Conforms to US OSHA Hazard Communication 29CFR1910.1200

# SAFETY DATA SHEET

Agilent Technologies

AFREGELMIX Gasahol Analyzer

## Section 1. Identification

**GHS product identifier** : AFREGELMIX Gasahol Analyzer

**Part no.** : CP80262

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

**Identified uses** : Reagents and Standards for Analytical Chemistry Laboratory Use
50 ml

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

**Emergency telephone number (with hours of operation)** : CHEMTREC®: 1-800-424-9300

## Section 2. Hazards identification

**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 |
| H336 | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 |
| H304 | ASPIRATION HAZARD - Category 1 |
| H411 | AQUATIC HAZARD (LONG-TERM) - Category 2 |

**GHS label elements**

**Hazard pictograms** :

**Signal word** : Danger

**Hazard statements** : H225 - Highly flammable liquid and vapor.
H304 - May be fatal if swallowed and enters airways.
H336 - May cause drowsiness or dizziness.
H411 - Toxic to aquatic life with long lasting effects.

**Precautionary statements**

**Prevention** : P210 - Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P273 - Avoid release to the environment.
P261 - Avoid breathing vapor.

**Response** : P391 - Collect spillage.
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.

**Storage** : P403 + P233 - Store in a well-ventilated place. Keep container tightly closed.

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

# Section 2. Hazards identification

## Other hazards

**Hazards not otherwise classified** : None known.

**Hazards identified when used** : No known significant effects or critical hazards.

# Section 3. Composition/information on ingredients

**Substance/mixture** : Mixture

| Ingredient name | Synonyms | % | Identifiers |
|---|---|---|---|
| pentane | - | ≥80 | CAS: 109-66-0 |
| 2-methoxy-2-methylbutane | - | ≥0.5 - ≤1.5 | CAS: 994-05-8 |
| tert-Butyl methyl ether | - | ≥0.5 - ≤1.5 | CAS: 1634-04-4 |
| Heptane | - | ≥0.5 - ≤1.5 | CAS: 142-82-5 |
| Cyclohexane | - | ≥0.1 - ≤1 | CAS: 110-82-7 |

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

## Description of necessary first aid measures

**Eye contact** : 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. Get medical attention if irritation occurs.

**Inhalation** : 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. Get medical attention. If necessary, call a poison center or physician. 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** : Flush contaminated skin with plenty of water. Remove contaminated clothing and shoes. Get medical attention if symptoms occur. Wash clothing before reuse. Clean shoes thoroughly before reuse.

**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. 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.

## Most important symptoms/effects, acute and delayed

### Potential acute health effects

**Eye contact** : No known significant effects or critical hazards.

# Section 4. First aid measures

**Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

**Skin contact** : No known significant effects or critical hazards.

**Ingestion** : Can cause central nervous system (CNS) depression. May be fatal if swallowed and enters airways.

## Over-exposure signs/symptoms

**Eye contact** : No specific data.

**Inhalation** : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

**Skin contact** : No specific data.

**Ingestion** : Adverse symptoms may include the following:
nausea or vomiting

## 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.

**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.

**See toxicological information (Section 11)**

# Section 5. Fire-fighting measures

## Extinguishing media

**Suitable extinguishing media** : Use dry chemical, $CO_2$, water spray (fog) or foam.

**Unsuitable extinguishing media** : Do not use water jet.

**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. This material is toxic to aquatic life with long lasting effects. Fire water contaminated with this material must be contained and prevented from being discharged to any waterway, sewer or drain.

**Hazardous thermal decomposition products** : Decomposition products may include the following materials:
carbon dioxide
carbon monoxide

**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

## 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. Avoid breathing 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".

**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). Water polluting material. May be harmful to the environment if released in large quantities. Collect spillage.

## Methods and materials for containment and cleaning up

**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

## Precautions for safe handling

**Protective measures** : Put on appropriate personal protective equipment (see Section 8). Do not swallow. Avoid contact with eyes, skin and clothing. Avoid breathing vapor or mist. Avoid release to the environment. 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.

**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.

# Section 8. Exposure controls/personal protection

## Control parameters

### Occupational exposure limits

| Ingredient name | Exposure limits |
|---|---|
| pentane | **NIOSH REL (United States, 10/2020)**<br>TWA 10 hours: 120 ppm.<br>TWA 10 hours: 350 mg/m³.<br>CEIL 15 minutes: 610 ppm.<br>CEIL 15 minutes: 1800 mg/m³.<br>**CAL OSHA PEL (United States, 1/2025)**<br>TWA 8 hours: 1800 mg/m³.<br>TWA 8 hours: 600 ppm.<br>**OSHA PEL (United States, 5/2018)**<br>TWA 8 hours: 1000 ppm.<br>TWA 8 hours: 2950 mg/m³.<br>**OSHA PEL 1989 (United States, 3/1989)**<br>TWA 8 hours: 600 ppm.<br>TWA 8 hours: 1800 mg/m³.<br>STEL 15 minutes: 750 ppm.<br>STEL 15 minutes: 2250 mg/m³.<br>**ACGIH TLV (United States, 1/2024) [Pentane]**<br>TWA 8 hours: 1000 ppm. |
| 2-methoxy-2-methylbutane | **ACGIH TLV (United States, 1/2024)**<br>TWA 8 hours: 20 ppm. |
| tert-Butyl methyl ether | **CAL OSHA PEL (United States, 1/2025)**<br>TWA 8 hours: 144 mg/m³.<br>TWA 8 hours: 40 ppm.<br>**ACGIH TLV (United States, 1/2024)** A3.<br>TWA 8 hours: 50 ppm. |
| Heptane | **NIOSH REL (United States, 10/2020)**<br>TWA 10 hours: 85 ppm.<br>TWA 10 hours: 350 mg/m³.<br>CEIL 15 minutes: 440 ppm.<br>CEIL 15 minutes: 1800 mg/m³.<br>**CAL OSHA PEL (United States, 1/2025)**<br>STEL 15 minutes: 2000 mg/m³.<br>STEL 15 minutes: 500 ppm.<br>TWA 8 hours: 1600 mg/m³.<br>TWA 8 hours: 400 ppm.<br>**OSHA PEL (United States, 5/2018)**<br>TWA 8 hours: 500 ppm.<br>TWA 8 hours: 2000 mg/m³.<br>**OSHA PEL 1989 (United States, 3/1989)**<br>TWA 8 hours: 400 ppm.<br>TWA 8 hours: 1600 mg/m³.<br>STEL 15 minutes: 500 ppm.<br>STEL 15 minutes: 2000 mg/m³.<br>**ACGIH TLV (United States, 1/2024) [Heptane]**<br>TWA 8 hours: 400 ppm.<br>TWA 8 hours: 1640 mg/m³.<br>STEL 15 minutes: 500 ppm.<br>STEL 15 minutes: 2050 mg/m³. |
| Cyclohexane | **NIOSH REL (United States, 10/2020)**<br>TWA 10 hours: 300 ppm.<br>TWA 10 hours: 1050 mg/m³. |

# Section 8. Exposure controls/personal protection

| | |
|---|---|
| | **CAL OSHA PEL (United States, 1/2025)**<br>TWA 8 hours: 1050 mg/m³.<br>TWA 8 hours: 300 ppm.<br>**OSHA PEL (United States, 5/2018)**<br>TWA 8 hours: 300 ppm.<br>TWA 8 hours: 1050 mg/m³.<br>**OSHA PEL 1989 (United States, 3/1989)**<br>TWA 8 hours: 300 ppm.<br>TWA 8 hours: 1050 mg/m³.<br>**ACGIH TLV (United States, 1/2024)**<br>TWA 8 hours: 100 ppm. |

**Biological exposure indices**

| Ingredient name | Exposure indices |
|---|---|
| Cyclohexane | **ACGIH BEI (United States, 1/2024)**<br>BEI: 50 mg/g creatinine, 1,2-cyclohexanediol [in urine]. Sampling time: end of shift at end of workweek. |

**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.

**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: safety glasses with side-shields.

**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.

## Section 8. Exposure controls/personal protection

**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

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

**Appearance**

**Physical state** : Liquid. [Clear.]

**Color** : Colorless.

**Odor** : Characteristic. Gasoline-like

**Odor threshold** : Not available.

**pH** : Not available.

**Melting point/freezing point** : -130°C (-202°F)

**Boiling point or initial boiling point and boiling range** : 36°C (96.8°F)

**Flash point** : Closed cup: -50°C (-58°F)

**Evaporation rate** : 28.6 (butyl acetate = 1)

**Flammability** : Not applicable.

**Lower and upper explosion limit/flammability limit** : Lower: 1.5%
Upper: 7.8%

**Vapor pressure** : 56.8 kPa (426 mm Hg)

**Relative vapor density** : 2.5 [Air = 1]

**Relative density** : 0.63

**Density** : 0.63 g/cm³

**Solubility(ies)** :

| Media | Result |
|---|---|
| water | Insoluble |

**Miscible with water** : No.

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

**Auto-ignition temperature** : 260°C (500°F)

**Decomposition temperature** : Not available.

**Viscosity** : Dynamic (room temperature): Not available.
Kinematic (room temperature): Not available.
Kinematic (40°C (104°F)): Not available.

**Particle characteristics**

**Median particle size** : Not applicable.

## Section 10. Stability and reactivity

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

**Chemical stability** : The product is stable.

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

# Section 10. Stability and reactivity

**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.

**Incompatible materials** : Reactive or incompatible with the following materials:
oxidizing materials

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

# Section 11. Toxicological information

## Information on toxicological effects

### Acute toxicity

| Product/ingredient name | Result | |
|---|---|---|
| pentane | Rat - Male, Female - Oral - LD50 | >2000 mg/kg |
| | Rat - Inhalation - LC50 Vapor | 364 g/m³ [4 hours] |
| 2-methoxy-2-methylbutane | Rat - Oral - LD50 | 1602 mg/kg |
| tert-Butyl methyl ether | Rat - Oral - LD50 | 4 g/kg |
| | Rat - Inhalation - LC50 Vapor | 23576 ppm [4 hours] |
| | Rat - Inhalation - LC50 Vapor | 41000 mg/m³ [4 hours] |
| Heptane | Rat - Inhalation - LC50 Vapor | 103 g/m³ [4 hours] |
| | Rat - Inhalation - LC50 Vapor | 48000 ppm [4 hours] |
| Cyclohexane | Rat - Oral - LD50 | 6240 mg/kg |
| | Rabbit - Dermal - LD50 | >5500 mg/kg |
| | Rat - Male, Female - Inhalation - LC50 Vapor | >32880 mg/m³ [4 hours] |

**Conclusion/Summary [Product]** : Not available.

### Skin corrosion/irritation

| Product/ingredient name | Result | |
|---|---|---|
| 2-methoxy-2-methylbutane | Rabbit - Skin - Severe irritant | Duration of treatment/ exposure: 4 hours |

**Conclusion/Summary [Product]** : Repeated exposure may cause skin dryness or cracking.

### Serious eye damage/eye irritation

| | Result | |
|---|---|---|
| 2-methoxy-2-methylbutane | Rabbit - Eyes - Severe irritant | Duration of treatment/ exposure: 24 hours |
| Cyclohexane | Rabbit - Eyes - Severe irritant | - |

**Conclusion/Summary [Product]** : Not available.

### Respiratory corrosion/irritation

**Product/ingredient name**

**Conclusion/Summary [Product]** : Not available.

### Respiratory or skin sensitization

**Skin**

# Section 11. Toxicological information

**Conclusion/Summary [Product]** : Not available.

**Respiratory**

**Conclusion/Summary [Product]** : Not available.

## Germ cell mutagenicity

**Conclusion/Summary [Product]** : Not available.

## Carcinogenicity

Not available.

**Conclusion/Summary [Product]** : Not available.

### Classification

| Product/ingredient name | OSHA | IARC | NTP |
|---|---|---|---|
| tert-Butyl methyl ether | - | 3 | - |

## Reproductive toxicity

**Conclusion/Summary [Product]** : Not available.

## Specific target organ toxicity (single exposure)

| Product/ingredient name | Result |
|---|---|
| pentane | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 |
| 2-methoxy-2-methylbutane | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 |
| tert-Butyl methyl ether | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 |
| Heptane | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 |
| Cyclohexane | SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 |

## Specific target organ toxicity (repeated exposure)

Not available.

## Aspiration hazard

| Product/ingredient name | Result |
|---|---|

# Section 11. Toxicological information

| | |
|---|---|
| AFREGELMIX Gasahol Analyzer | ASPIRATION HAZARD - Category 1 |
| pentane | ASPIRATION HAZARD - Category 1 |
| Heptane | ASPIRATION HAZARD - Category 1 |
| Cyclohexane | 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** : No known significant effects or critical hazards.

**Inhalation** : Can cause central nervous system (CNS) depression. May cause drowsiness or dizziness.

**Skin contact** : No known significant effects or critical hazards.

**Ingestion** : 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** : No specific data.

**Inhalation** : Adverse symptoms may include the following:
nausea or vomiting
headache
drowsiness/fatigue
dizziness/vertigo
unconsciousness

**Skin contact** : No specific data.

**Ingestion** : Adverse symptoms may include the following:
nausea or vomiting

## 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

**Conclusion/Summary [Product]** : Not available.

**General** : No known significant effects or critical hazards.

**Carcinogenicity** : No known significant effects or critical hazards.

**Mutagenicity** : No known significant effects or critical hazards.

**Reproductive toxicity** : No known significant effects or critical hazards.

## Numerical measures of toxicity

### Acute toxicity estimates

# Section 11. Toxicological information

| Product/ingredient name | Oral (mg/kg) | Dermal (mg/kg) | Inhalation (gases) (ppm) | Inhalation (vapors) (mg/l) | Inhalation (dusts and mists) (mg/l) |
|---|---|---|---|---|---|
| AFREGELMIX Gasahol Analyzer | 2533.5 | N/A | N/A | N/A | N/A |
| pentane | 2500 | N/A | N/A | 364 | N/A |
| 2-methoxy-2-methylbutane | 1602 | N/A | N/A | N/A | N/A |
| tert-Butyl methyl ether | 4000 | N/A | N/A | 41 | N/A |
| Heptane | N/A | N/A | N/A | 103 | N/A |
| Cyclohexane | 6240 | N/A | N/A | N/A | N/A |

# Section 12. Ecological information

## Toxicity

| Product/ingredient name | Result | |
|---|---|---|
| 2-methoxy-2-methylbutane | Acute - LC50 - Fresh water | >100 mg/l [96 hours] |
| | Acute - EC50 - Fresh water | >100 mg/l [48 hours] |
| | Chronic - NOEC | 3.39 mg/l [28 days] |
| | Acute - NOEC - Fresh water | 77 mg/l [72 hours] |
| | Acute - EC50 - Fresh water | 230 mg/l [72 hours] |
| tert-Butyl methyl ether | Acute - LC50 - Fresh water | 672 mg/l [96 hours] |
| | Acute - EC50 - Fresh water | 472 mg/l [48 hours] |
| | Chronic - NOEC - Marine water | 26 mg/l [28 days] |
| | Chronic - NOEC - Fresh water | 3.04 mg/l [21 days] |
| Heptane | Acute - LC50 - Fresh water | 375 mg/l [96 hours] |
| Cyclohexane | Acute - LC50 - Fresh water | 4530 µg/l [96 hours] |

**Conclusion/Summary [Product]** : Not available.

## Persistence and degradability

| Product/ingredient name | Result | | |
|---|---|---|---|
| pentane | OECD [Ready Biodegradability - Manometric Respirometry Test] | 87% [28 days] - Readily | Aerobic |
| 2-methoxy-2-methylbutane | OECD [Ready Biodegradability - Closed Bottle Test] | 4% [28 days] - Readily | - |
| tert-Butyl methyl ether | OECD [Ready Biodegradability - Closed Bottle Test] | 0% [28 days] - Not readily | Aerobic |

**Conclusion/Summary [Product]** : Not available.

| Product/ingredient name | Aquatic half-life | Photolysis | Biodegradability |
|---|---|---|---|
| pentane | - | - | Readily |
| 2-methoxy-2-methylbutane | - | - | Not readily |
| tert-Butyl methyl ether | - | 50%; 3.2 day(s) | Not readily |
| Heptane | - | - | Readily |
| Cyclohexane | - | - | Readily |

## Bioaccumulative potential

# Section 12. Ecological information

| Product/ingredient name | $LogP_{ow}$ | BCF | Potential |
|---|---|---|---|
| pentane | 3.45 | 171 | Low |
| 2-methoxy-2-methylbutane | 1.55 | - | Low |
| tert-Butyl methyl ether | 1.04 | 1.5 | Low |
| Heptane | 4.66 | 552 | High |
| Cyclohexane | 3.44 | 167 | Low |

**Mobility in soil**

**Soil/Water partition coefficient** : Not available.

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

# Section 13. Disposal considerations

**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.

# Section 14. Transport information

| | DOT Classification | TDG Classification | Mexico Classification | IMDG | IATA |
|---|---|---|---|---|---|
| **UN number** | UN1993 | UN1993 | UN1993 | UN1993 | UN1993 |
| **UN proper shipping name** | Flammable liquids, n.o.s. (pentane, tert-Butyl methyl ether) | FLAMMABLE LIQUID, N.O.S. (pentane, tert-Butyl methyl ether) | LIQUIDO INFLAMABLE, N. E.P. (pentane, tert-Butyl methyl ether) | FLAMMABLE LIQUID, N.O.S. (pentane, tert-Butyl methyl ether) | Flammable liquid, n. o.s. (pentane, tert-Butyl methyl ether) |
| **Transport hazard class(es)** | 3  | 3  | 3  | 3  | 3  |
| **Packing group** | II | II | II | II | II |
| **Environmental hazards** | No. | Yes. | Yes. The environmentally hazardous substance mark is not required. | Yes. | Yes. The environmentally hazardous substance mark is not required. |

**Additional information**

# Section 14. Transport information

**DOT Classification** : **Limited quantity** Yes.
**Packaging instruction** Exceptions: 150. Non-bulk: 202. Bulk: 242.
**Quantity limitation** Passenger aircraft/rail: 5 L. Cargo aircraft: 60 L.
**Special provisions** IB2, T7, TP1, TP8, TP28

**TDG Classification** : Product classified as per the following sections of the Transportation of Dangerous Goods Regulations: 2.18-2.19 (Class 3), 2.7 (Marine pollutant mark).
The marine pollutant mark is not required when transported by road or rail.
**Explosive Limit and Limited Quantity Index** 1
**Passenger Carrying Road or Rail Index** 5
**Special provisions** 16, 150

**Mexico Classification** : **Special provisions** 274

**IMDG** : The marine pollutant mark is not required when transported in sizes of ≤5 L or ≤5 kg.
**Emergency schedules** F-E, _S-E_
**Special provisions** 274

**IATA** : The environmentally hazardous substance mark may appear if required by other transportation regulations.
**Quantity limitation** Passenger and Cargo Aircraft: 5 L. Packaging instructions: 353. Cargo Aircraft Only: 60 L. Packaging instructions: 364. Limited Quantities - Passenger Aircraft: 1 L. Packaging instructions: Y341.
**Special provisions** A3

**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

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

**U.S. Federal regulations** : **Clean Water Act (CWA) 311**: Cyclohexane
**Clean Air Act (CAA) 112 regulated flammable substances**: pentane

**TSCA 12(b) - Chemical export notification**

Not applicable.

**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**

# Section 15. Regulatory information

**Classification** : FLAMMABLE LIQUIDS - Category 2
SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3
ASPIRATION HAZARD - Category 1

## Composition/information on ingredients

| Name | % | Classification |
|---|---|---|
| pentane | ≥80 | FLAMMABLE LIQUIDS - Category 2<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3<br>ASPIRATION HAZARD - Category 1<br>HNOC - Static-accumulating flammable liquid<br>HNOC - Defatting irritant |
| 2-methoxy-2-methylbutane | ≥0.5 - ≤1.5 | FLAMMABLE LIQUIDS - Category 2<br>ACUTE TOXICITY (oral) - Category 4<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 |
| tert-Butyl methyl ether | ≥0.5 - ≤1.5 | FLAMMABLE LIQUIDS - Category 2<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 |
| Heptane | ≥0.5 - ≤1.5 | FLAMMABLE LIQUIDS - Category 2<br>SKIN IRRITATION - Category 2<br>EYE IRRITATION - Category 2A<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Respiratory tract irritation) - Category 3<br>SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3<br>ASPIRATION HAZARD - Category 1<br>HNOC - Static-accumulating flammable liquid |

## SARA 313

| | Product name | CAS number | % |
|---|---|---|---|
| **Form R - Reporting requirements** | tert-Butyl methyl ether | 1634-04-4 | ≥0.5 - ≤1.5 |
| **Supplier notification** | tert-Butyl methyl ether | 1634-04-4 | ≥0.5 - ≤1.5 |

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: PENTANE; METHYL TERT-BUTYL ETHER; HEPTANE

**New York** : The following components are listed: Methyl tert-butyl ether

**New Jersey** : The following components are listed: PENTANE; tert-AMYL METHYL ETHER; METHYL-tert-BUTYL ETHER; n-HEPTANE

**Pennsylvania** : The following components are listed: PENTANE; METHYL TERT-BUTYL ETHER; HEPTANE

## California Prop. 65

This product does not require a Safe Harbor warning under California Prop. 65.

## International regulations

### Chemical Weapon Convention List Schedules I, II & III Chemicals

Not listed.

### Montreal Protocol

# Section 15. Regulatory information

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** : All components are listed or exempted.

**Canada** : All components are listed or exempted.

**China** : Not determined.

**Japan** : **Japan inventory (CSCL)**: Not determined.
**Japan inventory (ISHL)**: Not determined.

**New Zealand** : Not determined.

**Philippines** : All components are listed or exempted.

**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 | On basis of test data |
| SPECIFIC TARGET ORGAN TOXICITY (SINGLE EXPOSURE) (Narcotic effects) - Category 3 | Calculation method |
| ASPIRATION HAZARD - Category 1 | Expert judgment |
| AQUATIC HAZARD (LONG-TERM) - Category 2 | Calculation method |

## History

**Date of issue/Date of revision** : 09/24/2025

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**Version** : 7

**Key to abbreviations** : ATE = Acute Toxicity Estimate
BCF = Bioconcentration Factor
DOT = Department of Transportation
GHS = Globally Harmonized System of Classification and Labelling of Chemicals
IATA = International Air Transport Association
IBC = Intermediate Bulk Container
IMDG = International Maritime Dangerous Goods
IMO = International Maritime Organization
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
SGG = Segregation Group
TDG = Transportation of Dangerous Goods

# Section 16. Other information

UN = United Nations

**Indicates information that has changed from previously issued version.**

**Notice to reader**

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