

## Dimethyl Ether

### SECTION 1: Identification of the substance/mixture and of the company/undertaking

<b>Product identifier</b>	
<b>Name of product</b>	Dimethyl ether
	Art-Nr: 2800
<b>Name of substance</b>	Dimethyl ether
<b>Index No</b>	603-019-00-8
<b>EC No</b>	204-065-8
<b>REACH registration number</b>	01-2119472128-37
<b>CAS No</b>	115-10-6

#### Manufacturer / Distributor:

##### **Ehsan International Gases**

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

##### Identified uses

##### ! Sector of uses [SU]

- SU10 - Formulation [mixing] of preparations and/or re-packaging (excluding alloys)
- SU21 - Consumer uses: Private households (= general public = consumers)
- SU22 - Professional uses: Public domain (administration, education, entertainment, services, craftsmen)
- SU3 - Industrial uses: Uses of substances as such or in preparations at industrial sites
- SU8 - Manufacture of bulk, large scale chemicals (including petroleum products) SU9 - Manufacture of fine chemicals

##### ! Product categories [PC]

- PC1 - Adhesives, sealants
- PC3 - Air care products
- PC32 - Polymer preparations and compounds
- PC39 - Cosmetics, personal care products
- PC4 - Anti-freeze and de-icing products
- PC8 - Biocidal products (e.g. Disinfectants, pest control)
- PC9a - Coatings and paints, thinners, paint removers

##### ! Process categories [PROC]

- PROC1 - Use in closed process, no likelihood of exposure
- PROC2 - Use in closed, continuous process with occasional controlled exposure
- PROC3 - Use in closed batch process (synthesis or formulation)
- PROC4 - Use in batch and other process (synthesis) where opportunity for exposure arises

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PROC5 - Mixing or blending in batch processes for formulation of preparations and articles (multistage and/or significant contact)

PROC7 - Industrial spraying

PROC9 - Transfer of substance or preparation into small containers (dedicated filling line, including weighing)

PROC12 - use of blowing agents in manufacture of foam

PROC14 - production of preparations or articles by tableting, compression, extrusion, pelettisation PROC8b

- Transfer of substance or preparation (charging/discharging) from/to vessels/large containers at dedicated facilities

PROC11 - Non industrial spraying

PROC15 - Use as laboratory reagent

### ! Article categories for substances in articles without intended release

AC13 - Plastic articles

### ! Environmental release categories [ERC]

ERC1 - Manufacture of substances

ERC8a - Wide dispersive indoor use of processing aids in open systems

ERC8d - Wide dispersive outdoor use of processing aids in open systems

ERC10a - Wide dispersive outdoor use of long-life articles and materials with low release

ERC2 - Formulation of preparations (mixtures)

ERC11a - Wide dispersive indoor use of long-life articles and materials with low release

ERC4 - Industrial use of processing aids in processes and products, not becoming part of articles

ERC6a - Industrial use resulting in manufacture of another substance (use of intermediates)

### Recommended intended purpose(s)

Basic substance. Propellant.

## SECTION 2: Hazards identification

### Classification of the substance or mixture

#### Classification according to 67/548/EEC or 1999/45/EC

F+; R12 R-phrases 12      Extremely flammable.

#### Additional hints

Listed substance (Regulation (EC) No 1272/2008, Annex VI, part 3).

#### Classification according to Regulation (EC) No 1272/2008 [CLP/GHS]

Hazard classes and Hazard	Hazard Statements	Classification procedure categories
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<b>Flam. Gas 1</b>	<b>H220</b>
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<b>Liquef. Gas</b>	<b>H280</b>
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#### Hazard statements for physical hazards

H220	Extremely flammable gas.
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H280	Contains gas under pressure; may explode if heated.
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#### Additional hints

Listed substance (Regulation (EC) No 1272/2008, Annex VI, part 3).

#### Label elements

#### Labelling according to Regulation (EC) No 1272/2008 [CLP/GHS]

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GHS02



GHS04

### Signal word

Danger

### Hazard statements for physical hazards

H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.

### Precautionary Statements

#### Prevention

P210 Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

#### Response

P377 Leaking gas fire: Do not extinguish, unless leak can be stopped safely.

P381 Eliminate all ignition sources if safe to do so.

#### Storage

P403 Store in a well-ventilated place.

#### Other hazards

### Information pertaining to special dangers for human and environment

In high concentrations may cause asphyxiation.

Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

Contact with liquid may cause cold burns/frostbite.

## SECTION 3: Composition/ information on ingredients

### Substances

CAS No 115-10-6

Dimethyl ether

EC No 204-065-8

Index No 603-019-00-8

REACH registration number 01-2119472128-37

## SECTION 4: First aid measures

### Description of first aid measures

#### General information

Remove contaminated soaked clothing immediately.

Adhere to personal protective measures when giving first aid.

Seek medical advice immediately.

#### In case of inhalation

Remove the casualty into fresh air and keep him immobile.

Seek medical treatment immediately.

In case of respiratory standstill give artificial respiration by respiratory bag (Ambu bag) or respirator. Send for a doctor.

#### In case of skin contact

In case of contact with skin wash off with warm water.

In case of frostbite rinse with plenty of water. Don't remove clothing.

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In case of frostbite spray with lukewarm (not hot) water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.

### In case of eye contact

Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call for a doctor immediately.

### In case of ingestion

Ingestion is not considered a potential route of exposure.

### Most important symptoms and effects, both acute and delayed

#### ! Physician's information / possible symptoms

Unconsciousness  
Headache  
Nausea  
Dizziness

### Indication of any immediate medical attention and special treatment needed

**Treatment (Advice to doctor)** Treat symptoms.

If necessary, give oxygen.

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## SECTION 5: Firefighting measures

### Extinguishing media

#### Suitable extinguishing media

Foam  
Dry powder  
Carbon dioxide  
sand water  
mist

#### ! Extinguishing media which must not be used for safety reasons

Full water jet

### Special hazards arising from the substance or mixture

In case of fire formation of dangerous gases possible.

Formation of explosive gas mixtures in air.

In the event of fire the following can be released:

Carbon monoxide (CO)

### Advice for firefighters

**Special protective equipment for fire-fighters** Use

breathing apparatus with independent air supply.

Wear full protective clothing.

### Additional information

Cool endangered containers with water spray jet.

Exposure to fire may cause containers to rupture / explode.

Do not extinguish a leaking gas flame unless absolutely necessary. Spontaneous/explosive re-ignition may occur.

Extinguish any other fire.

## SECTION 6: Accidental release measures

### Personal precautions, protective equipment and emergency procedures

See chapter 8.

Remove persons to safety.

Evacuate area.

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Eliminate all ignition sources if safe to do so.  
Keep away sources of ignition.

### Environmental precautions

If possible, stop flow of product.  
Eliminate ignition sources.  
Do not discharge into the drains/surface waters/groundwater.  
Do not discharge into the subsoil/soil.

### Methods and material for containment and cleaning up

Ensure adequate air ventilation. Allow to vaporise.

### Reference to other sections

Informations for safe handling see chapter 7.  
Informations for personal protective equipment see chapter 8.

## SECTION 7: Handling and storage

### Precautions for safe handling

#### Advice on safe handling

Use only in thoroughly ventilated areas.  
Transfer and handle only in enclosed systems.  
Take measures against electrostatically charging.  
Barrels and installations thoroughly earthing (grounding ).  
Use antistatic tools.  
Treatment only in suitable rooms and systems.  
Provide good room ventilation even at ground level (vapours are heavier than air).  
Prevent cylinders from falling over.  
Ensure valve protection device is correctly fitted.  
Ensure valve outlet cap nut or plug (where provided) is correctly fitted.  
Open valve slowly to avoid pressure shock.  
Do not allow backfeed into the container.  
Suck back of water into the container must be prevented.  
No water to valves, flanges and other fittings.  
Purging of pipes and valves with inert gases - to avoid: water, solvents.

#### Advice on protection against fire and explosion

The product is combustible.  
Because of risk of explosion avoid vapours getting into cellar, sewage system and holes. Take precautionary measures against static discharges.  
Formation of explosive gas mixtures in air.  
Use explosion-proof equipment / fittings and non-sparking tools.

#### Conditions for safe storage, including any incompatibilities

##### Requirements for storage rooms and vessels

Keep in closed original container.  
Ventilate store-rooms thoroughly.  
Suitable materials: Normalised steel and carbon steel, tempered steel, aluminium alloys, stainless steel. Valve:  
Suitable materials: Brass, copper alloys, carbon steels, aluminium alloys, stainless steel.

##### Advice on storage compatibility

Do not store with spontaneously flammable materials.  
Do not store together with combustible liquids or combustible solids.  
Do not store together with animal feedstuffs.  
Do not store together with explosives.  
Do not store together with infectious substances.  
Do not store together with radioactive material.  
Do not store together with toxic liquids or toxic solids.

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Do not store together with food.  
Do not store together with oxidizing liquids or oxidizing solids.

### ! Further information on storage conditions

Ensure valve protection device is correctly fitted.  
Keep container tightly closed and store at cool and aired place.  
Prevent cylinders from falling over.  
Protect of heat.  
Storage temperature may not exceed 50°C (=122°F).

### Specific end use(s)

### Recommendation(s) for intended use

See exposure scenario(s).

## SECTION 8: Exposure controls/personal protection

### Control parameters

#### Ingredients with occupational exposure limits to be monitored

CAS No	Name	Code	[mg/m3]	[ppm]	Remark
115-10-6	Dimethyl ether	WEL, 8 hours	766	400	EH40/2005, United Kingdom
		Short-term	958	500	

#### Indicative occupational exposure limit values (91/322/EEC, 2000/39/EC, 2006/15/EC or 2009/161/EU)

CAS No	Name	Code	[mg/m3]	[ppm]	Remark
115-10-6	Dimethyl ether	8 hours	1920	1000	

### Additional advice

DNEL (workers, inhalation, long-term, systemic effects): 1894 mg/m<sup>3</sup> (986 ppm).  
DNEL (consumers, inhalation, long-term, systemic effects): 471 mg/m<sup>3</sup> (245 ppm).

### Exposure controls

#### Respiratory protection

Keep self contained breathing apparatus readily available for emergency use.  
In case of rescue and maintenance activities in storage containers use environment-independent breathing apparatus because of risk of suffocation by edging out of air oxygen

### ! Hand protection

Leather gloves  
NBR gloves  
Neoprene gloves

**Eye protection** safety goggles, in case of increased risk add protective face shield

### Skin protection

Safety shoes with steel toe.  
Body covering work clothing, or chemical resistant suit at increased risk.

**General protective measures** Do not inhale gases/vapours/aerosols.

### Hygiene measures

At work do not eat, drink and smoke.

### ! Limitation and surveillance of the environment

PNEC (water): 0,155 mg/l

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PNEC (sediment): 0,681 mg/kg  
 PNEC (soil): 0,045 mg/kg  
 PNEC (sewage treatment plant): 160 mg/l  
 See chapter 7.

### SECTION 9: Physical and chemical properties

#### Information on basic physical and chemical properties

<b>Form</b>	<b>Colour</b>	<b>Odour</b>
Gaseous / liquefied under pressure.	colourless	ethereal

#### Important health, safety and environmental information

	Value	Temperature	at	Method	Remark
<b>pH value in delivery state</b>	not applicable				
<b>Acid number</b>	not applicable				
<b>boiling point</b>	-23,7 °C		1013 hPa		
<b>melting point</b>	-141,5 °C				
<b>Flash point</b>	-80 °C				
<b>Flammable solid</b>	not applicable				
<b>Ignition temperature</b>	235 °C				
<b>Autoignition</b>	ca. 240 °C				
<b>Lower explosion limit</b>	3,3 Vol-%				
<b>Upper explosion limit</b>	26,2 Vol-%				
<b>Vapour pressure</b>	5130 hPa	20 °C			
<b>Density</b>	0,665 g/cm <sup>3</sup>	20 °C			liquid phase
<b>Rel. vapour density</b>	1,63				air = 1
<b>Solubility in water</b>	70 g/l	20 °C			
<b>Solubility/other</b>					soluble in organic solvent

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### SECTION 10: Stability and reactivity

**Reactivity**

See section "Possibility of hazardous reactions".

**Chemical stability**

Stable under normal conditions.

**Possibility of hazardous reactions**

May react violently with oxidants.

**Conditions to avoid**

Formation of explosive gas/air mixtures.

Heat sources / heat - risk of bursting.

**Incompatible materials**

**! Materials to avoid**

Oxidants.

**Hazardous decomposition products**

Carbon monoxide

Hydrogen

Methane

When handled and stored appropriately, no dangerous

**Thermal decomposition**

Remark                      No decomposition if used as directed.                      ion products are k

### SECTION 11: Toxicological information

**Information on toxicological effects**

**Acute toxicity/Irritability/Sensitization**

	Value/Validation	Species	Method	Remark
<b>LC50 acute inhalation</b>	16,4 Vol-% (4 h)	rat		

**Irritability skin**                      non-irritant

**Irritability eye**                      non-irritant

	non-sensitizing Value/Validation	Species	Method	Remark
<b>Skin sensitization</b>				

**Sensitization respiratory system**                      non-sensitizing

**Subacute Toxicity - Carcinogenicity**

Value	Species	Method	Validation



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### Mutagenicity

No experimental information on genotoxicity in vitro and in vivo available.

### Reproduction-Toxicity

No indications of toxic effects were observed in reproduction studies in animals.

### Carcinogenicity

No indications of carcinogenic effects are available from long-term trials.

### Experiences made from practice

May cause frostbite.  
Gases have a suffocating effect.  
Inhalation causes narcotic effect/intoxication.

## SECTION 12: Ecological information

### Toxicity

#### Ecotoxicological effects

	Value	Species	Method	Validation
<b>Fish</b>	LC50 > 4000 mg/l (96 h)	guppy		
<b>Daphnia</b>	EC50 > 4000 mg/l (48 h)	Daphnia magna		
<b>Algae</b>	not determined			
<b>Bacteria</b>	EC10 > 1600 mg/l	Pseudomonas putida		

### Persistence and degradability

#### Physico-chemical degradability

At normal temperature very highly volatile or gaseous product that can be released to atmosphere.  
Elimination test cannot be employed.

#### Biological degradability

Closed-bottles-test not readily degradable

#### Biological not determined eliminability

### Bioaccumulative potential

No high bioaccumulation potential (estimated).

### Mobility in soil

not applicable

### Results of PBT and vPvB assessment

This substance does not meet the PBT/vPvB criteria of REACH, annex XIII.

### Other adverse effects

Not known.

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### SECTION 13: Disposal considerations

#### Waste treatment methods

**Waste code No.**

16 05 04\*

**Name of waste**

gases in pressure containers (including halons) containing dangerous substances

Wastes marked with an asterisk are considered to be hazardous waste pursuant to Directive 91/689/EEC on hazardous waste.

**Recommendations for the product**

Dispose of as hazardous waste.

**Recommendations for packaging**

Transportable pressure equipment (empty, residual pressure): Return to supplier / manufacturer.

### SECTION 14: Transport information

**Land and inland navigation transport ADR/RID**

UN 1033 DIMETHYL ETHER, 2.1, (B/D), Classification code: 2F

**Marine transport IMDG**

UN 1033 DIMETHYL ETHER, 2.1

**Air transport ICAO/IATA-DGR**

UN 1033 Dimethyl ether, 2.1

**Special precautions for user**

The protective measures listed in Sections 6, 7 and 8 of the Safety Data Sheet have to be considered.

**Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code**

not applicable

### SECTION 15: Regulatory information

**Safety, health and environmental regulations/legislation specific for the substance or mixture****Other regulations (EU)**

Regulation (EC) No 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), Annex XVII No 40.

Directive 96/82/EC on the control of major-accident hazards involving dangerous substances.

**VOC standard****VOC content**

≥99 % 20 °C 5100 hPa

**Chemical Safety Assessment**

For this substance a chemical safety assessment has been carried out.

Exposure scenarios (ESs) see [http://www.ghc.de/pdf\\_e/es2800.001e.pdf](http://www.ghc.de/pdf_e/es2800.001e.pdf).

### SECTION 16: Other information

**Recommended uses and restrictions**

National and local regulations concerning chemicals shall be observed.

**Further information**

All declarations of safety-data-sheet refer to pure substance.

The information contained herein is based on the state of our knowledge. It characterizes the product with regard to the appropriate safety precautions. It does not represent a guarantee of the properties of the product.

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**Wording of the R/H-phrases specified in chapter 3 (not the classification of the mixture!)**

R 12 Extremely flammable.

H220 Extremely flammable gas.

H280 Contains gas under pressure; may explode if heated.