

## Material Safety Data Sheet

Material Name: Unity 4678E/US

Document: UNIT4678E/US

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

Chemical Name: Unity 4678E

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

**Phone Number:** 330-328-8186

**Emergency Phone Number:** 24 HR CHEMTREC U.S. 800-424-9300  
24 HR CHEMTREC Int'l 703-527-3887

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

CAS #	Component	Percent
110-43-0	2-Heptanone	50-90
Proprietary	Cyclic olefin Polymer	10-50
Trade Secret	Proprietary Additive	1-6
108-88-3	Toluene	0.1-1

**Component Information/Information on Non-Hazardous Components**

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

THIS MATERIAL IS SOLELY FOR RESEARCH AND DEVELOPMENT USE. This product contains components that are not known to be on the TSCA Inventory. This product 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**

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. May be harmful if swallowed. Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury. Exposure to toluene may cause teratogenic effects.

**Target Organs**

Eyes, Skin, Central Nervous System, Nerves, Liver, Kidney.

**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, edema, drying, defatting and cracking of the skin. This product may be absorbed through the skin and cause harm.

**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. Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

# Material Safety Data Sheet

Material Name: Unity 4678E/US

Document: UNIT4678E/US

## Potential Health Effects: Inhalation

Breathing of the mists, vapors or fumes may irritate the nose, throat and lungs. Repeated or prolonged exposures may cause bronchitis and laryngitis. 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. Liver and 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 plenty of water for at least 15 minutes. If irritation persists get medical attention.

### First Aid: Skin

For skin contact, wash immediately with soap and water. If irritation persists, get medical attention. Wash contaminated clothing before reuse. Contaminated leather articles, including shoes, that cannot be decontaminated should be discarded.

### 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 \*\*\*

### 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.

Vapors are heavier than air and may travel along the ground to some distant source of ignition and flash back.

### Hazardous Combustion Products

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

### Extinguishing Media

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

### Fire Fighting Equipment/Instructions

Use self-contained breathing apparatus (SCBA) and full bunker turnout gear in a sustained fire. Wear protective clothing ensemble as defined in NFPA 1500 (2002, or as updated).

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

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

# Material Safety Data Sheet

Material Name: Unity 4678E/US

Document: UNIT4678E/US

## \*\*\* Section 6 - Accidental Release Measures \*\*\*

### Containment Procedures

Stop the flow of material. Block any potential routes to water systems. Contain the discharged material. Remove sources of ignition.

### 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/combustible 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

Do not get in eyes, on skin or clothing. 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.

# Material Safety Data Sheet

Material Name: Unity 4678E/US

Document: UNIT4678E/US

## B: Component Exposure Limits

### 2-Heptanone (110-43-0)

ACGIH: 50 ppm TWA  
OSHA (Final): 100 ppm TWA; 465 mg/m3 TWA  
OSHA (Vacated): 100 ppm TWA; 465 mg/m3 TWA  
NIOSH: 100 ppm TWA; 465 mg/m3 TWA  
Alberta: 50 ppm TWA; 233 mg/m3 TWA  
British Columbia: 50 ppm TWA  
Manitoba: 50 ppm TWA; 235 mg/m3 TWA  
New Brunswick: 50 ppm TWA; 233 mg/m3 TWA  
NW Territories: 50 ppm TWA; 235 mg/m3 TWA  
100 ppm STEL; 465 mg/m3 STEL  
Nova Scotia: 50 ppm TWA  
Nunavut: 50 ppm TWA; 235 mg/m3 TWA  
100 ppm STEL; 465 mg/m3 STEL  
Ontario: 25 ppm TWAEV; 115 mg/m3 TWAEV  
Quebec: 50 ppm TWAEV; 233 mg/m3 TWAEV  
Saskatchewan: 233 mg/m3 TWA; 50 ppm TWA  
291 mg/m3 STEL; 60 ppm STEL  
Yukon: 100 ppm TWA; 465 mg/m3 TWA  
150 ppm STEL; 710 mg/m3 STEL

### Toluene (108-88-3)

ACGIH: 20 ppm TWA  
OSHA (Final): 200 ppm TWA  
300 ppm Ceiling  
OSHA (Vacated): 100 ppm TWA; 375 mg/m3 TWA  
150 ppm STEL; 560 mg/m3 STEL  
NIOSH: 100 ppm TWA; 375 mg/m3 TWA  
150 ppm STEL; 560 mg/m3 STEL  
Alberta: 50 ppm TWA; 188 mg/m3 TWA  
Substance may be readily absorbed through intact skin  
British Columbia: 50 ppm TWA  
Skin notation  
Manitoba: 100 ppm TWA; 375 mg/m3 TWA  
150 ppm STEL; 560 mg/m3 STEL  
New Brunswick: 50 ppm TWA; 188 mg/m3 TWA  
Skin - potential for cutaneous absorption  
NW Territories: 100 ppm TWA; 375 mg/m3 TWA  
150 ppm STEL; 560 mg/m3 STEL  
Skin notation  
Nova Scotia: 20 ppm TWA  
Nunavut: 100 ppm TWA; 375 mg/m3 TWA  
150 ppm STEL; 560 mg/m3 STEL  
Skin notation  
Ontario: 50 ppm TWAEV  
Quebec: 100 ppm TWAEV; 377 mg/m3 TWAEV  
150 ppm STEV; 565 mg/m3 STEV  
Saskatchewan: 188 mg/m3 TWA; 50 ppm TWA  
235 mg/m3 STEL; 60 ppm STEL  
Yukon: 100 ppm TWA; 375 mg/m3 TWA  
150 ppm STEL; 560 mg/m3 STEL  
Skin notation

## Engineering Controls

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

# Material Safety Data Sheet

Material Name: Unity 4678E/US

Document: UNIT4678E/US

## PERSONAL PROTECTIVE EQUIPMENT

### Personal Protective Equipment: Eyes/Face

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

### Personal Protective Equipment: Skin

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 \*\*\*

<b>Appearance:</b>	Colorless liquid	<b>Odor:</b>	Fruity
<b>Physical State:</b>	Liquid	<b>pH:</b>	Not available
<b>Vapor Pressure:</b>	2.14 mm Hg @ 20°C (68°F)	<b>Vapor Density:</b>	3.94 g/L (2-Heptanone)
<b>Boiling Point:</b>	149-150°C (300-302°F) (2-Heptanone)	<b>Melting Point:</b>	-35°C (-31°F) (2-Heptanone)
<b>Solubility (H2O):</b>	4.3 g/L @ 20°C (68°F)	<b>Specific Gravity:</b>	0.815 (2-Heptanone)
<b>Flash Point:</b>	105.8°F (41°C) (2-Heptanone)	<b>Flash Point Method:</b>	Not available
<b>Auto Ignition:</b>	739°F (393°C) (2-Heptanone)	<b>LFL:</b>	1.11% (2-Heptanone)
<b>UFL:</b>	7.9 % (2-Heptanone)	<b>Molecular Weight</b>	114.19 g/mole

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

### Chemical Stability

Stable under normal temperatures and pressures.

### Conditions to Avoid

Keep away from heat, ignition sources and incompatible materials.

### Incompatibility

Strong acids, strong bases and oxidizing agents.

### Hazardous Decomposition

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

### Hazardous Polymerization

Will not occur.

## \*\*\* 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. 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. May be harmful if swallowed. Small amounts of this product, if aspirated into the lungs, may cause mild to severe pulmonary injury.

# Material Safety Data Sheet

Material Name: Unity 4678E/US

Document: UNIT4678E/US

## B: Component Analysis - LD50/LC50

### 2-Heptanone (110-43-0)

#### Test & Species

Oral LD50 Rat  
Dermal LD50 Rabbit

#### Data

1670 mg/kg  
12600 µL/kg

### Toluene (108-88-3)

#### Test & Species

Inhalation LC50 Rat  
Inhalation LC50 Rat  
Oral LD50 Rat  
Dermal LD50 Rabbit

#### Data

12.5 mg/L/4H  
>26700 ppm/1H  
636 mg/kg  
8390 mg/kg

## Carcinogenicity

### A: General Product Information

No information available for the product.

### B: Component Carcinogenicity

#### Toluene (108-88-3)

ACGIH: A4 - Not Classifiable as a Human Carcinogen

IARC: Monograph 71 [1999], Monograph 47 [1989] (Group 3 (not classifiable))

## Chronic Toxicity

No information available for the product.

Intentional misuse of toluene has resulted in reproductive effects including physical and developmental abnormalities, such as low birth weight and microencephaly, and have been referred to as fetal toluene syndrome. Chronic exposure to toluene has been associated with headache, nausea, lightheadedness loss of coordination, memory loss, loss of appetite, enlargement of the liver, and blood effects, as well as cardiac effects.

## \*\*\* 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)

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.

# Material Safety Data Sheet

Material Name: Unity 4678E/US

Document: UNIT4678E/US

## C: Component Analysis - Ecotoxicity - Aquatic Toxicity

### 2-Heptanone (110-43-0)

Test & Species	Data	Conditions
96 Hr LC50 Pimephales promelas	131.0 mg/L	flow-through

### Toluene (108-88-3)

Test & Species	Data	Conditions
96 Hr LC50 Pimephales promelas	25 mg/L	1 day old
96 Hr LC50 Oncorhynchus mykiss	24.0 mg/L	flow-through
96 Hr LC50 Lepomis macrochirus	24.0 mg/L	
96 Hr LC50 Lepomis macrochirus	13 mg/L	
96 Hr EC50 Selenastrum capricornutum	>433 mg/L	
30 min EC50 Photobacterium phosphoreum	19.7 mg/L	
48 Hr EC50 water flea	11.3 mg/L	
48 Hr EC50 water flea	310 mg/L	
48 Hr EC50 Daphnia magna	11.3 mg/L	

## Environmental Fate

No ecological testing has been conducted on this product.

## \*\*\* 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

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:** Flammable liquid, n.o.s. (n-Amyl methyl ketone, Toluene)  
**UN/NA #:** UN1993 **Hazard Class:** 3 **Packing Group:** III  
**Required Label(s):** Flammable liquid  
**Additional Info.:** Additional Shipping Information: Flash point 41°C

## TDG Information

**Shipping Name:** Flammable liquid, n.o.s. (n-Amyl methyl ketone, Toluene)  
**UN/NA #:** UN1993 **Hazard Class:** 3 **Packing Group:** III  
**Required Label(s):** Flammable liquid  
**Additional Info.:** Additional Shipping Information: Flash point 41°C

## ICAO Information

**Shipping Name:** Flammable liquid, n.o.s. (n-Amyl methyl ketone, Toluene)  
**UN #:** UN1993 **Hazard Class:** 3 **Packing Group:** III  
**Required Label(s):** Flammable liquid  
**Additional Info.:** Additional Shipping Information: Flash point 41°C

# Material Safety Data Sheet

Material Name: Unity 4678E/US

Document: UNIT4678E/US

## IATA Information

**Shipping Name:** Flammable liquid, n.o.s. (n-Amyl methyl ketone, Toluene)

**UN #:** UN1993 **Hazard Class:** 3 **Packing Group:** III

**Required Label(s):** Flammable liquid

**Additional Info.:** Additional Shipping Information: Flash point 41°C

## ADR Information

**Shipping Name:** Flammable liquid, n.o.s. (n-Amyl methyl ketone, Toluene)

**UN #:** UN1193 **Hazard Class:** 3 **Packing Group:** III

**Required Label(s):** Flammable liquid

**Additional Info.:** Additional Shipping Information: Flash point 41°C

## RID Information

**Shipping Name:** Flammable liquid, n.o.s. (n-Amyl methyl ketone, Toluene)

**UN #:** UN1993 **Hazard Class:** 3 **Packing Group:** III

**Required Label(s):** Flammable liquid

**Additional Info.:** Additional Shipping Information: Flash point 41°C

## IMDG Information

**Shipping Name:** Flammable liquid, n.o.s. (n-Amyl methyl ketone, Toluene)

**UN #:** UN1993 **Hazard Class:** 3 **Packing Group:** III

**Required Label(s):** Flammable liquid

**Additional Info.:** 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. This product contains components that are not known to be on the TSCA Inventory. This product 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	EINECS	Yes
Cyclic olefin Polymer	Proprietary	No	No	No	No
Proprietary Additive	Trade Secret	Yes	NDSL	No	No
Toluene	108-88-3	Yes	DSL	EINECS	Yes

### US Federal Regulations

#### A: General Product Information

No additional information available.

#### B: Component Analysis

This material contains one or more of the following chemicals required to be identified under SARA Section 302 (40 CFR 355 Appendix A), SARA Section 313 (40 CFR 372.65) and/or CERCLA (40 CFR 302.4).

##### Toluene (108-88-3)

SARA 313: 1.0 % de minimis concentration

CERCLA: 1000 lb final RQ; 454 kg final RQ

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



# Material Safety Data Sheet

Material Name: Unity 4678E/US

Document: UNIT4678E/US

## 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
Toluene	108-88-3	Yes	Yes	Yes	Yes	Yes	Yes

The following statement(s) are provided under the California Safe Drinking Water and Toxic Enforcement Act of 1986 (Proposition 65):

WARNING! This product contains a chemical known to the state of California to cause reproductive/developmental effects.

### 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 %

## \*\*\* 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  
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

## Material Safety Data Sheet

Material Name: Unity 4678E/US

Document: UNIT4678E/US

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 UNIT4678E/US