DynaTrol® II

General Purpose Polyurethane Sealant

PECORA CORPORATION

SPECIFICATION DATA SHEET

BASIC USES

- Dynatrol® II is designed for use in expansion and control joints in precast panels, tilt walls and curtainwalls; bedding panels, coping joints, window and door perimeters, glazing, traffic, acoustical, firestopping, and applications requiring jet fuel resistance. Its wide color range and low modulus make it highly effective in exterior insulated finish systems (EIFS).

MANUFACTURER

Pecora Corporation
165 Wambold Road
Harleysville, PA 19438
Phone: 215-723-6051
800-523-6688
Fax: 215-721-0286
Website: www.pecora.com

PRODUCT DESCRIPTION

Dynatrol® II is a general purpose non-sag elastomeric sealant that creates a tenacious bond and watertight seal between materials of similar or dissimilar surface textures, porosities or expansion coefficients.

Fire Rated Systems: Four-hour fire and temperature rated wall and floor Design Joint systems up to 3" (75 mm) wide can be designed with Ultra Block® fire-blocking material and/or mineral wool fire safing.

These designs have been full scale tested and classified by Underwriters Laboratories, Inc. and appear in the UL Fire Resistance Directory, Vol. 2.

Ref: Standard "Fire Tests of Building Construction Materials," ANSI/UL 263, ASTM E119, NFPA No. 251.

Consult Pecora Technical Bulletin #85J (PEC201) for a complete listing of Pecora Firestop Systems.

Ultra-Block® is a product of Backer Rod Mfg. Co., Denver, CO.

Limitations: Dynatrol® II should not be used:

- over existing acrylic coatings without prior approval of mock up and associated field testing,
- Light colors can yellow if exposed to direct gas fired heating elements during the initial cure period.
- as a cap, heel or toe bead in glazing systems utilizing high-performance glass or acrylic polycarbonate sheet,
- in areas exposed to harsh chemicals.
- light colors may yellow in interior applications subject to fluorescent lighting or high levels of VOC's.
- When in direct contact with substrates that contain asphaltic or bituminous compounds.

TECHNICAL DATA

Federal Specification TT-S-00227E, Class A, Type II, SS-S-220E, Type M; ASTM C-920, Type M, Grade NS, Class 50, use M,A,G,T1, and Other, CAN/CGSB-19.24-M90.

Dynatrol® II will withstand structural movement of 50% in extension and 50% in compression without adhesive or cohesive failure in properly designed joints.

Joint Design: Good joint design in the construction industry dictates four times (4x) the anticipated movement of building components be used when calculating joint width. The theoretically derived 2:1 movement factor is based on thermal movement alone and does not allow for variances found at the jobsite and therefore should not be used.

The 4:1 design factor accommodates both thermal movement and wide variations in tolerances of construction materials, fabrication and erection often found in the field. This will also accommodate joints installed narrower than originally designed. The width or depth of the joint should not be less than 1/4" (6 mm). In joints up to 1/2" (12 mm) wide, the depth of the sealant should be equal to the width. In joints wider than 1/2" (12 mm) but not exceeding 2" (50 mm), the depth should be maintained at 1/2" (12 mm). For joints wider than 2" (50 mm), please consult our Technical Services department. Please refer to Technical Bulletin 104 for guidelines specific to applications exposed to pedestrian or vehicular traffic.

Joint sealants do not change volume with expansion or compression - only shape; the greater the change in shape (strain), the greater the stress on the sealant and bond line.

PACKAGING

- 1 1/2-gallon (347 cu. in.) (5.7 L) unit including Base and Activator
  Color Pack is packaged separately

COLOR

- Pecora's Color-Pack system has pre-measured tint paste for 51 standard colors.
- Custom colors are available upon request: minimum 5 color packs.
- The base material is not to be used without addition of color.
- Also available in pre-tinted limestone – this version eliminates need for color pack.

INSTALLATION

Surface Preparation: Joint surfaces must be dry, clean and free of all contamination. Glass, metal and other nonporous surfaces must be free of any coatings and wiped clean with solvent. Precast panels using form-release agents other than polyethylene film must be sandblasted or mechanically abraded and blown or brushed dust free.

Priming: Not required on glass or annodized aluminum and usually not necessary on most other common building materials. However, varieties of brick, natural stone, plastics, paints, coatings and other surface treatments often present the need for priming.

TYPICAL PHYSICAL PROPERTIES at 77°F (25°C), 50% RH

Test Property	Value	Test Procedure
Dynamic Movement Capability (%)	+/-50	ASTM C719
Bond to Concrete:***		
Non-Immersed	Pass, no bond loss	Fed. Spec. SS-S-200E
Immersed	Pass, no bond loss	Fed. Spec. SS-S-200E
Fuel-Immersed	Pass, no bond loss	Fed. Spec. SS-S-200E
Adhesion-in-peel (pli)	28, (4.kN/m) No adhesion loss*	ASTM C794
Adhesion-in-peel after UV exposure (pli)	28, (4.8 kN/m) No adhesion loss	ASTM C794
Application life (hours)	2	ASTM C603
Effect of acceleration weathering	No cracking	ASTM C793
Effect of heat aging (%)	1.4	ASTM C792
Extrusion rate (seconds)	4	ASTM C603
Hardness, Shore A	25-35	ASTM C661
Rheological properties	0	ASTM C639
Stain & color change	None	ASTM C510
Tack-free time (hours)	Min. 72 hrs.	ASTM C679
VOC Content Mixed Product (g/L)	<1	ASTM D3960
VOC Emissions (TVOC)	Pass (All Exposure Scenarios)	CDPH v1.2-2017

* Aluminum, glass and primed concrete substrates. ** When tested for +50% movement. ***P-75 or P-200 primer required

Since Pecora Architectural Sealants are applied to varied substrates under diverse environmental conditions and construction situations it is recommended that substrate testing be conducted prior to application.

DynaTrol®II

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Due to the number and unpredictable nature of these substrates, a field or laboratory test is recommended to determine the adhesion of Dynatrol® II with or without primer.When priming is indicated, P-75 or P-150 should be used on porous substrates and P-120 on nonporous substrates or consultTechnical Services. All primers and sealents to be used in accordance with localVOC regulations. Sealant should be applied within 8 hours after priming; otherwise, it will be necessary to reprime.
All Exterior Insulation Finish Systems must be primed with P-75 or P-150. Consult PecoraTechnical Services for specific EIFS recommendations.

Also, because architectural stones such as marble and granite vary considerably in porosity, some bleeding of the sealant into the substrate is a possibility. Again, a field or laboratory test to confirm this possibility is recommended.

Pecora offers complimentary adhesion, compatibility and stain testing in its laboratory on actual field samples of substrate from the jobsite or on project specific representative samples. Contact Technical Services for details.

Joint Backing: Backer rod controls the depth of the sealant and allows it to be applied under pressure. Closed-cell polyethylene or bi-cellular polyolefin foam is recommended. Use a size that will compress 25% when inserted into the joint. In joints too shallow for backer rod, use a bond-breaker tape to prevent undesirable three-sided adhesion.

Application: The Base andActivator (nested in Base container) are formulated and pre-measured to function as a unit. Do not interchange Base orActivator components from one shipment with those from another. The two components should be blended thoroughly along with the desired Color Pack for a minimum of six (6) minutes in accordance with mixing instructions appearing on the container label.

Do not thin with solvents or adulterate it in any way.Apply sealant to joints, using standard caulking equipment. Application life is 2-3 hours at 77˚ F (25˚ C), 50% R.H. Higher temperature and/or humidity will shorten this application life.

In control and construction joints in interior industrial flooring subjected to fork truck traffic, Pecora DynaFlex two part high durometer urethane is recommended for better protection against joint edge spalling. In areas of pedestrian traffic where firmersupport and resistance to puncture (i.e. high heels) is considered more important than elongation and flexibility, Pecora Dynaflex two-part, non-sag polyurethane sealant with a 55 Shore A hardness is recommended.

Tooling: Tool immediately to assure full adhesion.Tooling without a slicking agent is preferred but if conditions require one, mineral spirits is recommended. (See Caution statement.)

Painting: Due to variability in paint products and their raw materials, installation conditions, installation techniques as well as primers, it is required that contractors who apply paint, pretest paint onto sealant, to determine suitability. Oil based paints can exhibit a slow/noncuring condition. Field test is required and user must determine suitability. Paintable after 72 hours. ConsultTechnical Bulletin # 31 for further information.

Clean Up: Immediately remove all excess sealant and smears adjacent to joints with mineral spirits.Also use mineral spirits to clean uncured sealant from equipment. Remove cured sealant by scraping, sandpapering, etc. (Caution: mineral spirits is flammable and toxic. Observe manufacturer's precautions.)

Storage Life: Dynatrol® II has a shelf life of approximately one (1) year from the date of manufacture when stored in sealed containers at temperatures lower than 80˚F (26˚C). Dynatrol® II performs equally well during any part of this shelf life.

Precautions: Contains diisocyantates. Contact with uncured sealant, with vapors generated during curing, or with dust formed from cured sealant may cause eye, skin, or respiratory tract irritation or allergic reaction. Do not breathe fumes, dusts, vapors or mist. Keep container closed. Use only with adequate ventilation or wear an appropriate NIOSH-approved respirator. Harmful if swallowed. Do not swallow or take internally. Do not get in eyes, on skin, or on clothing.Wash thoroughly after handling. Keep away from heat, sparks and flame. Repeated contact may, without symptoms, increase susceptibility of these effects. Refer to material Safety Data sheet (MSDS) for more information.

FOR PROFESSIONAL USE ONLY. KEEP OUT OF THE REACH OF CHILDREN.

AVAILABILITY AND COST

Pecora products are available from stocking distributors nationwide.For the name and telephone number of your nearest representative, call the number below or visit our website at www.pecora.com.

WARRANTY

Pecora Corporation warrants its products to be free of defects. Under this warranty, we will provide, at no charge, replacement materials for, or refund the purchase price of, any product proven to be defective when used in strict accordance with our published recommendations and in applications considered by us as suitable for this product.The determination of eligibility for this warranty, or the choice of remedy available under this warranty, shall be made in our sole discretion and any decisions made by Pecora Corporation shall be final.This warranty is in lieu of any and all other warranties, expressed or implied, including but not limited to a warranty of merchantability or fitness for a particular purpose and in no case will Pecora be liable for damages other than those expressly stated in this warranty, including but not limited to incidental or consequential damages.

MAINTENANCE

If the sealant is damaged and the bond is intact, cut out the damaged area and prime with P-75 or P-150 primer and recaulk. If the bond has been affected, remove the sealant, clean and prepare the joint in accordance with instructions under "Installation."

TECHNICAL SERVICES

Pecora representatives are available to assist you in selecting an appropriate product and to provide on-site application instructions or to conduct jobsite inspections. For further assistance call our Technical Service Department at 800-523-6688 or 215-723-6051.

FILING SYSTEMS

CSI MasterFormat Designation
- 07 84 43 - Joint FIRESTOPPING
- 07 92 00 - Joint Sealants

SEALANT • WATERPROOFING & RESTORATION INSTITUTE

Issued to: Pecora Corporation
Product: Dynatrol® II Polyurethane Sealant

C719: Pass ✔ Ext:+50% Comp:-50%

Substrate: Primed Mortar, unprimed anodized aluminum and glass substrates
[mortar substrates primed with Pecora P-75 Primer]

Validation Date: 8/29/18 – 8/28/23

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SEALANT VALIDATION
www.swrionline.org

MIAMI-DADE COUNTY APPROVED

NOA # 20-0313.02

Pecora is a member of and supports: SWRI, CSI, AIA, ICRI, ABAA, USGBC, IPI.
Pecora products are proudly made in America.

165 Wambold Road, Harleysville, PA 19438 | 800.523.6688 | pecora.com

PECORA SEALANTS

Safety Data Sheet

according to OSHA HCS (29CFR 1910.1200) and WHMIS 2015 Regulations

Revision: July 10, 2019

1 Identification

· **Product identifier**

· **Trade name: DynaTrol II Activator**

· **Other means of identification:** DynaTrol II Activator

· **Recommended use and restriction on use**
· **Recommended use:** Activator
· **Restrictions on use:** No relevant information available.

· **Details of the supplier of the Safety Data Sheet**
· **Manufacturer/Supplier:**
Pecora Corporation
165 Wambold Road
Harleysville, PA 19438
215-723-6051

· **Emergency telephone number:**
CHEMTREC
1-800-424-9300 (US/Canada)

2 Hazard(s) identification

· **Classification of the substance or mixture**

Resp. Sens. 1 H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
Skin Sens. 1 H317 May cause an allergic skin reaction.

· **Label elements**
· **GHS label elements**
The product is classified and labeled according to the Globally Harmonized System (GHS).
· **Hazard pictograms:**

GHS08

· **Signal word:** Danger
· **Hazard statements:**
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H317 May cause an allergic skin reaction.
· **Precautionary statements:**
P261 Avoid breathing dust/fume/gas/mist/vapors/spray
P272 Contaminated work clothing must not be allowed out of the workplace.
P280 Wear protective gloves.
P285 In case of inadequate ventilation wear respiratory protection.
P302+P352 If on skin: Wash with plenty of soap and water.
P304+P341 If inhaled: If breathing is difficult, remove person to fresh air and keep comfortable for breathing.
P333+P313 If skin irritation or rash occurs: Get medical advice/attention.
P342+P311 If experiencing respiratory symptoms: Call a poison center/doctor.
P363 Wash contaminated clothing before reuse.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

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· **Other hazards** There are no other hazards not otherwise classified that have been identified.

3 Composition/information on ingredients

· **Chemical characterization: Mixtures**

· **Components:**

4098-71-9	3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate Acute Tox. 3, H331 Resp. Sens. 1, H334 Skin Irrit. 2, H315; Eye Irrit. 2A, H319; Skin Sens. 1, H317; STOT SE 3, H335	<5%

· **Additional information:**
For the listed ingredient(s), the identity and/or exact percentage(s) are being withheld as a trade secret.
For the wording of the listed Hazard Statements, refer to section 16.

4 First-aid measures

· **Description of first aid measures**
· **After inhalation:**
Supply fresh air.
Provide oxygen treatment if affected person has difficulty breathing.
If experiencing respiratory symptoms: Call a poison center/doctor.
In case of unconsciousness place patient stably in side position for transportation.
· **After skin contact:**
Immediately wash with water and soap and rinse thoroughly.
If skin irritation or rash occurs: Get medical advice/attention.
· **After eye contact:**
Protect unharmed eye.
Immediately remove contact lenses if possible.
Rinse opened eye for several minutes under running water. If symptoms persist, consult a doctor.
· **After swallowing:**
Rinse out mouth and then drink plenty of water.
Do not induce vomiting; immediately call for medical help.
· **Most important symptoms and effects, both acute and delayed:**
Asthma attacks
Breathing difficulty
Coughing
Allergic reactions
Slight irritant effect on eyes.
Gastric or intestinal disorders when ingested.
Slight irritant effect on skin and mucous membranes.
Nausea in case of ingestion.
· **Danger:**
May be harmful if inhaled.
Danger of impaired breathing.
· **Indication of any immediate medical attention and special treatment needed:**
Severe allergic skin reaction, bronchial spasms and anaphylactic shock are possible.
Medical supervision for at least 48 hours.
If necessary oxygen respiration treatment.

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Later observation for pneumonia and pulmonary edema.
Contains 3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate. May produce an allergic reaction.
Treat skin and mucous membrane with antihistamine and corticoid preparations.
In cases of irritation to the lungs, initial treatment with cortical steroid inhalants.

5 Fire-fighting measures

· **Extinguishing media**
· **Suitable extinguishing agents:** Use fire fighting measures that suit the environment.
· **For safety reasons unsuitable extinguishing agents:** No relevant information available.
· **Special hazards arising from the substance or mixture**
During heating or in case of fire poisonous gases are produced.
· **Advice for firefighters**
· **Protective equipment:**
Wear self-contained respiratory protective device.
Wear fully protective suit.

6 Accidental release measures

· **Personal precautions, protective equipment and emergency procedures**
Isolate area and prevent access.
Wear protective equipment. Keep unprotected persons away.
Ensure adequate ventilation.
For large spills, use respiratory protective device against the effects of fumes/dust/aerosol.
· **Environmental precautions** Avoid release to the environment.
· **Methods and material for containment and cleaning up**
Towel or mop up material and collect in a suitable container.
For larger spills, add sawdust, chalk or other inert binding material, then sweep up and discard.
Send for recovery or disposal in suitable receptacles.
· **Reference to other sections**
See Section 7 for information on safe handling.
See Section 8 for information on personal protection equipment.
See Section 13 for disposal information.

7 Handling and storage

· **Handling**
· **Precautions for safe handling:**
Use only in well ventilated areas. Avoid contact with the eyes and skin. Avoid breathing mist, vapors, or spray. Open and handle receptacle with care.

· **Conditions for safe storage, including any incompatibilities**
· **Requirements to be met by storerooms and receptacles:**
Avoid storage near extreme heat, ignition sources or open flame.
Store in cool, dry conditions in well sealed receptacles.
Do not allow product to freeze.

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· **Information about storage in one common storage facility:**
Store away from foodstuffs.
Store away from oxidizers, strong acids, strong bases.
Protect from humidity and water.
· **Specific end use(s)** No relevant information available.

8 Exposure controls/personal protection

· **Control parameters**

· **Components with limit values that require monitoring at the workplace:**	
4098-71-9 3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate	
REL (USA)	Short-term value: 0.18 mg/m³, 0.02 ppm Long-term value: 0.045 mg/m³, 0.005 ppm Skin
TLV (USA)	Long-term value: 0.045 mg/m³, 0.005 ppm
EL (Canada)	Long-term value: 0.005 ppm Ceiling limit value: 0.01 ppm S(R)
EV (Canada)	Long-term value: 0.005 ppm Ceiling limit value: 0.02 ppm
LMPE (Mexico)	Long-term value: 0.005 ppm

· **Exposure controls**
· **General protective and hygienic measures:**
The usual precautionary measures for handling chemicals should be followed.
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.
Do not breathe dust/fume/gas/mist/vapors/spray.
· **Engineering controls:** Provide adequate ventilation.
· **Breathing equipment:**
Use suitable respiratory protective device in case of insufficient ventilation.
NIOSH or EN approved organic vapor respirator equipped with a dust/mist prefilter should be used.
· **Protection of hands:**

Protective gloves

The glove material has to be impermeable and resistant to the product/ the substance/ the preparation.
· **Eye protection:**

Safety glasses

Follow relevant national guidelines concerning the use of protective eyewear.
· **Body protection:** Protective work clothing
· **Limitation and supervision of exposure into the environment**
No relevant information available.

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· **Risk management measures** No relevant information available.

9 Physical and chemical properties

· **Information on basic physical and chemical properties**	
· **Appearance:**	
Form:	Viscous liquid.
Color:	According to product specification
· **Odor:**	Not determined.
· **Odor threshold:**	Not determined.
· **pH-value:**	Not applicable.
· **Melting point/Melting range:**	Not determined.
· **Boiling point/Boiling range:**	Not determined.
· **Flash point:**	>93.3 °C (>199.9 °F)
· **Flammability (solid, gaseous):**	Not determined.
· **Auto-ignition temperature:**	Not determined.
· **Decomposition temperature:**	Not determined.
· **Danger of explosion:**	Product does not present an explosion hazard.
· **Explosion limits**	
Lower:	Not determined.
Upper:	Not determined.
· **Oxidizing properties:**	Non-oxidizing.
· **Vapor pressure:**	Not determined.
· **Density:**	
Relative density:	1.036
Vapor density:	Not applicable.
Evaporation rate:	Not determined.
· **Solubility in / Miscibility with**	
Water:	Slowly reacts with water. Not miscible or difficult to mix.
· **Partition coefficient (n-octanol/water):**	Not determined.
· **Viscosity**	
Dynamic:	Not applicable.
Kinematic:	Not applicable.
· **VOC content:**	0 g/l
· **Other information**	No relevant information available.

10 Stability and reactivity

· **Reactivity:** No relevant information available.
· **Chemical stability:** Stable under normal temperatures and pressures.

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· **Thermal decomposition / conditions to be avoided:**
No decomposition if used and stored according to specifications.
Avoid extreme heat.
· **Possibility of hazardous reactions**
Toxic fumes may be released if heated above the decomposition point.
Contact with acids releases toxic gases.
Reacts with strong alkali.
Reacts with oxidizing agents.
Reacts with peroxides and other radical forming substances.
Reacts with water.
· **Conditions to avoid**
Excessive heat.
Moisture.
· **Incompatible materials** Oxidizers, strong bases, strong acids
· **Hazardous decomposition products**
Hydrogen cyanide (prussic acid)
Isocyanate
Carbon monoxide and carbon dioxide

11 Toxicological information

· **Information on toxicological effects**
· **Acute toxicity:** May be harmful if inhaled.
· **LD/LC50 values that are relevant for classification:** None.
· **Primary irritant effect:**
· **On the skin:** Based on available data, the classification criteria are not met.
· **On the eye:** Based on available data, the classification criteria are not met.
· **Sensitization:** May cause sensitization by inhalation and skin contact.

· **IARC (International Agency for Research on Cancer):**
None of the ingredients are listed.
· **NTP (National Toxicology Program):**
None of the ingredients are listed.
· **OSHA-Ca (Occupational Safety & Health Administration):**
None of the ingredients are listed.

· **Probable route(s) of exposure:**
Ingestion.
Inhalation.
Eye contact.
Skin contact.
· **Germ cell mutagenicity:** Based on available data, the classification criteria are not met.
· **Carcinogenicity:** Based on available data, the classification criteria are not met.
· **Reproductive toxicity:** Based on available data, the classification criteria are not met.
· **STOT-single exposure:** Based on available data, the classification criteria are not met.
· **STOT-repeated exposure:** Based on available data, the classification criteria are not met.
· **Aspiration hazard:** Based on available data, the classification criteria are not met.

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12 Ecological information

· **Toxicity**
· **Aquatic toxicity** No relevant information available.
· **Persistence and degradability** No relevant information available.
· **Bioaccumulative potential:** No relevant information available.
· **Mobility in soil:** No relevant information available.
· **Other adverse effects** No relevant information available.

13 Disposal considerations

· **Waste treatment methods**
· **Recommendation:**
Can be disposed of with household garbage after solidification following consultation with the waste disposal facility operator and the pertinent authorities and adhering to the necessary technical regulations. The user of this material has the responsibility to dispose of unused material, residues and containers in compliance with all relevant local, state and federal laws and regulations regarding treatment, storage and disposal for hazardous and nonhazardous wastes.

· **Uncleaned packagings**
· **Recommendation:** Disposal must be made according to official regulations.

14 Transport information

· **UN-Number** · **DOT, ADR/RID/ADN, IMDG, IATA**	Not regulated.
· **UN proper shipping name** · **DOT, ADR/RID/ADN, IMDG, IATA**	Not regulated.
· **Transport hazard class(es)** · **DOT, ADR/RID/ADN, IMDG, IATA** · **Class**	Not regulated.
· **Packing group** · **DOT, ADR/RID/ADN, IMDG, IATA**	Not regulated.
· **Environmental hazards** · **Marine pollutant:**	No
· **Special precautions for user**	Not applicable.
· **Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code**	Not applicable.

15 Regulatory information

· **Safety, health and environmental regulations/legislation specific for the substance or mixture**

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· **United States (USA)**
· **SARA**

· **Section 302 (extremely hazardous substances):**	
None of the ingredients are listed.	
· **Section 355 (extremely hazardous substances):**	
4098-71-9	3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate
· **Section 313 (Specific toxic chemical listings):**	
4098-71-9	3-isocyanatomethyl-3,5,5-trimethylcyclohexyl isocyanate
· **TSCA (Toxic Substances Control Act)**	
All ingredients are listed or exempt.	

· **Proposition 65 (California)**

· **Chemicals known to cause cancer:**
None of the ingredients are listed.
· **Chemicals known to cause developmental toxicity for females:**
None of the ingredients are listed.
· **Chemicals known to cause developmental toxicity for males:**
None of the ingredients are listed.
· **Chemicals known to cause developmental toxicity:**
None of the ingredients are listed.
· **EPA (Environmental Protection Agency):**
None of the ingredients are listed.
· **IARC (International Agency for Research on Cancer):**
None of the ingredients are listed.
· **Canadian Domestic Substances List (DSL):**
All ingredients are listed or exempt.

16 Other information

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

· **Abbreviations and acronyms:**
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
CAS: Chemical Abstracts Service (division of the American Chemical Society)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
OSHA: Occupational Safety & Health Administration
Acute Tox. 3: Acute toxicity – Category 3
Skin Irrit. 2: Skin corrosion/irritation – Category 2
Eye Irrit. 2A: Serious eye damage/eye irritation – Category 2A
Resp. Sens. 1: Respiratory sensitisation – Category 1
Skin Sens. 1: Skin sensitisation – Category 1
STOT SE 3: Specific target organ toxicity (single exposure) – Category 3

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· **Sources**

Website, European Chemicals Agency (echa.europa.eu)
Website, US EPA Substance Registry Services (ofmpub.epa.gov/sor internet/registry/substreg/home/overview/home.do)
Website, Chemical Abstracts Registry, American Chemical Society (www.cas.org)
Patty's Industrial Hygiene, 6th ed., Rose, Vernon, ed. ISBN: 978-0-470-07488-6
Casarett and Doull's Toxicology: The Basic Science of Poisons, 8th Ed., Klaasen, Curtis D., ed., ISBN: 978-0-07-176923-5.
Safety Data Sheets, Individual Manufacturers

SDS Prepared by:
ChemTel Inc.
1305 North Florida Avenue
Tampa, Florida USA 33602-2902
Toll Free North America 1-888-255-3924 Intl. +01 813-248-0573
Website: www.chemtelinc.com

PECORA CORPORATION®
Architectural Weatherproofing Products
U.S.A. • since 1862

PECORA DYNATROL II BASE

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

1.1 IDENTIFICATION of the SUBSTANCE or PREPARATION

PRODUCT IDENTIFIER/TRADE NAME (AS LABELED)	**PECORA DYNATROL II BASE**
OTHER MEANS OF IDENTIFICATION	DynaTrol II Part B
RECOMMENDED PRODUCT USE:	Sealant Part B Base
RESTRICTIONS ON USE:	Other than recommended use

1.2 U.S. COMPANY/UNDERTAKING IDENTIFICATION:

U.S. SUPPLIER/MANUFACTURER'S NAME:	**Pecora Corporation**
ADDRESS:	165 Wambold Road, Harleysville, PA 19438
EMERGENCY PHONE:	800-424-9300 (CHEMTREC, 24-hours)
BUSINESS PHONE:	215-723-6051 (Mon–Fri, 8 AM–5 PM ET)
PREPARATION DATE:	July 10, 2023
REVISION DATE:	New

This product is sold for commercial use. This SDS has been developed to address safety concerns of those individuals working with bulk quantities of this material, as well as those of potential users of this product in industrial/occupational settings.

2. HAZARD IDENTIFICATION

2.1 GLOBAL HARMONIZATION LABELING AND CLASSIFICATION: Classified in accordance with Global Harmonization Standard under U.S. OSHA Hazard Communication Standard, Canadian WHMIS HPR-GHS 2015.

2.1.1 Classification:
Germ Cell Mutagen Cat. 2, Skin Irritation Category 2; Skin Sensitization Category 1B, Eye Corrosion/Irritation Category 2A, Specific Target Organ Toxicity (Inhalation-Respiratory Irritation) Single Exposure Category 3, Aquatic Chronic Toxicity Category 3

2.1.2 Signal Word: Warning

2.1.3 Hazard Statements:
H341: Suspected of causing genetic effects. H315: Causes skin irritation. H317: May cause an allergic skin reaction. H319: Causes serious eye irritation. H335: May cause respiratory irritation. H412: Harmful to aquatic life with long-lasting effects.

2.1.4 Hazards Not Otherwise Classified (HNOC): Contains multiple trace compounds that may cause adverse effects on the thymus and immune system after chronic exposure. Contains a trace component that is under assessment as a PBT (Persistent, Bioaccumulative and Toxic) compound and a POP (Persistent Organic Pollutant) compound.

2.1.5 Physical Hazards Not Otherwise Classified (PHNOC): None known.

2.1.6 Precautionary Statements:

2.1.6.1 Prevention:
P203: Obtain, read and follow all safety instructions before use. P261: Avoid breathing vapors. P264 + P265: Wash hands and other contamination areas thoroughly after handling. Do not touch eyes. P270: Do not eat, drink or smoke when using this product. P271: Use only outdoors or in a well-ventilated area. P272: Contaminated work clothing should not be allowed out of the workplace. P273: Avoid release to the environment. P280: Wear protective gloves, clothing, eye protection and face protection.

2.6.1.2 Response:
P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P333 + P313: If skin irritation or rash occurs, get medical attention. P362 + P364: Take off contaminated clothing and wash it before reuse. P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. P337 + P317: If eye irritation persists: get medical help. P304 + P340: If inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing. P319: Get medical help if you feel unwell.P321: Specific treatment (remove from exposure and treat symptoms).

2.6.1.3 Storage:
P403 + P233 + P405: Store in a well-ventilated place. Keep container tightly closed. Store locked up.

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

2.1.7 Hazard Symbols/Pictograms: GHS07, GHS08

2.2 Percent of Unknown Acute Toxicity: This product is a mixture; the following are percentages of unknown acute toxicity, by route of exposure. Oral: < 98% Dermal > 27%, and Inhalation: Not determined.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

Chemical Name	CAS #	W/W%	LABEL ELEMENTS GHS Classification under U.S. OSHA Hazard Communication Standard & Canadian WHMIS (HPR-GHS) 2015 Hazard Statement Codes
Proprietary Prepolymer		45-55%	Classification: Not Classified
Proprietary Terephthalate		15-25%	Classification: Not Classified
Proprietary Vegetable Oil		10-20%	Classification: Not Classified
Calcium Carbonate	471-34-1	5-8%	Notified Classification: Skin Irritation Cat. 2, Eye Corrosion/Damage Cat. 1, Specific Target Organ Toxicity (Inhalation-Respiratory Irritation) Single Exposure Cat. 3 Hazard Statements: H315:Causes skin irritation. H318: Causes serious eye damage. H335: May cause respiratory irritation.
Calcium Carbonate (Limestone)	1317-65-3	1-5%	Notified Classification: Skin Irritation Cat. 2 Hazard Statements: H315:Causes skin irritation.
Calcium Oxide	1305-78-8	1-5%	Notified Classification: Skin Irritation Cat. 2, Eye Corrosion/Damage Cat. 1, Specific Target Organ Toxicity (Inhalation-Respiratory Irritation) Single Exposure Cat. 3 Hazard Statements: H315:Causes skin irritation. H318: Causes serious eye damage. H335: May cause respiratory irritation.
bis(1,2,2,6,6-pentamethyl-4-piperdyl) sebacate	41556-26-7	0.1-0.7%	Notified Classification: Skin Sensitization Cat. 1, Aquatic Acute Toxicity Cat. 1, Aquatic Chronic Toxicity Cat. 1 Hazard Statements: H317: May cause an allergic skin reaction. H400: Very toxic to aquatic life. H410: Very toxic to aquatic life with long-lasting effects.
Proprietary Glycol		0.1-0.6%	Classification: Not Classified
Titanium Dioxide	13463-67-7	0.1-0.5%	Harmonized Classification: Carcinogen Cat. 2 Hazard Statements: H350i: May cause cancer by inhalation.
Tall Oil Fatty Acids	61790-12-3	0.1-0.5%	Notified Classification: Skin Sensitization Cat. 1A Hazard Statements: H317: May cause an allergic skin reaction.
2-(2H-Benzotriazol-2-yl-4,6-di-tert-pentylphenol	25973-55-1	0.1-0.4%	Notified Classification: Specific Target Oran Toxicity (Oral-Liver, Kidneys) Repeated Exposure Cat. 2 Hazard Statements: H373: May cause damage to the liver and kidneys through prolonged or repeated exposure. Hazards Not Otherwise Classified: Considered to be a PBT (Persistent, Bioaccumulative and Toxic) in the Environment) Compound. Under Assessment as a POP (Persistent Organic Pollutant) Compound
Methyl 1,2,2,6-pentamethyl-4-piperdiyl Sebacate	82919-37-7	0.1-0.3%	Notified Classification: Skin Sensitization Cat. 1, Aquatic Acute Toxicity Cat. 1, Aquatic Chronic Toxicity Cat. 1 Hazard Statements: H317: May cause an allergic skin reaction. H400: Very toxic to aquatic life. H410: Very toxic to aquatic life with long-lasting effects. EU ECHA Properties of Concern: Suspected Persistent in the Environment: The Danish QSAR database contains information indicating that the substance is predicted as non-readily biodegradable.
Ethylhexyl 4,4-dibutyl-10-ethyl-7-oxo-8-oxa-3,5-dithia-4-stannate-tradecanoate	10584-98-2	0.11%	Notified Classification: Germ Cell Mutagen Cat. 2, Acute Skin Toxicity Cat. 3, Acute Inhalation Toxicity Cat. 3, Acute Oral Toxicity Cat. 4, Skin Irritation Cat. 2, Skin Sensitization Cat. 1, Specific Target Organ Toxicity (Immune System, Thymus) Single Exposure Cat. 1, Aquatic Acute Toxicity Cat. 1 Hazard Statements: H341: Suspected of causing genetic effects. H311 + H331: Toxic in contact with skin or if inhaled. H317: May cause an allergic skin reaction. H371: May cause damage to immune system and thymus. H400: Very toxic to aquatic life. Hazards Not Otherwise Classified: Considered to be a PBT (Persistent, Bioaccumulative and Toxic) in the Environment) Compound
Other components not classified, with no exposure limits and/or in less than 0.1%		Balance	Classification: Not Applicable

The specific chemical identity and/or exact percentage (concentration) of composition has been withheld as a trade secret.

4. FIRST-AID MEASURES

4.1 PROTECTION OF FIRST AID RESPONDERS: Rescuers should not attempt to retrieve victims of exposure to this material without adequate personal protective equipment. Rescuers should be taken for medical attention, if necessary.

4.2 DESCRIPTION OF FIRST AID MEASURES: Remove victim(s) to fresh air, as quickly as possible. Only trained personnel should administer supplemental oxygen and/or cardio-pulmonary resuscitation, if necessary. Remove and isolate contaminated clothing and shoes. Seek immediate medical attention. Take copy of label and SDS to physician or other health professional with victim(s).

4.2.1 Inhalation: If aerosols of this material are inhaled, remove victim to fresh air. If necessary, use artificial respiration to support vital functions.

4.2.1.1 GHS Precautionary Statements for Inhalation Exposure: P304 + P340: If inhaled, remove victim to fresh air and keep at rest in a position comfortable for breathing.

4. FIRST-AID MEASURES (Continued)

4.2 DESCRIPTION OF FIRST AID MEASURES (continued):

4.2.2 Skin Exposure: If the material contaminates the skin, immediately begin decontamination with running water. Minimum flushing is for 20 minutes. Do not interrupt flushing. Remove exposed or contaminated clothing, taking care not to contaminate eyes. Victim must seek immediate medical attention.

4.2.2.1 GHS Precautionary Statements for Skin Exposure: P302 + P352: IF ON SKIN: Wash with plenty of soap and water. P333 + P313: If skin irritation or rash occurs, get medical attention. P362 + P364: Take off contaminated clothing and wash it before reuse.

4.2.3 Eye Exposure: If this product enters the eyes, open victim's eyes while under gently running water. Use sufficient force to open eyelids. Have victim "roll" eyes. Minimum flushing is for 20 minutes. Do not interrupt flushing.

4.2.3.1 GHS Precautionary Statements for Eye Exposure: P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. P337 + P317: If eye irritation persists: get medical help.

4.2.4 Ingestion: If this material 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 or give several cupfuls of 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.

4.2.4.1 GHS Precautionary Statements for Ingestion Exposure: None.

4.3 MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Acute or chronic respiratory conditions may be aggravated by exposure to this product.

4.4 IMPORTANT SYMPTOMS AND EFFECTS, WHETHER ACUTE OR DELAYED: See Sections 2 (Hazard Identification) and 11 (Toxicological Information) for more detailed information.

4.4.1 Acute:

Symptoms/Effects: Fumes from heated product are an irritant to eyes and respiratory system. Direct eye contact may cause serious eye irritation. All potential effects are dependent on concentration and duration of exposure. May cause skin irritation.

Symptoms/Effects After Inhalation of Fumes or Aerosols: Inhalation may cause coughing, dry or sore throat, mucosal irritations, shortness of breath, respiratory system irritation.

Symptoms/Effects After Skin Contact: Dermatitis, dry skin, dermal irritation.

Symptoms/Effects After Direct Eye Contact: Moderate to severe irritation of eye tissue from direct eye contact. Aerosols may cause eye irritation.

Symptoms/Effects After Ingestion: Irritation of mucous membranes in the mouth, pharynx, esophagus and gastrointestinal tract.

4.4.2 Chronic:

Symptoms/Effects After Skin Contact: Dermatitis (dry, red skin, itching, cracking of the skin, skin inflammation), allergic skin reaction.

Symptoms/Effects After Accidental Injection/Ingestion: None known.

Symptoms/Effects After Inhalation of Aerosols: None known.

Symptoms/Effects No Specific Route of Exposure: Potential mutagenic effects.

4.5 INDICATION OF IMMEDIATE MEDICAL ATTENTION AND SPECIAL TREATMENT IF NEEDED: Treat symptoms and eliminate exposure.

5. FIRE-FIGHTING MEASURES

5.1 FLASH POINT: > 93.3°C (> 200°F)

5.2 AUTOIGNITION: Not tested.

5.3 FLAMMABLE LIMITS IN AIR: Not tested.

5.4 FIRE EXTINGUISHING MEDIA: Use materials appropriate for surrounding materials. ABC extinguishers, carbon dioxide, foam, dry chemical and flooding quantities of water.

5.5 UNSUITABLE EXTINGUISHING MEDIA: None known.

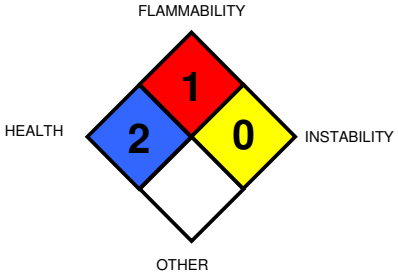
5.6 SPECIAL HAZARDS ARISING FROM THE PRODUCT: Not sensitive to mechanical impact. Closed containers may develop pressure and rupture in event of fire.

5.6.1 Explosion Sensitivity to Mechanical Impact: Not sensitive.

5.6.2 Explosion Sensitivity to Static Discharge: Not expected to be sensitive.

5.7 SPECIAL PROTECTIVE ACTIONS FOR FIRE-FIGHTERS: Incipient fire responders should wear eye protection. Structural firefighters must wear Self-Contained Breathing Apparatus and full protective equipment. Move containers from fire area if it can be done without risk to personnel. If possible, prevent runoff water from entering storm drains, bodies of water, or other environmentally sensitive areas.

NFPA RATING



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

6. ACCIDENTAL RELEASE MEASURES

6.1 PERSONAL PRECAUTIONS AND EMERGENCY PROCEDURES: An accidental release may result in a fire. Uncontrolled releases should be responded to by trained personnel using pre-planned procedures. Proper protective equipment should be used. Eliminate any possible sources of ignition and provide maximum explosion-proof ventilation. Use only non-sparking tools and equipment during the response. The atmosphere must at least 19.5 percent Oxygen before non-emergency personnel can be allowed in the area without Self-Contained Breathing Apparatus and fire protection. Avoid contact with water.

6.2 PERSONAL PROTECTIVE EQUIPMENT: Responders should wear the level of protection appropriate to the type of chemical released, the amount of the material spilled, and the location where the incident has occurred.

6.2.1 Small Spills: For releases of 1 drum or less, Level D Protective Equipment (gloves, chemical resistant apron, boots, and eye protection) should be worn.

6. ACCIDENTAL RELEASE MEASURES (Continued)

6.2 PERSONAL PROTECTIVE EQUIPMENT (continued):

6.2.2 Large Spills: Minimum Personal Protective Equipment should be rubber gloves, rubber boots, face shield, and Tyvek suit. Minimum level of personal protective equipment for releases in which the level of oxygen is less than 19.5% or is unknown must be **Level B: triple-gloves (rubber gloves and nitrile gloves over latex gloves), chemical resistant suit, fire-retardant clothing and boots, hard hat, and Self-Contained Breathing Apparatus.**

6.3 METHODS AND MATERIALS FOR CONTAINMENT AND CLEANING UP:

6.3.1 All Spills: Eliminate all sources of ignition prior to spill response. Access to the spill area should be restricted. Spread should be limited by gently covering the spill with polypads. Absorb spilled liquid with clay, sand, polypads, or other suitable inert absorbent materials. All contaminated absorbents and other materials should be placed in an appropriate container and seal. Do not mix with wastes from other materials. Dispose of in accordance with applicable Federal, State, and local procedures (see Section 13, Disposal Considerations). Dispose of recovered material and report spill per regulatory requirements. Remove all residue before decontamination of spill area. Clean spill area with soap and copious amounts of water. Monitor area for combustible vapor levels and confirm levels are below exposure limits given in Section 8 (Exposure Controls-Personal Protection), if applicable, and that levels are below applicable LELs (see Section 5 – Fire Fighting Measures) before non-response personnel are allowed into the spill area. Purge equipment with inert gas prior to reuse.

6.4 ENVIRONMENTAL PRECAUTIONS: Minimize use of water to prevent environmental contamination. Prevent spill or rinsate from contaminating storm drains, sewers, soil or groundwater. Place all spill residues in a suitable container and seal. Do not discharge effluent containing this product into streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance, contact your State Water Board or Regional Office of the EPA.

6.5 OTHER INFORMATION: U.S. regulations may require reporting of spills of this material that reach surface waters if a sheen is formed. If necessary, the toll-free phone number for the US Coast Guard National Response Center is 1-800-424-8802.

6.6 REFERENCE TO OTHER SECTIONS: See information in Section 8 (Exposure Controls – Personal Protection) and Section 13 (Disposal Considerations) for additional information.

7. HANDLING and STORAGE

7.1 PRECAUTIONS FOR SAFE HANDLING: As with all chemicals, avoid getting this product ON YOU or IN YOU. Wash thoroughly after handling this product. Do not eat or drink while handling this material. Avoid contact with eyes, skin, and clothing. Avoid breathing fumes, vapors or mist. Do not taste or swallow. Use only with adequate ventilation. Wash hands after handling this product. Contaminated clothing needs to be laundered prior to reuse. Keep away from heat and flame. In the event of a spill, follow practices indicated in Section 6: ACCIDENTAL RELEASE MEASURES. Keeping work areas clean is essential. Use work surfaces that can be easily decontaminated. Maintain good personal hygiene.

7.1.1 GHS Statements for Safe Handling: P203: Obtain, read and follow all safety instructions before use. P261: Avoid breathing vapors. P264: Wash contaminated tissues after handling. P270: Do not eat, drink or smoke when using this product. P271: Use only outdoors or in a well-ventilated area. P280: Wear protective gloves, clothing, eye protection and face protection.

7.2 CONDITIONS FOR SAFE STORAGE INCLUDING ANY INCOMPATIBILITIES: Keep container tightly closed when not in use. 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. Inspect all incoming containers before storage, to ensure containers are properly labeled and not damaged. Have appropriate extinguishing equipment in the storage area (such as sprinkler systems or portable fire extinguishers). Inspect all incoming containers before storage to ensure containers are properly labeled and not damaged. Empty containers may contain residual product; therefore, empty containers should be handled with care. Store container below 27°C (80°F) to avoid possible reactions related to heat and overpressure of containers. This product is not compatible with oxidizing agents, acids, bases, alcohols, amines, amides, mercaptan, phenols and isocyanates.

7.2.1 GHS Statements for Safe Handling: P403 + P233 + P405: Store in a well-ventilated place. Keep container tightly closed. Store locked up.

7.3 PRODUCT USE: This product is the base component for a sealant. Follow all industry standards for use of this product.

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

8.1 CONTROL PARAMETERS, INCLUDING OCCUPATIONAL EXPOSURE GUIDELINES OR BIOLOGICAL EXPOSURE LIMITS AND THE SOURCE OF THOSE VALUES:

8.1.1 Ventilation and Engineering Controls: Use with adequate, explosion proof ventilation to ensure exposure levels are maintained below the limits provided further in this section.

8.1.2 U.S. Occupational/Workplace Exposure Limits/Guidelines:

Chemical Name	CAS #	Guideline	Value
Calcium Carbonate Limestone	471-34-1 1317-65-3	ACGIH TLV TWA NIOSH REL TWA	15 mg/m^3 (total dust); 5 mg/m^3 (respirable fraction) 10 mg/m^3 (total dust); 5 mg/m^3 (respirable fraction)

8. EXPOSURE CONTROLS - PERSONAL PROTECTION

8.1 CONTROL PARAMETERS, INCLUDING OCCUPATIONAL EXPOSURE GUIDELINES OR BIOLOGICAL EXPOSURE LIMITS AND THE SOURCE OF THOSE VALUES (continued):

8.1.2 U.S. Occupational/Workplace Exposure Limits/Guidelines (continued):

Chemical Name	CAS #	Guideline	Value
Calcium Oxide	1305-78-8	ACGIH TLV TWA OSHA PEL TWA NIOSH STEL TWA DFG MAK TWA DFG MAK PEAK	2 mg/m^3 5 mg/m^3 2 mg/m^3 1 mg/m^3 (inhalable fraction) 2●MAK; Excursion Factor: 1, 15 minutes average value, 4 per shift, 1-hr interval
Proprietary Glycol		DFG MAK TWA DFG MAK PEAK AIHA WEEL TWA	44 mg/m^3 (inhalable fraction) 2●MAK; Excursion Factor: 4, 15 minutes average value, 4 per shift, 1-hr interval 10 mg/m^3
2-Ethylhexyl 4,4-dibutyl-10-ethyl-7-oxo-8-oxa-3,5-dithia-4-stannatetra-decanoate (Exposure limits given are for tetra-n-butyltin compounds)	10584-98-2	DFG MAK TWA DFG MAK PEAK	0.002 mg/m^3 (can also be found as vapor); Skin (for n-butyltin compounds whose organic ligands are already designated 'Sa' or 'Sh,' these designations may also apply 1●MAK; Excursion Factor: 1, 15 minutes average value, 4 per shift, 1-hr interval
Titanium Dioxide	13463-67-7	ACGIH TLV TWA OSHA PEL TWA NIOSH STEL TWA	0.2 mg/m^3 (respirable fraction) finescale particles 15 mg/m^3 (total dust) See Pocket Guide Appendix A

See Section 16 for Definitions of Terms Used.

8.1.3 ACGIH Biological Exposure Indices (BEIs): Currently, no following BEI's have been established for components.

8.2 INDIVIDUAL PROTECTION MEASURES, SUCH AS PERSONAL PROTECTIVE EQUIPMENT: The following information on appropriate Personal Protective Equipment is provided to assist employers in complying with OSHA regulations found in 29 CFR Subpart I (beginning at 1910.132, including the Respiratory Protection Standard (29 CFR 1910.134), Eye Protection Standard 29 CFR 1910.13, the Hand Protection Standard 29 CFR 1910.138, and the Foot Protection Standard 29 CFR 1910.136), equivalent standards of Canada (including the Canadian CSA Respiratory Standard Z94.4-93-02, the CSA Eye Protection Standard Z94.3-M1982, Industrial Eye and Face Protectors and the Canadian CSA Foot Protection Standard Z195-M1984, *Protective Footwear*). Please reference applicable regulations and standards for relevant details.

8.2.1 Eye/Face Protection: Use approved safety goggles or safety glasses. If necessary, refer to appropriate regulations.

8.2.2 Skin Protection: Wear chemical impervious gloves (e.g., Nitrile or Neoprene). Use triple gloves for spill response. If necessary, refer to appropriate regulations.

8.2.3 Body Protection: Use body protection appropriate for task (e.g., lab coat, coveralls, Tyvek suit). If necessary, refer to the OSHA Technical Manual (Section VII: Personal Protective Equipment) or 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 appropriate regulations.

8.2.4 Respiratory Protection: If mists or sprays from this product are created during use, use appropriate respiratory protection. If necessary, use only respiratory protection authorized in appropriate regulations. Oxygen levels below 19.5% are considered IDLH by OSHA. In such atmospheres, use of a full-facepiece pressure/demand SCBA or a full facepiece, supplied air respirator with auxiliary self-contained air supply is required under appropriate regulations.

9. PHYSICAL and CHEMICAL PROPERTIES

9.1 FORM: Smooth sealant.
9.2 COLOR: Various colors.
9.3 MOLECULAR WEIGHT: Mixture.
9.4 MOLECULAR FORMULA: Mixture.
9.5 ODOR: Mild.
9.6 ODOR THRESHOLD: Not determined.
9.7 BOILING POINT: Not available.
9.8 FREEZING/MELTING POINT: Not available.
9.9 RELATIVE DENSITY/SPECIFIC GRAVITY (water = 1): 0.97
9.10 VAPOR DENSITY: (air = 1): > 1
9.11 VAPOR PRESSURE: Not available.
9.12 pH: Not available.
9.13 SOLUBILITY IN WATER: Not soluble.
9.14 OTHER SOLUBILITIES: Not known.
9.15 EVAPORATION RATE (nBuAc = 1): Not available.
9.16 VOLATILE ORGANIC COMPOUNDS (VOC): Not available.
9.17 FLAMMABILITY: Not flammable.
9.18 FLASH POINT: > 93.3°C (> 200°F)
9.19 AUTOIGNITION TEMPERATURE: Not determined.
9.20 FLAMMABLE LIMITS IN AIR: Not tested.
9.21 PERCENT VOLATILE BY VOLUME: < 1 g/L
9.22 COEFFICIENT WATER/OIL DISTRIBUTION: Not available.

9. PHYSICAL and CHEMICAL PROPERTIES (Continued)

9.23 VISCOSITY: Not available.

9.24 HOW TO DETECT THIS SUBSTANCE (WARNING PROPERTIES): The paste form of this product may act as a warning property in the event of an accidental release.

10. STABILITY and REACTIVITY

10.1 REACTIVITY: This product is not known to be reactive under normal circumstances of use and handling.

10.2 CHEMICAL STABILITY: Stable under normal circumstances of use and handling.

10.3 POSSIBILITY OF HAZARDOUS REACTIONS/POLYMERIZATION: This product is not expected polymerize.

10.4 CONDITIONS TO AVOID: Avoid contact with incompatible chemicals and exposure to ignition sources, prolonged heating or extreme temperatures.

10.5 INCOMPATIBLE MATERIALS: This product is not compatible with oxidizing agents, acids, bases, alcohols, amines, amides, mercaptan, phenols and isocyanates.

10.6 HAZARDOUS DECOMPOSITION PRODUCTS:

10.6.1 Combustion: Thermal decomposition of this product can generate calcium, carbon, potassium, sodium, silicon, titanium and nitrogen oxides and propylene glycol, acetaldehyde, furan, dioxalane, carbon, hydrogen cyanide and formaldehyde.

10.6.2 Hydrolysis: None known.

11. TOXICOLOGICAL INFORMATION

11.1 POTENTIAL HEALTH EFFECTS: The most significant routes of occupational exposure are contact with skin and eyes. The symptoms of exposure to this product are as follows:

11.1.1 Contact with Skin: Causes skin irritation. Depending on the duration of skin contact, skin exposure can cause reddening, discomfort or irritation. Contains multiple compounds that may cause skin sensitization and allergic reaction in susceptible individuals. Symptoms can include reddening of skin, rash, welts and itching. Once sensitized, exposure to very small amount can cause reactions.

11.1.1 Contact with Eyes: Although unlikely due to the form of the product, direct eye contact may cause serious eye irritation. Contact with fumes from heated product and the eyes can cause irritation, reddening and watering.

11.1.2 Skin Absorption: Prolonged skin contact may be harmful by skin absorption as described under ingestion or inhalation.

11.1.3 Ingestion: Although ingestion is unlikely in the workplace, if swallowed, irritation of the mouth, throat, and other tissues of the gastro-intestinal system can occur, as well as cause nausea, vomiting, and diarrhea.

11.1.4 Inhalation: Effects by inhalation are not likely to the paste form of the product. If heated to decomposition, inhalation of fumes may cause respiratory irritation. Inhalation of fumes may irritate the tissues of the nose, mouth, throat, and upper respiratory system. Symptoms of exposure may include coughing, sneezing, and difficulty breathing.

11.1.5 Injection: Accidental injection of this product (e.g., puncture with a contaminated object) may cause burning, redness, and swelling in addition to the wound.

11.1.6: Other Effects: None known.

11.2 DELAYED and IMMEDIATE EFFECTS and CHRONIC EFFECTS FROM SHORT-TERM and LONG-TERM EXPOSURE:

11.2.1 Short-Term: Direct eye contact may cause irritation. Skin contact and inhalation aerosols may be irritating. Ingestion may be harmful.

11.2.2 Long-Term: Prolonged or chronic skin contact may cause dermatitis or skin sensitization and allergic reaction in susceptible individuals. Chronic exposure may cause adverse effects on the liver, kidneys, thymus and endocrine system. Chronic exposure may pose a hazard of mutagenic effects.

11.3 TARGET ORGANS:

11.3.1 Short Term: Skin, eyes, respiratory system.

11.3.2 Long Term: Skin, liver, kidneys, thymus.

11.4 OVERALL ACUTE TOXICITY ESTIMATES (ATE) FOR PRODUCT:

11.4.1 Oral ATE: > 5100 mg/kg (< 98% unknown)

11.4.2 Dermal ATE: > 3100 mg/kg (41% unknown)

11.4.3 Inhalation Vapor ATE: Not determined due to large amount of unknown data (unknown-not determined)

11.5 TOXICITY DATA: The following toxicology data are available for components greater than 1% in concentration. Due to the large amount of data, only human data, LD50 Oral-Rat or Mouse, LD50 Skin-Rat or Mouse, LC50 Inhalation-Rat or Mouse and skin irritation data are provided in this SDS. Contact Pecora for more information.

Calcium Carbonate:
LD_{50} (Oral-Rat) 2000 mg/kg
LC_{50} (Inhalation-Rat) 4 hours: > 3.26 mg/L

Calcium Oxide:
LD_{50} (Oral-Rat) > 2000 mg/kg
LD_{50} (Skin-Rabbit) > 2500 mg/kg
LC_{50} (Inhalation-Rat) 4 hours: > 6.04 mg/L

Proprietary Terephthalate:
LD_{50} (Oral-Rat) > 5000 mg/kg

Proprietary Vegetable Oil:
LD_{50} (Oral-Rat) > 20,000 mg/kg
LD_{50} (Skin-Rat) > 2000 mg/kg
LC_{50} (Inhalation-Rat) 6 hours: > 1.86 mg/L

Proprietary Prepolymer:
LD_{50} (Oral-Rat) > 5000 mg/kg
LD_{50} (Skin Rat) > 2000 mg/kg
LC_{50} (Inhalation-Rat) 1 hour: > 0.17 mg/L (no deaths)

11.6 REPEATED DOSE TOXICITY:

2-(2H-Benzotriazol-2-yl-4,6-di-tert-pentylphenol: Repeated dose toxicity testing via oral route has shown systemic effects (target organ) digestive: liver; urogenital: kidneys. Based on the data, the test substance has to be classified for specific target organ toxicity - repeated exposure (STOT RE): Cat. 2.

Titanium Dioxide: Titanium dioxide did not show any adverse effects oral repeated dose toxicity studies. Titanium dioxide is not absorbed to any relevant extent through human skin; thus, no toxic effects can be expected via the dermal route of exposure. Titanium dioxide showed adverse pulmonary effects in chronic inhalation studies only at concentrations above the maximum tolerated dose (MTD).

11. TOXICOLOGICAL INFORMATION (Continued)

11.7 CARCINOGENIC POTENTIAL: The following table summarizes the carcinogenicity listing for the components of this product. "NO" indicates that the substance is not considered to be or suspected to be a carcinogen by the listed agency, see section 16 for definitions of other ratings.

CHEMICAL	IARC	EPA	NTP	NIOSH	ACGIH	OSHA	PROP 65
Titanium Dioxide	2B	No	No	Ca	A3	No	Yes (airborne particles of respirable size)

ACGIH TLV-A3: Confirmed Animal Carcinogen with Unknown Relevance to Humans. IARC-2B: Possibly Carcinogenic to Humans. NIOSH-Ca: Potential Occupational Carcinogen with no Further Categorization.

11.7.1 Additional Information on Carcinogenic Potential: None.

11.8 IRRITANCY OF PRODUCT: This product is irritating by skin exposure. Aerosols may be irritating to the respiratory system and eyes. Direct eye contact may cause more serious irritation.

11.9 SENSITIZATION TO THE PRODUCT: Multiple components have been classified as skin sensitizers as indicated below.

11.9.1 Skin Sensitization: The following information is available for the components that have been found to have skin sensitizing effects.

bis(1,2,2,6,6-pentamethyl-4-piperdyl) Sebacate: Based upon skin sensitization tests (in vivo (non-LLNA) 70% of the animals were sensitized by the test compound under the experimental conditions employed, this compound meets the criteria of Category 1A (indication of significant skin sensitizing potential) under GHS.

Ethylhexyl 4,4-dibutyl-10-ethyl-7-oxo-8-oxa-3,5-dithia-4-stannate-tetradecanoate: In a dermal sensitization study according to OECD 406, 10 week old male and female Pirbright White Guinea Pigs were exposed to TK 11638/1 in a maximization test. The test substance was found to be sensitizing according to GHS and should therefore be classified as H317 - May cause sensitization by skin contact.

Methyl 1,2,2,6-pentamethyl-4-piperdiyl Sebacate: Suspected Skin Sensitizer: CAESAR skin sensitization model in VEGA (Q)SAR platform predicts that the chemical is Sensitizer (good reliability).

11.9.2 Respiratory Sensitization: No component is known or suspected to cause respiratory sensitization effects in humans; no animal data available.

11.10 ENDOCRINE TOXICITY: The Ethylhexyl 4,4-dibutyl-10-ethyl-7-oxo-8-oxa-3,5-dithia-4-stannatetradecanoate compound is an organic dibutyltin compound. Organic tin compouunds are considered to be endocrine disruptors and may cause adverse effects on the thymus gland.

11.11 TOXICOLOGICAL SYNERGISTIC PRODUCTS: None known.

11.12 REPRODUCTIVE TOXICITY INFORMATION: This product has not been tested for reproductive toxicity.

11.12.1 Mutagenicity: No component of this product is known to cause human mutagenic effects. The following information is available for components.

Ethylhexyl 4,4-dibutyl-10-ethyl-7-oxo-8-oxa-3,5-dithia-4-stannate-tetradecanoate: Based upon *in Vivo* mutagenicity testing and positive results, this compound is classified as having mutagenic properties. According to Regulation (EC) no 1272/2008 the test substance would be classified as Muta. 2 with the Hazard statement: H341: Suspected of causing genetic defects and should be accompanied with the signal word 'Warning'.

11.12.2 Embryotoxicity/Teratogenicity: No data.

11.12.3 Reproductive Toxicity: No component has been classified as a reproductive toxin.

12. ECOLOGICAL INFORMATION

ALL WORK PRACTICES MUST BE AIMED AT ELIMINATING ENVIRONMENTAL CONTAMINATION.

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

12.2 PERSISTENCE AND BIODEGRADABILITY: This product has not been tested for persistence or biodegradability. Several trace compounds are suspected as being persistent and or non-biodegradable.

2-(2H-Benzotriazol-2-yl-4,6-di-tert-pentylphenol: Considered to be a PBT (Persistent, Bioaccumulative and Toxic) in the Environment Compound. Under Assessment as a POP (Persistent Organic Pollutant) Compound

Methyl 1,2,2,6-pentamethyl-4-piperdiyl Sebacate: Listed by the EU ECHA database as: Suspected Persistent in the Environment: The Danish QSAR database contains information indicating that the substance is predicted as non-readily biodegradable.

12.3 BIO-ACCUMULATION POTENTIAL: This product has not been tested for bio-accumulation potential. Multiple trace components are suspected as having bio-accumulation potential.

2-(2H-Benzotriazol-2-yl-4,6-di-tert-pentylphenol: Considered to be PBT (Persistent, Bioaccumulation and Toxic in the Environment).

Ethylhexyl 4,4-dibutyl-10-ethyl-7-oxo-8-oxa-3,5-dithia-4-stannate-tetra-decanoate: Considered to be PBT (Persistent, Bioaccumulation and Toxic in the Environment).

12.4 ECOTOXICITY: This product has not been tested for aquatic or animal toxicity. All release to terrestrial, atmospheric and aquatic environments should be avoided. The following aquatic toxicity data are presented for components present a significant toxic hazard to aquatic organisms.

bis(1,2,2,6,6-Pentamethyl-4-Piperidyl) Sebacate:
LC_{50} (*Danio reiro* Zebra fish) 96 hours: 0.97 mg/L
EC_{50} (*Daphnia magna* Big water flea) 24 hours: 1 mg/L
EC_{50} (*Desmodesmus subspicatus* Green algae) 72 hours: 1.68 mg/L

Ethylhexyl 4,4-dibutyl-10-ethyl-7-oxo-8-oxa-3,5-dithia-4-stanna-tetradecanoate
LC_{50} (*Brachydanio reiro* Zebra fish) 96 hours: 7.2-19.0 mg/L
LC_{50} (*Daphnia magna* Giant water flea) 48 hours: > 1.4 mg/L

Ethylhexyl 4,4-dibutyl-10-ethyl-7-oxo-8-oxa-3,5-dithia-4-stanna-tetradecanoate
EC_{50} (*Desmodesmus subspicatus* Green algae) 48 hours: 0.44-0.7 mg/L

Methyl 1,2,2,6,6,-Pentamethyl-4-Piperidyl Sebacate:
LC_{50} (*Lepomis macrochirus* Bluegill) 96 hours: 0.9 mg/L
LC_{50} (*Daphnia magna* Giant water flea) 21 days: 1 mg/L
EC_{50} (*Desmodesmus subspicatus* Green algae) 72 hours: 1.68 mg/L

12.4.1 GHS Statements for Environmental Hazards: P273: Avoid release to the environment.

12.5 OTHER ADVERSE EFFECTS: This product is not expected to have any ozone depletion potential.

12.6 ENDOCRINE DISRUPTORS: The trace Ethylhexyl 4,4-dibutyl-10-ethyl-7-oxo-8-oxa-3,5-dithia-4-stannate-tetradecanoate component is an organic dibutyltin compound, which are suspected endocrine disruptors. Endocrine disruptors that find their way into the environment can cause adverse effects on aquatic and terrestrial organisms.

12. ECOLOGICAL INFORMATION (Continued)

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

13. DISPOSAL CONSIDERATIONS

13.1 PREPARING WASTES FOR DISPOSAL: As supplied, this product is not a hazardous waste as defined by U.S. federal regulation (40 CFR 261) if discarded or disposed. State and local regulations may differ from federal regulations. he generator of the waste is responsible for proper waste determination and management.

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

13.2 U.S. EPA WASTE NUMBER: None applicable.

14. TRANSPORTATION INFORMATION

14.1 U.S. DEPARTMENT OF TRANSPORTATION (DOT): Not regulated per U.S. DOT regulations, under 49 CFR 172.101.

14.2 TRANSPORT CANADA TRANSPORTATION OF DANGEROUS GOODS REGULATIONS (TDG): Not regulated per regulations of Transport Canada.

14.3 INTERNATIONAL AIR TRANSPORT ASSOCIATION SHIPPING INFORMATION (IATA): Not regulated per the International Air Transport Association.

14.4 INTERNATIONAL MARITIME ORGANIZATION SHIPPING INFORMATION (IMO): Not regulated per the International Maritime Organization.

15. REGULATORY INFORMATION

15.1 U.S. REGULATIONS:

15.1.1 U.S. SARA Reporting Requirements: The following component of this product is subject to the reporting requirements of Sections 302, 304, and 313 of Title III of the Superfund Amendments and Reauthorization Act.

Proprietary Glycol: As a glycol ether, the Proprietary Glycol is subject to Section 313 TRI (Threshold) (40 CFR 372.65)

15.1.2 U.S. SARA Hazard Categories (Section 311/312, 40 CFR 370-21): ACUTE: Yes; CHRONIC: Yes; FIRE: No; REACTIVE: No; SUDDEN RELEASE: No

15.1.3 U.S. TSCA Inventory Status: All components of this product listed by CAS# in Section 3 are in compliance with the inventory listing requirements of the U.S. Toxic Substances Control Act (TSCA) Chemical Substance Inventory.

15.1.4 U.S. CERCLA Reportable Quantity (RQ): As a glycol ether compound, the Diethylene Glycol component is a CERCLA Hazardous Material, although it has no specific reportable quantity.

15.1.5 U.S. Clean Air Act (CA 112r) Threshold Quantity (TQ): Not applicable.

15.1.7 California Safe Drinking Water And Toxic Enforcement Act (Proposition 65): The Titanium Dioxide component is listed on the Proposition 65 lists, but only as airborne, unbound particles of respirable size, which is not applicable to this product. As such, the Proposition 65 warning for Titanium Dioxide is not applicable to this product.

15.2 CANADIAN REGULATIONS:

15.2.1 Canadian DSL/NDSL Inventory Status: The components of this product listed by CAS# in Section 3 are on the DSL Inventory.

15.2.2 Canadian Environmental Protection Act (CEPA) Priorities Substances Lists: Not applicable.

15.2.3 Canadian WHMIS (HPR-GHS) 2015 Classification and Symbols: See Section 16 in Classification and Symbols under HPR-GHS 2015.

16. OTHER INFORMATION

16.1 HAZARDOUS MATERIALS IDENTIFICATION SYSTEM (HMIS®)

Health	**2***
Flammability	**1**
Physical Hazard	**0**

See Section 16 for definitions of ratings

0 = Minimal 3 = Serious
1 = Slight 4 = Severe
2 = Moderate * = Chronic

HMIS® is a registered trademark of the National Paint and Coatings Association.

16.2 REFERENCES AND DATA SOURCES: Contact the supplier for information.

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

16.4 DATE OF PREPARATION: July 10, 2023

16.5 REVISION DETAILS: New.

16.6 DISCLAIMER OF EXPRESSED AND IMPLIED WARRANTIES

The information presented in this Safety Data Sheet is presented in good faith based on data believed to be accurate as of the date this Safety Data Sheet was prepared. HOWEVER, NO WARRANTY OF MERCHANTABILITY, FITNESS FOR ANY PARTICULAR PURPOSE, OR ANY OTHER WARRANTY IS EXPRESSED OR IS TO BE IMPLIED REGARDING THE ACCURACY OR COMPLETENESS OF THE INFORMATION PROVIDED ABOVE, THE RESULTS TO BE OBTAINED FROM THE USE OF THIS INFORMATION OR THE PRODUCT, THE SAFETY OF THIS PRODUCT, OR THE HAZARDS RELATED TO ITS USE. In no case shall the descriptions, information, data or designs provided be considered a part of our terms and conditions of sale.

All materials may present hazards and should be used with caution. Because many factors may affect processing or application/use, we recommend that you make tests to determine the suitability of a product for your particular purpose prior to use. No responsibility is assumed for any damage or injury resulting from abnormal use or from any failure to adhere to recommended practices or applicable federal, state, or local laws or regulations. The information provided above, and the product, are furnished on the condition that the person receiving them shall make their own determination as to the suitability of the product for their particular purpose and on the condition that they assume the risk of their use. In addition, no authorization is given nor implied to practice any patented invention without a license.

16. OTHER INFORMATION (Continued)

16.2 DEFINITIONS OF TERMS

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

KEY ACRONYMS:

CHEMTREC: Chemical Transportation Emergency Center, a 24-hour emergency information and/or emergency assistance to emergency responders.
CEILING LEVEL: The concentration that shall not be exceeded during any part of the working exposure.
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.
TLV: Threshold Limit Value. An airborne concentration of a substance that represents conditions under which it is generally believed that nearly all workers may be repeatedly exposed without adverse effect. The duration must be considered, including the 8-hour.
TWA: Time Weighted Average exposure concentration for a conventional 8-hr (TLV, PEL) or up to a 10-hr (REL) workday and a 40-hr workweek.
WEEL: Workplace Environmental Exposure Limits from the AIHA.

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS:

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

HEALTH HAZARD: 0 Minimal Hazard: No significant health risk, irritation of skin or eyes not anticipated. *Skin Irritation*: Essentially non-irritating. Mechanical irritation may occur. PII or Draize = 0. *Eye Irritation*: Essentially non-irritating, minimal effects clearing in < 24 hours. Mechanical irritation may occur. Draize = 0. *Oral Toxicity 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 exposure; 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) (e.g., 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. **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) (e.g., 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) (e.g., OSHA Class IA); and Materials that ignite spontaneously when exposed to air at a temperature of 54.4°C (130°F) or below (pyrophoric).

HAZARDOUS MATERIALS IDENTIFICATION SYSTEM HAZARD RATINGS (continued):

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. *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. **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.

16.2 DEFINITIONS OF TERMS (continued)

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

HEALTH HAZARD (continued): 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) (e.g., 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) (e.g., 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) (e.g., 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) (e.g., 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.

NATIONAL FIRE PROTECTION ASSOCIATION HAZARD RATINGS (continued):

INSTABILITY HAZARD: 0 Materials that in themselves are normally stable, even under fire conditions. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) below 0.01 W/mL. Materials that do not exhibit an exotherm at temperatures less than or equal to 500°C (932°F) when tested by differential scanning calorimetry. **1** Materials that in themselves are normally stable, but that can become unstable at elevated temperatures and pressures. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 0.01 W/mL and below 10 W/mL. **2** Materials that readily undergo violent chemical change at elevated temperatures and pressures. Materials that have an instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 10 W/mL and below 100W/mL. **3** Materials that in themselves are capable of detonation or explosive decomposition or explosive reaction, but that require a strong initiating source or that must be heated under confinement before initiation. Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) at or above 100 W/mL and below 1000 W/mL. Materials that are sensitive to thermal or mechanical shock at elevated temperatures and pressures. **4** Materials that in themselves are readily capable of detonation or explosive decomposition or explosive reaction at normal temperatures and pressures. Materials that are sensitive to localized thermal or mechanical shock at normal temperatures and pressures. Materials that have an estimated instantaneous power density (product of heat of reaction and reaction rate) at 250°C (482°F) of 1000 W/mL or greater.

FLAMMABILITY LIMITS IN AIR:

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

TOXICOLOGICAL INFORMATION:

Human and Animal Toxicology: Possible health hazards as derived from human data, animal studies, or from the results of studies with similar compounds are presented. 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. **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 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 (e.g., 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.:

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

CANADA:

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