

Material Safety Data Sheet

Final 11/09/2004

Material Name: Avatrel 2580-20 Polymer/US/Canada/Japan

Document:
AVA2580-20***** Section 1 - Chemical Product and Company Identification *******Chemical Name** Avatrel 2580-20 Polymer

Company Identification: Promerus LLC
9921 Brecksville Road
Brecksville, OH 44141-3289
United States of America

Phone Number: 330-328-8186
Emergency Phone Number: 1-888-211-4441

***** Section 2 - Composition / Information on Ingredients *****

CAS #	Component	Percent
110-43-0	2-Heptanone	20-85
Proprietary	Cyclic olefin polymer	15-60

Component Related Regulatory Information

This product may be regulated, have exposure limits or other information identified as the following: Flammable substances meeting the definition of risk phrase R10.

Component Information/Information on Non-Hazardous Components

This product has been evaluated using criteria specified in 29 CFR 1910.1200 (Hazard Communication Standard).

This product has been evaluated according to Canada's Controlled Product Regulation.

THIS MATERIAL IS SOLELY FOR RESEARCH AND DEVELOPMENT USE. It is not know to be on the TSCA, DSL/NDSL or METI Inventories and cannot be distributed by itself or as part of another product in commerce. Its use is to be by or under the supervision of a technically qualified person. The physical, chemical and toxicological properties of this substance have not been fully determined.

***** Section 3 - Hazards Identification *******Emergency Overview**

Product is a colorless liquid with a fruity odor.

Combustible liquid.

This product is irritating to the eyes and skin. This product may cause irritation to the respiratory system. Excessive inhalation of this material causes headache, dizziness, nausea and incoordination. May be harmful if absorbed through the skin. Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury. May form peroxides during prolonged storage. May cause skin sensitization.

Target Organs

Eyes, Skin, Central Nervous System, Respiratory System and Peripheral Nervous System

Potential Health Effects: Eyes

This product is irritating to the eyes. Symptoms may include reddening, itching and inflammation.

Potential Health Effects: Skin

Repeated or prolonged skin contact may cause irritation.

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Potential Health Effects: Ingestion

Ingestion of this product is unlikely. However, ingestion of product may produce gastrointestinal irritation and disturbances. This product is harmful if swallowed.

Potential Health Effects: Inhalation

Processing fumes or vapors may cause respiratory tract irritation. Material is irritating to mucous membranes and upper respiratory tract. This product may be harmful by inhalation.

Medical Conditions Aggravated by Exposure

Pre-existing skin problems may be aggravated by prolonged or repeated contact. Individuals with pre-existing skin disorders, eye problems or impaired respiratory function may be more susceptible to the effects of this substance. Persons with sensitive airways (e.g., asthmatics) may react to airborne vapors.

HMIS Ratings: Health: 2* Fire: 2 Physical Hazard: 0 Pers. Prot.:

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

*** Section 4 - First Aid Measures ***

First Aid: Eyes

Immediately flush eyes with plenty of water for at least 15 minutes. If irritation persists get medical attention.

First Aid: Skin

Wash the affected area thoroughly with plenty of water and soap. If irritation persists, get medical attention. Wash contaminated clothing before reuse.

First Aid: Ingestion

If the material is swallowed, get immediate medical attention or advice -- Do not induce vomiting. Prevent aspiration of material into lungs.

First Aid: Inhalation

If inhaled, immediately remove the affected person to fresh air. If the affected person is not breathing, apply artificial respiration. If symptoms persist, get medical attention.

First Aid: Notes to Physician

This material, if aspirated into the lungs, may cause chemical pneumonitis; treat the affected person appropriately.

*** Section 5 - Fire Fighting Measures ***

Flash Point: 105.8°F

Upper Flammable Limit (UFL): 7.9% @121°F

Auto Ignition: 393°C

Rate of Burning: Not applicable

Method Used: Not applicable

Lower Flammable Limit (LFL): 1.11@ 65°F

Flammability Classification: NFPA Level II Combustible

General Fire Hazards

This product is an NFPA Level II Combustible liquid.

Hot vapor or mists may be susceptible to spontaneous combustion when mixed with air. Ignition temperatures decrease with increasing vapor volume and vapor/air contact time and are influenced by pressure changes.

Therefore, ignition may occur below published ignition temperatures. Use of this product in processes involving elevated-temperatures, vacuum if subject to sudden ingress of air, sudden escape of vapor or mist, etc., must be thoroughly evaluated to assure safe operation. Exposing closed containers to heat may cause excessive pressure resulting in explosive rupture.

Hazardous Combustion Products

Upon decomposition, this product emits carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

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Extinguishing Media

Dry chemical, foam, carbon dioxide. Use water to cool fire-exposed containers and to protect personnel.

Fire Fighting Equipment/Instructions

Wear self-contained breathing apparatus (SCBA) equipped with a full facepiece and operated in a pressure-demand mode (or other positive pressure mode) and approved protective clothing. Personnel without suitable respiratory protection must leave the area to prevent significant exposure to hazardous gases from combustion, burning or decomposition. In an enclosed or poorly ventilated area, wear SCBA during cleanup immediately after a fire as well as during the attack phase of firefighting operations.

NFPA Ratings: Health: 2 Fire: 2 Reactivity: 0

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

*** Section 6 - Accidental Release Measures ***

Containment Procedures

Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Prevent flow into public sewer (explosion hazard), streams or other water systems. Clean up spills immediately. Wear proper personal protective clothing and equipment. Remove sources of ignition. Use spark proof tools. Ventilate the area.

Clean-Up Procedures

Combustible liquid. Eliminate all ignition sources. Ventilate the contaminated area. If spill is large, be prepared to isolate the hazard area. Deny access to the spill area to persons who are not involved in the cleanup and/or who have not been properly trained in spill management of hazardous/flammable liquids. Absorb spill with inert material. Shovel material into appropriate container for disposal. Put material in suitable, covered, labeled containers. Ventilate the contaminated area.

Special Procedures

Spillage may cause SLIPPERY CONDITIONS (especially when wet).

*** Section 7 - Handling and Storage ***

Handling Procedures

Avoid contact with skin and eyes. Avoid prolonged or repeated skin contact with this material. Avoid breathing vapors or mists of this product. Use this product with adequate ventilation. Keep away from heat, sparks, flames and direct sunlight. DO NOT cut, puncture or weld on or near this container. Do not apply pressure to this container. Containers should be bonded and grounded during transfer of material. Wash thoroughly after handling.

Storage Procedures

Store in a cool, dry, and well-ventilated area. Store in flammable storage area and away from heat and open flame. Avoid storing containers in direct sunlight as vapors may accumulate in the head space creating pressure. Do not store in open, unlabeled or mislabeled containers. Keep container closed when not in use. Keep container upright, when not in use, to prevent leakage. Open containers carefully and slowly. Emptied container may contain residual vapors or liquid which may ignite or explode. Do not reuse empty container without commercial cleaning or reconditioning.

*** Section 8 - Exposure Controls / Personal Protection ***

Exposure Guidelines

A: General Product Information

Keep all exposures to a minimum.

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B: Component Exposure Limits

2-Heptanone (110-43-0)

ACGIH: 50 ppm TWA

OSHA: 100 ppm TWA; 465 mg/m³ TWA

NIOSH: 100 ppm TWA; 465 mg/m³ TWA

Engineering Controls

Ventilation should effectively remove and prevent buildup of any vapor or mist generated from the handling of this product.

PERSONAL PROTECTIVE EQUIPMENT

Personal Protective Equipment: Eyes/Face

Wear chemical goggles; add face shield (if splashing is possible).

Personal Protective Equipment: Skin

Wear protective gloves. Use chemical resistant protective clothing.

Personal Protective Equipment: Respiratory

If ventilation is not sufficient to effectively prevent buildup of aerosols or mists, appropriate NIOSH approved respiratory protection must be provided. Use respiratory protection in accordance with your company's respiratory protection program, local regulations or OSHA regulations under 29 CFR 1910.134.

Personal Protective Equipment: General

Eye wash fountain and emergency showers are recommended.

*** Section 9 - Physical & Chemical Properties ***

Appearance: Colorless Liquid
Physical State: Liquid
Vapor Pressure: 2.6mm@ 20°C
Boiling Point: 149-150°C
Solubility (H₂O): 4.3g/L (20°C)

Odor: Fruity
pH: Not applicable
Vapor Density: 3.9
Melting Point: -35°C
Specific Gravity: 0.815

Physical Properties: Additional Information

Molecular Weight: 114.19g/mole

*** Section 10 - Chemical Stability & Reactivity Information ***

Chemical Stability

Stable under normal temperatures and pressures.

Chemical Stability: Conditions to Avoid

Avoid heat, ignition sources, oxidizing agents, strong acids, strong bases

Incompatibility

May react with strong oxidizing agents, acids, or bases.

Hazardous Decomposition

Upon decomposition, this product emits peroxides, carbon monoxide, carbon dioxide and/or low molecular weight hydrocarbons.

Hazardous Polymerization

Hazardous polymerization will not occur.

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*** Section 11 - Toxicological Information ***

Acute and Chronic Toxicity

A: General Product Information

No toxicity studies have been conducted on this product. As with all chemicals for which test data are limited or do not exist, caution must be exercised through the prudent use of protective equipment and handling procedures to minimize exposure.

B: Component Analysis - LD50/LC50

2-Heptanone (110-43-0)

Test & Species

Oral LD50 Rat
Oral LD50 Mouse
Dermal LD50 Rabbit

Data

1670 mg/kg
730 mg/kg
12600 µL/kg

Carcinogenicity

A: General Product Information

No information available for the product.

B: Component Carcinogenicity

None of the components in Section 2 are listed by ACGIH, IARC, OSHA, NIOSH, or NTP.

Chronic Toxicity

No information available for the product.

Epidemiology

No information available.

Neurotoxicity

No information available.

Mutagenicity

No information available.

Teratogenicity

No information available.

Other Toxicological Information

No information available.

2-HEPTANONE (ALDRICH)

ROUTES OF EXPOSURE

SKIN CONTACT: CAUSES SKIN IRRITATION

SKIN ABSORPTION: MAY BE HARMFUL IF ABSORBED THROUGH THE SKIN

EYE CONTACT: CAUSES EYE IRRITATION

INHALATION: MATERIAL IS IRRITATING TO MUCOUS MEMBRANES AND UPPER RESPIRATORY TRACT.

HARMFUL IF SWALLOWED.

TARGET ORGANS OR SYSTEM

CENTRAL NERVOUS SYSTEM. EYES. SKIN. RESPIRATORY SYSTEM. PERIPHERAL NERVOUS SYSTEM

SIGNS AND SYMPTOMS OF EXPOSURE

TO THE BEST OF OUR KNOWLEDGE, THE CHEMICAL, PHYSICAL AND TOXICOLOGICAL PROPERTIES HAVE NOT BEEN THOROUGHLY INVESTIGATED.

CAN CAUSE CNS DEPRESSION

TOXICITY DATA

ORAL RAT: LD50=1670 MG/KG

INTRAPERITONEAL RAT: LD 50=800 MG/KG

ORAL MOUSE: LD50=730 MG/KG

INTRAPERITONEAL MOUSE: 400 MG/KG

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SKIN RABBIT: LD 50=12600 UL/KG

IRRITATION DATA

SKIN RABBIT: 14 MG

24H

REMARKS: OPEN IRRITATION TEST

*** Section 12 - Ecological Information ***

Ecotoxicity

A: General Product Information

No ecotoxicity testing has been conducted on this product.

B: Component Analysis

2-Heptanone (110-43-0)

Ecotoxicity: Fish: Fathead Minnow: LC50 = 131.0 mg/L; 96 Hr.; Flow-through Bioassay

Environmental: If released to soil, calculated soil adsorption coefficients ranging from 44-285 indicate that 2-heptanone may display moderate to high mobility and it has the potential to leach into groundwater. Heptanone has the potential to biodegrade in soil. If released to water, 2-heptanone is expected to rapidly volatilize to the atmosphere. The half-life for volatilization from a model river 1 m deep, flowing at 1 m/sec with a wind speed of 3 m/sec is 8.4hr.

Physical: If released to the atmosphere, 2-heptanone is expected to undergo a gas-phase reaction with photochemically produced hydroxyl radicals; the estimated half-life for this process is 1.9days.

Other: 2-Heptanone had a theoretical biological oxygen demand (BOD) of 1.4%, 2.4% and 4.8% after 6, 12 and 24 hr, respectively, when incubated with a activated sludge seed at an initial concentration of 500 ppm. 2-Heptanone underwent a 5 day theoretical BOD of 44%. In a screening study using a sewage seed, 2-heptanone had a 10 day BOD of 0.50 g/g.

2-Heptanone (Aldrich)

PHYSICAL PROPERTIES AFFECTING ECOTOXICITY

BOD after 5 Days: 1.77%

ACUTE ECOTOXICITY TESTS

Test Type: LC50 Fish

Species: Pimephales promelas (Fathead minnow)

Time: 96h

Value: 126-137 mg/L

C: Component Analysis - Ecotoxicity - Aquatic Toxicity

2-Heptanone (110-43-0)

Test & Species	Data	Conditions
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96 Hr LC50 fathead minnow	131.0 mg/L	flow-through
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Environmental Fate

No ecological testing has been conducted on this product.

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*** Section 13 - Disposal Considerations ***

US EPA Waste Number & Descriptions

If discarded, this product is considered a RCRA ignitable waste, D001. Wastes must be tested using methods described in 40 CFR Part 261 to determine if it meets applicable definitions of hazardous wastes.

Disposal Instructions

Liquids cannot be disposed of in a landfill.

*** Section 14 - Transportation Information ***

US DOT Information

Shipping Name: Flammable liquids, n.o.s. (Contains: 2-Heptanone)

Proper Shipper Name: n-Amyl methyl ketone, Mixture

UN#: 1110

Class: 3

Packing Group: III

Additional Shipping Information: Flash point 41°C

TDG Information

Shipping Name: Flammable liquid, n.o.s. (Contains: 2-Heptanone)

Proper Shipper Name: n-Amyl methyl ketone, Mixture

UN#: 1110

Class: 3

Packing Group: III

Additional Shipping Information: Flash point 41°C

ICAO Information

Shipping Name: Flammable liquid, n.o.s. (Contains: [110-43-0])

Proper Shipper Name: n-Amyl methyl ketone, Mixture

UN#: 1110

Class: 3

Packing Group: III

Additional Shipping Information: Flash point 41°C

IATA Information

Shipping Name: Flammable liquid, n.o.s. (Contains: [110-43-0])

Proper Shipper Name: n-Amyl methyl ketone, Mixture

UN#: 1110

Class: 3

Packing Group: III

Additional Shipping Information: Flash point 41°C

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ADR Information

Shipping Name: Flammable liquid, n.o.s. (Contains: 2-Heptanone)

Proper Shipper Name: n-Amyl methyl ketone, Mixture

UN#: 1110

Class: 3

Packing Group: III

Additional Shipping Information: Flash point 41°C

RID Information

Shipping Name: Flammable liquid, n.o.s. (Contains: 2-Heptanone)

Proper Shipper Name: n-Amyl methyl ketone, Mixture

UN#: 1110

Class: 3

Packing Group: III

Additional Shipping Information: Flash point 41°C

IMDG Information

Shipping Name: Flammable liquid, n.o.s. (Contains: 2-Heptanone)

Proper Shipper Name: n-Amyl methyl ketone, Mixture

UN#: 1110

Class: 3

Packing Group: III

Additional Shipping Information: Flash point 41°C

*** Section 15 - Regulatory Information ***

Additional Regulatory Information

A: General Product Information

THIS MATERIAL IS SOLELY FOR RESEARCH AND DEVELOPMENT USE. It is not known to be on the TSCA, DSL/NDSL, or METI Inventories and cannot be distributed by itself or as part of another product in commerce. Its use is to be by or under the supervision of a technically qualified person. The physical, chemical and toxicological properties of this substance have not been fully determined.

B: Component Analysis - Inventory

Component	CAS #	TSCA	Canada	EU	METI
2-Heptanone	110-43-0	Yes	DSL	EINE CS	Yes
Cyclic olefin polymer	Proprietary	NO	NO	NO	NO

C: Japan List of Designated Chemical Substances

None of the components in this product are listed on the Japanese List of Hazardous Substances.

US Federal Regulations

A: General Product Information

No additional information available.

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B: U.S. EPA TSCA 12(b) Export Notification

This product contains a chemical or chemicals that require Export Notification.

C: Component Analysis

None of this product's components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

SARA 311/312 - Acute Health: Yes Chronic Health: Yes Fire: Yes Pressure: No Reactive: No

State Regulations

A: General Product Information

Other state regulations may apply. Check individual state requirements.

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
2-Heptanone	110-43-0	Yes	Yes	Yes	Yes	Yes	Yes

Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
2-Heptanone	110-43-0	1 % (English Item 1015, French Item 1114); 1 % (English Item 1016, French Item 1115)

*** Section 15 - Regulatory Information ***

Additional Regulatory Information

A: General Product Information

Components of this product have been checked against the non-confidential TSCA inventory by CAS Registry Number. Components not identified on this non-confidential inventory are either exempt from listing (i.e. polymers, hydrates) or are listed on the confidential inventory as declared by the supplier.

The cyclic olefin polymer in this product meets the requirements of the TSCA Polymer Exemption.

The polycyclic olefin in this product was granted a low volume exemption under the Japan Substance Control Law (expires March, 2005).

B: Component Analysis - Inventory

Component	CAS #	TSCA	Canada	EU	METI
2-Heptanone	110-43-0	Yes	DSL	EINE CS	Yes

C: Japan List of Designated Chemical Substances

None of the components in this product are listed on the Japanese List of Hazardous Substances.

US Federal Regulations

A: General Product Information

Components of this product have been checked against the non-confidential TSCA inventory by CAS Registry Number. Components not identified on this non-confidential inventory are either exempt from listing (i.e. polymers, hydrates) or are listed on the confidential inventory as declared by the supplier.

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B: U.S. EPA TSCA 12(b) Export Notification

This product contains a chemical or chemicals that require Export Notification.

C: Component Analysis

None of this product's components are listed under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65), or CERCLA (40 CFR 302.4).

SARA 311/312 - Acute Health: No Chronic Health: No Fire: No Pressure: No Reactive: No

State Regulations

A: General Product Information

Other state regulations may apply. Check individual state requirements.

B: Component Analysis - State

The following components appear on one or more of the following state hazardous substances lists:

Component	CAS	CA	MA	MN	NJ	PA	RI
2-Heptanone	110-43-0	Yes	Yes	Yes	Yes	Yes	Yes

Canadian WHMIS Information

A: General Product Information

This product is not controlled under the Canadian Workplace Hazardous Materials Information System (WHMIS).

B: Component Analysis - WHMIS IDL

The following components are identified under the Canadian Hazardous Products Act Ingredient Disclosure List:

Component	CAS #	Minimum Concentration
2-Heptanone	110-43-0	1 % (English Item 1015, French Item 1114); 1 % (English Item 1016, French Item 1115)

*** Section 16 - Other Information ***

Other Information

Reasonable care has been taken in the preparation of this information, but the manufacturer makes no warranty of merchantability or any other warranty, expressed or implied, with respect to this information. The manufacturer makes no representations and assumes no liability for any direct, incidental or consequential damages resulting from its use.

This bulletin cannot cover all possible situations which the user may experience during processing. Each aspect of your operation should be examined to determine if, or where, additional precautions may be necessary. All health and safety information contained in this bulletin should be provided to your employees or customers. It is your responsibility to develop appropriate work practice guidelines and employee instructional programs for your operation.

Key/Legend

ACGIH: American Conference of Governmental Industrial Hygienists

A1: Confirmed human carcinogen

A2: Suspected human carcinogen

A3: Animal carcinogen

DSL: Canadian Domestic Substances List

CAS No: Chemical Abstract Service Registry Number

EEC: European Economic Community

IARC: International Agency for Research on Cancer

Group1: Carcinogenic to humans

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Group2A: Probably carcinogenic to humans
Group2B: Possibly carcinogenic to humans
Group3: Unclassifiable as a carcinogen to humans
JSOH: Japan Society for Occupational Health
LVE: Low Volume Exemption
METI: Ministry of Environment, Trade, and Industry
MSHA: Mine Safety and Health Administration
NIOSH: National Institute for Occupational Safety and Health
NDSL: Non-Domestic Substances List
NTP: National Toxicology Program
N/A: Not Applicable
N/E: None Established
OSHA: Occupational Safety and Health Administration
PEL: Permissible Exposure Limit
PNOC: Particulates Not Otherwise Classified
RTK: Right To Know
STEL: Short Term Exposure Limit (15 minute Time Weighted Average)
TLV: Threshold Limit Value
C: Ceiling limit
S: Skin notation refers to the potential significant contribution to the overall exposure by the cutaneous route including mucous membranes and the eyes and by direct skin contact with the substance
WEEL: Workplace Environmental Exposure Level
WHMIS: Canadian Workplace Hazardous Materials Information System

End of Sheet AVA2580-20