

SAFETY DATA SHEET



QUALITATIVE - PEAK ID MIX ASTM-D4815, Part Number 8500-8434

Section 1. Identification

1.1 Product identifier

Product name : QUALITATIVE - PEAK ID MIX ASTM-D4815, Part Number 8500-8434
Part no. : 8500-8434
Validation date : 4/3/2024

1.2 Relevant identified uses of the substance or mixture and uses advised against

Identified uses : Analytical chemistry.
 1 x 1 ml.

1.3 Details of the supplier of the safety data sheet

Supplier/Manufacturer : Agilent Technologies, Inc.
 5301 Stevens Creek Blvd
 Santa Clara, CA 95051, USA
 800-227-9770

1.4 Emergency telephone number

In case of emergency : CHEMTREC®: 1-800-424-9300

Section 2. Hazards identification

2.1 Classification of the substance or mixture

OSHA/HCS status : This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification of the substance or mixture

H225 FLAMMABLE LIQUIDS - Category 2
 H302 ACUTE TOXICITY (oral) - Category 4
 H312 ACUTE TOXICITY (dermal) - Category 4
 H332 ACUTE TOXICITY (inhalation) - Category 4
 H315 SKIN IRRITATION - Category 2
 H318 SERIOUS EYE DAMAGE - Category 1
 H340 GERM CELL MUTAGENICITY - Category 1
 H350 CARCINOGENICITY - Category 1A
 H360 TOXIC TO REPRODUCTION - Category 1B
 H371 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 2
 H335 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
 H336 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
 H372 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
 H304 ASPIRATION HAZARD - Category 1

Ingredients of unknown toxicity : Percentage of the mixture consisting of ingredient(s) of unknown acute dermal toxicity: 10 - 30%
 Percentage of the mixture consisting of ingredient(s) of unknown acute inhalation toxicity: 10 - 30%
 Percentage of the mixture consisting of ingredient(s) of unknown acute oral toxicity: 10 - 30%
 Percentage of the mixture consisting of ingredient(s) of unknown hazards to the aquatic environment: 4%

2.2 GHS label elements

Section 2. Hazards identification

Hazard pictograms :



Signal word :

Danger

Hazard statements :

- H225 - Highly flammable liquid and vapor.
- H302 + H312 + H332 - Harmful if swallowed, in contact with skin or if inhaled.
- H304 - May be fatal if swallowed and enters airways.
- H315 - Causes skin irritation.
- H318 - Causes serious eye damage.
- H335 - May cause respiratory irritation.
- H336 - May cause drowsiness or dizziness.
- H340 - May cause genetic defects.
- H350 - May cause cancer.
- H360 - May damage fertility or the unborn child.
- H371 - May cause damage to organs. (central nervous system (CNS), optic nerve)
- H372 - Causes damage to organs through prolonged or repeated exposure. (central nervous system (CNS))

Precautionary statements

Prevention :

- P201 - Obtain special instructions before use.
- P280 - Wear protective gloves, protective clothing and eye or face protection.
- P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
- P241 - Use explosion-proof electrical, ventilating or lighting equipment.
- P242 - Use non-sparking tools.
- P243 - Take action to prevent static discharges.
- P260 - Do not breathe vapor.
- P270 - Do not eat, drink or smoke when using this product.
- P264 - Wash thoroughly after handling.

Response :

- P308 + P311 - IF exposed or concerned: Call a POISON CENTER or doctor.
- P304 + P312 - IF INHALED: Call a POISON CENTER or doctor if you feel unwell.
- P301 + P310, P331 - IF SWALLOWED: Immediately call a POISON CENTER or doctor. Do NOT induce vomiting.
- P362 + P364 - Take off contaminated clothing and wash it before reuse.
- P302 + P312, P352 - IF ON SKIN: Call a POISON CENTER or doctor if you feel unwell. Wash with plenty of water.
- P305 + P351 + P338, P310 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Immediately call a POISON CENTER or doctor.

Storage :

- P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.
- P403 + P235 - Keep cool.

Disposal :

- P501 - Dispose of contents and container in accordance with all local, regional, national and international regulations.

2.3 Other hazards

Hazards not otherwise classified :

None known.

Section 3. Composition/information on ingredients

Substance/mixture :

Mixture

Section 3. Composition/information on ingredients

Ingredient name	%	CAS number
Propan-2-ol	≤10	67-63-0
Ethanol	≤10	64-17-5
Butan-1-ol	≤10	71-36-3
Propan-1-ol	≤10	71-23-8
Butan-2-ol	≤10	78-92-2
2-Methylpropan-1-ol	≤10	78-83-1
2-Methylbutan-2-ol	≤10	75-85-4
2-Methylpropan-2-ol	≤10	75-65-0
Methanol	<10	67-56-1
2-methoxy-2-methylbutane	≤10	994-05-8
1,2-Dimethoxyethane	≤10	110-71-4
benzene	≤10	71-43-2
tert-Butyl methyl ether	≤5	1634-04-4
methylcyclopentane	≤5	96-37-7
2-Ethoxy-2-methylpropane	≤5	637-92-3
Diisopropyl ether	≤5	108-20-3

Any concentration shown as a range is to protect confidentiality or is due to batch variation.

There are no additional ingredients present which, within the current knowledge of the supplier and in the concentrations applicable, are classified and hence require reporting in this section.

Occupational exposure limits, if available, are listed in Section 8.

Section 4. First aid measures

4.1 Description of necessary first aid measures

- Eye contact** : Get medical attention immediately. Call a poison center or physician. Immediately flush eyes with plenty of water, occasionally lifting the upper and lower eyelids. Check for and remove any contact lenses. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician.
- Inhalation** : Get medical attention immediately. Call a poison center or physician. Remove victim to fresh air and keep at rest in a position comfortable for breathing. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. If not breathing, if breathing is irregular or if respiratory arrest occurs, provide artificial respiration or oxygen by trained personnel. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.
- Skin contact** : Get medical attention immediately. Call a poison center or physician. Wash with plenty of soap and water. Remove contaminated clothing and shoes. Wash contaminated clothing thoroughly with water before removing it, or wear gloves. Continue to rinse for at least 10 minutes. Chemical burns must be treated promptly by a physician. Wash clothing before reuse. Clean shoes thoroughly before reuse.

Section 4. First aid measures

- Ingestion** : Get medical attention immediately. Call a poison center or physician. Wash out mouth with water. Remove dentures if any. If material has been swallowed and the exposed person is conscious, give small quantities of water to drink. Stop if the exposed person feels sick as vomiting may be dangerous. Aspiration hazard if swallowed. Can enter lungs and cause damage. Do not induce vomiting. If vomiting occurs, the head should be kept low so that vomit does not enter the lungs. Chemical burns must be treated promptly by a physician. Never give anything by mouth to an unconscious person. If unconscious, place in recovery position and get medical attention immediately. Maintain an open airway. Loosen tight clothing such as a collar, tie, belt or waistband.

4.2 Most important symptoms/effects, acute and delayed

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : Harmful if inhaled. May cause damage to organs following a single exposure if inhaled. Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.
- Skin contact** : Harmful in contact with skin. May cause damage to organs following a single exposure in contact with skin. Causes skin irritation.
- Ingestion** : Harmful if swallowed. May cause damage to organs following a single exposure if swallowed. Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Over-exposure signs/symptoms

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness
- Inhalation** : Adverse symptoms may include the following:
respiratory tract irritation
coughing
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Skin contact** : Adverse symptoms may include the following:
pain or irritation
redness
blistering may occur
reduced fetal weight
increase in fetal deaths
skeletal malformations
- Ingestion** : Adverse symptoms may include the following:
stomach pains
nausea or vomiting
reduced fetal weight
increase in fetal deaths
skeletal malformations

4.3 Indication of immediate medical attention and special treatment needed, if necessary

- Notes to physician** : Treat symptomatically. Contact poison treatment specialist immediately if large quantities have been ingested or inhaled.
- Specific treatments** : No specific treatment.

Section 4. First aid measures

- Protection of first-aiders** : No action shall be taken involving any personal risk or without suitable training. If it is suspected that fumes are still present, the rescuer should wear an appropriate mask or self-contained breathing apparatus. It may be dangerous to the person providing aid to give mouth-to-mouth resuscitation. Wash contaminated clothing thoroughly with water before removing it, or wear gloves.

See toxicological information (Section 11)

Section 5. Fire-fighting measures

5.1 Extinguishing media

- Suitable extinguishing media** : Use dry chemical, CO₂, water spray (fog) or foam.
- Unsuitable extinguishing media** : Do not use water jet.

5.2 Special hazards arising from the substance or mixture

- Specific hazards arising from the chemical** : Highly flammable liquid and vapor. Runoff to sewer may create fire or explosion hazard. In a fire or if heated, a pressure increase will occur and the container may burst, with the risk of a subsequent explosion. The vapor/gas is heavier than air and will spread along the ground. Vapors may accumulate in low or confined areas or travel a considerable distance to a source of ignition and flash back.
- Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide
Formaldehyde.

5.3 Advice for firefighters

- Special protective actions for fire-fighters** : Promptly isolate the scene by removing all persons from the vicinity of the incident if there is a fire. No action shall be taken involving any personal risk or without suitable training. Move containers from fire area if this can be done without risk. Use water spray to keep fire-exposed containers cool.
- Special protective equipment for fire-fighters** : Fire-fighters should wear appropriate protective equipment and self-contained breathing apparatus (SCBA) with a full face-piece operated in positive pressure mode.

Section 6. Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

- For non-emergency personnel** : No action shall be taken involving any personal risk or without suitable training. Evacuate surrounding areas. Keep unnecessary and unprotected personnel from entering. Do not touch or walk through spilled material. Shut off all ignition sources. No flares, smoking or flames in hazard area. Do not breathe vapor or mist. Provide adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Put on appropriate personal protective equipment.
- For emergency responders** : If specialized clothing is required to deal with the spillage, take note of any information in Section 8 on suitable and unsuitable materials. See also the information in "For non-emergency personnel".

- 6.2 Environmental precautions** : Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers. Inform the relevant authorities if the product has caused environmental pollution (sewers, waterways, soil or air).

6.3 Methods and materials for containment and cleaning up

Section 6. Accidental release measures

- Methods for cleaning up** : Stop leak if without risk. Move containers from spill area. Use spark-proof tools and explosion-proof equipment. Dilute with water and mop up if water-soluble. Alternatively, or if water-insoluble, absorb with an inert dry material and place in an appropriate waste disposal container. Dispose of via a licensed waste disposal contractor.

Section 7. Handling and storage

7.1 Precautions for safe handling

- Protective measures** : Put on appropriate personal protective equipment (see Section 8). Avoid exposure - obtain special instructions before use. Avoid exposure during pregnancy. Do not handle until all safety precautions have been read and understood. Do not get in eyes or on skin or clothing. Do not breathe vapor or mist. Do not swallow. Use only with adequate ventilation. Wear appropriate respirator when ventilation is inadequate. Do not enter storage areas and confined spaces unless adequately ventilated. Keep in the original container or an approved alternative made from a compatible material, kept tightly closed when not in use. Store and use away from heat, sparks, open flame or any other ignition source. Use explosion-proof electrical (ventilating, lighting and material handling) equipment. Use only non-sparking tools. Take precautionary measures against electrostatic discharges. Empty containers retain product residue and can be hazardous. Do not reuse container.
- Advice on general occupational hygiene** : Eating, drinking and smoking should be prohibited in areas where this material is handled, stored and processed. Workers should wash hands and face before eating, drinking and smoking. Remove contaminated clothing and protective equipment before entering eating areas. See also Section 8 for additional information on hygiene measures.

7.2 Conditions for safe storage, including any incompatibilities

- : Store in accordance with local regulations. Store in a segregated and approved area. Store in original container protected from direct sunlight in a dry, cool and well-ventilated area, away from incompatible materials (see Section 10) and food and drink. Store locked up. Eliminate all ignition sources. Separate from oxidizing materials. Keep container tightly closed and sealed until ready for use. Containers that have been opened must be carefully resealed and kept upright to prevent leakage. Do not store in unlabeled containers. Use appropriate containment to avoid environmental contamination. See Section 10 for incompatible materials before handling or use.

7.3 Specific end use(s)

- Recommendations** : Industrial applications, Professional applications.
- Industrial sector specific solutions** : Not available.

Section 8. Exposure controls/personal protection

8.1 Control parameters

Occupational exposure limits

Ingredient name	Exposure limits
Propan-2-ol	<p>ACGIH TLV (United States, 1/2023). TWA: 200 ppm 8 hours. STEL: 400 ppm 15 minutes.</p> <p>OSHA PEL 1989 (United States, 3/1989). TWA: 400 ppm 8 hours. TWA: 980 mg/m³ 8 hours. STEL: 500 ppm 15 minutes. STEL: 1225 mg/m³ 15 minutes.</p> <p>NIOSH REL (United States, 10/2020). TWA: 400 ppm 10 hours. TWA: 980 mg/m³ 10 hours.</p>

Section 8. Exposure controls/personal protection

Ethanol

STEL: 500 ppm 15 minutes.
 STEL: 1225 mg/m³ 15 minutes.
OSHA PEL (United States, 5/2018).
 TWA: 400 ppm 8 hours.
 TWA: 980 mg/m³ 8 hours.
CAL OSHA PEL (United States, 5/2018).
 STEL: 1225 mg/m³ 15 minutes.
 STEL: 500 ppm 15 minutes.
 TWA: 980 mg/m³ 8 hours.
 TWA: 400 ppm 8 hours.

ACGIH TLV (United States, 1/2023).
 STEL: 1000 ppm 15 minutes.
OSHA PEL 1989 (United States, 3/1989).
 TWA: 1000 ppm 8 hours.
 TWA: 1900 mg/m³ 8 hours.
NIOSH REL (United States, 10/2020).
 TWA: 1000 ppm 10 hours.
 TWA: 1900 mg/m³ 10 hours.
OSHA PEL (United States, 5/2018).
 TWA: 1000 ppm 8 hours.
 TWA: 1900 mg/m³ 8 hours.
CAL OSHA PEL (United States, 5/2018).
 TWA: 1900 mg/m³ 8 hours.
 TWA: 1000 ppm 8 hours.

Butan-1-ol

ACGIH TLV (United States, 1/2023).
 TWA: 20 ppm 8 hours.
OSHA PEL 1989 (United States, 3/1989).
Absorbed through skin.
 CEIL: 50 ppm
 CEIL: 150 mg/m³
NIOSH REL (United States, 10/2020).
Absorbed through skin.
 CEIL: 50 ppm
 CEIL: 150 mg/m³
OSHA PEL (United States, 5/2018).
 TWA: 100 ppm 8 hours.
 TWA: 300 mg/m³ 8 hours.
CAL OSHA PEL (United States, 5/2018).
Absorbed through skin.
 C: 150 mg/m³
 C: 50 ppm

Propan-1-ol

OSHA PEL 1989 (United States, 3/1989).
 TWA: 200 ppm 8 hours.
 TWA: 500 mg/m³ 8 hours.
 STEL: 250 ppm 15 minutes.
 STEL: 625 mg/m³ 15 minutes.
NIOSH REL (United States, 10/2020).
Absorbed through skin.
 TWA: 200 ppm 10 hours.
 TWA: 500 mg/m³ 10 hours.
 STEL: 250 ppm 15 minutes.
 STEL: 625 mg/m³ 15 minutes.
OSHA PEL (United States, 5/2018).
 TWA: 200 ppm 8 hours.
 TWA: 500 mg/m³ 8 hours.
ACGIH TLV (United States, 1/2023).
 TWA: 100 ppm 8 hours.
CAL OSHA PEL (United States, 5/2018).

Section 8. Exposure controls/personal protection

Butan-2-ol

Absorbed through skin.

STEL: 625 mg/m³ 15 minutes.
 STEL: 250 ppm 15 minutes.
 TWA: 500 mg/m³ 8 hours.
 TWA: 200 ppm 8 hours.

OSHA PEL 1989 (United States, 3/1989).

TWA: 100 ppm 8 hours.
 TWA: 305 mg/m³ 8 hours.

ACGIH TLV (United States, 1/2023).

TWA: 100 ppm 8 hours.
 TWA: 303 mg/m³ 8 hours.

NIOSH REL (United States, 10/2020).

TWA: 100 ppm 10 hours.
 TWA: 305 mg/m³ 10 hours.
 STEL: 150 ppm 15 minutes.
 STEL: 455 mg/m³ 15 minutes.

OSHA PEL (United States, 5/2018).

TWA: 150 ppm 8 hours.
 TWA: 450 mg/m³ 8 hours.

CAL OSHA PEL (United States, 5/2018).

TWA: 305 mg/m³ 8 hours.
 TWA: 100 ppm 8 hours.

2-Methylpropan-1-ol

ACGIH TLV (United States, 1/2023).

TWA: 50 ppm 8 hours.
 TWA: 152 mg/m³ 8 hours.

OSHA PEL 1989 (United States, 3/1989).

TWA: 50 ppm 8 hours.
 TWA: 150 mg/m³ 8 hours.

NIOSH REL (United States, 10/2020).

TWA: 50 ppm 10 hours.
 TWA: 150 mg/m³ 10 hours.

OSHA PEL (United States, 5/2018).

TWA: 100 ppm 8 hours.
 TWA: 300 mg/m³ 8 hours.

CAL OSHA PEL (United States, 5/2018).

TWA: 150 mg/m³ 8 hours.
 TWA: 50 ppm 8 hours.

2-Methylbutan-2-ol
 2-Methylpropan-2-ol

None.

OSHA PEL 1989 (United States, 3/1989).

TWA: 100 ppm 8 hours.
 TWA: 300 mg/m³ 8 hours.
 STEL: 150 ppm 15 minutes.
 STEL: 450 mg/m³ 15 minutes.

ACGIH TLV (United States, 1/2023).

TWA: 100 ppm 8 hours.
 TWA: 303 mg/m³ 8 hours.

NIOSH REL (United States, 10/2020).

TWA: 100 ppm 10 hours.
 TWA: 300 mg/m³ 10 hours.
 STEL: 150 ppm 15 minutes.
 STEL: 450 mg/m³ 15 minutes.

OSHA PEL (United States, 5/2018).

TWA: 100 ppm 8 hours.
 TWA: 300 mg/m³ 8 hours.

CAL OSHA PEL (United States, 5/2018).

STEL: 450 mg/m³ 15 minutes.
 STEL: 150 ppm 15 minutes.
 TWA: 300 mg/m³ 8 hours.

Section 8. Exposure controls/personal protection

Methanol

TWA: 100 ppm 8 hours.
ACGIH TLV (United States, 1/2023).
Absorbed through skin.
 TWA: 200 ppm 8 hours.
 TWA: 262 mg/m³ 8 hours.
 STEL: 250 ppm 15 minutes.
 STEL: 328 mg/m³ 15 minutes.
OSHA PEL 1989 (United States, 3/1989).
Absorbed through skin.
 TWA: 200 ppm 8 hours.
 TWA: 260 mg/m³ 8 hours.
 STEL: 250 ppm 15 minutes.
 STEL: 325 mg/m³ 15 minutes.
NIOSH REL (United States, 10/2020).
Absorbed through skin.
 TWA: 200 ppm 10 hours.
 TWA: 260 mg/m³ 10 hours.
 STEL: 250 ppm 15 minutes.
 STEL: 325 mg/m³ 15 minutes.
OSHA PEL (United States, 5/2018).
 TWA: 200 ppm 8 hours.
 TWA: 260 mg/m³ 8 hours.
CAL OSHA PEL (United States, 5/2018).
Absorbed through skin.
 STEL: 325 mg/m³ 15 minutes.
 STEL: 250 ppm 15 minutes.
 C: 1000 ppm
 TWA: 260 mg/m³ 8 hours.
 TWA: 200 ppm 8 hours.

2-methoxy-2-methylbutane

ACGIH TLV (United States, 1/2023).
 TWA: 20 ppm 8 hours.

1,2-Dimethoxyethane

CAL OSHA PEL (United States, 5/2018).
Absorbed through skin.
 STEL: 18 mg/m³ 15 minutes.
 STEL: 5 ppm 15 minutes.
 TWA: 3.7 mg/m³ 8 hours.
 TWA: 1 ppm 8 hours.

benzene

ACGIH TLV (United States, 1/2023).
Absorbed through skin.
 TWA: 0.5 ppm 8 hours.
 TWA: 1.6 mg/m³ 8 hours.
 STEL: 2.5 ppm 15 minutes.
 STEL: 8 mg/m³ 15 minutes.
OSHA PEL 1989 (United States, 3/1989).
 TWA: 1 ppm 8 hours.
 STEL: 5 ppm 15 minutes.
OSHA PEL Z2 (United States, 2/2013).
 TWA: 10 ppm 8 hours.
 CEIL: 25 ppm
 AMP: 50 ppm 10 minutes.
NIOSH REL (United States, 10/2020).
 TWA: 0.1 ppm 10 hours.
 STEL: 1 ppm 15 minutes.
OSHA PEL (United States, 5/2018).
 TWA: 1 ppm 8 hours.
 STEL: 5 ppm 15 minutes.
CAL OSHA PEL (United States, 5/2018).
Absorbed through skin.

Section 8. Exposure controls/personal protection

<p>tert-Butyl methyl ether</p>	<p>STEL: 5 ppm 15 minutes. TWA: 1 ppm 8 hours. ACGIH TLV (United States, 1/2023). TWA: 50 ppm 8 hours. CAL OSHA PEL (United States, 5/2018). TWA: 144 mg/m³ 8 hours. TWA: 40 ppm 8 hours.</p>
<p>methylcyclopentane 2-Ethoxy-2-methylpropane</p>	<p>None. ACGIH TLV (United States, 1/2023). TWA: 25 ppm 8 hours. CAL OSHA PEL (United States, 5/2018). TWA: 21 mg/m³ 8 hours. TWA: 5 ppm 8 hours.</p>
<p>Diisopropyl ether</p>	<p>ACGIH TLV (United States, 1/2023). TWA: 250 ppm 8 hours. TWA: 1040 mg/m³ 8 hours. STEL: 310 ppm 15 minutes. STEL: 1300 mg/m³ 15 minutes. OSHA PEL 1989 (United States, 3/1989). TWA: 500 ppm 8 hours. TWA: 2100 mg/m³ 8 hours. NIOSH REL (United States, 10/2020). TWA: 500 ppm 10 hours. TWA: 2100 mg/m³ 10 hours. OSHA PEL (United States, 5/2018). TWA: 500 ppm 8 hours. TWA: 2100 mg/m³ 8 hours. CAL OSHA PEL (United States, 5/2018). TWA: 1050 mg/m³ 8 hours. TWA: 250 ppm 8 hours.</p>

Biological exposure indices

Ingredient name	Exposure indices
Propan-2-ol	<p>ACGIH BEI (United States, 1/2023) BEI: 40 mg/l, acetone [in urine]. Sampling time: end of shift at end of workweek.</p>
Methanol	<p>ACGIH BEI (United States, 1/2023) BEI: 15 mg/l, methanol [in urine]. Sampling time: end of shift.</p>
benzene	<p>ACGIH BEI (United States, 1/2023) BEI: 25 µg/g creatinine, S-phenylmercapturic acid [in urine]. Sampling time: end of shift. BEI: 500 µg/g creatinine, t,t-muconic acid [in urine]. Sampling time: end of shift.</p>

8.2 Exposure controls

Appropriate engineering controls

- Use only with adequate ventilation. Use process enclosures, local exhaust ventilation or other engineering controls to keep worker exposure to airborne contaminants below any recommended or statutory limits. The engineering controls also need to keep gas, vapor or dust concentrations below any lower explosive limits. Use explosion-proof ventilation equipment.

Environmental exposure controls

- Emissions from ventilation or work process equipment should be checked to ensure they comply with the requirements of environmental protection legislation. In some cases, fume scrubbers, filters or engineering modifications to the process equipment will be necessary to reduce emissions to acceptable levels.

Section 8. Exposure controls/personal protection

Individual protection measures

- Hygiene measures** : Wash hands, forearms and face thoroughly after handling chemical products, before eating, smoking and using the lavatory and at the end of the working period. Appropriate techniques should be used to remove potentially contaminated clothing. Wash contaminated clothing before reusing. Ensure that eyewash stations and safety showers are close to the workstation location.
- Eye/face protection** : Safety eyewear complying with an approved standard should be used when a risk assessment indicates this is necessary to avoid exposure to liquid splashes, mists, gases or dusts. If contact is possible, the following protection should be worn, unless the assessment indicates a higher degree of protection: chemical splash goggles and/or face shield. If inhalation hazards exist, a full-face respirator may be required instead.
- Skin protection**
- Hand protection** : Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary. Considering the parameters specified by the glove manufacturer, check during use that the gloves are still retaining their protective properties. It should be noted that the time to breakthrough for any glove material may be different for different glove manufacturers. In the case of mixtures, consisting of several substances, the protection time of the gloves cannot be accurately estimated.
- Body protection** : Personal protective equipment for the body should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product. When there is a risk of ignition from static electricity, wear anti-static protective clothing. For the greatest protection from static discharges, clothing should include anti-static overalls, boots and gloves.
- Other skin protection** : Appropriate footwear and any additional skin protection measures should be selected based on the task being performed and the risks involved and should be approved by a specialist before handling this product.
- Respiratory protection** : Based on the hazard and potential for exposure, select a respirator that meets the appropriate standard or certification. Respirators must be used according to a respiratory protection program to ensure proper fitting, training, and other important aspects of use.

Section 9. Physical and chemical properties and safety characteristics

The conditions of measurement of all properties are at standard temperature and pressure unless otherwise indicated.

Appearance

- Physical state** : Liquid.
- Color** : Clear. / Colorless.
- Odor** : Not available.
- Odor threshold** : Not available.
- pH** : Not available.
- Melting point/freezing point** : -98°C (-144.4°F)
- Boiling point, initial boiling point, and boiling range** : 65°C (149°F)
- Flash point** : Closed cup: 10°C (50°F)
- Evaporation rate** : >1 (butyl acetate = 1)
- Flammability** : Not applicable
- Lower and upper explosion limit/flammability limit** : Lower: 6%
Upper: 36.5%
- Vapor pressure** : 13.3 kPa (100 mm Hg)
- Relative vapor density** : 1.1 [Air = 1]

Section 9. Physical and chemical properties and safety characteristics

Relative density : 0.79

Density : 0.79 g/cm³

Solubility(ies)	Media	Result
	water	Soluble

Miscible with water : Yes.

Partition coefficient: n-octanol/water : Not applicable.

Auto-ignition temperature	Ingredient name	°C	°F	Method
	1,2-Dimethoxyethane	202	395.6	-
	methylcyclopentane	257.85	496.1	-

Decomposition temperature : Not available.

Viscosity : Not available.

Particle characteristics

Median particle size : Not applicable.

Section 10. Stability and reactivity

10.1 Reactivity : No specific test data related to reactivity available for this product or its ingredients.

10.2 Chemical stability : The product is stable.

10.3 Possibility of hazardous reactions : Under normal conditions of storage and use, hazardous reactions will not occur.

10.4 Conditions to avoid : Avoid all possible sources of ignition (spark or flame). Do not pressurize, cut, weld, braze, solder, drill, grind or expose containers to heat or sources of ignition. Do not allow vapor to accumulate in low or confined areas.

10.5 Incompatible materials : Reactive or incompatible with the following materials:
oxidizing materials
Reactive or incompatible with the following materials: metals and acids.

10.6 Hazardous decomposition products : Under normal conditions of storage and use, hazardous decomposition products should not be produced.

Section 11. Toxicological information

11.1 Information on toxicological effects

Acute toxicity

Product/ingredient name	Result	Species	Dose	Exposure
Propan-2-ol	LD50 Dermal	Rabbit	12800 mg/kg	-
	LD50 Oral	Rat	5000 mg/kg	-
Ethanol	LC50 Inhalation Vapor	Rat	124700 mg/m ³	4 hours
	LD50 Oral	Rat	7 g/kg	-
Butan-1-ol	LC50 Inhalation Vapor	Rat	24000 mg/m ³	4 hours
	LD50 Dermal	Rabbit	3400 mg/kg	-
	LD50 Oral	Rat	790 mg/kg	-
Propan-1-ol	LC50 Inhalation Vapor	Rat - Male,	>33.8 mg/l	4 hours
		Female		
Butan-2-ol	LD50 Dermal	Rabbit	5040 mg/kg	-
	LC50 Inhalation Vapor	Rat	48500 mg/m ³	4 hours

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	LC50 Inhalation Vapor	Rat	8000 ppm	4 hours
	LD50 Dermal	Rat - Male, Female	>2000 mg/kg	-
2-Methylpropan-1-ol	LD50 Oral	Rat	2054 mg/kg	-
	LD50 Dermal	Rabbit	3400 mg/kg	-
2-Methylpropan-2-ol	LD50 Oral	Rat	2460 mg/kg	-
	LC50 Inhalation Gas.	Rat	14100 ppm	4 hours
	LD50 Dermal	Rabbit - Male, Female	>2000 mg/kg non-toxic.	-
Methanol	LD50 Oral	Rat	2733 mg/kg	-
	LC50 Inhalation Vapor	Rat	189.95 mg/l	1 hours
	LC50 Inhalation Vapor	Rat	145000 ppm	1 hours
	LC50 Inhalation Vapor	Rat	83.84 mg/l	4 hours
	LC50 Inhalation Vapor	Rat	64000 ppm	4 hours
	LD50 Dermal	Rabbit	15800 mg/kg	-
	LD50 Oral	Rat	5600 mg/kg	-
2-methoxy-2-methylbutane	LD50 Oral	Rat	1602 mg/kg	-
1,2-Dimethoxyethane	LD50 Dermal	Rabbit	2000 mg/kg	-
	LD50 Oral	Rat	775 mg/kg	-
tert-Butyl methyl ether	LC50 Inhalation Vapor	Rat	41000 mg/m ³	4 hours
	LC50 Inhalation Vapor	Rat	23576 ppm	4 hours
	LD50 Oral	Rat	4 g/kg	-
2-Ethoxy-2-methylpropane	LC50 Inhalation Vapor	Rat	36200 mg/m ³	4 hours
	LD50 Oral	Rat	7150 mg/kg	-
Diisopropyl ether	LD50 Oral	Rat	4.5 g/kg	-

Irritation/Corrosion

Product/ingredient name	Result	Species	Score	Exposure	Observation
Propan-2-ol	Eyes - Moderate irritant	Rabbit	-	10 mg	-
	Eyes - Moderate irritant	Rabbit	-	24 hours 100 mg	-
Ethanol	Skin - Mild irritant	Rabbit	-	500 mg	-
	Eyes - Mild irritant	Rabbit	-	24 hours 500 mg	-
	Eyes - Moderate irritant	Rabbit	-	0.066666667 minutes 100 mg	-
Butan-1-ol	Eyes - Moderate irritant	Rabbit	-	100 uL	-
	Eyes - Severe irritant	Rabbit	-	0.005 MI	-
	Eyes - Severe irritant	Rabbit	-	24 hours 2 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 mg	-
Propan-1-ol	Eyes - Moderate irritant	Rabbit	-	24 hours 20 mg	-
Butan-2-ol	Skin - Mild irritant	Rabbit	-	500 mg	-
	Eyes - Severe irritant	Rabbit	-	0.1 MI	-
2-Methylpropan-2-ol	Eyes - Severe irritant	Rabbit	-	24 hours 100 uL	-
	Skin - Mild irritant	Rabbit	-	24 hours 500 uL	-
Methanol	Eyes - Moderate irritant	Rabbit	-	24 hours 100 mg	-
	Eyes - Moderate irritant	Rabbit	-	40 mg	-
	Skin - Moderate irritant	Rabbit	-	24 hours 20 mg	-
2-methoxy-2-methylbutane	Eyes - Severe irritant	Rabbit	-	24 hours 100 uL	-
	Skin - Severe irritant	Rabbit	-	4 hours 500	-

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benzene	Eyes - Moderate irritant	Rabbit	-	uL	-
	Skin - Mild irritant	Rabbit	-	88 mg	-
2-Ethoxy-2-methylpropane	Skin - Mild irritant	Rat	-	24 hours 15	-
				mg	-
	Skin - Moderate irritant	Rabbit	-	8 hours 60 uL	-
				24 hours 20	-
Diisopropyl ether	Skin - Moderate irritant	Rabbit	-	mg	-
				24 hours 100	-
Diisopropyl ether	Skin - Mild irritant	Rabbit	-	uL	-
				4 hours 500	-
				uL	-
				363 mg	-

Conclusion/Summary

- Skin** : Repeated exposure may cause skin dryness or cracking.
- Eyes** : May cause eye irritation.

Sensitization

Not available.

Mutagenicity

- Conclusion/Summary** : Not available.

Carcinogenicity

- Conclusion/Summary** : Not available.

Classification

Product/ingredient name	OSHA	IARC	NTP
Propan-2-ol	-	3	-
Ethanol	-	1	-
benzene	+	1	Known to be a human carcinogen.
tert-Butyl methyl ether	-	3	-

Reproductive toxicity

- Conclusion/Summary** : Repeated or prolonged exposure to the substance can produce reproductive system damage.

Teratogenicity

- Conclusion/Summary** : Not available.

Specific target organ toxicity (single exposure)

Name	Category	Route of exposure	Target organs
Propan-2-ol	Category 3	-	Narcotic effects
Butan-1-ol	Category 3	-	Respiratory tract irritation
Propan-1-ol	Category 3	-	Narcotic effects
Butan-2-ol	Category 3	-	Respiratory tract irritation
2-Methylpropan-1-ol	Category 3	-	Narcotic effects
	Category 3	-	Respiratory tract irritation
2-Methylbutan-2-ol	Category 3	-	Narcotic effects
	Category 3	-	Respiratory tract irritation
	Category 3	-	Narcotic effects

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2-Methylpropan-2-ol	Category 3	-	Respiratory tract irritation
Methanol	Category 3 Category 1	-	Narcotic effects central nervous system (CNS), optic nerve
2-methoxy-2-methylbutane	Category 3	-	Respiratory tract irritation
tert-Butyl methyl ether	Category 3 Category 3	-	Narcotic effects Respiratory tract irritation
methylcyclopentane	Category 3 Category 3	-	Narcotic effects Respiratory tract irritation
2-Ethoxy-2-methylpropane	Category 3	-	Narcotic effects
Diisopropyl ether	Category 3 Category 3	-	Narcotic effects Respiratory tract irritation
	Category 3		Narcotic effects

Specific target organ toxicity (repeated exposure)

Name	Category	Route of exposure	Target organs
benzene	Category 1	-	-
Diisopropyl ether	Category 2	-	central nervous system (CNS)

Aspiration hazard

Name	Result
QUALITATIVE - PEAK ID MIX ASTM-D4815, Part Number 8500-8434	ASPIRATION HAZARD - Category 1
benzene	ASPIRATION HAZARD - Category 1
methylcyclopentane	ASPIRATION HAZARD - Category 1

Information on the likely routes of exposure : Routes of entry anticipated: Oral, Dermal, Inhalation, Eyes.

Potential acute health effects

- Eye contact** : Causes serious eye damage.
- Inhalation** : Harmful if inhaled. May cause damage to organs following a single exposure if inhaled. Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness. May cause respiratory irritation.
- Skin contact** : Harmful in contact with skin. May cause damage to organs following a single exposure in contact with skin. Causes skin irritation.
- Ingestion** : Harmful if swallowed. May cause damage to organs following a single exposure if swallowed. Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

Symptoms related to the physical, chemical and toxicological characteristics

- Eye contact** : Adverse symptoms may include the following:
pain
watering
redness

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- Inhalation** : Adverse symptoms may include the following:
 respiratory tract irritation
 coughing
 nausea or vomiting
 headache
 drowsiness/fatigue
 dizziness/vertigo
 unconsciousness
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations
- Skin contact** : Adverse symptoms may include the following:
 pain or irritation
 redness
 blistering may occur
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations
- Ingestion** : Adverse symptoms may include the following:
 stomach pains
 nausea or vomiting
 reduced fetal weight
 increase in fetal deaths
 skeletal malformations

Delayed and immediate effects and also chronic effects from short and long term exposure

Short term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Long term exposure

- Potential immediate effects** : Not available.
- Potential delayed effects** : Not available.

Potential chronic health effects

- General** : Causes damage to organs through prolonged or repeated exposure.
- Carcinogenicity** : May cause cancer. Risk of cancer depends on duration and level of exposure.
- Mutagenicity** : May cause genetic defects.
- Reproductive toxicity** : May damage fertility or the unborn child.

Numerical measures of toxicity

Acute toxicity estimates

Product/ingredient name	Oral (mg/kg)	Dermal (mg/kg)	Inhalation (gases) (ppm)	Inhalation (vapors) (mg/l)	Inhalation (dusts and mists) (mg/l)
QUALITATIVE - PEAK ID MIX ASTM-D4815, Part Number 8500-8434	713.5	1918.2	139841.1	19.9	N/A
Propan-2-ol	5000	12800	N/A	72.2	N/A
Ethanol	7000	N/A	N/A	124.7	N/A
Butan-1-ol	790	3400	N/A	24	N/A
Propan-1-ol	N/A	5040	N/A	N/A	N/A
Butan-2-ol	2054	2500	N/A	48.5	N/A
2-Methylpropan-1-ol	2460	3400	N/A	N/A	N/A

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2-Methylbutan-2-ol	N/A	1100	N/A	11	N/A
2-Methylpropan-2-ol	2733	N/A	14100	N/A	N/A
Methanol	100	300	N/A	3	N/A
2-methoxy-2-methylbutane	1602	N/A	N/A	N/A	N/A
1,2-Dimethoxyethane	775	2000	N/A	11	N/A
tert-Butyl methyl ether	4000	N/A	N/A	41	N/A
2-Ethoxy-2-methylpropane	7150	N/A	N/A	36.2	N/A
Diisopropyl ether	4500	N/A	N/A	N/A	N/A

Other information

: Adverse symptoms may include the following: blurred or double vision Eye contact can result in corneal damage or blindness. Repeated or prolonged exposure to the substance can produce liver damage. Narcotic effect. May cause nervous system disturbances.

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12.1 Toxicity

Product/ingredient name	Result	Species	Exposure
Propan-2-ol	Acute EC50 7550 mg/l Fresh water	Daphnia - <i>Daphnia magna</i> - Neonate	48 hours
	Acute LC50 1400000 µg/l Marine water	Crustaceans - <i>Crangon crangon</i>	48 hours
	Acute LC50 4200 mg/l Fresh water	Fish - <i>Rasbora heteromorpha</i>	96 hours
	Acute EC50 3306 mg/l Marine water	Algae - <i>Ulva pertusa</i>	96 hours
	Acute EC50 1074 mg/l Fresh water	Crustaceans - <i>Cypris subglobosa</i>	48 hours
	Acute EC50 2 mg/l Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute LC50 11000000 µg/l Marine water	Fish - <i>Alburnus alburnus</i>	96 hours
	Chronic NOEC 4.995 mg/l Marine water	Algae - <i>Ulva pertusa</i>	96 hours
	Chronic NOEC 100 ul/L Fresh water	Daphnia - <i>Daphnia magna</i> - Neonate	21 days
	Butan-1-ol	Acute EC50 225 mg/l Fresh water	Algae - <i>Pseudokirchneriella subcapitata</i>
Acute EC50 1983 mg/l Fresh water		Daphnia - <i>Daphnia magna</i>	48 hours
Acute LC50 1730000 µg/l Fresh water		Fish - <i>Pimephales promelas</i>	96 hours
Acute NOEC 415 mg/l Fresh water		Daphnia - <i>Daphnia magna</i>	48 hours
Propan-1-ol	Acute NOEC 519 mg/l Fresh water	Fish - <i>Pimephales promelas</i>	Static
	Acute EC50 4480000 µg/l Fresh water	Algae - <i>Selenastrum sp.</i>	96 hours
	Acute LC50 1000000 µg/l Fresh water	Crustaceans - <i>Gammarus pulex</i>	48 hours
	Acute LC50 2950000 µg/l Fresh water	Daphnia - <i>Daphnia pulex</i>	48 hours
	Acute LC50 3800000 µg/l Marine water	Fish - <i>Alburnus alburnus</i>	96 hours
	Acute EC50 4227 mg/l Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
Butan-2-ol	Acute LC50 3670000 µg/l Fresh water	Fish - <i>Pimephales promelas</i>	96 hours
	Acute LC50 600 mg/l Marine water	Crustaceans - <i>Artemia salina</i>	48 hours
2-Methylpropan-1-ol	Acute LC50 1030000 µg/l Fresh water	Daphnia - <i>Daphnia magna</i> - Neonate	48 hours
	Acute LC50 1330000 µg/l Fresh water	Fish - <i>Oncorhynchus mykiss</i>	96 hours
2-Methylbutan-2-ol	Chronic NOEC 4 mg/l Fresh water	Daphnia - <i>Daphnia magna</i>	21 days
	Acute LC50 450 mg/l Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute EC50 >976 mg/l Fresh water	Algae	72 hours
	Acute EC50 5504 mg/l Fresh water	Daphnia - <i>Daphnia magna</i>	48 hours
	Acute LC50 6410000 µg/l Fresh water	Fish - <i>Pimephales promelas</i>	96 hours
	Chronic NOEC 100 mg/l Fresh water	Daphnia	21 days
	Acute EC50 2736 mg/l Marine water	Algae - <i>Ulva pertusa</i>	96 hours
	Acute LC50 2500000 µg/l Marine water	Crustaceans - <i>Crangon crangon</i> - Adult	48 hours
2-Methylpropan-2-ol	Acute LC50 3289 mg/l Fresh water	Daphnia - <i>Daphnia magna</i> -	48 hours

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2-methoxy-2-methylbutane	Acute LC50 290 mg/l Fresh water Chronic NOEC 9.96 mg/l Marine water Acute EC50 230 mg/l Fresh water Acute EC50 >100000 µg/l Fresh water Acute LC50 >100000 µg/l Fresh water Acute NOEC 77 mg/l Fresh water Chronic NOEC 3.39 mg/l	Neonate Fish - <i>Danio rerio</i> - Egg Algae - <i>Ulva pertusa</i> Algae Daphnia - <i>Daphnia magna</i> Fish - <i>Oncorhynchus mykiss</i> Algae Crustaceans	96 hours 96 hours 72 hours 48 hours 96 hours 72 hours 28 days
1,2-Dimethoxyethane	Acute EC50 9120 mg/l Fresh water	Algae - <i>Pseudokirchneriella subcapitata</i> Daphnia - <i>Daphnia magna</i>	72 hours 48 hours
benzene	Acute EC50 4000 mg/l Fresh water Acute EC50 1600000 µg/l Fresh water Acute EC50 9.23 mg/l Fresh water	Algae - <i>Selenastrum sp.</i> Daphnia - <i>Daphnia magna</i> - Neonate Crustaceans - <i>Artemia salina</i> Fish - <i>Oncorhynchus gorbuscha</i> - Fry	96 hours 48 hours 96 hours 48 hours
	Acute LC50 21 mg/l Marine water Acute LC50 5.28 ul/L Fresh water	Fish - <i>Oncorhynchus gorbuscha</i> - Fry Algae - <i>Desmodesmus subspicatus</i>	48 hours 96 hours
	Chronic EC10 >1360 mg/l Fresh water	Daphnia - <i>Daphnia magna</i> Fish - <i>Morone saxatilis</i> - Juvenile (Fledgling, Hatchling, Weanling)	96 hours 21 days 4 weeks
tert-Butyl methyl ether	Chronic NOEC 98 mg/l Fresh water Chronic NOEC 1.5 to 5.4 ul/L Marine water Acute EC50 472 mg/l Fresh water Acute LC50 672000 µg/l Fresh water Chronic NOEC 26 mg/l Marine water Chronic NOEC 3.04 mg/l Fresh water	Daphnia Fish - <i>Pimephales promelas</i> Daphnia Fish	48 hours 96 hours 28 days 21 days
2-Ethoxy-2-methylpropane	Acute EC50 1100 mg/l Fresh water	Algae - <i>Pseudokirchneriella subcapitata</i>	72 hours
	Acute NOEC 7.5 mg/l Fresh water	Algae - <i>Pseudokirchneriella subcapitata</i>	72 hours
Diisopropyl ether	Acute EC50 190 mg/l Fresh water Acute LC50 91700 µg/l Fresh water	Daphnia - <i>Daphnia magna</i> Fish - <i>Pimephales promelas</i>	48 hours 96 hours

Conclusion/Summary : Not available.

12.2 Persistence and degradability

Product/ingredient name	Test	Result	Dose	Inoculum
2-Methylbutan-2-ol	OECD 310 Ready Biodegradability - CO ₂ in Sealed Vessels (Headspace Test)	40 to 50 % - Inherent - 28 days	-	-
2-Methylpropan-2-ol	OECD 301B Ready Biodegradability - CO ₂ Evolution Test	2.6 to 5.1 % - Not readily - 29 days	ThCO ₂	-
2-methoxy-2-methylbutane	OECD 301D Ready Biodegradability - Closed Bottle Test	4 % - Readily - 28 days	-	-
1,2-Dimethoxyethane	OECD 302B Inherent Biodegradability: Zahn-Wellens/	16 % - Not readily - 28 days	95 mg/l	Activated sludge

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tert-Butyl methyl ether	EMPA Test OECD 301D Ready Biodegradability - Closed Bottle Test	0 % - Not readily - 28 days	-	Activated sludge
methylcyclopentane	OECD 301C Ready Biodegradability - Modified MITI Test (I)	93 to 94 % - Readily - 28 days	-	-
Diisopropyl ether	OECD 301D Ready Biodegradability - Closed Bottle Test	0 % - Not readily - 28 days	-	-

Product/ingredient name	Aquatic half-life	Photolysis	Biodegradability
Propan-2-ol	-	-	Readily
Ethanol	-	-	Readily
Butan-1-ol	-	-	Readily
Propan-1-ol	-	-	Readily
Butan-2-ol	-	-	Readily
2-Methylpropan-1-ol	-	-	Readily
2-Methylbutan-2-ol	-	-	Inherent
Methanol	-	-	Readily
2-methoxy-2-methylbutane	-	-	Not readily
1,2-Dimethoxyethane	-	-	Not readily
benzene	-	-	Readily
tert-Butyl methyl ether	-	50%; 3.2 day(s)	Not readily
methylcyclopentane	-	-	Readily
Diisopropyl ether	-	-	Not readily

12.3 Bioaccumulative potential

Product/ingredient name	LogP _{ow}	BCF	Potential
Propan-2-ol	0.05	-	Low
Ethanol	-0.35	0.5	Low
Butan-1-ol	1	-	Low
Propan-1-ol	0.2	-	Low
Butan-2-ol	0.61	-	Low
2-Methylpropan-1-ol	1	3	Low
2-Methylbutan-2-ol	0.89	-	Low
2-Methylpropan-2-ol	0.317	5.01	Low
Methanol	-0.77	<10	Low
2-methoxy-2-methylbutane	1.55	-	Low
1,2-Dimethoxyethane	-0.21	-	Low
benzene	2.13	11	Low
tert-Butyl methyl ether	1.04	1.5	Low
methylcyclopentane	3.37	-	Low
2-Ethoxy-2-methylpropane	1.48	-	Low
Diisopropyl ether	2.4	-	Low

12.4 Mobility in soil

Soil/water partition coefficient (K_{oc}) : Not available.

Section 12. Ecological information

12.5 Other adverse effects : No known significant effects or critical hazards.

Section 13. Disposal considerations

13.1 Waste treatment methods

Disposal methods : The generation of waste should be avoided or minimized wherever possible. Disposal of this product, solutions and any by-products should at all times comply with the requirements of environmental protection and waste disposal legislation and any regional local authority requirements. Dispose of surplus and non-recyclable products via a licensed waste disposal contractor. Waste should not be disposed of untreated to the sewer unless fully compliant with the requirements of all authorities with jurisdiction. Waste packaging should be recycled. Incineration or landfill should only be considered when recycling is not feasible. This material and its container must be disposed of in a safe way. Care should be taken when handling emptied containers that have not been cleaned or rinsed out. Empty containers or liners may retain some product residues. Vapor from product residues may create a highly flammable or explosive atmosphere inside the container. Do not cut, weld or grind used containers unless they have been cleaned thoroughly internally. Avoid dispersal of spilled material and runoff and contact with soil, waterways, drains and sewers.

United States - RCRA Toxic hazardous waste "U" List

Ingredient	CAS #	Status	Reference number
1-Butanol (I)	71-36-3	Listed	U031
Isobutyl alcohol (I,T)	78-83-1	Listed	U140
Methanol (I)	67-56-1	Listed	U154
Benzene (I,T)	71-43-2	Listed	U019

Disposal should be in accordance with applicable regional, national and local laws and regulations. Local regulations may be more stringent than regional or national requirements.

The information presented below only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations.

Refer to Section 7: HANDLING AND STORAGE and Section 8: EXPOSURE CONTROLS/PERSONAL PROTECTION for additional handling information and protection of employees.

Section 14. Transport information

DOT / TDG / Mexico / IMDG / IATA : Not regulated.

Additional information

Remarks: De minimis quantities

Special precautions for user : **Transport within user's premises:** always transport in closed containers that are upright and secure. Ensure that persons transporting the product know what to do in the event of an accident or spillage.

Transport in bulk according to IMO instruments : Not available.

Section 15. Regulatory information

15.1 Safety, health and environmental regulations/legislation specific for the substance or mixture

U.S. Federal regulations : **TSCA 5(a)2 final significant new use rules:** 1,2-Dimethoxyethane
TSCA 8(a) PAIR: Butan-2-ol; 2-Methylpropan-2-ol; 2-methoxy-2-methylbutane; 2-Ethoxy-2-methylpropane
TSCA 8(a) CDR Exempt/Partial exemption: Not determined
TSCA 12(b) one-time export: 1,2-Dimethoxyethane
Clean Water Act (CWA) 307: benzene
Clean Water Act (CWA) 311: benzene

Clean Air Act Section 112 (b) Hazardous Air Pollutants (HAPs) : Listed

Clean Air Act Section 602 Class I Substances : Not listed

Clean Air Act Section 602 Class II Substances : Not listed

DEA List I Chemicals (Precursor Chemicals) : Not listed

DEA List II Chemicals (Essential Chemicals) : Not listed

SARA 302/304

Composition/information on ingredients

No products were found.

SARA 304 RQ : Not applicable.

SARA 311/312

Classification : FLAMMABLE LIQUIDS - Category 2
 ACUTE TOXICITY (oral) - Category 4
 ACUTE TOXICITY (dermal) - Category 4
 ACUTE TOXICITY (inhalation) - Category 4
 SKIN IRRITATION - Category 2
 SERIOUS EYE DAMAGE - Category 1
 GERM CELL MUTAGENICITY - Category 1
 CARCINOGENICITY - Category 1A
 TOXIC TO REPRODUCTION - Category 1B
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 2
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3
 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1
 ASPIRATION HAZARD - Category 1

Composition/information on ingredients

Name	%	Classification
Propan-2-ol	≤10	FLAMMABLE LIQUIDS - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
Ethanol	≤10	HNOC - Defatting irritant FLAMMABLE LIQUIDS - Category 2 EYE IRRITATION - Category 2A HNOC - Defatting irritant
Butan-1-ol	≤10	FLAMMABLE LIQUIDS - Category 3 ACUTE TOXICITY (oral) - Category 4 SKIN IRRITATION - Category 2

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Propan-1-ol	≤10	SERIOUS EYE DAMAGE - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 HNOC - Defatting irritant FLAMMABLE LIQUIDS - Category 2 SERIOUS EYE DAMAGE - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 HNOC - Defatting irritant
Butan-2-ol	≤10	FLAMMABLE LIQUIDS - Category 3 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 HNOC - Defatting irritant
2-Methylpropan-1-ol	≤10	FLAMMABLE LIQUIDS - Category 3 SKIN IRRITATION - Category 2 SERIOUS EYE DAMAGE - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 HNOC - Defatting irritant
2-Methylbutan-2-ol	≤10	FLAMMABLE LIQUIDS - Category 2 ACUTE TOXICITY (dermal) - Category 4 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 SERIOUS EYE DAMAGE - Category 1 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
2-Methylpropan-2-ol	≤10	FLAMMABLE LIQUIDS - Category 2 ACUTE TOXICITY (inhalation) - Category 4 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
Methanol	<10	FLAMMABLE LIQUIDS - Category 2 ACUTE TOXICITY (oral) - Category 3 ACUTE TOXICITY (dermal) - Category 3 ACUTE TOXICITY (inhalation) - Category 3
2-methoxy-2-methylbutane	≤10	SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 1 FLAMMABLE LIQUIDS - Category 2 ACUTE TOXICITY (oral) - Category 4 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
1,2-Dimethoxyethane	≤10	FLAMMABLE LIQUIDS - Category 2 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 4 ACUTE TOXICITY (inhalation) - Category 4
benzene	≤10	TOXIC TO REPRODUCTION - Category 1B FLAMMABLE LIQUIDS - Category 2 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A GERM CELL MUTAGENICITY - Category 1B CARCINOGENICITY - Category 1A SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1 ASPIRATION HAZARD - Category 1
tert-Butyl methyl ether	≤5	HNOC - Defatting irritant FLAMMABLE LIQUIDS - Category 2 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3

Section 15. Regulatory information

methylcyclopentane	≤5	FLAMMABLE LIQUIDS - Category 2 SKIN IRRITATION - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 ASPIRATION HAZARD - Category 1 HNOC - Static-accumulating flammable liquid
2-Ethoxy-2-methylpropane	≤5	FLAMMABLE LIQUIDS - Category 2 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 HNOC - Defatting irritant
Diisopropyl ether	≤5	FLAMMABLE LIQUIDS - Category 2 EYE IRRITATION - Category 2A SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 2 HNOC - Defatting irritant

SARA 313

	Product name	CAS number	%
Form R - Reporting requirements	Butan-1-ol	71-36-3	≤10
	Butan-2-ol	78-92-2	≤10
	2-Methylpropan-2-ol	75-65-0	≤10
	Methanol	67-56-1	<10
	1,2-Dimethoxyethane	110-71-4	≤10
	benzene	71-43-2	≤10
	tert-Butyl methyl ether	1634-04-4	≤5
Supplier notification	Butan-1-ol	71-36-3	≤10
	Butan-2-ol	78-92-2	≤10
	2-Methylpropan-2-ol	75-65-0	≤10
	Methanol	67-56-1	<10
	1,2-Dimethoxyethane	110-71-4	≤10
	benzene	71-43-2	≤10
	tert-Butyl methyl ether	1634-04-4	≤5

SARA 313 notifications must not be detached from the SDS and any copying and redistribution of the SDS shall include copying and redistribution of the notice attached to copies of the SDS subsequently redistributed.

State regulations

Massachusetts

: The following components are listed: ISOPROPYL ALCOHOL; ETHYL ALCOHOL; N-BUTYL ALCOHOL; PROPYL ALCOHOL; SEC-BUTYL ALCOHOL; ISOBUTYL ALCOHOL; 2-METHYL-2-BUTANOL; TERT-BUTYL ALCOHOL; METHANOL; ETHYLENE GLYCOL DIMETHYL ETHER; BENZENE; METHYL TERT-BUTYL ETHER; METHYLCYCLOPENTANE; ISOPROPYL ETHER

New York

: The following components are listed: Butyl alcohol; Isobutanol; Methanol; Benzene; Methyl tert-butyl ether

New Jersey

: The following components are listed: ISOPROPYL ALCOHOL; ETHYL ALCOHOL; n-BUTYL ALCOHOL; PROPYL ALCOHOL; sec-BUTYL ALCOHOL; ISOBUTYL ALCOHOL; 2-METHYL-2-BUTANOL; tert-BUTYL ALCOHOL; METHYL ALCOHOL; tert-AMYL METHYL ETHER; 1,2-DIMETHOXYETHANE; BENZENE; METHYL-tert-BUTYL ETHER; METHYL CYCLOPENTANE; ETHYL tert-BUTYL ETHER; DIISOPROPYL ETHER

Pennsylvania

: The following components are listed: 2-PROPANOL; ETHANOL; 1-BUTANOL; 1-PROPANOL; 2-BUTANOL; 1-PROPANOL, 2-METHYL-; 2-BUTANOL, 2-METHYL-; 2-PROPANOL, 2-METHYL-; METHANOL; ETHANE, 1,2-DIMETHOXY-; BENZENE; METHYL TERT-BUTYL ETHER; CYCLOPENTANE, METHYL-; PROPANE, 2,2'-OXYBIS-

California Prop. 65

Section 15. Regulatory information

⚠ WARNING: This product can expose you to chemicals including Benzene, which is known to the State of California to cause cancer and birth defects or other reproductive harm. This product can expose you to chemicals including Methanol, which is known to the State of California to cause birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

Ingredient name	No significant risk level	Maximum acceptable dosage level
Methanol	-	Yes.
Benzene	Yes.	Yes.

International regulations

Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

Montreal Protocol

Not listed.

Stockholm Convention on Persistent Organic Pollutants

Not listed.

Rotterdam Convention on Prior Informed Consent (PIC)

Not listed.

UNECE Aarhus Protocol on POPs and Heavy Metals

Not listed.

Inventory list

Australia	: Not determined.
Canada	: At least one component is not listed in DSL but all such components are listed in NDSL.
China	: Not determined.
Japan	: Japan inventory (CSCL): Not determined. Japan inventory (ISHL): Not determined.
New Zealand	: Not determined.
Philippines	: Not determined.
Republic of Korea	: All components are listed or exempted.
Taiwan	: All components are listed or exempted.
Thailand	: Not determined.
Turkey	: Not determined.
United States	: All components are active or exempted.
Viet Nam	: All components are listed or exempted.

Section 16. Other information

Procedure used to derive the classification

Classification	Justification
FLAMMABLE LIQUIDS - Category 2 ACUTE TOXICITY (oral) - Category 4 ACUTE TOXICITY (dermal) - Category 4 ACUTE TOXICITY (inhalation) - Category 4 SKIN IRRITATION - Category 2 SERIOUS EYE DAMAGE - Category 1 GERM CELL MUTAGENICITY - Category 1 CARCINOGENICITY - Category 1A	On basis of test data Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method Calculation method

Section 16. Other information

TOXIC TO REPRODUCTION - Category 1B	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) - Category 2	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3	Calculation method
SPECIFIC TARGET ORGAN TOXICITY (REPEATED EXPOSURE) - Category 1	Calculation method
ASPIRATION HAZARD - Category 1	Expert judgment

History

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Key to abbreviations :

- ATE = Acute Toxicity Estimate
- BCF = Bioconcentration Factor
- GHS = Globally Harmonized System of Classification and Labelling of Chemicals
- IATA = International Air Transport Association
- IBC = Intermediate Bulk Container
- IMDG = International Maritime Dangerous Goods
- LogPow = logarithm of the octanol/water partition coefficient
- MARPOL = International Convention for the Prevention of Pollution From Ships, 1973 as modified by the Protocol of 1978. ("Marpol" = marine pollution)
- N/A = Not available
- UN = United Nations

📌 Indicates information that has changed from previously issued version.

Notice to reader

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