SAFETY DATA SHEET
(in accordance with Regulation (EU) 2015/830)

105880-Ethylene glycol dimethyl ether

Version: 3
Revision date: 18/04/2016
Print date: 18/04/2016

SECTION 1: IDENTIFICATION OF THE SUBSTANCE AND OF THE COMPANY/UNDERTAKING.

1.1 Product identifier.

Product Name: Ethylene glycol dimethyl ether
Product Code: 105880
Chemical Name: Ethylene glycol dimethyl ether
Index No: 603-031-00-3
CAS No: 110-71-4
EC No: 203-794-9
Registration No: 01-2119485981-24-XXXX

1.2 Relevant identified uses of the substance and uses advised against.

For manufacturing, processing, laboratory or repacking use only

Uses advised against:
Uses other than those recommended.

1.3 Details of the supplier of the safety data sheet.

Company: DC FINE CHEMICALS Ltd.
Address: Hill Top, 88
City: NW11 6DY London (United Kingdom)
Telephone: +44 (20) 7586 6800
Fax: +44 (20) 7504 1701
E-mail: info@dcfinechemicals.com
Web: www.dcfinechemicals.com

1.4 Emergency telephone number: (Only available during office hours)

SECTION 2: HAZARDS IDENTIFICATION.

2.1 Classification of the substance.
In accordance with Regulation (EU) No 1272/2008:
Acute Tox. 4 : Harmful if inhaled.
Flam. Liq. 2 : Highly flammable liquid and vapour.
Repr. 1B : May damage fertility. May damage the unborn child.

2.2 Label elements.

Labelling in accordance with Regulation (EU) No 1272/2008:

Pictograms:

Signal Word:
Danger

H statements:
H225 Highly flammable liquid and vapour.
H332 Harmful if inhaled.
H360FD May damage fertility. May damage the unborn child.

P statements:
P201 Obtain special instructions before use.
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P308+P313 IF exposed or concerned: Get medical advice/attention.
P370+P378 In case of fire: Use appropriate elements to extinction.
SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS.

3.1 Substances.
Chemical Name: [4] Ethylene glycol dimethyl ether
Index No: 603-031-00-3
CAS No: 110-71-4
CE No: 203-794-9
Registration No: 01-2119485981-24-XXXX
[4] Substance included in the list established under Article 59, paragraph 1, REACH (Candidate or subject to authorization).

3.2 Mixtures.
Not Applicable.

SECTION 4: FIRST AID MEASURES.

4.1 Description of first aid measures.
In case of doubt or when symptoms of feeling unwell persist, get medical attention. Never administer anything orally to persons who are unconscious.

Inhalation.
If wearing contact lenses, remove them. If breathing is irregular or stops, perform artificial respiration. Do not administer anything orally. If unconscious, place them in a suitable position and seek medical assistance.

Eye contact.
If wearing contact lenses, remove them. Wash eyes with plenty of clean and cool water for at least 10 minutes while pulling eyelids up, and seek medical assistance.

Skin contact.
Remove contaminated clothing. Wash skin vigorously with water and soap or a suitable skin cleaner. NEVER use solvents or thinners.

Ingestion.
If accidentally ingested, seek immediate medical attention. Keep calm. NEVER induce vomiting.

4.2 Most important symptoms and effects, both acute and delayed.
Toxic Product, accidental contact may result in serious respiratory difficulties, alteration of the central nervous system and in extreme cases, unconsciousness. Immediate medical assistance is required.

4.3 Indication of any immediate medical attention and special treatment needed.
In case of doubt or when symptoms of feeling unwell persist, get medical attention. Never administer anything orally to persons who are unconscious.

SECTION 5: FIREFIGHTING MEASURES.

The product is Highly inflammable, it can cause or considerably worsen a fire, the necessary prevention measures should be taken and risks avoided. In case of fire, the following measures are recommended:

-Continued on next page.-
5.1 Extinguishing media.  
**Recommended extinguishing methods.**
Extinguisher powder or CO₂. In case of more serious fires, also alcohol-resistant foam and water spray. Do not use a direct stream of water to extinguish.

5.2 Special hazards arising from the substance.  
**Special risks.**
Fire can cause thick, black smoke. As a result of thermal decomposition, dangerous products can form: carbon monoxide, carbon dioxide. Exposure to combustion or decomposition products can be harmful to your health.

5.3 Advice for firefighters.  
Use water to cool tanks, cisterns, or containers close to the heat source or fire. Take wind direction into account. Prevent the products used to fight the fire from going into drains, sewers, or waterways.  
**Fire protection equipment.**
According to the size of the fire, it may be necessary to use protective suits against the heat, individual breathing equipment, gloves, protective goggles or facemasks, and gloves.

**SECTION 6: ACCIDENTAL RELEASE MEASURES.**

6.1 Personal precautions, protective equipment and emergency procedures.  
Eliminate possible ignition points and ventilate the area. Avoid breathing fumes. For exposure control and individual protection measures, see section 8.

6.2 Environmental precautions.  
Prevent the contamination of drains, surface or subterranean waters, and the ground.

6.3 Methods and material for containment and cleaning up.  
Pick up the spill with non-combustible absorbent materials (soil, sand, vermiculite, diatomite, etc.). Pour the product and the absorbent in an appropriate container. The contaminated area should be immediately cleaned with an appropriate de-contaminator. Pour the decontaminator on the remains in an opened container and let it act various days until no further reaction is produced.

6.4 Reference to other sections.  
For exposure control and individual protection measures, see section 8.
For later elimination of waste, follow the recommendations under section 13.

**SECTION 7: HANDLING AND STORAGE.**

7.1 Precautions for safe handling.  
The fumes are heavier than air and can spread across the ground. They can form explosive mixtures with air. Prevent the creation of flammable or explosive fume concentrations in the air; prevent fume concentrations above work exposure limits. The product must only be used in areas where all unprotected flames and other ignition points have been eliminated. Electrical equipment has to be protected according to applicable standards.
The product can be electrostatically charged: always use earth grounds when transferring the product. Operators must use anti-static footwear and clothing, and floors must be conductors.  
Keep the container tightly closed and isolated from heat sources, sparks, and fire. Do not use tools that can cause sparks. For personal protection, see section 8.  
Always use pressure to empty the containers. They are not pressure-resistant containers.  
In the application area, smoking, eating, and drinking must be prohibited.  
Follow legislation on occupational health and safety.  
Keep the product in containers made of a material identical to the original.

7.2 Conditions for safe storage, including any incompatibilities.  
Store according to local legislation. Observe indications on the label. Keep far away from ignition points. Keep away from oxidising agents and from highly acidic or alkaline materials. Do not smoke. Prevent the entry of non-authorised persons. Once the containers are open, they must be carefully closed and placed vertically to prevent spills.  
Classification and threshold amount of storage in accordance with Annex I to Directive 2012/18/EU (SEVESO III):

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Lower-tier requirements</th>
<th>Upper-tier requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>P5b</td>
<td>FLAMMABLE LIQUIDS</td>
<td>50</td>
<td>200</td>
</tr>
</tbody>
</table>

-Continued on next page.-
7.3 Specific end use(s).

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION.

8.1 Control parameters.

The product does NOT contain substances with Professional Exposure Environmental Limit Values. The product does NOT contain substances with Biological Limit Values.

8.2 Exposure controls.

Measures of a technical nature:
Provide adequate ventilation, which can be achieved by using good local exhaust-ventilation and a good general exhaust system.

<table>
<thead>
<tr>
<th>Concentration:</th>
<th>100 %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Uses:</td>
<td>For manufacturing, processing, laboratory or repacking use only</td>
</tr>
<tr>
<td>Breathing protection:</td>
<td>Filter mask for protection against gases and particles.</td>
</tr>
<tr>
<td>PPE:</td>
<td>«CE» marking, category III. The mask must have a wide field of vision and an anatomically designed form in order to be sealed and watertight.</td>
</tr>
<tr>
<td>Characteristics:</td>
<td>CEN standards: EN 136, EN 140, EN 405</td>
</tr>
<tr>
<td>Maintenance:</td>
<td>Should not be stored in places exposed to high temperatures and damp environments before use. Special attention should be paid to the state of the inhalation and exhalation valves in the face adaptor.</td>
</tr>
<tr>
<td>Observations:</td>
<td>Read carefully the manufacturer’s instructions regarding the equipment’s use and maintenance. Attach the necessary filters to the equipment according to the specific nature of the risk (Particles and aerosols: P1-P2-P3, Gases and vapours: A-B-E-K-AX), changing them as advised by the manufacturer.</td>
</tr>
<tr>
<td>Filter Type needed:</td>
<td>A2</td>
</tr>
</tbody>
</table>

Hand protection:

| PPE:           | Non-disposable protective gloves against chemicals. |
| Characteristics: | «CE» marking, category III. Check the list of chemicals for which the glove has been tested. |
| CEN standards: | EN 374-1, En 374-2, EN 374-3, EN 420 |
| Maintenance:   | A schedule for the periodical replacement of gloves should be established in order to guarantee their replacement before pollutants permeate them. The use of contaminated gloves could be more dangerous than not using gloves, since the pollutant can gradually accumulate in the glove’s material. |
| Observations:  | They are to be replaced whenever tears, cracks or deformations are observed or when exterior dirt could reduce their strength. |
| Material:      | PVC (polyvinyl chloride) |
| Breakthrough time (min.): | > 480 |
| Material thickness (mm): | 0,35 |

Eye protection:

| PPE:           | Protective goggles with built-in frame. |
| Characteristics: | «CE» marking, category II. Eye protector with built-in frame for protection against dust, smoke, fog and vapour. |
| CEN standards: | EN 165, EN 166, EN 167, EN 168 |
| Maintenance:   | Visibility through lenses should be ideal. Therefore, these parts should be cleaned daily. Protectors should be disinfected periodically following the manufacturer’s instructions. |
| Observations:  | Some signs of wear and tear include: yellow colouring of the lenses, superficial scratching of the lenses, scraping etc. |

Skin protection:

| PPE:           | Chemical protective clothing |
| Characteristics: | «CE» marking, category III. Clothing should fit properly. The level of protection must be set according to a test parameter called BT (Breakthrough Time), which indicates how long it takes for the chemical to pass through the material. |
| CEN standards: | EN 464, EN 340, EN 943-1, EN 943-2, EN ISO 6529, EN ISO 6530, EN 13034 |
| Maintenance:   | In order to guarantee uniform protection, follow the washing and maintenance instructions provided by the manufacturer. |
| Observations:  | The protective clothing’s design should facilitate correct positioning, staying in place without moving for the period of use expected, bearing in mind environmental factors as well as any movement or position the user might adopt while carrying out the activity. |

| PPE:           | Anti-static safety footwear against chemicals. |
| Characteristics: | «CE» marking, category III. Check the list of chemicals against which the footwear is resistant. |
SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES.

9.1 Information on basic physical and chemical properties.
Appearance: Liquid
Colour: N.A./N.A.
Odour: N.A./N.A.
Odour threshold: N.A./N.A.
pH: N.A./N.A.
Melting point: -69 ºC
Boiling Point: 85 ºC
Flash point: -2 ºC
Evaporation rate: N.A./N.A.
Inflammability (solid, gas): N.A./N.A.
Lower Explosive Limit: 1.6% v/v
Upper Explosive Limit: N.A./N.A.
Vapour pressure: N.A./N.A.
Vapour density: 3.11
Relative density: N.A./N.A.
Solubility: N.A./N.A.
Liposolubility: N.A./N.A.
Hydrosolubility: N.A./N.A.
Partition coefficient (n-octanol/water): -2.1 (log Pow)
Auto-ignition temperature: N.A./N.A.
Decomposition temperature: N.A./N.A.
Viscosity: N.A./N.A.
Explosive properties: N.A./N.A.
Oxidizing properties: N.A./N.A.
N.A./N.A. = Not Available/Not Applicable due to the nature of the product

9.2. Other information.

SECTION 10: STABILITY AND REACTIVITY.

10.1 Reactivity.
The product does not present hazards by their reactivity.

10.2 Chemical stability.
Stable under the recommended handling and storage conditions (see section 7).

10.3 Possibility of hazardous reactions.
May form explosive peroxides.

10.4 Conditions to avoid.
Avoid any improper handling.

10.5 Incompatible materials.
Keep away from oxidising agents and from highly alkaline or acidic materials in order to prevent exothermic reactions.

10.6 Hazardous decomposition products.
No decomposition if used for the intended uses.

SECTION 11: TOXICOLOGICAL INFORMATION.
11.1 Information on toxicological effects.
Repeated or prolonged contact with the product can cause the elimination of oil from the skin, giving rise to non-allergic contact dermatitis and absorption of the product through the skin. Splatters in the eyes can cause irritation and reversible damage.

Toxicological information.

<table>
<thead>
<tr>
<th>Name</th>
<th>Acute toxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene glycol dimethyl ether</td>
<td></td>
</tr>
<tr>
<td>CAS No: 110-71-4 EC No: 203-794-9</td>
<td></td>
</tr>
<tr>
<td>Oral</td>
<td>DL50 Rat</td>
</tr>
<tr>
<td>Dermal</td>
<td>DL50 Rat</td>
</tr>
<tr>
<td>Inhalation</td>
<td></td>
</tr>
</tbody>
</table>

a) acute toxicity;
Product classified:
Acute toxicity (Inhalation), Category 4: Harmful if inhaled.

b) skin corrosion/irritation;
Not conclusive data for classification.

c) serious eye damage/irritation;
Not conclusive data for classification.

d) respiratory or skin sensitisation;
Not conclusive data for classification.

e) germ cell mutagenicity;
Not conclusive data for classification.

f) carcinogenicity;
Not conclusive data for classification.

g) reproductive toxicity;
Product classified:
Reproductive toxicant, Category 1B: May damage fertility or the unborn child.

h) STOT-single exposure;
Not conclusive data for classification.

i) STOT-repeated exposure;
Not conclusive data for classification.

j) aspiration hazard;
Not conclusive data for classification.

SECTION 12: ECOLOGICAL INFORMATION.

12.1 Toxicity.

<table>
<thead>
<tr>
<th>Name</th>
<th>Ecotoxicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene glycol dimethyl ether</td>
<td></td>
</tr>
<tr>
<td>CAS No: 110-71-4 EC No: 203-794-9</td>
<td></td>
</tr>
<tr>
<td>Fish</td>
<td>LC50</td>
</tr>
<tr>
<td>Leuciscus idus</td>
<td>&gt;500 mg/l (96 h)</td>
</tr>
<tr>
<td>Aquatic invertebrates</td>
<td>EC0</td>
</tr>
<tr>
<td>Bacteria</td>
<td>&gt;1 g/l (24 h)</td>
</tr>
<tr>
<td>Aquatic plants</td>
<td></td>
</tr>
</tbody>
</table>
12.2 Persistence and degradability.
No information is available about persistence and degradability of the product.

12.3 Bioaccumulative potential.
Information about the bioaccumulation.

<table>
<thead>
<tr>
<th>Name</th>
<th>Bioaccumulation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene glycol dimethyl ether</td>
<td></td>
</tr>
<tr>
<td>N. CAS: 110-71-4 EC No: 203-794-9</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name</th>
<th>Log Pow</th>
<th>BCF</th>
<th>NOECs</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ethylene glycol dimethyl ether</td>
<td>-2,1</td>
<td>-</td>
<td>-</td>
<td>Very low</td>
</tr>
</tbody>
</table>

12.4 Mobility in soil.
No information is available about the mobility in soil.
The product must not be allowed to go into sewers or waterways.
Prevent penetration into the ground.

12.5 Results of PBT and vPvB assessment.
No information is available about the results of PBT and vPvB assessment of the product.

12.6 Other adverse effects.
No information is available about other adverse effects for the environment.

SECTION 13 DISPOSAL CONSIDERATIONS.

13.1 Waste treatment methods.
Do not dump into sewers or waterways. Waste and empty containers must be handled and eliminated according to current, local/national legislation.

SECTION 14: TRANSPORT INFORMATION.

Transport following ADR rules for road transport, RID rules for railway, ADN for inner waterways, IMDG for sea, and ICAO/IATA for air transport.

- **Land:** Transport by road: ADR, Transport by rail: RID.
- **Sea:** Transport by ship: IMDG.
- **Air:** Transport by plane: ICAO/IATA.

14.1 UN number.
UN No: UN2252

14.2 UN proper shipping name.
Description: UN 2252, 1,2-DIMETHOXYETHANE, 3, PG II, (D/E)

14.3 Transport hazard class(es).
Class(es): 3

14.4 Packing group.
Packing group: II

14.5 Environmental hazards.
Marine pollutant: No

14.6 Special precautions for user.
LABELS: 3

Hazard number: 33
ADR LQ: 1 L

Provisions concerning carriage in bulk ADR: Not authorized carriage in bulk in accordance with ADR.
Transport by ship, FEm – Emergency sheets (F – Fire, S - Spills): F-E,S-D
Proceed in accordance with point 6.

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code.
The product is not transported in bulk.

SECTION 15: REGULATORY INFORMATION.

15.1 Safety, health and environmental regulations/legislation specific for the substance.
Product classification according to Annex I of Directive 2012/18/EU (SEVESO III): P5b
The product is not affected by Regulation (EU) No 528/2012 concerning the making available on the market and use of biocidal products.
The product is not affected by the procedure established Regulation (EU) No 649/2012, concerning the export and import of dangerous chemicals.
Restrictions on the manufacturing, placing on the market and use of certain dangerous substances, mixtures and articles:

<table>
<thead>
<tr>
<th>Designation of the substance, of the group of substances or of the mixture</th>
<th>Conditions of restriction</th>
</tr>
</thead>
<tbody>
<tr>
<td>3B. Substances which appear in Part 3 of Annex VI to Regulation (EC) No 1272/2008 classified as toxic to reproduction category 1A or 1B (Table 3.1) or toxic to reproduction category 1 or 2 (Table 3.2) and listed as follows:</td>
<td>1. Shall not be placed on the market, or used,</td>
</tr>
<tr>
<td>- Reproductive toxicant category 1A adverse effects on sexual function and fertility or on development (Table 3.1) or reproductive toxicant category 1 with R60 (May impair fertility) or R61 (May cause harm to the unborn child) (Table 3.2) listed in Appendix 5</td>
<td>- as substances,</td>
</tr>
<tr>
<td>- Reproductive toxicant category 1B adverse effects on sexual function and fertility or on development (Table 3.1) or reproductive toxicant category 2 with R60 (May impair fertility) or R61 (May cause harm to the unborn child) (Table 3.2) listed in Appendix 6</td>
<td>- as constituents of other substances, or,</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>for supply to the general public when the individual concentration in the substance or mixture is equal to or greater than:</td>
<td>- in mixtures,</td>
</tr>
<tr>
<td>- either the relevant specific concentration limit specified in Part 3 of Annex VI to Regulation (EC) No 1272/2008, or,</td>
<td>for supply to the general public when the individual concentration in the substance or mixture is equal to or greater than:</td>
</tr>
<tr>
<td>- the relevant concentration specified in Directive 1999/45/EC where no specific concentration limit is set out in Part 3 of Annex VI to Regulation (EC) No 1272/2008.</td>
<td>- either the relevant specific concentration limit specified in Part 3 of Annex VI</td>
</tr>
<tr>
<td>Without prejudice to the implementation of other Community provisions relating to the classification, packaging and labelling of substances and mixtures, suppliers shall ensure before the placing on the market that the packaging of such substances and mixtures is marked visibly, legibly and indelibly as follows:</td>
<td>to Regulation (EC) No 1272/2008.</td>
</tr>
<tr>
<td>‘Restricted to professional users’.</td>
<td>Without prejudice to the implementation of other Community provisions</td>
</tr>
<tr>
<td>2. By way of derogation, paragraph 1 shall not apply to:</td>
<td>relating to the classification, packaging and labelling of substances and</td>
</tr>
<tr>
<td>(a) medicinal or veterinary products as defined by Directive 2001/82/EC and Directive 2001/83/EC;</td>
<td>mixtures, suppliers shall ensure before the placing on the market that the</td>
</tr>
<tr>
<td>(b) cosmetic products as defined by Directive 76/768/EEC;</td>
<td>packaging of such substances and mixtures is marked visibly, legibly and</td>
</tr>
<tr>
<td>(c) the following fuels and oil products:</td>
<td>indelibly as follows:</td>
</tr>
<tr>
<td>- motor fuels which are covered by Directive 98/70/EC,</td>
<td>‘Restricted to professional users’.</td>
</tr>
<tr>
<td>- mineral oil products intended for use as fuel in mobile or fixed combustion plants,</td>
<td>Without prejudice to the implementation of other Community provisions</td>
</tr>
<tr>
<td>- fuels sold in closed systems (e.g. liquid gas bottles);</td>
<td>relating to the classification, packaging and labelling of substances and</td>
</tr>
<tr>
<td>(d) artists' paints covered by Directive 1999/45/EC;</td>
<td>mixtures, suppliers shall ensure before the placing on the market that the</td>
</tr>
<tr>
<td>(e) the substances listed in Appendix 11, column 1, for the applications or uses listed in Appendix 11, column 2. Where a date is specified in column 2 of</td>
<td>packaging of such substances and mixtures is marked visibly, legibly and</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

-Continued on next page.-
15.2 Chemical safety assessment.
There has been no evaluation a chemical safety assessment of the product.

SECTION 16: OTHER INFORMATION.

Classification codes:

Acute Tox. 4 [Inhalation] : Acute toxicity (Inhalation), Category 4
Flam. Liq. 2 : Flammable liquid, Category 2
Repr. 1B : Reproductive toxicant, Category 1B

Sections changed compared with the previous version:
1,2,14,16

It is advisable to carry out basic training with regard to health and safety at work in order to handle this product correctly.

Labelling in accordance with Directive 67/548/EEC:

Symbols:

F
Highly flammable
T
Toxic

R Phrases:
R11  Highly flammable.
R19  May form explosive peroxides.
R20  Harmful by inhalation.
R60  May impair fertility.
R61  May cause harm to the unborn child.

S Phrases:
S45  In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).
S53  Avoid exposure - obtain special instructions before use.

Other Phrases:
Restricted to professional users.

Contains:
Ethylene glycol dimethyl ether

Abbreviations and acronyms used:
ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road.
BCF: Bioconcentration factor.
CEN: European Committee for Standardization.
EC50: Half maximal effective concentration.
PPE: Personal protection equipment.
IATA: International Air Transport Association.
LC50: Lethal concentration, 50%.
LD50: Lethal dose, 50%.
Log Pow: Logarithm of the partition octanol-water.
NOEC: No observed effect concentration.
RID: Regulations Concerning the International Transport of Dangerous Goods by Rail.

Key literature references and sources for data:
http://eur-lex.europa.eu/homepage.html
http://echa.europa.eu/


The information in this Safety Data Sheet on the Preparation is based on current knowledge and on current EC and national laws, as far as the working conditions of the users is beyond our knowledge and control. The product must not be used for purposes other than those that are specified without first having written instructions on how to handle. It is always the responsibility of the user to take the appropriate measures in order to comply with the requirements established by current legislation. The information contained in this Safety Sheet only states a description of the safety requirements for the preparation, and it must not be considered as a guarantee of its properties.