1 Identification

Product identifier

Product name: Diethylene glycol dimethyl ether

Stock number: A13397
CAS Number:
111-96-6
EC number:
203-924-4
Index number:
603-139-00-0

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

Identified use: SU24 Scientific research and development

Details of the supplier of the safety data sheet

Manufacturer/Supplier:
Alfa Aesar
Thermo Fisher Scientific Chemicals, Inc.
30 Bond Street
Ward Hill, MA 01835-8099
Tel: 800-343-0660
Fax: 800-322-4757
Email: tech@alfa.com
www.alfa.com

Information Department: Health, Safety and Environmental Department

Emergency telephone number: During normal business hours (Monday-Friday, 8am-7pm EST), call (800) 343-0660. After normal business hours, call Carechem 24 at (866) 928-0789.

2 Hazard(s) identification

Classification of the substance or mixture in accordance with 29 CFR 1910 (OSHA HCS)

GHS02 Flame
Flam. Liq. 3 H226 Flammable liquid and vapour.

GHS08 Health hazard
Repr. 1B H360 May damage fertility or the unborn child.

Hazard(s) not otherwise classified No information known.

Label elements

GHS label elements The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

Hazard pictograms

GHS02 GHS08

Signal word Danger

Hazard statements
H226 Flammable liquid and vapour.
H360 May damage fertility or the unborn child.

Precautionary statements
P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P281 Use personal protective equipment as required.
P303+P361+P353 If on skin (or hair). Take off immediately all contaminated clothing. Rinse skin with water/shower.
P405 Store locked up.
P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

WHMIS classification

B3 - Combustible liquid
D2A - Very toxic material causing other toxic effects

Classification system

WHMIS ratings (scale 0-4)
(Hazardous Materials Identification System)

Health (acute effects) = 1
Flammability = 2
Physical Hazard = 1

Other hazards

Results of PBT and vPvB assessment
PBT: Not applicable.
vPvB: Not applicable.

3 Composition/information on ingredients

Chemical characterization: Substances

CAS# Description:
111-96-6 Diethylene glycol dimethyl ether

Identification number(s):
EC number: 203-924-4
Index number: 603-139-00-0

Impurities and stabilizing additives:
Stabilized with:

(Contd. on page 2)
4 First-aid measures
   Description of first aid measures
   After inhalation
   Supply fresh air. If required, provide artificial respiration. Keep patient warm.
   Seek immediate medical advice.

   After skin contact
   Immediately wash with water and soap and rinse thoroughly.
   Seek immediate medical advice.

   After eye contact
   Rinse opened eye for several minutes under running water. Then consult a doctor.

   After swallowing
   Seek medical treatment.

   Information for doctor
   Most important symptoms and effects, both acute and delayed No further relevant information available.
   Indication of any immediate medical attention and special treatment needed No further relevant information available.

5 Fire-fighting measures
   Extinguishing media
   Suitable extinguishing agents Carbon dioxide, extinguishing powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
   Special hazards arising from the substance or mixture
   If this product is involved in a fire, the following can be released:
   Carbon monoxide and carbon dioxide

   Advice for firefighters
   Wear self-contained respirator.
   Wear fully protective impervious suit.

6 Accidental release measures
   Personal precautions, protective equipment and emergency procedures
   Wear protective equipment. Keep unprotected persons away.
   Ensure adequate ventilation
   Keep away from ignition sources

   Environmental precautions:
   Do not allow material to be released to the environment without proper governmental permits.
   Dispose of contaminated material as waste according to section 13.

   Methods and material for containment and cleaning up:
   Keep away from ignition sources.
   Absorb with liquid-binding material (sand, diatomite, acid binders, universal binders, sawdust).

   Prevention of secondary hazards: Keep away from ignition sources.

   Reference to other sections
   See Section 7 for information on safe handling
   See Section 8 for information on personal protection equipment.
   See Section 13 for disposal information.

7 Handling and storage
   Handling
   Precautions for safe handling
   Handle under dry protective gas.
   Keep container tightly sealed.
   Store in cool, dry place in tightly closed containers.
   Ensure good ventilation at the workplace.
   Open and handle container with care.
   Information about protection against explosions and fires:
   Protect against electrostatic charges.
   Fumes can combine with air to form an explosive mixture.
   Keep ignition sources away.
   Do not distill to dryness.
   Explosive peroxides may form, handle container cautiously.

   Conditions for safe storage, including any incompatibilities
   Storage
   Requirements to be met by storerooms and receptacles:
   Store in a cool location.
   Information about storage in one common storage facility:
   Store away from water/moisture.
   Do not store together with acids.
   Store away from strong bases.
   Store away from oxidizing agents.
   Further information about storage conditions:
   Store under dry inert gas.
   This product is hygroscopic.
   Store in cool, dry conditions in well sealed containers.
   Protect from humidity and water.
   Avoid contact with air/oxygen (formation of peroxide).
   Check container pressure periodically to prevent explosive peroxides.

   Specific end use(s) No further relevant information available.

8 Exposure controls/personal protection
   Additional information about design of technical systems:
   Properly operated, a chemical fume hood designed for hazardous chemicals and having an average face velocity of at least 100 feet per minute.

   Control parameters
   Components with limit values that require monitoring at the workplace:
   The product does not contain any relevant quantities of materials with critical values that have to be monitored at the workplace.
   Additional information: No data

   Exposure controls
   Personal protective equipment
   General protective and hygienic measures
   The usual precautionary measures for handling chemicals should be followed.
   Keep away from foodstuffs, beverages and feed.
   Remove all soiled and contaminated clothing immediately.
   Wash hands before breaks and at the end of work.
   Store protective clothing separately.
9 Physical and chemical properties

Information on basic physical and chemical properties

General information

Appearance: Liquid
Color: Colorless
Odor: Ether-like
Odor threshold: Not determined.

Change in condition
Melting point/Melting range: -64 °C (-83 °F)
Boiling point/Boiling range: 161-162 °C (322-324 °F)
Sublimation temperature / start: Not determined

Flash point: 51 °C (124 °F)
Flammability (solid, gaseous) Not applicable.
Ignition temperature: 190 °C (374 °F)
Decomposition temperature: Not determined
Auto igniting: Not determined.

Danger of explosion: May form explosive peroxides.
Explosion limits: Do not distill to dryness.
Lower: 1.5 Vol %
Upper: 17.4 Vol %

Vapor pressure at 20 °C (68 °F): 2.7 hPa (2 mm Hg)
Density at 20 °C (68 °F): 0.944 g/cm³ (7.878 lbs/gal)
Relative density Not determined.
Vapor density Not determined.
Evaporation rate Not determined.
Solubility in / Miscibility with Water: Fully miscible
Partition coefficient (n-octanol/water): Not determined.
Viscosity: dynamic at 20 °C (68 °F): 1.88 mPas
kinematic: Not determined.
Other information No further relevant information available.

10 Stability and reactivity

Reactivity: May form explosive peroxides.
Chemical stability: Stable under recommended storage conditions.
Thermal decomposition / conditions to be avoided: Decomposition will not occur if used and stored according to specifications.
Possibility of hazardous reactions: Reacts with strong oxidizing agents
May form explosive peroxides.
Conditions to avoid: No further relevant information available.
Incompatible materials: Acids
Oxidizing agents
Water/moisture
Bases
Hazardous decomposition products: Carbon monoxide and carbon dioxide
Additional information: Avoid loss of stabilizer.

11 Toxicological information

Information on toxicological effects
Acute toxicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains acute toxicity data for this substance.
LD/LC50 values that are relevant for classification:
Oral LD50 5400 mg/kg (rat)
Skin irritation or corrosion: May cause irritation
Eye irritation or corrosion: May cause irritation
Sensitization: No sensitizing effects known.
Germ cell mutagenicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains mutation data for this substance.
Carcinogenicity: No classification data on carcinogenic properties of this material is available from the EPA, IARC, NTP, OSHA or ACGIH.
Reproductive toxicity: May damage fertility or the unborn child.
The Registry of Toxic Effects of Chemical Substances (RTECS) contains reproductive data for this substance.
Specific target organ system toxicity - repeated exposure: No effects known.
Specific target organ system toxicity - single exposure: No effects known.
Aspiration hazard: No effects known.
Subacute to chronic toxicity: The Registry of Toxic Effects of Chemical Substances (RTECS) contains multiple dose toxicity data for this substance.
Additional toxicological information: To the best of our knowledge the acute and chronic toxicity of this substance is not fully known.
12 Ecological information

Toxicity
Aquatic toxicity: No further relevant information available.
Persistence and degradability: No further relevant information available.
Bioaccumulative potential: No further relevant information available.
Mobility in soil: No further relevant information available.

Additional ecological information:
- General notes: Do not allow material to be released to the environment without proper governmental permits.
- Do not allow undiluted product or large quantities to reach ground water, water course or sewage system.
- Avoid transfer into the environment.
- Results of PBT and vPvB assessment
  - PBT: Not applicable.
  - vPvB: Not applicable.
- Other adverse effects: No further relevant information available.

13 Disposal considerations

Waste treatment methods
Recommendation: Consult state, local or national regulations to ensure proper disposal.

Uncleaned packagings:
Recommendation: Disposal must be made according to official regulations.
Recommended cleansing agent: Water, if necessary with cleansing agents.

14 Transport information

<table>
<thead>
<tr>
<th>UN-Number</th>
<th>DOT, IMDG, IATA</th>
<th>UN3271</th>
</tr>
</thead>
<tbody>
<tr>
<td>UN proper shipping name</td>
<td>DOT</td>
<td>Ethers, n.o.s. (Diethylene glycol dimethyl ether)</td>
</tr>
<tr>
<td>IMDG, IATA</td>
<td>DOT</td>
<td>ETHERS, N.O.S. (Diethylene glycol dimethyl ether)</td>
</tr>
</tbody>
</table>

Transport hazard class(es)

- DOT Class 3 Flammable liquids.
- IMDG, IATA Class 3 (F1) Flammable liquids

Environmental hazards:
- Not applicable.

Special precautions for user
- Warning: Flammable liquids

EMS Number: F-E-S-D

Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code: Not applicable.

Transport/Additional information:
- DOT Marine Pollutant (DOT): No
- UN "Model Regulation": UN3271, Ethers, n.o.s. (Diethylene glycol dimethyl ether), 3, III

15 Regulatory information

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

GHS label elements: The product is classified and labeled in accordance with 29 CFR 1910 (OSHA HCS)

Hazard pictograms

GHS02 GHS08

Signal word: Danger

Hazard statements:
- H226 Flammable liquid and vapour.
- H360 May damage fertility or the unborn child.

Precautionary statements:
- P210 Keep away from heat/sparks/open flames/hot surfaces. No smoking.
- P280 Wear protective gloves/protective clothing/eye protection/face protection.
- P281 Use personal protective equipment as required.
- P303+P361+P353 If on skin (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P405 Store locked up.
- P501 Dispose of contents/container in accordance with local/regional/national/international regulations.

National regulations:
- All components of this product are listed in the U.S. Environmental Protection Agency Toxic Substances Control Act Chemical substance Inventory.
- All components of this product are listed on the Canadian Domestic Substances List (DSL).
- SARA Section 313 (specific toxic chemical listings) Substance is not listed.
- California Proposition 65
  - Prop 65 - Chemicals known to cause cancer: Substance is not listed.
  - Prop 65 - Developmental toxicity: Substance is not listed.
Prop 65 - Developmental toxicity, female Substance is not listed.
Prop 65 - Developmental toxicity, male Substance is not listed.

Information about limitation of use: For use only by technically qualified individuals.

Other regulations, limitations and prohibitive regulations
Substance of Very High Concern (SVHC) according to the REACH Regulations (EC) No. 1907/2006.
This substance is included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH).
The conditions of restrictions according to Article 67 of and Annex XVII of the Regulation (EC) No 1907/2006 (REACH) for the manufacturing, placing on the market and use must be observed.

Substance is not listed.
Annex XIV of the REACH Regulations (requiring Authorisation for use) Substance is listed.
Chemical safety assessment: A Chemical Safety Assessment has not been carried out.

16 Other information
Employers should use this information only as a supplement to other information gathered by them, and should make independent judgement of suitability of this information to ensure proper use and protect the health and safety of employees. This information is furnished without warranty, and any use of the product not in conformance with this Material Safety Data Sheet, or in combination with any other product or process, is the responsibility of the user.

Department issuing SDS: Global Marketing Department
Date of preparation / last revision 11/23/2015 / -

Abbreviations and acronyms:
RID: Règlement international concernant le transport des marchandises dangereuses par chemin de fer (Regulations Concerning the International Transport of Dangerous Goods by Rail)
ICAO: International Civil Aviation Organization
ADR: Accord européen sur le transport des marchandises dangereuses par Route (European Agreement concerning the International Carriage of Dangerous Goods by Road)
IMDG: International Maritime Code for Dangerous Goods
DOT: US Department of Transportation
IATA: International Air Transport Association
EINECS: European Inventory of Existing Commercial Chemical Substances
CAS: Chemical Abstracts Service (division of the American Chemical Society)
WHMIS: Workplace Hazardous Materials Information System (Canada)
LC50: Lethal concentration, 50 percent
LD50: Lethal dose, 50 percent
vPvB: very Persistent and very Bioaccumulative
ACGIH: American Conference of Governmental Industrial Hygienists (USA)
OSHA: Occupational Safety and Health Administration (USA)
NTP: National Toxicology Program (USA)
IARC: International Agency for Research on Cancer
EPA: Environmental Protection Agency (USA)