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----------ISO 9001: 2015----------

MATERIAL SAFETY DATA SHEET

1.Identification
1.1GHS Product identifier
Diethylene glycol dimethyl ether, 99%
Code D 1745

2.Hazard identification
2.1Classification of the substance or mixture
Flammable liquids, Category 3
Reproductive toxicity, Category 1B
2.2GHS label elements, including precautionary statements
Pictogram(s)

Signal word	Danger
Hazard statement(s)	H226 Flammable liquid and vapour H360FD
Precautionary statement(s)	
Prevention	P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233 Keep container tightly closed. P240 Ground and bond container and receiving equipment. P241 Use explosion-proof [electrical/ventilating/lighting/...] equipment. P242 Use non-sparking tools. P243 Take action to prevent static discharges. P280 Wear protective gloves/protective clothing/eye protection/face protection. P201 Obtain special instructions before use. P202 Do not handle until all safety precautions have been read and understood.
Response	P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water [or shower]. P370+P378 In case of fire: Use ... to extinguish. P308+P313 IF exposed or concerned: Get medical advice/ attention.
Storage	P403+P235 Store in a well-ventilated place. Keep cool. P405 Store locked up.
Disposal	P501 Dispose of contents/container to ...

2.3Other hazards which do not result in classification
none

3.Composition/information on ingredients
3.1Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
diglyme	diglyme	111-96-6	none	100%

4.First-aid measures
4.1Description of necessary first-aid measures
General advice
Consult a physician. Show this safety data sheet to the doctor in attendance.
If inhaled
Fresh air, rest.
In case of skin contact
Remove contaminated clothes. Rinse skin with plenty of water or shower.
In case of eye contact
First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.
If swallowed
Rinse mouth. Give one or two glasses of water to drink.
4.2Most important symptoms/effects, acute and delayed
INGESTION (severe cases): nausea, vomiting, abdominal cramps, weakness progressing to coma. (USCG, 1999)
4.3Indication of immediate medical attention and special treatment needed, if necessary

Absorption, Distribution and Excretion
The major route of elimination is through the urine. Ninety-six hours after oral application of 6.84 mg diglyme/kg body weight to male Sprague-Dawley rats, 90% of the dose was excreted via urine, 3.6% as carbon dioxide, and 2.9% in the feces. Only 1.7% of the dose remained in the carcass.

5.Fire-fighting measures
5.1Extinguishing media
Suitable extinguishing media
Fire Extinguishing Agents: Dry chemical, foam, carbon dioxide (USCG, 1999)
5.2Specific hazards arising from the chemical
This chemical is combustible.
5.3Special protective actions for fire-fighters
Wear self-contained breathing apparatus for firefighting if necessary.

6.Accidental release measures
6.1Personal precautions, protective equipment and emergency procedures
Use personal protective equipment. Avoid dust formation. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust. For personal protection see section 8.
6.2Environmental precautions
Personal protection: filter respirator for organic gases and vapours adapted to the airborne concentration of the substance. Remove all ignition sources. Ventilation. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.
6.3Methods and materials for containment and cleaning up
Pick up and arrange disposal. Sweep up and shovel. Keep in suitable, closed containers for disposal.

7.Handling and storage
7.1Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Avoid exposure - obtain special instructions before use.Provide appropriate exhaust ventilation at places where dust is formed. For precautions see section 2.2.
7.2Conditions for safe storage, including any incompatibilities
Fireproof. Separated from strong oxidants.

8.Exposure controls/personal protection
8.1Control parameters
Occupational Exposure limit values
NIOSH recommends reducing exposure to lowest feasible concn & preventing contact with the skin. /Glycol ethers/
Biological limit values
no data available
8.2Appropriate engineering controls
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.
8.3Individual protection measures, such as personal protective equipment (PPE)
Eye/face protection
Safety glasses with side-shields conforming to EN166. Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU).
Skin protection
Wear impervious clothing. The type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace. Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique(without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands. The selected protective gloves have to satisfy the specifications of EU Directive 89/686/EEC and the standard EN 374 derived from it.
Respiratory protection
Wear dust mask when handling large quantities.
Thermal hazards
no data available

9.Physical and chemical properties

Physical state	clear liquid
Colour	Colorless liquid
Odour	Mild odor
Melting point/ freezing point	-68\u00b0C(lit.)
Boiling point or initial boiling point and boiling range	162\u00b0C(lit.)
Flammability	Flammable.
Lower and upper explosion limit / flammability limit	no data available
Flash point	57\u00b0C
Auto-ignition temperature	187.78\u00b0C
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	1.089 cP at 20\u00b0C

Solubility	In water:Miscible
Partition coefficient n-octanol/water (log value)	log Kow = -0.36
Vapour pressure	3 mm Hg (20 \u00b0C)
Density and/or relative density	0.944g/mLat 20\u00b0C(lit.)
Relative vapour density	4.6 (vs air)
Particle characteristics	no data available

10.Stability and reactivity
10.1Reactivity
no data available
10.2Chemical stability
Stable under recommended storage conditions.
10.3Possibility of hazardous reactions
CombustibleA violent explosion occurred when lithium aluminum hydride was being used to dry diethylene glycol dimethyl ether. The ignition may have occurred due to the presence of large amounts of water or perhaps peroxide formed in the ether. About 75% of the ether had been removed when the explosion occurred, [MCA Case History 1494 (1968)].
10.4Conditions to avoid
no data available
10.5Incompatible materials
Glycol ethers, glycols, ketones, and alcohols undergo violent decomposition in contact with 68-72% perchloric acid
10.6Hazardous decomposition products
When heated to decomposition it emits toxic fumes of /nitrogen oxides/.

11.Toxicological information
Acute toxicity
Oral: LD50 Mouse oral 2978 mg/kg bw
Inhalation: LC50 Rat inhalation >11 mg/L/7 hr
Dermal: no data available
Skin corrosion/irritation
no data available
Serious eye damage/irritation
no data available
Respiratory or skin sensitization
no data available
Germ cell mutagenicity
no data available
Carcinogenicity
no data available
Reproductive toxicity
no data available
STOT-single exposure
no data available
STOT-repeated exposure
no data available
Aspiration hazard
no data available

12.Ecological information
12.1Toxicity
Toxicity to fish: no data available
Toxicity to daphnia and other aquatic invertebrates: no data available
Toxicity to algae: no data available
Toxicity to microorganisms: no data available
12.2Persistence and degradability
AEROBIC: Diethylene glycol dimethyl ether had a 37.0% COD removal at 30\u00b0C from a starting concentration of 600 mg COD/L (time period not given) indicating little degradation compared to 95% degradation of ethylene glycol monophenyl ether(1). Diethylene glycol dimethyl ether was degraded 33% after 25 days and a 7 day lag period using an activated sludge from an industry producing the chemical(2). 40% was removed in a 1% salt solution after 25 days with a 20 day lag period, higher salt concentrations inhibited the degradation of diethylene glycol dimethyl ether(2).
12.3Bioaccumulative potential
An estimated BCF of 3 was calculated in fish for diethylene glycol dimethyl ether(SRC), using a log Kow of -0.36(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).
12.4Mobility in soil
The Koc of diethylene glycol dimethyl ether is estimated as 15(SRC), using a log Kow of -0.36(1) and a regression-derived equation(2). According to a classification scheme(3), this estimated Koc value suggests that diethylene glycol dimethyl ether is expected to have very high mobility in soil.
12.5Other adverse effects
no data available

13.Disposal considerations
13.1Disposal methods
Product
The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.
Contaminated packaging
Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

14.Transport information
14.1UN Number
ADR/RID: UN3271 IMDG: UN3271 IATA: UN3271
14.2UN Proper Shipping Name
ADR/RID: ETHERS, N.O.S.
IMDG: ETHERS, N.O.S.
IATA: ETHERS, N.O.S.
14.3Transport hazard class(es)
ADR/RID: 3 IMDG: 3 IATA: 3
14.4Packing group, if applicable
ADR/RID: III IMDG: III IATA: III
14.5Environmental hazards
ADR/RID: no IMDG: no IATA: no
14.6Special precautions for user
no data available
14.7Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code
no data available

15.Regulatory information
15.1Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
diglyme	diglyme	111-96-6	none
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.
EC Inventory			Listed.
United States Toxic Substances Control Act (TSCA) Inventory			Listed.
China Catalog of Hazardous chemicals 2015			Not Listed.
New Zealand Inventory of Chemicals (NZIoC)			Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)			Listed.
Vietnam National Chemical Inventory			Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)			Listed.

Section 16: Other Information
This safety data sheet should be used in conjunction with technical sheets. It does not replace them. The information given is based on our knowledge of this product, at the time of publication. It is given in good faith. The attention of the user is drawn to the possible risks incurred by using the product for any other purpose other than that for which it was intended. This does not in any way excuse the user from knowing and applying all the regulations governing his activity. It is the sole responsibility of the user to take all precautions required in handling the product. The aim of the mandatory regulations mentioned is to help the user to fulfill his obligations regarding the use of hazardous products.