

SAFETY DATA SHEET

According to US Regulation 29 CFR 1910.1200 (HazCom 2012)

1. Identification

Product identifier: ETHYL ALCOHOL COMPLETELY DENATURED

Other means of identification

Product No.: 3791, 7018, 9014, MV568

Recommended restrictions

Recommended use: Not available.

Restrictions on use: Not determined.

Details of the supplier of the safety data sheet

Manufacturer

Company Name: Avantor Performance Materials, LLC.
Address: 3477 Corporate Parkway
Center Valley, PA 18034

Telephone: Customer Service: 855-282-6867

Fax: 610-573-2610
Contact Person: Environmental Health & Safety
E-mail: info@avantormaterials.com

Emergency telephone number:

CHEMTREC: 1-800-424-9300 within US and Canada

2. Hazard(s) identification

Hazard Classification

Physical Hazards

Flammable liquids Category 2

Health Hazards

Acute toxicity (Inhalation - vapor)	Category 4
Serious Eye Damage/Eye Irritation	Category 2A
Carcinogenicity	Category 1A
Specific Target Organ Toxicity - Single Exposure	Category 3

Label Elements

Hazard Symbol:



Signal Word:	Danger
Hazard Statement:	Highly flammable liquid and vapor. Harmful if inhaled. Causes serious eye irritation. May cause cancer. May cause respiratory irritation.
Precautionary Statements	
Prevention:	Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. Take action to prevent static discharges. Wear protective gloves/protective clothing/eye protection/face protection. Avoid breathing dust/fume/gas/mist/vapors/spray. Wash hands thoroughly after handling. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area.
Response:	IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. If eye irritation persists: Get medical advice/attention. IF exposed or concerned: Get medical advice/attention.
Storage:	Store in a well-ventilated place. Keep cool. Store locked up.
Disposal:	Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
Hazard(s) not otherwise classified (HNOC):	None.

3. Composition/information on ingredients

Mixtures

Chemical Identity	CAS number	Content in percent (%)*
Ethanol	64-17-5	95%
Methyl isobutyl ketone	108-10-1	4%
Kerosene	8008-20-6	1%

* All concentrations are percent by weight unless ingredient is a gas. Gas concentrations are in percent by volume.

4. First-aid measures

General information:	Get medical advice/attention if you feel unwell. Show this safety data sheet to the doctor in attendance.
Ingestion:	Rinse mouth. If vomiting occurs, keep head low so that stomach content doesn't get into the lungs. Get medical attention if symptoms occur.
Inhalation:	Move to fresh air. Get medical attention if symptoms persist.

Skin Contact: Immediately flush with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation persists after washing. Wash contaminated clothing before reuse. Destroy or thoroughly clean contaminated shoes.

Eye contact: Immediately flush with plenty of water for at least 15 minutes. If easy to do, remove contact lenses. Get medical attention if irritation persists after washing.

Most important symptoms/effects, acute and delayed

Symptoms: Irritating to eyes, respiratory system and skin.

Hazards: None known.

Indication of immediate medical attention and special treatment needed

Treatment: Treat symptomatically. Symptoms may be delayed.

5. Fire-fighting measures

General Fire Hazards: Highly flammable liquid and vapor. In case of fire and/or explosion do not breathe fumes.

Suitable (and unsuitable) extinguishing media

Suitable extinguishing media: Water spray, foam, dry powder or carbon dioxide.

Unsuitable extinguishing media: Avoid water in straight hose stream; will scatter and spread fire.

Specific hazards arising from the chemical: Vapors may cause a flash fire or ignite explosively. Vapors may travel considerable distance to a source of ignition and flash back. Prevent buildup of vapors or gases to explosive concentrations. Heat may cause the containers to explode.

Special protective equipment and precautions for firefighters

Special fire fighting procedures: Use water spray to keep fire-exposed containers cool. Water may be ineffective in fighting the fire. Fight fire from a protected location. Move containers from fire area if you can do so without risk.

Special protective equipment for fire-fighters: Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures: ELIMINATE all ignition sources (no smoking, flares, sparks or flames in immediate area). Keep unauthorized personnel away. Keep upwind. Use personal protective equipment. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ventilate closed spaces before entering them. See Section 8 of the SDS for Personal Protective Equipment.

Methods and material for containment and cleaning up:

In case of leakage, eliminate all ignition sources. Take precautionary measures against static discharges. Stop leak if possible without any risk. Use non-sparking tools. Absorb spill with vermiculite or other inert material, then place in a container for chemical waste. Clean surface thoroughly to remove residual contamination. Dike far ahead of larger spill for later recovery and disposal.

Notification Procedures:

Prevent entry into waterways, sewer, basements or confined areas. Inform authorities if large amounts are involved.

Environmental Precautions:

Do not contaminate water sources or sewer. Prevent further leakage or spillage if safe to do so.

7. Handling and storage

Precautions for safe handling:

DO NOT handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Take precautionary measures against static discharges. Ground and bond container and receiving equipment. Use explosion-proof [electrical/ventilating/lighting] equipment. Use non-sparking tools. Wear protective gloves/protective clothing/eye protection/face protection. Use only with adequate ventilation. Wash hands thoroughly after handling. Avoid contact with eyes. Avoid contact with skin. Obtain special instructions before use. Do not handle until all safety precautions have been read and understood.

Conditions for safe storage, including any incompatibilities:

Keep away from food, drink and animal feeding stuffs. Keep container tightly closed in a cool, well-ventilated place. Ground container and transfer equipment to eliminate static electric sparks. Comply with all national, state, and local codes pertaining to the storage, handling, dispensing, and disposal of flammable liquids.

8. Exposure controls/personal protection

Control Parameters
Occupational Exposure Limits

Chemical Identity	Type	Exposure Limit Values	Source
Ethanol	STEL	1,000 ppm	US. ACGIH Threshold Limit Values (2011)
	REL	1,900 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	PEL	1,900 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	TWA	1,900 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
Methyl isobutyl ketone	TWA	20 ppm	US. ACGIH Threshold Limit Values (2011)
	STEL	75 ppm	US. ACGIH Threshold Limit Values (2011)
	STEL	300 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	REL	205 mg/m ³	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
	PEL	410 mg/m ³	US. OSHA Table Z-1 Limits for Air Contaminants (29 CFR 1910.1000) (02 2006)
	TWA	205 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
	STEL	300 mg/m ³	US. OSHA Table Z-1-A (29 CFR 1910.1000) (1989)
Kerosene - Non-aerosol. - as total hydrocarbon vapor	TWA	P: Application restricted to conditions in which there are negligible aerosol exposures. 200 mg/m ³	US. ACGIH Threshold Limit Values (2011)
	SKIN_DES	Can be absorbed through the skin.	US. ACGIH Threshold Limit Values (2011)

Kerosene	REL	100 mg/m3	US. NIOSH: Pocket Guide to Chemical Hazards (2010)
----------	-----	-----------	--

Biological Limit Values

Chemical Identity	Exposure Limit Values	Source
Methyl isobutyl ketone (methyl isobutyl ketone: Sampling time: End of shift.)	1 mg/l (Urine)	ACGIH BEL (03 2013)

Appropriate Engineering Controls

No data available.

Individual protection measures, such as personal protective equipment

General information:	Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. An eye wash and safety shower must be available in the immediate work area. Use explosion-proof ventilation equipment.
Eyeface protection:	Wear safety glasses with side shields (or goggles).
Skin Protection	
Hand Protection:	Chemical resistant gloves
Other:	Wear suitable protective clothing.
Respiratory Protection:	In case of inadequate ventilation use suitable respirator.
Hygiene measures:	Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Provide eyewash station and safety shower.

9. Physical and chemical properties

Appearance

Physical state:	Liquid
Form:	Liquid
Color:	Colorless
Odor:	Mild
Odor threshold:	No data available.
pH:	No data available.
Melting point/freezing point:	< -114 °C
Initial boiling point and boiling range:	78 °C
Flash Point:	13 °C
Evaporation rate:	3.3
Flammability (solid, gas):	No data available.
Upper/lower limit on flammability or explosive limits	
Flammability limit - upper (%):	No data available.
Flammability limit - lower (%):	No data available.
Explosive limit - upper (%):	No data available.
Explosive limit - lower (%):	No data available.
Vapor pressure:	62.66 hPa (25 °C)

Vapor density:	1.6
Density:	0.80 g/ml (20 °C)
Relative density:	0.80 (20 °C)
Solubility(ies)	
Solubility in water:	Soluble
Solubility (other):	No data available.
Partition coefficient (n-octanol/water):	No data available.
Auto-ignition temperature:	No data available.
Decomposition temperature:	No data available.
Viscosity:	No data available.

10. Stability and reactivity

Reactivity:	No dangerous reaction known under conditions of normal use.
Chemical Stability:	Material is stable under normal conditions.
Possibility of hazardous reactions:	Hazardous polymerization does not occur.
Conditions to avoid:	Heat, sparks, flames. Contact with air. Contact with incompatible materials.
Incompatible Materials:	Strong oxidizing agents. Flammable/combustible material. Aluminum. Alkali metals. Acetylene. Calcium hypochlorite. Chlorinated compounds. Nitrates. Nitric acid. Acids. Bromides. Fluorine. Aldehydes. Phosphorus. Hydrogen peroxide (H ₂ O ₂)
Hazardous Decomposition Products:	Fire or excessive heat may produce hazardous decomposition products. Oxides of Carbon.

11. Toxicological information

Information on likely routes of exposure

Inhalation:	Harmful if inhaled.
Skin Contact:	May cause irritation.
Eye contact:	Causes serious eye irritation.
Ingestion:	May be harmful if swallowed.

Information on toxicological effects

Acute toxicity (list all possible routes of exposure)

Oral Product:	No data available.
----------------------	--------------------

Specified substance(s):

Ethanol	LD 50 (Rat): 6,200 mg/kg LD 50 (Guinea Pig): 5,600 mg/kg LD 50 (Rabbit): 6,300 mg/kg
---------	--

Methyl isobutyl ketone	LD 50 (Rat): 2,080 mg/kg
------------------------	--------------------------

Kerosene	LD 50 (Rat): > 5,000 mg/kg
----------	----------------------------

Dermal

Product:	No data available.
-----------------	--------------------

Specified substance(s):

Ethanol	LDLo (Rabbit): 20,000 mg/kg
---------	-----------------------------

Methyl isobutyl ketone	LD 50 (Rabbit): > 16,000 mg/kg
------------------------	--------------------------------

Kerosene	LD 50 (Rabbit): > 2,000 mg/kg
----------	-------------------------------

Inhalation

Product:	No data available.
-----------------	--------------------

Specified substance(s):

Ethanol	LC 50 (Rat, 10 h): 20000 ppm LC L0 (Guinea Pig,): 21900 ppm LC 50 (Mouse, 4 h): 0.039 mg/l
---------	---

Methyl isobutyl ketone	LC 50 (Rat, 4 h): 12.4 mg/l Vapour
------------------------	------------------------------------

Kerosene	LC 50 (Rat, 4 h): > 6.03 mg/l
----------	-------------------------------

Repeated dose toxicity

Product:	No data available.
-----------------	--------------------

Skin Corrosion/Irritation

Product:	May cause skin irritation.
-----------------	----------------------------

Serious Eye Damage/Eye Irritation

Product:	Causes serious eye irritation.
-----------------	--------------------------------

Respiratory or Skin Sensitization

Product:	Not a skin sensitizer.
-----------------	------------------------

Carcinogenicity

Product:	May cause cancer.
-----------------	-------------------

IARC Monographs on the Evaluation of Carcinogenic Risks to Humans:

Ethanol	Overall evaluation: 1. Carcinogenic to humans. Overall evaluation: 1. Carcinogenic to humans.
Methyl isobutyl ketone	Overall evaluation: 2B. Possibly carcinogenic to humans.

US. National Toxicology Program (NTP) Report on Carcinogens:

Ethanol	Known To Be Human Carcinogen.
---------	-------------------------------

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050):

No carcinogenic components identified

Germ Cell Mutagenicity

In vitro	
Product:	No mutagenic components identified

In vivo	
Product:	No mutagenic components identified

Reproductive toxicity	
Product:	No components toxic to reproduction

Specific Target Organ Toxicity - Single Exposure	
Product:	Respiratory tract irritation.

Specific Target Organ Toxicity - Repeated Exposure	
Product:	No data available.

Aspiration Hazard	
Product:	Not classified

Other effects:	None known.
-----------------------	-------------

12. Ecological information

Ecotoxicity:

Acute hazards to the aquatic environment:

Fish	
Product:	No data available.
Specified substance(s):	
Ethanol	LC 50 (Carp (Leuciscus idus melanotus), 48 h): 8,140 mg/l Mortality LC 50 (Rainbow trout, donaldson trout (Oncorhynchus mykiss), 96 h): 12,000 - 16,000 mg/l Mortality LC 50 (Fathead minnow (Pimephales promelas), 96 h): 13,480 mg/l Mortality
Methyl isobutyl ketone	LC 50 (Fathead minnow (Pimephales promelas), 96 h): 496 - 514 mg/l Mortality

LC 50 (Carp (Leuciscus idus melanotus), 48 h): 672 mg/l Mortality

Aquatic Invertebrates

Product: No data available.

Specified substance(s):

Ethanol
LC 50 (Brine shrimp (Artemia franchiscana), 48 h): 25.5 mg/l Mortality
LC 50 (Water flea (Daphnia magna), 96 h): > 100 mg/l Mortality
EC 50 (Water flea (Daphnia magna), 48 h): > 10,000 mg/l Intoxication
EC 50 (Water flea (Daphnia obtusa), 48 h): 10,100 - 11,200 mg/l Intoxication
LC 50 (Water flea (Daphnia magna), 48 h): 7,560 - 12,600 mg/l Mortality

Methyl isobutyl ketone
LC 50 (Brine shrimp (Artemia salina), 24 h): 1,230 mg/l Mortality
LC 50 (Water flea (Daphnia magna), 24 h): 4,280 mg/l Mortality

Chronic hazards to the aquatic environment:

Fish

Product: No data available.

Aquatic Invertebrates

Product: No data available.

Toxicity to Aquatic Plants

Product: No data available.

Persistence and Degradability

Biodegradation

Product: There are no data on the degradability of this product.

BOD/COD Ratio

Product: No data available.

Bioaccumulative potential

Bioconcentration Factor (BCF)

Product: No data available on bioaccumulation.

Partition Coefficient n-octanol / water (log Kow)

Product: No data available.

Specified substance(s):

Ethanol
Log Kow: -0.31

Methyl isobutyl ketone
Log Kow: 1.31

Kerosene
Log Kow: > 3.5

Mobility in soil: No data available.

Other adverse effects: The product components are not classified as environmentally hazardous. However, this does not exclude the possibility that large or frequent spills can have a harmful or damaging effect on the environment.

13. Disposal considerations

Disposal instructions:	Discharge, treatment, or disposal may be subject to national, state, or local laws. Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.
Contaminated Packaging:	Since emptied containers retain product residue, follow label warnings even after container is emptied.

14. Transport information

DOT

UN Number:	UN 1993
UN Proper Shipping Name:	Flammable liquids, n.o.s.(Ethyl alcohol, Methyl isobutyl ketone)
Transport Hazard Class(es)	
Class:	3
Label(s):	3
Packing Group:	II
Marine Pollutant:	No
Special precautions for user:	Not determined.

IMDG

UN Number:	UN 1993
UN Proper Shipping Name:	FLAMMABLE LIQUID, N.O.S.(ETHYL ALCOHOL, METHYL ISOBUTYL KETONE)
Transport Hazard Class(es)	
Class:	3
Label(s):	3
EmS No.:	F-E, S-E
Packing Group:	II
Marine Pollutant:	No
Special precautions for user:	Not determined.

IATA

UN Number:	UN 1993
Proper Shipping Name:	Flammable liquid, n.o.s.(Ethyl alcohol, Methyl isobutyl ketone)
Transport Hazard Class(es):	
Class:	3
Label(s):	3
Packing Group:	II
Marine Pollutant:	No
Special precautions for user:	Not determined.

15. Regulatory information

US Federal Regulations

TSCA Section 12(b) Export Notification (40 CFR 707, Subpt. D)

None present or none present in regulated quantities.

US. OSHA Specifically Regulated Substances (29 CFR 1910.1001-1050)

None present or none present in regulated quantities.

CERCLA Hazardous Substance List (40 CFR 302.4):

<u>Chemical Identity</u>	<u>Reportable quantity</u>
Ethanol	100 lbs.
Methyl isobutyl ketone	5000 lbs.

Superfund Amendments and Reauthorization Act of 1986 (SARA)

Hazard categories

Acute (Immediate)
Fire
Chronic (Delayed)

SARA 302 Extremely Hazardous Substance

None present or none present in regulated quantities.

SARA 304 Emergency Release Notification

<u>Chemical Identity</u>	<u>Reportable quantity</u>
Ethanol	100 lbs.
Methyl isobutyl ketone	5000 lbs.

SARA 311/312 Hazardous Chemical

<u>Chemical Identity</u>	<u>Threshold Planning Quantity</u>
Ethanol	10000 lbs.
Methyl isobutyl ketone	10000 lbs.
Kerosene	10000 lbs.

SARA 313 (TRI Reporting)

<u>Chemical Identity</u>	<u>Reporting threshold for other users</u>	<u>Reporting threshold for manufacturing and processing</u>
Methyl isobutyl ketone	10000 lbs.	25000 lbs.

Clean Air Act (CAA) Section 112(r) Accidental Release Prevention (40 CFR 68.130):

None present or none present in regulated quantities.

Clean Water Act Section 311 Hazardous Substances (40 CFR 117.3):

None present or none present in regulated quantities.

US State Regulations

US. California Proposition 65

Ethanol	Carcinogenic.
Ethanol	Developmental toxin.
Methyl isobutyl ketone	Carcinogenic.
Methyl isobutyl ketone	Developmental toxin.

US. New Jersey Worker and Community Right-to-Know Act

<u>Chemical Identity</u>
Ethanol
Methyl isobutyl ketone

US. Massachusetts RTK - Substance List

<u>Chemical Identity</u>
Ethanol
Methyl isobutyl ketone

US. Pennsylvania RTK - Hazardous Substances

<u>Chemical Identity</u>
Ethanol
Methyl isobutyl ketone

US. Rhode Island RTK

Chemical Identity

Ethanol
Methyl isobutyl ketone

International regulations

Montreal protocol

not applicable

Stockholm convention

not applicable

Rotterdam convention

not applicable

Kyoto protocol

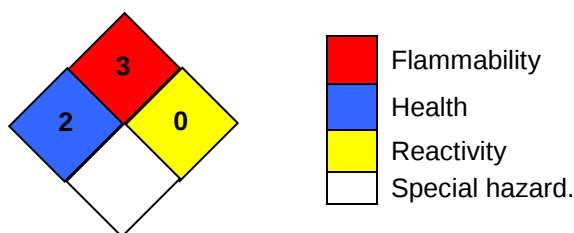
not applicable

Inventory Status:

Australia AICS:	On or in compliance with the inventory
Canada DSL Inventory List:	On or in compliance with the inventory
EINECS, ELINCS or NLP:	On or in compliance with the inventory
Japan (ENCS) List:	Not in compliance with the inventory.
China Inv. Existing Chemical Substances:	On or in compliance with the inventory
Korea Existing Chemicals Inv. (KECI):	On or in compliance with the inventory
Canada NDSL Inventory:	Not in compliance with the inventory.
Philippines PICCS:	On or in compliance with the inventory
US TSCA Inventory:	On or in compliance with the inventory
New Zealand Inventory of Chemicals:	On or in compliance with the inventory
Japan ISHL Listing:	Not in compliance with the inventory.
Japan Pharmacopoeia Listing:	Not in compliance with the inventory.
Mexico INSQ:	On or in compliance with the inventory
Ontario Inventory:	On or in compliance with the inventory
Taiwan Chemical Substance Inventory:	On or in compliance with the inventory

16. Other information, including date of preparation or last revision

NFPA Hazard ID



Hazard rating: 0 - Minimal; 1 - Slight; 2 - Moderate; 3 - Serious; 4 - Severe; RNP - Rating not possible

Issue Date: 08-28-2017

Revision Information: Not relevant.

Version #: 1.1

Further Information: No data available.

Disclaimer: The information provided in this Safety Data Sheet (SDS) was prepared based on data believed to be accurate as of the date of this SDS. TO THE GREATEST EXTENT PERMITTED BY LAW, AVANTOR PERFORMANCE MATERIALS ("AVANTOR") EXPRESSLY DISCLAIMS ANY AND ALL REPRESENTATIONS AND WARRANTIES REGARDING THE INFORMATION CONTAINED HEREIN INCLUDING, WITHOUT LIMITATION, AS TO ACCURACY, COMPLETENESS, FITNESS FOR PURPOSE OR USE, MERCHANTABILITY, NON-INFRINGEMENT, PERFORMANCE, SAFETY, SUITABILITY AND STABILITY. This SDS is intended as a guide to the appropriate use, handling, storage and disposal of the product to which it relates by properly trained personnel, and is not intended to be comprehensive. Users of Avantor's products are advised to perform their own tests and to exercise their own judgment to determine the safety, suitability and appropriate use, handling, storage and disposal of each product and product combination for their own purposes and uses. TO THE GREATEST EXTENT PERMITTED BY LAW, AVANTOR DISCLAIMS LIABILITY FOR, AND BY USING AVANTOR'S PRODUCTS PURCHASER AGREES THAT UNDER NO CIRCUMSTANCES SHALL AVANTOR BE LIABLE FOR, SPECIAL, INDIRECT, INCIDENTAL, PUNITIVE OR CONSEQUENTIAL DAMAGES OF ANY TYPE OR KIND, INCLUDING WITHOUT LIMITATION, FOR LOSS OF PROFITS, REPUTATIONAL DAMAGE, PRODUCT RECALL OR BUSINESS INTERRUPTION.