PROMERUS
electronic materials

Material Safety Data Sheet

Material Name: Developer 9000 for Avatrel Polymers/US/Canada/Japan **Document: DVLPR9000**

* * * Section 1 - Chemical Product and Company Identification * * *

Chemical Name 2-Heptanone
Synonyms Methyl Amyl Ketone; n-Amyl Methyl Ketone; Ketone; Methyl Pentyl; Methyl Pentyl Ketone; Butyl Acetone

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	100

Component Information/Information on Non-Hazardous Components

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

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

Japan: This Safety Data Sheet has been prepared in compliance with JIS Z7250.

* * * Section 3 - Hazards Identification * * *

Emergency Overview

Product is a colorless combustible liquid with a fruity odor. This product is harmful by inhalation and if it is swallowed. This product is irritating to the eyes, skin and respiratory system. Overexposure may cause central nervous system depression. Symptoms can include headache, nausea, dizziness and unconsciousness.

Target Organs

Eyes, skin, lungs, peripheral nervous system and central nervous system.

Potential Health Effects: Eyes

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

Potential Health Effects: Skin

This product is irritating to the skin. Symptoms may include redness, drying, cracking and dermatitis. Product may be absorbed through skin.

Potential Health Effects: Ingestion

Ingestion can cause gastrointestinal irritation, nausea, vomiting and diarrhea. Ingestion of this product may result in central nervous system effects including headache, sleepiness, dizziness, slurred speech and blurred vision.

Potential Health Effects: Inhalation

Breathing of the mists, vapors or fumes may irritate the nose, throat and lungs. May cause central nervous system depression or effects. Symptoms may include headache, excitation, euphoria, dizziness, incoordination, drowsiness, light-headedness, blurred vision, fatigue, tremors, convulsions, loss of consciousness, coma, respiratory arrest and death, depending on the concentration and duration of exposure.

Medical Conditions Aggravated by Exposure

Chronic respiratory or skin conditions may temporarily worsen from exposure to this product. Nervous system disorders may be aggravated by exposure to this product.

HMIS Ratings: Health: 2* **Fire:** 2 **Physical Hazard:** 0 **Pers. Prot.:** D
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 water for at least 15 minutes, while holding eyelids open. If irritation persists get medical attention.

First Aid: Skin

For skin contact flush with large amounts of water. Immediately take off all contaminated clothing. Wash contaminated clothing before reuse. If irritation persists, get medical attention.

First Aid: Ingestion

If the material is swallowed, get immediate medical attention or advice -- Do not induce vomiting.

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.

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

General Fire Hazards

Product is a combustible liquid. The vapor is heavier than air. Vapors or gases may ignite at distant ignition sources and flash back.

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 and carbon dioxide.

Extinguishing Media

Use dry chemical, "alcohol" foam, carbon dioxide or water spray. Use water to cool fire-exposed containers and to protect personnel.

Fire Fighting Equipment/Instructions

Remove container from fire area if it can be done without risk. Use water/water spray to keep fire-exposed containers cool. Stay away from ends of tanks. Use self-contained breathing apparatus (SCBA) and full bunker turnout gear in a sustained fire. Wear protective clothing ensemble as defined in NFPA 1500 (1997, or as updated).

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. Avoid runoff into storm sewers and ditches which lead to waterways. Clean up spills immediately, observing precautions in the Protective Equipment section. Remove sources of ignition. Use spark proof tools. Provide adequate ventilation.

Clean-Up Procedures

Combustible liquid. Eliminate all ignition sources. Ventilate the 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.

* * * 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 combustible 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.

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

Use local exhaust ventilation. 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; face shield (if splashing is possible).

Personal Protective Equipment: Skin

Use chemical resistant impervious gloves. Use chemical resistant protective clothing.

Personal Protective Equipment: Respiratory

If ventilation is not sufficient to effectively prevent buildup of vapors, appropriate NIOSH/MSHA 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	**Odor:**	Fruity
Physical State:	Liquid	**pH:**	Not determined
Vapor Pressure:	2.6 mmHg @ 20°C (68°F)	**Vapor Density:**	3.9 g/L (air = 1)
Boiling Point:	149-150°C (300 - 302°F)	**Melting Point:**	-35°C (-31°F)
Solubility (H2O):	4.3 g/L @ 20°C (68°F)	**Specific Gravity:**	0.82 (water = 1)
Flash Point:	47°C (117°F)	**Flash Point Method:**	Closed Cup
Auto Ignition:	393°C (739°F)	**LFL:**	Not available
UFL:	Not available	**Evaporation Rate:**	Not determined
Viscosity:	0.77 Pas	**Octanol/H2O Coeff.:**	Not determined
Sat. Vapor Conc.:	Molecular Weight = 114.19 g/mole		

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

Chemical Stability

Stable under normal conditions.

Chemical Stability: Conditions to Avoid

Keep away from heat, ignition sources and incompatible materials. Containers may rupture or explode if exposed to heat.

Incompatibility

This product may react with strong oxidizing agents, strong reducing agents, and strong bases.

Hazardous Decomposition

Upon decomposition, this product emits carbon monoxide and carbon dioxide.

Hazardous Polymerization

Will not occur.

* * * Section 11 - Toxicological Information * * *

Acute and Chronic Toxicity

A: General Product Information

This product is harmful by inhalation and ingestion, and is irritating to eyes, skin and the respiratory tract.

Product may be absorbed through skin. Overexposure may cause skin irritation with cracking and dryness.

Overexposure to vapor may be irritating to the nose and throat and may cause peripheral nervous system and central nervous system depression. Symptoms may include headache, nausea, narcosis and coma.

B: Component Analysis - LD50/LC50

2-Heptanone (110-43-0)

Test & Species	Data
Oral LD50 Rat	1670 mg/kg
Dermal LD50 Rabbit	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.

* * * Section 12 - Ecological Information * * *

Ecotoxicity

A: General Product Information

This material is not expected to be harmful to aquatic life.

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.

C: Component Analysis - Ecotoxicity - Aquatic Toxicity

2-Heptanone (110-43-0)

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

Environmental Fate

No additional information available.

* * * Section 13 - Disposal Considerations * * *

US EPA Waste Number & Descriptions

This product is a D001 ignitable waste in supplied form. Wastes must be tested using methods described in 40 CFR Part 261 to determine if it meets applicable definitions of hazardous wastes.

Disposal Instructions

Dispose of waste by incineration, in accordance with local regulations and available facilities.
Liquids cannot be disposed of in a landfill.

* * * Section 14 - Transportation Information * * *

US DOT Information

Shipping Name: n-Amyl methyl ketone
UN/NA #: UN1110 **Hazard Class:** 3 **Packing Group:** III
Required Label(s): FLAMMABLE LIQUID

TDG Information

Shipping Name: n-Amyl methyl ketone
UN/NA #: UN1110 **Hazard Class:** 3 **Packing Group:** III
Required Label(s): FLAMMABLE LIQUID

ICAO Information

Shipping Name: n-Amyl methyl ketone
UN #: UN1110 **Hazard Class:** 3 **Packing Group:** III
Required Label(s): FLAMMABLE LIQUID

IATA Information

Shipping Name: n-Amyl methyl ketone
UN #: UN1110 **Hazard Class:** 3 **Packing Group:** III
Required Label(s): FLAMMABLE LIQUID

ADR Information

Shipping Name: n-Amyl methyl ketone
UN #: UN1110 **Hazard Class:** 3 **Packing Group:** III
Required Label(s): FLAMMABLE LIQUID

RID Information

Shipping Name: n-Amyl methyl ketone
UN #: UN1110 **Hazard Class:** 3 **Packing Group:** III
Required Label(s): FLAMMABLE LIQUID

IMDG Information

Shipping Name: n-Amyl methyl ketone
UN #: UN1110 **Hazard Class:** 3 **Packing Group:** III
Required Label(s): FLAMMABLE LIQUID

* * * Section 15 - Regulatory Information * * *

Additional Regulatory Information

A: General Product Information

This product is a controlled product under the Canadian Workplace Hazardous Materials Information System (WHMIS).

All components in this product are either listed on the US TSCA Inventory or are otherwise compliant with TSCA regulations.

B: Component Analysis - Inventory

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

This product does not contain any substance(s) subject to the reporting requirements (i.e., at or above de minimis quantities) of Section 313 of Title III of the Superfund Amendments and Reauthorization Act (SARA) 40 CFR 372.

B: 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

Canadian WHMIS Information

A: General Product Information

WHMIS CLASS B3 - Combustible liquid

WHMIS CLASS D2B - Material causing other toxic effects.

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.

MSDS History

New MSDS: April 19, 2005.

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
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 DVLPR9000