/kg (Rat)		

Irritation No information available
Corrosivity No information available
Sensitization No information available

Chronic toxicity

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen

Component	ACGIH	IARC	NTP	OSHA	Mexico
TITANIUM DIOXIDE (TOTAL DUST)		Group 2B		X	
CRYSTALLINE SILICA (QUARTZ)	A2	Group 1	Known	X	

Mutegenicity No information available
Reproductive effects No information available
Developmental effects No information available
Teratogenicity No information available
Target Organ Effects Eyes, Lungs, Respiratory system, Skin.
Endocrine Disruptor Information No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

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13. DISPOSAL CONSIDERATIONS

13. DISPOSAL CONSIDERATIONS

Waste disposal methods Keep container tightly closed. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal

14. TRANSPORT INFORMATION

DOT Ground Transportation Only. Call TNEMEC Traffic Department - 816-474-3400 for other modes of Transportation.

Proper shipping name PAINT,WATER BASE FREEZABLE

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Does not Comply
CHINA	Complies
ENCS	Does not Comply
KECL	Does not Comply
PICCS	Does not Comply
AICS	Complies

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):
United States of America Federal Regulations

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values
ZINC COMPOUNDS	1314-13-2	1 - 5	1.0
BARIUM SULFATE (TOTAL DUST)	7727-43-7	1 - 5	1.0
ALUMINUM OXIDES	1344-28-1	1 - 5	1.0 % de minimis concentration (fibrous forms)
BARIUM SULFATE (TOTAL DUST)	7727-43-7	0.1 - 1	1.0

SARA 311/312 Hazardous Categorization

Chronic Health Hazard	no
Acute Health Hazard	yes
Fire Hazard	yes
Sudden Release of Pressure Hazard	no
Reactive Hazard	no

Component	CWA - Reportable Quantities	CWA - Toxic Pollutants	CWA - Priority Pollutants	CWA - Hazardous Substances
ZINC COMPOUNDS		X		

CERCLA

United States of America State Regulations

California Prop. 65
This product contains the following Proposition 65 chemicals:

Component	CAS-No	California Prop. 65
CRYSTALLINE SILICA (QUARTZ)	14808-60-7	Carcinogen

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
TITANIUM DIOXIDE (TOTAL DUST)	X	X	X		X
ZINC COMPOUNDS	X	X	X		X
ALUMINUM SILICATE (TOTAL DUST)	X	X	X		X
BARIUM SULFATE (TOTAL DUST)	X	X	X		X
CARBONIC ACID CALCIUM SALT	X	X	X		X
ALUMINUM OXIDES	X	X	X		X
BARIUM SULFATE (TOTAL DUST)	X	X	X		X
FERRIC SESQUIOXIDE	X	X	X		X
CRYSTALLINE SILICA (QUARTZ)	X	X	X		X

Other international regulations

Canada

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

WHMIS Classification
D2B Toxic materials

Component	NPRI
ALUMINUM OXIDES	Part 1, Group 1 Substance (fibrous form)

Legend
NPRI - National Pollutant Release Inventory

16. OTHER INFORMATION

Revision Date 27-May-2011

Revision Note No information available

HMIS (Hazardous Material Information System) **Health** 3* **Flammability** 1 **Reactivity** 1

Disclaimer

For specific information regarding occupational safety and health standards, please refer to the Code of Federal Regulations, Title 29, Part 1910.

To the best of our knowledge, the information contained herein is accurate. However, neither the Tnemec Company or any of its subsidiaries assume any liability whatsoever for the accuracy of completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

End of MSDS

Material Safety Data Sheet

Print Date 31-May-2011 **Revision Date** 31-May-2011 **Revision Number** 3

1. PRODUCT AND COMPANY IDENTIFICATION

Common name	SERIES 158
Product code	F158-01WH
Trade name	BIO-LASTIC ASH WHITE
Product Class	ACRYLIC EMULSION PAINT
Manufacturer	Tnemec Company, Inc. 6800 Corporate Drive, Kansas City, MO 64120-1372
Emergency telephone	800-535-5053 (INFOTRAC) - TNEMEC REGULATORY DEPT: 816-474-3400

2. HAZARDS IDENTIFICATION

Emergency Overview

WARNING!

HARMFUL IF INHALED.
MAY AFFECT THE BRAIN OR NERVOUS SYSTEM CAUSING DIZZINESS, HEADACHE OR NAUSEA.
MAY CAUSE EYE, SKIN, NOSE, THROAT AND RESPIRATORY TRACT IRRITATION.
MAY BE HARMFUL IF ABSORBED THROUGH SKIN.

Potential health effects

Principle Routes of Exposure Eye contact, Inhalation, Skin contact.

Acute effects

Eyes	Irritating to eyes.
Skin	Irritating to skin.
Inhalation	Irritating to respiratory system.
Ingestion	May be harmful if swallowed.

Chronic effects
NOTICE: Reports have associated repeated and prolonged occupational overexposure to solvents with permanent brain and nervous system damage. Intentional misuse by deliberately concentrating and inhaling the contents may be harmful or fatal.

See Section 11 for additional Toxicological information.

Aggravated Medical Conditions Central nervous system. Kidney disorders. Skin disorders. Respiratory disorders. Liver disorders.

Interactive effects Use of alcoholic beverages may enhance toxic effects.

Potential environmental effects See Section 12 for additional Ecological Information

Target Organ Effects Central nervous system, Eyes, Kidney, Lungs, Respiratory system, Skin, Blood, Hematopoietic System, Liver

3. COMPOSITION/INFORMATION ON INGREDIENTS

3. COMPOSITION/INFORMATION ON INGREDIENTS

Hazardous Components

Component	CAS-No	Weight %
SOLUBLE BARIUM COMPOUND	13701-59-2	5 - 10
TITANIUM DIOXIDE (TOTAL DUST)	13463-67-7	5 - 10
ETHYLENE GLYCOL MONOBUTYL ETHER (SKIN)	111-76-2	1 - 5
ALUMINUM OXIDES	1344-28-1	0.1 - 1

4. FIRST AID MEASURES

Eye contact: Rinse thoroughly with plenty of water for at least 15 minutes.

Skin contact: Wash off immediately with soap and plenty of water.

Ingestion: If swallowed, do not induce vomiting. Get medical attention immediately.

Inhalation: Move to fresh air. Oxygen or artificial respiration if needed.

5. FIRE-FIGHTING MEASURES

Flammable properties No information available.

Suitable extinguishing media Use extinguishing measures that are appropriate to local circumstances and the surrounding environment. Contact with water may cause violent frothing. Use: Carbon dioxide (CO2) - Foam - Dry chemical

Hazardous decomposition products Oxides of carbon, hydrocarbons.

Specific hazards arising from the chemical
Thermal decomposition can lead to release of irritating gases and vapours. In the event of fire and/or explosion do not breathe fumes.

Protective equipment and precautions for firefighters
Use water spray to cool unopened containers. In the event of fire, wear self-contained breathing apparatus. Keep away from heat/sparks/open flames/hot surfaces. May cause heat and pressure build-up in closed containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions Avoid contact with skin, eyes and clothing. Use personal protective equipment. Remove all sources of ignition.

Environmental precautions Prevent further leakage or spillage if safe to do so. Do not flush into surface water or sanitary sewer system.

Methods for cleaning up If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Other information Not applicable

7. HANDLING AND STORAGE

Handling
Close container after each use. Avoid contact with skin, eyes and clothing. Do not eat, drink or smoke when using this product. If splashes are likely to occur, wear goggles. Wear protective gloves/clothing. Do not burn, or use a cutting torch on, the empty drum. When used in a mixture, read the labels and safety data sheets of all components. Wash thoroughly after handling.

Storage
Prevent build-up of vapors by opening all windows and doors to achieve cross ventilation.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Guidelines

Component	ACGIH TLV	OSHA PEL	Quebec TWAEV	Ontario TWAEV	Mexico OEL (TWA)
SOLUBLE BARIUM COMPOUND	TWA: 0.5 mg/m^3		TWA: 0.5 mg/m^3	TWA: 0.5 mg/m^3 TWA (as Ba)	TWA: 0.5 mg/m^3
TITANIUM DIOXIDE (TOTAL DUST)	: 10 mg/m^3 TWA	: 10 mg/m^3 TWA (total dust) : 15 mg/m^3 TWA (total dust)	TWA: 10 mg/m^3 TWAEV (total dust, containing no asbestos and less than 1% crystalline silica)	TWA: 10 mg/m^3 TWA (total dust)	: 10 mg/m^3 TWA (as Ti) : 20 mg/m^3 STEL (as Ti)
ETHYLENE GLYCOL MONOBUTYL ETHER (SKIN)	: 20 ppm TWA	: 25 ppm TWA; 120 mg/m^3 TWA Skin : 50 ppm TWA; 240 mg/m^3 TWA	TWA: 20 ppm TWAEV; 97 mg/m^3 TWAEV	TWA: 20 ppm TWA	: 26 ppm TWA; 120 mg/m^3 TWA : 75 ppm STEL; 360 mg/m^3 STEL
ALUMINUM OXIDES	TWA: 1 mg/m^3	: 10 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction) : 15 mg/m^3 TWA (total dust); 5 mg/m^3 TWA (respirable fraction)	TWA: 10 mg/m^3 TWAEV (total dust, containing no asbestos and less than 1% crystalline silica, as Al)	TWA: 10 mg/m^3	: 10 mg/m^3 TWA

Engineering measures Ensure adequate ventilation, especially in confined areas

Personal Protective Equipment

Skin protection Lightweight protective clothing, Apron, Impervious gloves

Eye/face protection Safety glasses with side-shields

Respiratory protection **Use only with adequate ventilation.** Do not breathe dust, vapors or spray mist. Ensure fresh air entry during application and drying. If you experience eye watering, headache or dizziness or if air monitoring demonstrates vapor/mist levels are above applicable limits, wear an appropriate, properly fitted respirator (NIOSH approved) during and after application. Follow respirator manufacturer's directions for respirator use.

General hygiene considerations Handle in accordance with good industrial hygiene and safety practice. Avoid breathing dust created by cutting, sanding, or grinding.

9. PHYSICAL AND CHEMICAL PROPERTIES

Flash point	Not applicable
Boiling range	100 - 172°C / 212.0 - 341.0°F
Upper explosion limit	No information available
Lower explosion limit	No information available
Evaporation rate	No information available
Vapor pressure	No information available
Vapor density	No information available
Specific Gravity	1.40998 g/cm3
Density	11.73316 lbs/gal
Volatile organic compounds (VOC) content	.417 lbs/gal
Volatile by weight	37.7720 %
Volatile by volume	53.4736 %

10. STABILITY AND REACTIVITY

Chemical stability Stable.

Conditions to avoid Heat, flames and sparks.

Incompatible products Strong oxidizing agents. Acids.

Possibility of hazardous reactions None under normal processing

11. TOXICOLOGICAL INFORMATION

Acute toxicity

Component Information

Component	LD50 Oral	LD50 Dermal	LC50 Inhalation
SOLUBLE BARIUM COMPOUND	3800 mg/kg (Rat)		
TITANIUM DIOXIDE (TOTAL DUST)	10000 mg/kg (Rat)		
ETHYLENE GLYCOL MONOBUTYL ETHER (SKIN)	470 mg/kg (Rat)	2270 mg/kg (Rat) 220 mg/kg (Rabbit)	2.21 mg/L (Rat) 4 h 450 ppm (Rat) 4 h
ALUMINUM OXIDES	5000 mg/kg (Rat)		

Irritation No information available
Corrosivity No information available
Sensitization No information available

Chronic toxicity

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen

Component	ACGIH	IARC	NTP	OSHA	Mexico
TITANIUM DIOXIDE (TOTAL DUST)		Group 2B		X	
ETHYLENE GLYCOL MONOBUTYL ETHER (SKIN)	A3				

Mutegenicity No information available
Reproductive effects No information available
Developmental effects No information available
Teratogenicity No information available
Target Organ Effects Central nervous system, Eyes, Kidney, Lungs, Respiratory system, Skin, Blood, Hematopoietic System, Liver.
Endocrine Disruptor Information No information available

12. ECOLOGICAL INFORMATION

Ecotoxicity

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Component	Toxicity to algae	Toxicity to fish	Toxicity to microorganisms	Toxicity to daphnia
ETHYLENE GLYCOL MONOBUTYL ETHER (SKIN)		LC50= 1490 mg/L Lepomis macrochirus 96 h LC50= 2950 mg/L Lepomis macrochirus 96 h		EC50 1698 - 1940 mg/L 24 h EC50 > 1000 mg/L 48 h

13. DISPOSAL CONSIDERATIONS

Waste disposal methods Keep container tightly closed. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Contaminated packaging Empty containers should be taken for local recycling, recovery or waste disposal

14. TRANSPORT INFORMATION

DOT Ground Transportation Only. Call TNEMEC Traffic Department - 816-474-3400 for other modes of Transportation.

Proper shipping name PAINT,WATER BASE FREEZABLE

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL/NDSL	Complies
EINECS/ELINCS	Does not Comply
CHINA	Complies
ENCS	Does not Comply
KECL	Does not Comply
PICCS	Does not Comply
AICS	Complies

The following chemical(s) are listed as HAP under the U.S. Clean Air Act, Section 12 (40 CFR 61):
Component
ETHYLENE GLYCOL MONOBUTYL ETHER (SKIN)

United States of America Federal Regulations

SARA 313

Component	CAS-No	Weight %	SARA 313 - Threshold Values
SOLUBLE BARIUM COMPOUND	13701-59-2	5 - 10	1.0
ETHYLENE GLYCOL MONOBUTYL ETHER (SKIN)	111-76-2	1 - 5	1.0
ALUMINUM OXIDES	1344-28-1	0.1 - 1	1.0 % de minimis concentration (fibrous forms)

SARA 311/312 Hazardous Categorization

Chronic Health Hazard	no
Acute Health Hazard	yes
Fire Hazard	no
Sudden Release of Pressure Hazard	no
Reactive Hazard	no

CERCLA

United States of America State Regulations

California Prop. 65
This product contains the following Proposition 65 chemicals:

State Right-to-Know

Component	Massachusetts	New Jersey	Pennsylvania	Illinois	Rhode Island
SOLUBLE BARIUM COMPOUND		X	X		X
TITANIUM DIOXIDE (TOTAL DUST)	X	X	X		X
ETHYLENE GLYCOL MONOBUTYL ETHER (SKIN)	X	X	X	X	X
ALUMINUM OXIDES	X	X	X		X

Other international regulations

Canada

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

WHMIS Classification
D2B Toxic materials

Component	NPRI
ETHYLENE GLYCOL MONOBUTYL ETHER (SKIN)	Part 1, Group 1 Substance; Part 5 Substance
ALUMINUM OXIDES	Part 1, Group 1 Substance (fibrous form)

Legend
NPRI - National Pollutant Release Inventory

16. OTHER INFORMATION

Revision Date 31-May-2011

Revision Note No information available

HMIS (Hazardous Material Information System) **Health** 3* **Flammability** 1 **Reactivity** 1

Disclaimer
For specific information regarding occupational safety and health standards, please refer to the Code of Federal Regulations, Title 29, Part 1910.
To the best of our knowledge, the information contained herein is accurate. However, neither the Tnemec Company or any of its subsidiaries assume any liability whatsoever for the accuracy of completeness of the information contained herein. Final determination of suitability of any material is the sole responsibility of the user. All materials may present unknown health hazards and should be used with caution. Although certain hazards are described herein, we cannot guarantee that these are the only hazards which exist.

End of MSDS