1. Product and Company Identification

Product identifier: Glycol Ether DPnB (Comsol DPnB, Dipropylene Glycol n-Butyl Ether)
Version #: 01
Issue date: 05-19-2014
Chemical description: Aliphatic ether alcohol
CAS #: 29911-28-2
MSDS Number: COM137
Product use: Professional use only
Synonym(s): DIPROPYLENE GLYCOL BUTYL ETHER * DIPROPYLENE GLYCOL MONOBUTYL ETHER
Manufacturer information: Refer to supplier
Supplier: Comet Chemical
3463 Thomas Street
Innisfill, ON L9S 3W4 CA
Information (M-F 8:00-5:00): 705-436-5580
24 Hour Number (Newalta): 800-567-7455

2. Hazards Identification

CAUTION!

Hydroscopic (absorbs moisture from the air).
May be irritating to eyes. May be irritating to the skin. May cause central nervous system effects.

Potential health effects:
Routes of exposure: Inhalation. Ingestion. Skin contact. Eye contact. Skin absorption.
Eyes: Direct contact may cause very mild, temporary irritation and redness.
Skin: Direct skin contact may cause slight or mild, transient irritation.
Inhalation: May cause irritation of respiratory tract.
Ingestion: Not an expected route of entry under normal conditions of use. Ingestion of large amounts may cause nausea, vomiting, diarrhea, as well as depression of the central nervous system.

Target organs: Central nervous system.
Chronic effects: Chronic skin contact with low concentrations may cause dermatitis.
Signs and symptoms:
Direct eye contact may cause slight or mild, transient irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Direct skin contact may cause slight or mild, transient irritation. Symptoms may include redness, edema, drying, defatting and cracking of the skin. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. May cause central nervous system effects. May cause nausea, vomiting, headache and other central nervous system effects.

Potential environmental effects: See ECOLOGICAL INFORMATION, Section 12.

3. Composition / Information on Ingredients

The components are not hazardous or are below required disclosure limits.

4. First Aid Measures

First aid procedures:
Eye contact: Immediately flush eyes with plenty of water for at least 15 minutes. Continue rinsing. Get medical attention if irritation develops and persists.
Skin contact: Take off immediately all contaminated clothing. Wash off immediately with plenty of water for at least 15 minutes. Get medical attention if irritation develops and persists. Wash contaminated clothing before reuse.
Inhalation: Move to fresh air. If breathing is difficult, give oxygen. If breathing stops, provide artificial respiration. Get medical attention, if needed.
Ingestion

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician. Rinse mouth. Do not induce vomiting. Never give anything by mouth to a victim who is unconscious or is having convulsions. If vomiting occurs spontaneously, keep victim’s head lowered (forward) to reduce the risk of aspiration.

Notes to physician

Treat symptomatically. Symptoms may be delayed.

General advice

If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves. Show this safety data sheet to the doctor in attendance.

5. Fire Fighting Measures

Flammable properties

Not flammable by WHMIS criteria. Container may explode in heat of fire.

Extinguishing media

Suitable extinguishing media

Alcohol resistant foam. Water fog. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media

Do not use water jet as an extinguisher, as this will spread the fire.

Protection of firefighters

Specific hazards arising from the chemical

Fire may produce irritating, corrosive and/or toxic gases. Closed containers may rupture if exposed to excess heat or flame due to a build-up of internal pressure.

Protective equipment for firefighters

Firefighters should wear full protective clothing including self contained breathing apparatus.

Fire fighting equipment/instructions

Evacuate the area promptly. Firefighters must use standard protective equipment including flame retardant coat, helmet with face shield, gloves, rubber boots, and in enclosed spaces, SCBA. Fight fire with normal precautions from a reasonable distance. Cool containers / tanks with water spray.

Explosion data

Sensitivity to static discharge

Not expected to be sensitive to static discharge.

Sensitivity to mechanical impact

Not expected to be sensitive to mechanical impact.

Hazardous combustion products

Toxic fumes, gases or vapours may evolve on burning.

6. Accidental Release Measures

Personal precautions

Ventilate the contaminated area. Keep unnecessary personnel away. Remove all sources of ignition. Use only non-sparking tools. Wear appropriate protective equipment and clothing during clean-up. Avoid inhalation of vapors or mists. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the MSDS.

Methods for containment

Eliminate all ignition sources (no smoking, flares, sparks, or flames in immediate area). Stop leak if you can do so without risk. Use water spray to reduce vapors or divert vapor cloud drift. Dike the spilled material, where this is possible. Prevent entry into waterways, sewer, basements or confined areas.

Methods for cleaning up

Ventilate the contaminated area. Eliminate all ignition sources if safe to do so. Wear appropriate protective equipment and clothing during clean-up. Absorb in vermiculite, dry sand or earth and place into containers. Clean up in accordance with all applicable regulations. For waste disposal, see section 13 of the MSDS.

Other information

Clean up in accordance with all applicable regulations.

7. Handling and Storage

Handling

Do not use in areas without adequate ventilation. Keep away from heat/sparks/open flames/hot surfaces. - No smoking. Do not handle, store or open near an open flame, sources of heat or sources of ignition. Protect material from direct sunlight. Minimize fire risks from flammable and combustible materials (including combustible dust and static accumulating liquids) or dangerous reactions with incompatible materials. Take precautionary measures against static discharges. All equipment used when handling the product must be grounded. Use non-sparking tools and explosion-proof equipment. Avoid breathing mist or vapor. Avoid contact with eyes, skin, and clothing. Wear appropriate personal protective equipment. Wash hands after handling and before eating. Observe good industrial hygiene practices. Do not taste or swallow.

Storage

Store locked up. Keep away from heat and sources of ignition. This material can accumulate static charge which may cause spark and become an ignition source. Ground/bond container and equipment. Store in a closed container away from incompatible materials. Store in original tightly closed container. Store in a cool, dry place out of direct sunlight. Store in a well-ventilated place.
8. Exposure Controls / Personal Protection

Occupational exposure limits
No exposure limits noted for ingredient(s).

Biological limit values
No biological exposure limits noted for the ingredient(s).

Engineering controls
Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Ensure adequate ventilation, especially in confined areas.

Personal protective equipment

Eye/face protection
Wear safety glasses with side shields (or goggles). Face shield is recommended. Eye wash facilities and emergency shower must be available when handling this product.

Skin protection
Wear appropriate chemical resistant clothing. Wear chemical protective equipment that is specifically recommended by the manufacturer. Use of an impervious apron is recommended. Use of impervious boots is recommended. Wear appropriate chemical resistant gloves. Advice should be sought from glove suppliers.

Respiratory protection
Use a positive-pressure air-supplied respirator if there is any potential for an uncontrolled release, exposure levels are not known, or any other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection
Gloves impervious to the material are recommended. Butyl rubber gloves are recommended. Advice should be sought from glove suppliers.

9. Physical & Chemical Properties

Appearance
Colorless, viscous liquid.

Physical state
Liquid.

Form
Liquid.

Color
Clear colorless or nearly colorless

Odor
Mild. Ether-like.

Odor threshold
Not available.

pH
Not available.

Vapor pressure
0.03 mm Hg at 25 °C

Vapor density
Not available.

Boiling point
446 °F (230 °C)

Melting point/Freezing point
-103 °F (-75 °C)

Solubility (water)
Partially Soluble

Specific gravity
0.91

Relative density
Not available.

Flash point
212.0 °F (100.0 °C) Cleveland Closed Cup

Flammability limits in air, upper, % by volume
Not available.

Flammability limits in air, lower, % by volume
Not available.

Auto-ignition temperature
Not available.

Evaporation rate
Not available.

Partition coefficient (n-octanol/water)
Not available.

Molecular weight
190.29

Molecular formula
C10H22O3

Other data
Density
0.91 g/cm3

Kinematic viscosity
4.23 cSt

Surface tension
28.2 mN/m

10. Chemical Stability & Reactivity Information

Chemical stability
Material is stable under normal conditions.
Conditions to avoid
Keep away from heat. Keep away from direct sunlight. Contact with incompatible materials. Do not use in areas without adequate ventilation. Exposure to air.

Incompatible materials
Strong oxidizing agents. Strong acids.

Hazardous decomposition products
None known, refer to hazardous combustion products in Section 5. The following may be released during a fire: Carbon oxides. Other irritating fumes and smoke.

Possibility of hazardous reactions
Hazardous polymerization does not occur.

11. Toxicological Information

Toxicological data

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipropylene Glycol Butyl Ether (CAS 29911-28-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Acute</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dermal</td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>&gt; 2000 mg/kg</td>
</tr>
<tr>
<td><strong>Inhalation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LC50</td>
<td>Rat</td>
<td>&gt; 42 ppm, 4 Hours</td>
</tr>
<tr>
<td><strong>Oral</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LD50</td>
<td>Rat</td>
<td>4000 mg/kg</td>
</tr>
<tr>
<td><strong>Acute effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>See data for individual ingredient acute toxicity data.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Sensitization</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not expected to be a skin or respiratory sensitizer.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Chronic effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chronic skin contact with low concentrations may cause dermatitis.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Carcinogenicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No components are listed as carcinogens by ACGIH, IARC, OSHA or NTP.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Skin corrosion/irritation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct skin contact may cause slight or mild, transient irritation. Prolonged contact, such as when trapped against the skin under clothing or jewelry, may be more irritating.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Serious eye damage/irritation</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct contact may cause very mild, temporary irritation and redness.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mutagenicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not expected to be mutagenic.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reproductive effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>This product is not expected to cause reproductive or developmental effects.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Teratogenicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not expected to be a teratogen.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Symptoms and target organs</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Direct eye contact may cause slight or mild, transient irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. Direct eye contact may cause slight or mild, transient irritation. Symptoms may include redness, edema, drying, defatting and cracking of the skin. Inhalation of vapors/fumes generated by heating this product may cause respiratory irritation with throat discomfort, coughing or difficulty breathing. May cause central nervous system effects. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Epidemiology</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No epidemiological data is available for this product.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Synergistic materials</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not available.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

12. Ecological Information

Ecotoxicological data

<table>
<thead>
<tr>
<th>Product</th>
<th>Species</th>
<th>Test Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dipropylene Glycol Butyl Ether (CAS 29911-28-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acute Crustacea</td>
<td>EC50</td>
<td>Water flea (Daphnia magna) &gt; 1000 mg/l, 48 hours</td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
<td>Guppy (Poecilia reticulata) 841 mg/l, 96 hours</td>
</tr>
<tr>
<td><strong>Ecotoxicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do not allow this material to drain into sewers/water supplies.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Environmental effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Aquatic toxicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The product should not be allowed to enter drains, water courses or the soil.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Persistence and degradability</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Readily biodegradable.</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mobility in environmental media</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>The product is immiscible with water.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
13. Disposal Considerations

Disposal instructions
Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Do not allow this material to drain into sewers/water supplies. Dispose in accordance with all applicable regulations.

Waste from residues / unused products
Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging
Empty containers should be taken to an approved waste handling site for recycling or disposal. Since emptied containers may retain product residue, follow label warnings even after container is emptied.

14. Transport Information

TDG
Not regulated as dangerous goods.

IATA
Not regulated as dangerous goods.

IMDG
Not regulated as dangerous goods.

15. Regulatory Information

Canadian regulations
This product has been classified in accordance with the hazard criteria of the CPR and the MSDS contains all the information required by the CPR.

WHMIS status
Non-controlled

International Inventories

<table>
<thead>
<tr>
<th>Country(s) or region</th>
<th>Inventory name</th>
<th>On inventory (yes/no)*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Australian Inventory of Chemical Substances (AICS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Domestic Substances List (DSL)</td>
<td>Yes</td>
</tr>
<tr>
<td>Canada</td>
<td>Non-Domestic Substances List (NDSL)</td>
<td>No</td>
</tr>
<tr>
<td>China</td>
<td>Inventory of Existing Chemical Substances in China (IECSC)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European Inventory of Existing Commercial Chemical Substances (EINECS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Europe</td>
<td>European List of Notified Chemical Substances (ELINCS)</td>
<td>No</td>
</tr>
<tr>
<td>Japan</td>
<td>Inventory of Existing and New Chemical Substances (ENCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>Korea</td>
<td>Existing Chemicals List (ECL)</td>
<td>Yes</td>
</tr>
<tr>
<td>New Zealand</td>
<td>New Zealand Inventory</td>
<td>Yes</td>
</tr>
<tr>
<td>Philippines</td>
<td>Philippine Inventory of Chemicals and Chemical Substances (PICCS)</td>
<td>Yes</td>
</tr>
<tr>
<td>United States &amp; Puerto Rico</td>
<td>Toxic Substances Control Act (TSCA) Inventory</td>
<td>Yes</td>
</tr>
</tbody>
</table>

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s). A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other Information

Recommended restrictions
Professional Use Only

HMIS® ratings
Health: 0
Flammability: 1
Physical hazard: 0

NFPA ratings
Health: 0
Flammability: 1
Instability: 0
Disclaimer

This Safety Data Sheet was prepared by ICC The Compliance Center Inc. using information provided by / obtained from Comet Chemical Company Ltd. and CCOHS’ Web Information Service. The information in the Safety Data Sheet is offered for your consideration and guidance when exposed to this product. ICC The Compliance Center Inc and Comet Chemical Company Ltd. expressly disclaim all expressed or implied warranties and assume no responsibilities for the accuracy or completeness of the data contained herein. The data in this SDS does not apply to use with any other product or in any other process.

This Safety Data Sheet may not be changed, or altered in any way without the expressed knowledge and permission of ICC The Compliance Center Inc. and Comet Chemical Company Ltd.

Legend to abbreviations and acronyms used in the SDS

ACGIH: American Conference of Governmental Industrial Hygienists
CAS: Chemical Abstract Services
CEPA: Canadian Environmental Protection Act
DSL: Domestic Substance List
HMIS: Hazardous Materials Identification System
HPA: Hazardous Protection Act
HSDB® - Hazardous Substances Data Bank
IARC: International Agency for Research on Cancer
IATA: International Air Transport Association
IMDG: International Maritime Dangerous Goods
IUCLID: International Uniform Chemical Information Database
LC: Lethal Concentration
LD: Lethal Dose
MSDS: Material Safety Data Sheet
NFPA: National Fire Protection Association
NIOSH: National Institute of Occupational Safety and Health
NTP: National Toxicology Program
OECD: Organisation for Economic Co-operation and Development
OEL: National occupational exposure limits
OSHA: Occupational Safety and Health Administration
PPE: Personal Protective Equipment
RTECS: Registry of Toxic Effects of Chemical Substances
STEL: Short Term Exposure Limit
TLV: Threshold Limit Values
TWA: Time Weighted Average

References

Canadian Centre for Occupational Health and Safety, CCInfoWeb Databases, 2014
(Chempendium, RTECs, HSDB, INCHEM)