



Material Safety Data Sheet

Product No. 18306-4221 ERL 4221

Issue Date (04-05-05)

Review Date (06-01-12)

Section 1: Product and Company Identification

Product Name: ERL 4221

Chemical Name: 7-Oxabicyclo (4.1.0) heptane-3-carboxylic acid, 7-oxabicyclo (4.1.0) hept-3-ylmethyl ester

Synonym: 3, 4-Epoxy cyclohexylmethyl 3, 4-epoxy cyclohexanecarboxylate*, ERL-4221, Cycloaliphatic Epoxide Resin

Company Name

Ted Pella, Inc., P.O. Box 492477, Redding, CA 96049-2477

Domestic Phone (800) 237-3526 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)

International Phone (01) (530) 243-2200 (Mon-Thu. 6:00AM to 4:30PM PST; Fri 6:00AM to 4:00PM PST)

Chemtrec Emergency Number 1-800-424-9300 24 hrs a day.

Section 2: Composition / Information on Ingredients

Principle Hazardous Component(s) (chemical and common name(s)) (Cas. No)	%	OSHA PEL mg/m ³	ACGIH TLV mg/m ³	NTP	IARC	OSHA regulated
7-Oxabicyclo[4.1.0]heptane-3-carboxylic acid, 7-oxabicyclo[4.1.0]hept-3-ylmethyl ester * (2386-87-0)	≥ 82 ≤ 89	NE	NE	ND	ND	ND
Soluble Oligomer (No Cas. No.)	≥ 8 ≤ 13	NE	NE	ND	ND	ND
Monoepoxides of 3-cyclohexenylmethyl-3-cyclohexene carboxylate (No Cas. No.)	≥ 3 ≤ 5	NE	NE	ND	ND	ND
3-Cyclohexene-1-carboxylic acid, 3-cyclohexen-1-ylmethyl ester (2611-00-9)	≤ 0.3	NE	NE	ND	ND	ND

Section 3: Hazard Identification

Emergency overview

Appearance: Liquid.

Immediate effects: Irritant. May cause sensitization by skin contact. Target organ(s): Kidneys, liver and respiratory system.

Potential health effects

Primary Routes of entry: Ingestion, eye and skin contact.

Signs and Symptoms of Overexposure: To the best of our knowledge, the chemical, physical and toxicological properties have not been thoroughly investigated.

Eyes: May cause eye irritation.

Skin: May cause skin irritation. May be harmful if absorbed through the skin and may cause allergic skin reactions.

Ingestion: May be harmful if swallowed.

Inhalation: May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Chronic Exposure: ND

Chemical Listed As Carcinogen Or Potential Carcinogen: None.

See Toxicological Information (Section 11)

Potential environmental effects

See Ecological Information (Section 12)

Section 4: First Aid Measures

If accidental overexposure is suspected

Eye(s): Contact: In case of contact with eyes, flush with copious amount of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

Skin Contact: In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes.

Inhalation: If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

Ingestion: If swallowed, wash out mouth with water provided person is conscious. Call a physician.

Note to physician

Treatment: ND

Medical Conditions generally Aggravated by Exposure: ND

Section 5: Fire Fighting Measures

Flash Point: 245 °F (118 °C), Method: Closed cup.

Flammable Limits: ND

Auto-ignition point: ND

Fire Extinguishing Media: Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

Special Fire Fighting Procedures: Protective equipment: Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes. Do not direct a solid stream of water at burning material as spattering may result.

Unusual Fire and Explosion Hazards: Emits toxic fumes under fire conditions. Container explosion may occur under fire conditions.

Hazardous combustion products: Toxic fumes, carbon dioxide, carbon monoxide and phenolics.

DOT Class: Not regulated.

Section 6: Accidental Release Measures

Steps to be Taken in Case Material is Released or Spilled: Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves. Cover with dry lime or soda ash, pick up, keep in a closed container, and hold for waste disposal. Ventilate area and wash spill site after material pickup is complete.

Waste Disposal Methods: Dispose of waste according to Federal, State and Local Regulations.

Section 7: Handling and Storage

Precautions to be Taken in Handling and Storage: User exposure: Do not breathe vapor. Do not get in eyes, on skin, or on clothing. Keep tightly closed.

Storage temperature: Ambient temperature.

Storage Pressure: NA

Section 8: Exposure Controls / Personal Protection

Engineering Controls

Ventilation required: Good general ventilation should be sufficient for most conditions.

Local exhaust ventilation may be necessary for some operations.

Personal Protection Equipment

Respiratory protection: No respiratory protection should be needed

Protective gloves: Wear chemical-resistant gloves.

Skin protection: Wear protective clothing. Wash thoroughly after handling. Wash contaminated clothing before reuse.

Eye protection: Wear safety goggles.

Additional clothing and/or equipment: NIF

Exposure Guidelines

See Composition/Information on Ingredients (Section2)

Section 9 Physical and Chemical Properties

Appearance and Physical State: Liquid.

Odor (threshold): Odorless

Specific Gravity (H₂O=1): 1.17 g/cm³

Vapor Pressure (mm Hg): <0.01 mm Hg at 20°C

VOC 0.00g/L

Vapor Density (air=1): 9

Percent Volatile by volume: ND

Evaporation Rate (butyl acetate=1): ND

Boiling Point: ND

Freezing point / melting point: -37°C

pH: ND

Solubility in Water: < 0.1% (by weight)

Molecular Weight: 252.31 AMU

Partition Coefficient: Log Kow: 1.34

Section 10: Stability and Reactivity

Stability: Stable.

Conditions to Avoid: Incompatible materials.

Materials to Avoid (Incompatibility): Amines, acids, bases, oxidizing agents,

Hazardous Decomposition Products: Carbon monoxides, carbon dioxides, and phenolics.

Hazardous Polymerization: Will not occur.

Section 11: Toxicological Information

Results of component toxicity test performed: Oral, rat, LD50: 4490 mg/kg. Peroral, rat, LD50: 5000 mg/kg; approximately. Skin, rabbit, LD50: 20 ml/kg. Percutaneous, rabbit, LD50: 23000mg/kg.

Developmental Toxicity: Did not cause birth defects in laboratory animals. Has been toxic to the fetus in lab animals at doses toxic to the mother.

Reproductive Toxicity: Limited data in laboratory animals suggest that the material does not affect reproduction.

Chronic toxicity and carcinogenicity: Did not cause cancer in animal skin painting studies.

Genetic toxicology: In Vitro genetic toxicity studies were negative in some cases and positive in other cases. In vivo animal genetic toxicity studies were negative.

Significant data with possible relevance to humans: In animals, effects have been reported on the following organs: Kidney, liver. Upper respiratory tract.

Human experience: NIF

This product **does not** contain any compounds listed by NTP or IARC or regulated by OSHA as a carcinogen.

Section 12: Ecological Information

Ecological Information: Material is slightly toxic to aquatic organisms on an acute basis (LC50/EC50 between 10 and 100 mg/L in the most sensitive species tested)

Toxicity to Aquatic Invertebrates: Water flea, *Daphnia magna*; Acute immobilization EC50. Result Value: 40 mg/L.

Toxicity to Aquatic Plants: Green alga *Selenastrum capricornutum*; Growth inhibition; EC50. Result Value: 90 mg/L.

Toxicity to Fish: Rainbow trout (*Oncorhynchus mykiss*); Acute LC50. Result Value: 24 mg/L.

Further Information: Bioconcentration potential is low (BCF<100or Log Pow<3).

Potential for mobility in soil is very high (Koc from 0 to 50). Soil organic carbon/water partition coefficient (Koc) is estimated to be: 29. Henry's law constant (H) is estimated to be: 3.60E-10 atm-m³/mole. Theoretical Oxygen Demand (ThOD) – calculated: 2.16 mg/mg

Octanol/Water partition coefficient – Measured: 1.34

Chemical Fate Information: Based on stringent OECD test guidelines, this material cannot be considered as readily biodegradable; however

Section 13 Disposal Considerations

RCRA 40 CFR 261 Classification: Contact a licensed professional waste disposal service to dispose of this material.

Federal, State and local laws governing disposal of materials can differ. Ensure proper disposal compliance with proper authorities before disposal.

Section 14: Transportation Information

US DOT Information: Proper shipping name: None, Non-hazardous for transport.

IATA: Proper shipping name: None, Non-hazardous for transport.

Domestic shipments only: NA

IMO: Proper shipping name: None

EMS: NA

MFAG: NA

Marine Pollutant: No

Canadian TDG: ND

IMDG Page: ND

Limitations: ND

Section 15: Regulatory Information

United States Federal Regulations

MSDS complies with OSHA's Hazard Communication Rule 29, CFR 1910.1200.

SARA: Section 302: To the best of our knowledge this product does not contain chemicals at levels which require reporting under this statute.

Section 311/312: Delayed (Chronic) Health Hazard: Yes. Fire Hazard: No. Immediate (Acute) Health Hazard: Yes. Reactive Hazard: Yes. Sudden Release of Pressure Hazard: No

SARA Title III: Section 313: To the best of our knowledge this product does not contain chemicals at levels which require reporting under this statute.

RCRA: To the best of our knowledge this product does not contain chemicals at levels which require reporting under this statute.

TSCA: All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements.

CERCLA: To the best of our knowledge this product does not contain chemicals at levels which require reporting under this statute.

RTECS Number: RN7750000

State Regulations

California Proposition 65: None

International Regulations

Canada WHMIS: Classification: This product has been classified in accordance with the hazard criteria of the CPR, and the MSDS contains all the information required by the CPR. DSL: Yes. NDSL: No.

Europe EINECS Numbers: ND

Section 16: Other Information

Label Information: US classification and label text; Indication of danger: Irritant. Risk Statement: May cause sensitization by skin contact. Safety statements: Wear suitable protective clothing and gloves. US statements: Target organ(s): Kidneys. Liver.

European Risk and Safety Phrases: R: 43, May cause sensitization by skin contact. S: 36/37, Wear suitable protective clothing and gloves.

European symbols needed: Symbol of Danger: Xi; Indication of Danger: Irritant.

Canadian WHMIS Symbols: ND

For R&D use only. Not for drug, household or other uses.

HMIS® Hazard Rating: Health: **3***; Flammability: **1**; Physical Hazard: **1**; Personal Protection: See Section 8.

*Additional chronic hazards present.

NFPA Hazard Rating: Health: **3**; Flammability: **1**; Reactivity: **1**

(0=least, 1=Slight, 2=Moderate, 3=High, 4=Extreme)

Abbreviations used in this document

NE= Not established

NA= Not applicable

NIF= No Information Found

ND= No Data

Disclaimer

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