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DIMETHYLETHER (99,99%)
Version 1
Effective Date 14.12.2018
Regulation 1907/2006/EC

Safety Data Sheet

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

1.1. Product Identifier

Material Name	:	**DIMETHYLETHER (99,99%)**
CAS No.	:	115-10-6
Other Identifier	:	DME Dimethylether
REACH Registration No.	:	01-2119472128-37-0016

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

Product Use	:	Aerosol Propellant. Please refer to Ch16 for the registered uses under REACH. Chemical intermediate. Foam blowing agent. Fuel. Use as a propellant in industrial aerosol products.
Uses Advised Against	:	This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.

1.3. Details of the Supplier of the safety data sheet

Manufacturer/Supplier	:	Taba is ve dis tic. ltd. sti. Fenerbahce mah. Munir Nurettin Selcuk cad. No:38/5 Kadikoy / Istanbul - TURKEY
Telephone	:	+90 216 488 0009
Fax	:	-
Email Contact for Safety Data Sheet	:	info@tabaltd.com

1.4. Emergency Telephone Number : +90 216 488 0009

SECTION 2. HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture
Regulation (EC) No 1272/2008 (CLP)

Hazard classes / Hazard categories	**Hazard Statement**
Flammable gas., Category 1	H220
Gases under pressure	H280

67/548/EEC or 1999/45/EC

Hazard Characteristics	**R-phrase(s)**
F+: Extremely flammable.;	R12

2.2. Label Elements

Labeling according to Regulation (EC) No 1272/2008

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Hazard pictograms :

Signal Words : Danger

CLP Hazard Statements : **PHYSICAL HAZARDS:**
H220: Extremely flammable gas.
H280: Contains gas under pressure; may explode if heated.

HEALTH HAZARDS:
Not classified as a health hazard under CLP criteria.

ENVIRONMENTAL HAZARDS:
Not classified as environmental hazard according to CLP criteria.

CLP Precautionary statements

Prevention : P210: Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P377: Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
P381: Eliminate all ignition sources if safe to do so.

Storage : P410+P403: Protect from sunlight. Store in a well-ventilated place.

2.3. Other Hazards

Health Hazards : High gas concentrations will displace available oxygen from the air; unconsciousness and death may occur suddenly from lack of oxygen.
Exposure to rapidly expanding gases may cause frost burns to eyes and/or skin.

Safety Hazards : Vapours are heavier than air. Vapours may travel across the ground and reach remote ignition sources causing a flashback fire danger. May form explosive peroxides. This material has the potential to be a static accumulator.

Environmental Hazards : Not classified as dangerous for the environment

Other Information : This product is intended for use in closed systems only.
The substance does not meet the criteria for PBT or vPvB in accordance with Annex XIII.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substance

Material Name : Not applicable

Synonyms : DME; Dimethylether

CAS No. : 115-10-6

3.2. Mixtures

Mixture Description : Gaseous ether
Product is not a mixture according to regulation 1907/2006/EC

Hazardous Components

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Classification of components according to Regulation (EC) No 1272/2008

Chemical Name	CAS No.	EC Number	REACH Registration No.	Conc.
Dimethylether	115-10-6	204-065-8	01-2119472128-37	>= 99,99%

Chemical Name	Hazard Class & Category	Hazard Statement
Dimethylether	Flam. Gas, 1; Press. Gas.	H220; H280;

Classification of components according to 67/548/EEC

Chemical Name	CAS No.	EC Number	REACH Registration No.	Symbol(s)	R-phrase(s)	Conc.
Dimethylether	115-10-6	204-065-8	01-2119472128-37	F+	R12	>= 99,99%

Additional Information : The substance does not meet the criteria for PBT or vPvB in accordance with Annex XIII.

Refer to Ch 16 for full text of R- and H- phrases.

SECTION 4. FIRST-AID MEASURES

4.1. Description of First Aid Measures

Inhalation : Remove to fresh air. If breathing but unconscious, place in the recovery position. If breathing has stopped, apply artificial respiration. If heartbeat absent, give external cardiac compression. Monitor breathing and pulse. Seek urgent medical advice

Skin Contact : Do not remove clothing that adheres to skin due to freezing. In the event of frostbite, slowly warm the exposed area by rinsing with warm water. Otherwise: Obtain medical treatment immediately. Contaminated clothing may be a fire hazard and therefore should be soaked with water before being removed. Loosen tight clothing. Keep warm and at rest.

Eye Contact : DO NOT DELAY. Obtain medical treatment immediately. Remove contact lenses, if present and easy to do. Continue rinsing. Flush eye with copious quantities of water.

Ingestion : In the unlikely event of ingestion, obtain medical attention immediately

Self-protection of the first aider : When administering first aid, ensure that you are wearing the appropriate personal protective equipment according to the incident, injury and surroundings

4.2. Most important symptoms and effects, both acute and delayed : High concentrations may cause central nervous system depression resulting in headaches, dizziness and nausea; continued exposure may result in unconsciousness and/or death.

4.3. Indication of any immediate medical attention and special treatment needed : Treat symptomatically.
Administer oxygen if necessary.

SECTION 5. FIRE-FIGHTING MEASURES

Clear fire area of all non-emergency personnel

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5.1. Extinguishing Media	:	Shut off supply. If not possible and no risk to surroundings, let the fire burn itself out. Use foam, water fog for major fires. Use dry chemical powder, carbon dioxide, sand or earth for minor fires
Unsuitable Extinguishing Media	:	Do not use direct water jets on the burning product as they could cause a steam explosion and spread of the fire. Simultaneous use of foam and water on the same surface is to be avoided as water destroys the foam.
5.2. Special hazards arising from the substance or mixture	:	Hazardous combustion products may include: Carbon monoxide may be evolved if incomplete combustion occurs. Unidentified organic and inorganic compounds. Sustained fire attack on vessels may result in a Boiling Liquid Expanding Vapour Explosion (BLEVE). Contents are under pressure and can explode when exposed to heat or flames. The vapour is heavier than air, spreads along the ground and distant ignition is possible
5.3. Advice for firefighters	:	Wear full protective clothing and self-contained breathing apparatus.
Additional Advice	:	Keep adjacent containers cool by spraying with water. If possible remove containers from the danger zone. If the fire cannot be extinguished the only course of action is to evacuate immediately.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Evacuate the area of all non-essential personnel. Ventilate contaminated area thoroughly. Avoid contact with spilled or released material. Immediately remove all contaminated clothing. Do not attempt to do so if clothing is adhering to skin. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material Safety Data Sheet.

6.1. Personal Precautions, Protective Equipment and Emergency Procedures	:	6.1.1 For non emergency personnel: Shut off leaks, if possible without personal risks. Remove all possible sources of ignition in the surrounding area and evacuate all personnel. Attempt to disperse the gas or to direct its flow to a safe location for example by using fog sprays. Take precautionary measures against static discharge. Ensure electrical continuity by bonding and grounding (earthing) all equipment. Monitor area with combustible gas meter. 6.1.2 For emergency responders: Test atmosphere for flammable gas concentrations to ensure safe working conditions before personnel are allowed to enter the area.
6.2. Environmental Precautions	:	Use appropriate containment to avoid environmental contamination.
6.3. Methods and Material for Containment and Cleaning Up	:	Allow to evaporate. Attempt to disperse the vapour or to direct its flow to a safe location, for example by using fog sprays. Otherwise treat as for small spillage.
Additional Advice	:	Notify authorities if any exposure to the general public or the environment occurs or is likely to occur. Vapour may form an explosive mixture with air. Risk of explosion. Inform the emergency services if product enters surface water drains.
Reference to other sections	:	For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. For guidance on disposal of spilled material see Chapter 13 of this Material

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SECTION 7. HANDLING AND STORAGE

General Precautions	:	Avoid breathing vapours or contact with material. Only use in well ventilated areas. Wash thoroughly after handling. For guidance on selection of personal protective equipment see Chapter 8 of this Material Safety Data Sheet. Use the information in this data sheet as input to a risk assessment of local circumstances to help determine appropriate controls for safe handling, storage and disposal of this material. Air-dry contaminated clothing in a well-ventilated area before laundering. Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.
7.1. Precautions for Safe Handling	:	This product can create a low temperature exposure hazard when released as a liquid. Extinguish any naked flames. Do not smoke. Remove ignition sources. Avoid sparks. Avoid prolonged or repeated contact with skin. Electrostatic charges may be generated during handling. Electrostatic discharge may cause fire. Earth all equipment. Use local exhaust ventilation if there is risk of inhalation of vapours, mists or aerosols.
Product Transfer	:	Do not use compressed air for filling, discharging or handling. Electrostatic charges may be generated during pumping. Electrostatic discharge may cause fire. Delivery lines may become cold enough to present a cold burns hazard.
7.2. Conditions for safe storage, including any incompatibilities	:	Store only in purpose-designed, appropriately labelled pressure vessels or cylinders. Must be stored in a well- ventilated area, away from sunlight, ignition sources and other sources of heat. Do not store near cylinders containing compressed oxygen or other strong oxidizers. Refer to section 15 for any additional specific legislation covering the packaging and storage of this product
Recommended Materials	:	Stainless steel. Mild steel.
Unsuitable Materials	:	Some forms of cast iron. Examples of materials to avoid are: ABS, polymethyl methacrylate (PMMA), polyethylene (PE / HDPE), polypropylene (PP), PVC, natural rubber (NR), Nitrile (NBR) ethylene propylene rubber (EPDM), Butyl (IIR), Hypalon (CSM), polystyrene, polyvinyl chloride (PVC), polyisobutylene. For containers and container linings, aluminium should not be used if there is a risk of caustic contamination of the product.
Container Advice	:	Containers, even those that have been emptied, can contain explosive vapours. Do not cut, drill, grind, weld or perform similar operations on or near containers.
7.3. Specific end use(s)	:	Please refer to Ch16 and/or the annexes for the registered uses under REACH.
Additional Information	:	This product is intended for use in closed systems only. Ensure that all local regulations regarding handling and storage facilities are followed. Storage class according to TRGS 510: 2A. Fire hazard classification: C

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SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

If the American Conference of Governmental Industrial Hygienists (ACGIH) value is provided on this document, it is provided for information only.
Read in conjunction with the Exposure Scenario for your specific use contained in the Annex.

8.1. Control Parameters

Occupational Exposure Limits

None established.

Material	Source	Type	ppm	mg/m3	Notation
Dimethylether	TRGS 900	AGW	1.000 ppm	1.900 mg/m3	
	TRGS 900	STEL CL			Category II: substances with a resorptive effect.
	DFG MAK	MAK	1.000 ppm	1.900 mg/m3	Listed.
	DFG MAK	PEAK CAT			Category II: substances with a resorptive effect.

Biological Exposure Index (BEI)

No biological limit allocated.

Derived No Effect Levels (DNEL/DMEL) Table

Component	Exposure Route	Exposure Type (long/short)	Application Area	Value
Dimethylether	Inhalation	long term, systemic effects	Worker	1894 mg/m3
	Inhalation	long term, systemic effects	Consumer	471 mg/m3

Predicted No Effect Concentration (PNEC)

Component	Exposure Route	Value	Remark
Dimethylether	Water.	0,155 mg/l	fresh
	Sediment	0,681 mg/kg	
	Soil	0,045 mg/kg	
	STP	160 mg/l	

Monitoring Methods : Monitoring of the concentration of substances in the breathing zone of workers or in the general workplace may be required to confirm compliance with an OEL and adequacy of exposure controls. For some substances biological monitoring may also be appropriate. Validated exposure measurement methods should be applied by a competent person and samples analysed by an accredited laboratory. Examples of sources of recommended exposure measurement methods are given below or contact the supplier. Further national methods may be available.
National Institute of Occupational Safety and Health (NIOSH), USA: Manual of Analytical Methods http://www.cdc.gov/niosh/ Occupational Safety and Health Administration (OSHA), USA: Sampling and Analytical Methods http://www.osha.gov/

Institut für Arbeitsschutz Deutschen Gesetzlichen Unfallversicherung (IFA), Germany. http://www.dguv.de/inhalt/index.jsp

8.2. Exposure Controls

General Information : Read in conjunction with the Exposure Scenario for your specific use contained in the Annex.
The level of protection and types of controls necessary will vary depending upon potential exposure conditions. Select controls based on a risk assessment of local circumstances.
Appropriate measures include: Use sealed systems as far as possible. Adequate explosion-proof ventilation to control airborne concentrations below the exposure guidelines/limits. Local exhaust ventilation is recommended. Exhaust emission systems should be designed in accordance with local conditions; the air should always be moved away from the source of vapour generation and the person working at this point. Firewater monitors and deluge systems are recommended. Always observe good personal hygiene measures, such as washing hands after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants. Discard contaminated clothing and footwear that cannot be cleaned. Practice good housekeeping. Define procedures for safe handling and maintenance of controls. Educate and train workers in the hazards and control measures relevant to normal activities associated with this product. Ensure appropriate selection, testing and maintenance of equipment used to control exposure, e.g. personal protective equipment, local exhaust ventilation.

Occupational Exposure Controls

Personal Protective Equipment : Personal protective equipment (PPE) should meet recommended national standards. Check with PPE suppliers.
The provided information is made in consideration of the PPE directive (Council Directive 89/686/EEC) and the CEN European Committee for Standardisation (CEN) standards

Eye Protection : Chemical splash goggles (gas-tight monogoggles) and face shield with chin guard.
Approved to EU Standard EN166.

Hand Protection : Personal hygiene is a key element of effective hand care. Gloves must only be worn on clean hands. After using gloves, hands should be washed and dried thoroughly. Application of a non-perfumed moisturizer is recommended. Suitability and durability of a glove is dependent on usage, e.g. frequency and duration of contact, chemical resistance of glove material, dexterity. Always seek advice from glove suppliers.
Contaminated gloves should be replaced. Where hand contact with the product may occur the use of gloves approved to relevant standards (e.g. Europe: EN374, US: F739) made from the following materials may provide suitable chemical protection: Neoprene rubber. Nitrile rubber. If contact with liquefied product is possible or anticipated, gloves should be thermally insulated to prevent cold burns. For continuous

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		contact we recommend gloves with breakthrough time of more than 240 minutes with preference for > 480 minutes where suitable gloves can be identified. For short-term/splash protection we recommend the same, but recognise that suitable gloves offering this level of protection may not be available and in this case a lower breakthrough time may be acceptable so long as appropriate maintenance and replacement regimes are followed. Glove thickness is not a good predictor of glove resistance to a chemical as it is dependent on the exact composition of the glove material. Glove thickness should be typically greater than 0.35 mm depending on the glove make and model.
Body protection	:	Chemical and cold resistant gloves/gauntlets, boots, and apron
Respiratory Protection	:	If engineering controls do not maintain airborne concentrations to a level which is adequate to protect worker health, select respiratory protection equipment suitable for the specific conditions of use and meeting relevant legislation. Check with respiratory protective equipment suppliers. Where air-filtering respirators are unsuitable (e.g. airborne concentrations are high, risk of oxygen deficiency, confined space) use appropriate positive pressure breathing apparatus. Where air- filtering respirators are suitable, select an appropriate combination of mask and filter. Select a filter suitable for organic gases and vapors [Type AX boiling point < 65°C (149°F)] meeting EN14387.
Thermal Hazards	:	When handling cold material that can cause frost burns, wear heat resistant gloves, safety hat and visor, cold resistant overalls (with cuffs over gloves and legs over boots) and heavy duty boots e.g. leather for cold resistance.
Environmental Exposure Controls		
Environmental exposure control measures	:	Local guidelines on emission limits for volatile substances must be observed for the discharge of exhaust air containing vapour. Information on accidental release measures are to be found in section 6.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

Appearance	:	Colourless. Liquid under pressure.
Odour	:	Ethereal.
Odour threshold	:	Data not available
pH	:	Not applicable
Initial Boiling Point and Boiling Range	:	ca. -25 °C / -13 °F 1.013 hPa
Melting / freezing point	:	Typical -141,5 °C / -222,7 °F
Flash point	:	ca. -80 °C / -112 °F
Upper / lower Flammability or Explosion limits	:	Typical 3,3 - 26,2 %(V)
Auto-ignition temperature	:	ca. 226 °C / 439 °F
Vapour pressure	:	Typical 513 kPa at 20 °C / 68 °F
Density	:	ca. 670 kg/m3
Water solubility	:	Typical 45,6 g/l at 25 °C / 77 °F

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Solubility in other solvents	:	Data not available
n-octanol/water partition coefficient (log Pow)	:	Typical 0,07 at 25 °C / 77 °F
Dynamic viscosity	:	Not applicable.
Kinematic viscosity	:	Not applicable.
Vapour density (air=1)	:	>1
Evaporation rate (nBuAc=1)	:	Data not available.
Flammability	:	Extremely flammable.
Oxidizing Properties	:	Not applicable.
Explosive Properties	:	Not classified.

9.2. Other Information

Electrical conductivity	:	This material is not expected to be a static accumulator.
Other Information	:	Not applicable.

SECTION 10. STABILITY AND REACTIVITY

10.1. Reactivity	:	No, product will not become self-reactive.
10.2. Chemical stability	:	Stable under normal use conditions.
10.3. Possibility of Hazardous Reactions	:	No hazardous reaction is expected when handled and stored according to provisions.
10.4. Conditions to Avoid	:	Heat, open flames, sparks and flammable atmospheres.
10.5. Incompatible Materials	:	Strong oxidising agents
10.6. Hazardous Decomposition Products	:	Hazardous decomposition products are not expected to form during normal storage.

Other Information

Hazardous Polymerisation	:	No, hazardous, exothermic polymerization cannot occur.
Sensitivity to Mechanical Impact	:	No, product will not become self-reactive.
Sensitivity to Static Discharge	:	Yes, in certain circumstances product can ignite due to static electricity.

SECTION 11. TOXICOLOGICAL INFORMATION

11.1. Information on Toxicological effects

Basis for Assessment	:	Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
Likely Routes of Exposure	:	Inhalation is the primary route of exposure although exposure may occur through skin or eye contact
Acute Oral Toxicity	:	Not expected to be a hazard
Acute Dermal Toxicity	:	Not expected to be a hazard
Acute Inhalation Toxicity	:	Low toxicity by inhalation
Skin corrosion/irritation	:	Expected to be non-irritating to skin
Serious eye damage/irritation	:	Expected to be non-irritating to eyes
Respiratory Irritation	:	Not expected to be a respiratory irritant
Respiratory or skin sensitisation	:	Not expected to be a sensitiser
Aspiration Hazard	:	Not considered an aspiration hazard
Germ cell mutagenicity	:	No evidence of mutagenic activity
Carcinogenicity	:	Not expected to be carcinogenic

Dimethylether	:	GHS / CLP: No carcinogenicity classification

Reproductive and Developmental Toxicity	:	Not expected to impair fertility. Not expected to be a developmental toxicant.

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Summary on evaluation of the CMR properties

Carcinogenicity	:	This product does not meet the criteria for classification in categories 1A/1B.
Mutagenicity	:	This product does not meet the criteria for classification in categories 1A/1B.
Reproductive Toxicity (fertility)	:	This product does not meet the criteria for classification in categories 1A/1B.
Specific target organ toxicity - single exposure	:	May cause drowsiness and dizziness.
Specific target organ toxicity - repeated exposure	:	Not expected to be a hazard.
Additional Information	:	Rapid release of gases which are liquids under pressure may cause frost burns of exposed tissues (skin, eye) due to evaporative cooling. High gas concentrations will displace available oxygen from the air; unconsciousness and death may occur suddenly from lack of oxygen. Classifications by other authorities under varying regulatory frameworks may exist.

SECTION 12. ECOLOGICAL INFORMATION

Basis for Assessment	:	Incomplete ecotoxicological data are available for this product. The information given below is based partly on a knowledge of the components and the ecotoxicology of similar products. Unless indicated otherwise, the data presented is representative of the product as a whole, rather than for individual component(s).
12.1. Toxicity		
Acute Toxicity	:	In view of the high rate of loss from solution, the product is unlikely to pose a significant hazard to aquatic life.
Fish	:	Practically non toxic, LC/EC/IC 50 > 100 mg/l
Aquatic crustacea	:	Practically non toxic, LC/EC/IC 50 > 100 mg/l
Algae/aquatic plants	:	Practically non toxic, LC/EC/IC 50 > 100 mg/l
Microorganisms	:	Expected to be practically non toxic: LC/EC/IC50 > 100 mg/l
Chronic Toxicity		
Fish	:	Data not available
Aquatic crustacea	:	Data not available
12.2. Persistence and degradability	:	Expected to be inherently biodegradable. Oxidises rapidly by photo-chemical reactions in air.
12.3. Bioaccumulative Potential	:	Not expected to bioaccumulate significantly. Log Kow < 4.
12.4. Mobility in Soil	:	Contains volatile constituents. Because of their extreme volatility, air is the only environmental compartment that hydrocarbon gases will be found.
12.5. Result of PBT and vPvB assesment	:	The substance does not fulfill all screening criteria for persistence, bioaccumulation and toxicity and hence is not considered to be PBT or vPvB.

SECTION 13. DISPOSAL CONSIDERATIONS

13.1 Waste Treatment Methods

Material Disposal	:	It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste classification and disposal methods

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in compliance with applicable regulations. Waste arising from a spillage or tank cleaning should be disposed of in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand. Do not dispose into the environment, in drains or in water courses. Given the nature and uses of this product, the need for disposal seldom arises. If necessary, dispose by controlled combustion in purpose-designed equipment. If this is not possible, contact the supplier.

Container Disposal : Drain container thoroughly. After draining, vent in a safe place away from sparks and fire. Residues may cause an explosion hazard. Do not puncture, cut, or weld uncleaned drums. Send to drum recoverer or metal reclaimer. Do not pollute the soil, water or environment with the waste container. Return part-used or empty cylinders to the supplier. For tanks seek specialist advice from suppliers. Dispose in accordance with prevailing regulations, preferably to a recognised collector or contractor. The competence of the collector or contractor should be established beforehand.

Local Legislation : Disposal should be in accordance with applicable regional, national, and local laws and regulations. Local regulations may be more stringent than regional or national requirements and must be in compliance.
EU Waste Disposal Code (EWC): 16 05 04 gases in pressure containers (including halons) containing dangerous substances.
Classification of waste is always the responsibility of the end user.

SECTION 14. TRANSPORT INFORMATION

Land transport (ADR/RID):

ADR

14.1. UN number	:	1033
14.2. UN proper shipping name	:	DIMETHYL ETHER
14.3. Transport hazard class(es)	:	2
14.4. Packing group	:	Not applicable.
Danger label (primary risk)	:	2.1
14.5. Environmental hazards	:	No
14.6. Special precautions for user	:	Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.

RID

14.1. UN number	1033
14.2. UN proper shipping name	DIMETHYL ETHER
14.3. Transport hazard class(es)	2
14.4. Packing group	Not applicable.
Danger label (primary risk)	2.1
14.5. Environmental hazards	No
14.6. Special precautions for user	Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs

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to comply with in connection with transport.

Inland waterways transport (ADN):	
14.1. UN number	1033
14.2. UN proper shipping name	DIMETHYL ETHER
14.3. Transport hazard class(es)	2
14.4. Packing group	Not applicable.
Danger label (primary risk)	2.1
14.5. Environmental hazards	No
14.6. Special precautions for user	Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.
CDNI Inland Water Waste Agreement	NST 8191 Dimethyl ether
Sea transport (IMDG Code):	
14.1. UN number	UN 1033
14.2. UN proper shipping name	DIMETHYL ETHER
14.3. Transport hazard class(es)	2.1
14.4. Packing group	Not applicable.
14.5. Environmental hazards	No
14.6. Special precautions for user	Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.
Air transport (IATA):	
14.1. UN number	1033
14.2. UN proper shipping name	Dimethyl ether
14.3. Transport hazard class(es)	2.1
14.4. Packing group	Not applicable.
14.6. Special precautions for user	Special Precautions: Refer to Chapter 7, Handling & Storage, for special precautions which a user needs to be aware of or needs to comply with in connection with transport.
14.7. Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code	
Pollution Category	Not applicable.
Ship Type	Not applicable.
Product Name	Not applicable.
Special Precaution	Not applicable.

SECTION 15. REGULATORY INFORMATION

The regulatory information is not intended to be comprehensive. Other regulations may apply to this material.

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

Other regulatory Information

Recommended Restrictions on Use (Advice Against)	:	This product must not be used in applications other than those recommended in Section 1, without first seeking the advice of the supplier.

National Legislation

Water Pollution Class	:	WGK 1 - low hazard to waters (appendix 2, VwVwS, substances)., List Number 714
Other Information	:	Technische Anleitung Luft: Product not listed by name. Observe section 5.2.5 in connection with section 5.4.9

15.2. Chemical Safety

Assessment	:	A Chemical Safety Assessment was performed for this substance

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SECTION 16. OTHER INFORMATION

R-phrase(s)	
R12	Extremely flammable.
CLP Hazard Statements	
H220	Extremely flammable gas.
H280	Contains gas under pressure; may explode if heated.
Identified Uses according to the Use Descriptor System	
Uses – Worker	Manufacture of substance - Industrial
Title	
Uses – Worker	Use as an intermediate - Industrial
Title	
Uses – Worker	Formulation & (re)packing of substances and mixtures-
Title	Industrial
Uses – Worker	Use as a propellant - Industrial
Title	
Uses – Worker	Blowing agents - Industrial
Title	
Uses – Worker	Use as a propellant - Professional
Title	
Uses – Worker	Use in laboratories - Professional
Title	
Uses – Worker	Use as a fuel - Professional
Title	
Identified Uses according to the Use Descriptor System	
Uses – Consumer	Use as a propellant - Consumer
Title	
Identified Uses according to the Use Descriptor System	
Uses – Article	Service life of foam article - Consumer
Title	
Additional Information	This document contains important information to ensure the safe storage, handling and use of this product. The information in this document should be brought to the attention of the person in your organisation responsible for advising on safety matters. Due to the conversion of this product to CLP classification and labelling, there has been a significant change to the nature of the information presented in chapter 2.
Other Information	
Further Information	This product is intended for use in closed systems only.The substance does not meet the criteria for PBT or vPvB in accordance with Annex XIII.
Abbreviations and Acronyms	AGW = Maximum Workplace Concentration TRGS = Technical rules for hazardous substances DFG = Federal Institute of Hydrology MAK = Maximum workplace concentration ACGIH = American Conference of Governmental Industrial Hygienists ADR = European Agreement concerning the International Carriage of Dangerous Goods by Road

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AICS = Australian Inventory of Chemical Substances ASTM = American Society for Testing and Materials BEL = Biological exposure limits
BTEX = Benzene, Toluene, Ethylbenzene, Xylenes CAS = Chemical Abstracts Service
CEFIC = European Chemical Industry Council CLP = Classification Packaging and Labelling COC = Cleveland Open-Cup
DIN = Deutsches Institut fur Normung DMEL = Derived Minimal Effect Level DNEL = Derived No Effect Level
DSL = Canada Domestic Substance List EC = European Commission
EC50 = Effective Concentration fifty
ECETOC = European Center on Ecotoxicology and Toxicology Of Chemicals
ECHA = European Chemicals Agency
EINECS = The European Inventory of Existing Commercial Chemical Substances
EL50 = Effective Loading fifty
ENCS = Japanese Existing and New Chemical Substances Inventory
EWC = European Waste Code
GHS = Globally Harmonised System of Classification and Labelling of Chemicals
IARC = International Agency for Research on Cancer IATA = International Air Transport Association
IC50 = Inhibitory Concentration fifty IL50 = Inhibitory Level fifty
IMDG = International Maritime Dangerous Goods INV = Chinese Chemicals Inventory
IP346 = Institute of Petroleum test method N° 346 for the determination of polycyclic aromatics DMSO-extractables KECI = Korea Existing Chemicals Inventory
LC50 = Lethal Concentration fifty LD50 = Lethal Dose fifty per cent.
LL/EL/IL = Lethal Loading/Effective Loading/Inhibitory loading
LL50 = Lethal Loading fifty
MARPOL = International Convention for the Prevention of Pollution From Ships
NOEC/NOEL = No Observed Effect Concentration / No Observed Effect Level
OE_HPV = Occupational Exposure - High Production Volume PBT = Persistent, Bioaccumulative and Toxic
PICCS = Philippine Inventory of Chemicals and Chemical Substances
PNEC = Predicted No Effect Concentration
REACH = Registration Evaluation And Authorisation Of Chemicals
RID = Regulations Relating to International Carriage of Dangerous Goods by Rail
SKIN_DES = Skin Designation STEL = Short term exposure limit
TRA = Targeted Risk Assessment
TSCA = US Toxic Substances Control Act TWA = Time-Weighted

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	Average vPvB = very Persistent and very Bioaccumulative
SDS Distribution	The information in this document should be made available to all who may handle the product.
SDS Version Number	2.2
SDS Effective Date	14.12.2018
SDS Revisions	A vertical bar (|) in the left margin indicates an amendment from the previous version.
SDS Regulation	Regulation 1907/2006/EC as amended by Regulation (EU) 453/2010
Disclaimer	:This information is based on our current knowledge and is intended to describe the product for the purposes of health, safety and environmental requirements only. It should not therefore be construed as guaranteeing any specific property of the product.

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Exposure Scenario - Worker

SECTION 1	EXPOSURE SCENARIO TITLE
Title	Manufacture of substance - Industrial
Use Descriptor	**Sector of Use**: SU 3, SU8, SU9 **Process Categories**: PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8b, PROC 9, PROC 15 **Environmental Release Categories**: ERC 1
Scope of process	Manufacture of the substance or use as a process chemical or extraction agent. Includes recycling/ recovery, material transfers, storage, maintenance and loading (including marine vessel/barge, road/rail car and bulk container), sampling and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES

Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Gas/liquefied gas
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	

Contributing Scenarios	Risk Management Measures
General measures applicable to all activities.	No other specific measures identified.

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Not biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	1
Regional use tonnage (tonnes/year):	30000
Fraction of Regional tonnage used locally:	1
Annual site tonnage (tonnes/year):	30000
Maximum daily site tonnage (kg/day):	94000
Frequency and Duration of Use	
Emission Days (days/year):	320
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0,005
Release fraction to wastewater from process (initial release prior to RMM):	0
Release fraction to soil from process (initial release prior to RMM):	0
Technical conditions and measures at process level (source) to prevent release	
No wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	99,5
Treat onsite wastewater (prior to receiving water discharge) to provide the required	0

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removal efficiency of >= (%)	
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	0
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	0
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste for disposal	
During manufacturing no waste of the substance is generated.	
Conditions and measures related to external recovery of waste	
During manufacturing no waste of the substance is generated.	

SECTION 3	**EXPOSURE ESTIMATION**
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	

Section 3.2 - Environment
Used ECETOC TRA model.

SECTION 4	**GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO**
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	

Section 4.2 -Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site- specific chemical safety assessment is required.

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Exposure Scenario - Worker

SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use as an intermediate - Industrial
Use Descriptor	**Sector of Use**: SU 3, SU8, SU9 **Process Categories**: PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8b, PROC 9, PROC 15 **Environmental Release Categories**: ERC 6A
Scope of process	Use of substance as an intermediate (not related to Strictly Controlled Conditions). Includes recycling/ recovery, material transfers, storage, sampling, associated laboratory activities, maintenance and loading (including marine vessel/barge, road/rail car and bulk container).

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES

Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Gas/liquefied gas
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently).
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	

Contributing Scenarios	Risk Management Measures
General measures applicable to all activities.	No other specific measures identified.

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Not biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	1
Regional use tonnage (tonnes/year):	30000
Fraction of Regional tonnage used locally:	1
Annual site tonnage (tonnes/year):	30000
Maximum daily site tonnage (kg/day):	94000
Frequency and Duration of Use	
Emission Days (days/year):	320
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0,005
Release fraction to wastewater from process (initial release prior to RMM):	0
Release fraction to soil from process (initial release prior to RMM):	0
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
No wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	99,5

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Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	0
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	0
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	**EXPOSURE ESTIMATION**
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	

Section 3.2 - Environment	
Used ECETOC TRA model.	

SECTION 4	**GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO**
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	

Section 4.2 -Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.

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Exposure Scenario - Worker

SECTION 1	EXPOSURE SCENARIO TITLE
Title	Formulation & (re)packing of substances and mixtures - Industrial
Use Descriptor	**Sector of Use**: SU 3, SU 10 **Process Categories**: PROC 1, PROC 2, PROC 3, PROC 4, PROC 5, PROC 8b, PROC 9, PROC 15 **Environmental Release Categories**: ERC 2
Scope of process	Formulation, packing and re-packing of the substance and its mixtures in batch or continuous operations, including storage, materials transfers, mixing, tabletting, compression, pelletisation, extrusion, large and small scale packing, sampling, maintenance and associated laboratory activities.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES

Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Gas/liquefied gas
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently).
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	

Contributing Scenarios	Risk Management Measures
General measures applicable to all activities.	No other specific measures identified.

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Not biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	1
Regional use tonnage (tonnes/year):	6000
Fraction of Regional tonnage used locally:	1
Annual site tonnage (tonnes/year):	6000
Maximum daily site tonnage (kg/day):	20000
Frequency and Duration of Use	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0,002
Release fraction to wastewater from process (initial release prior to RMM):	0
Release fraction to soil from process (initial release prior to RMM):	0
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
No wastewater treatment required.	

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Treat air emission to provide a typical removal efficiency of (%)	0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
If discharging to domestic sewage treatment plant, no secondary wastewater treatment required.	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	0
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	0
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	**EXPOSURE ESTIMATION**
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	

Section 3.2 - Environment
Used ECETOC TRA model.

SECTION 4	**GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO**
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	

Section 4.2 -Environment	
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.	
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.	
If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site- specific chemical safety assessment is required.	

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Exposure Scenario - Worker

SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use as a propellant - Industrial
Use Descriptor	**Sector of Use**: SU 3 **Process Categories**: PROC 7 **Environmental Release Categories**: ERC 8A, ERC 8D
Scope of process	Use as a propellant in professional aerosol products.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES

Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Gas/liquefied gas
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	

Contributing Scenarios	Risk Management Measures
General measures applicable to all activities.	No other specific measures identified.

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Not biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	0,1
Regional use tonnage (tonnes/year):	1500
Fraction of Regional tonnage used locally:	0,0002
Annual site tonnage (tonnes/year):	3
Maximum daily site tonnage (kg/day):	8,2
Frequency and Duration of Use	
Emission Days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	1
Release fraction to wastewater from process (initial release prior to RMM):	0
Release fraction to soil from process (initial release prior to RMM):	0
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
No wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
Conditions and Measures related to municipal sewage treatment plant	

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Estimated substance removal from wastewater via domestic sewage treatment (%)	0
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	0
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	**EXPOSURE ESTIMATION**
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	

Section 3.2 - Environment
Used ECETOC TRA model.

SECTION 4	**GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO**
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	

Section 4.2 -Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site- specific chemical safety assessment is required.

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Exposure Scenario - Worker

SECTION 1	**EXPOSURE SCENARIO TITLE**
Title	Blowing agents - Industrial
Use Descriptor	**Sector of Use**: SU 3 **Process Categories**: PROC 5, PROC 12, PROC 14 **Environmental Release Categories**: ERC 4
Scope of process	Use as a blowing agent for rigid and flexible foams, including material transfers, mixing and injection, curing, cutting, storage and packing.

SECTION 2	**OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES**

Section 2.1	**Control of Worker Exposure**
Product Characteristics	
Physical form of product	Gas/liquefied gas
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	

Contributing Scenarios	**Risk Management Measures**
General measures applicable to all activities.	No other specific measures identified.

Section 2.2	**Control of Environmental Exposure**
Substance is a unique structure.	
Not biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	1
Regional use tonnage (tonnes/year):	300
Fraction of Regional tonnage used locally:	1
Annual site tonnage (tonnes/year):	300
Maximum daily site tonnage (kg/day):	940
Frequency and Duration of Use	
Emission Days (days/year):	300
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	0,5
Release fraction to wastewater from process (initial release prior to RMM):	0
Release fraction to soil from process (initial release prior to RMM):	0
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
No wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	0
If discharging to domestic sewage treatment plant, provide the required onsite	0

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wastewater removal efficiency of (%)	
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	0
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	0
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	**EXPOSURE ESTIMATION**
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	

Section 3.2 - Environment
Used ECETOC TRA model.

SECTION 4	**GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO**
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	

Section 4.2 -Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site- specific chemical safety assessment is required.

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Exposure Scenario - Worker

SECTION 1	**EXPOSURE SCENARIO TITLE**
Title	Use as a propellant - Professional
Use Descriptor	**Sector of Use**: SU 22 **Process Categories**: PROC 11 **Environmental Release Categories**: ERC 8A, ERC 8D
Scope of process	Use as a propellant in professional aerosol products.

SECTION 2	**OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES**

Section 2.1	**Control of Worker Exposure**
Product Characteristics	
Physical form of product	Gas/liquefied gas
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	

Contributing Scenarios	**Risk Management Measures**
General measures applicable to all activities.	No other specific measures identified.

Section 2.2	**Control of Environmental Exposure**
Substance is a unique structure.	
Not biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	0,1
Regional use tonnage (tonnes/year):	1500
Fraction of Regional tonnage used locally:	0,002
Annual site tonnage (tonnes/year):	30
Maximum daily site tonnage (kg/day):	82
Frequency and Duration of Use	
Emission Days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	1
Release fraction to wastewater from process (initial release prior to RMM):	0
Release fraction to soil from process (initial release prior to RMM):	0
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
No wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
Conditions and Measures related to municipal sewage treatment plant	

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Estimated substance removal from wastewater via domestic sewage treatment (%)	0
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	0
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	**EXPOSURE ESTIMATION**
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	

Section 3.2 - Environment
Used ECETOC TRA model.

SECTION 4	**GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO**
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	

Section 4.2 -Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site- specific chemical safety assessment is required.

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Exposure Scenario - Worker

SECTION 1	**EXPOSURE SCENARIO TITLE**
Title	Use in laboratories - Professional
Use Descriptor	**Sector of Use**: SU 22 **Process Categories**: PROC 15 **Environmental Release Categories**: ERC 8A
Scope of process	Use of small quantities within laboratory settings, including material transfers and equipment cleaning.

SECTION 2	**OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES**
Section 2.1	**Control of Worker Exposure**
Product Characteristics	
Physical form of product	Liquid, vapour pressure > 10 kPa at STP
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	

Contributing Scenarios	**Risk Management Measures**
General measures applicable to all activities.	No other specific measures identified.

Section 2.2	**Control of Environmental Exposure**
Substance is a unique structure.	
Not biodegradable.	

SECTION 3	**EXPOSURE ESTIMATION**
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	

Section 3.2 - Environment

SECTION 4	**GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO**
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	
Section 4.2 - Environment	

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Exposure Scenario - Worker

SECTION 1	EXPOSURE SCENARIO TITLE
Title	Use as a fuel - Professional
Use Descriptor	**Sector of Use**: SU 22 **Process Categories**: PROC 1, PROC 2, PROC 3, PROC 8a, PROC 16, PROC 8b **Environmental Release Categories**: ERC 9A, ERC 9B
Scope of process	Covers consumer uses of automotive fuels only.

SECTION 2	OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES

Section 2.1	Control of Worker Exposure
Product Characteristics	
Physical form of product	Gas/liquefied gas
Concentration of substance in product.	Covers use of substance/product up to 100% (unless stated differently).,
Frequency and Duration of Use	
Covers daily exposures up to 8 hours (unless stated differently).	
Other Operational Conditions affecting Exposure	
Assumes use at not more than 20°C above ambient temperature (unless stated differently). Assumes a good basic standard of occupational hygiene has been implemented.	

Contributing Scenarios	Risk Management Measures
General measures applicable to all activities.	No other specific measures identified.

Section 2.2	Control of Environmental Exposure
Substance is a unique structure.	
Not biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	0,1
Regional use tonnage (tonnes/year):	50
Fraction of Regional tonnage used locally:	0,002
Annual site tonnage (tonnes/year):	0,1
Maximum daily site tonnage (kg/day):	0,3
Frequency and Duration of Use	
Emission Days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	1
Release fraction to wastewater from process (initial release prior to RMM):	0,1
Release fraction to soil from process (initial release prior to RMM):	0
Technical conditions and measures at process level (source) to prevent release	
Common practices vary across sites thus conservative process release estimates used.	
Technical onsite conditions and measures to reduce or limit discharges, air emissions and releases to soil	
No wastewater treatment required.	
Treat air emission to provide a typical removal efficiency of (%)	0
Treat onsite wastewater (prior to receiving water discharge) to provide the required removal efficiency of >= (%)	0
If discharging to domestic sewage treatment plant, provide the required onsite wastewater removal efficiency of (%)	0
Conditions and Measures related to municipal sewage treatment plant	

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Estimated substance removal from wastewater via domestic sewage treatment (%)	0
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	0
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	**EXPOSURE ESTIMATION**
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate workplace exposures unless otherwise indicated.	

Section 3.2 - Environment
Used ECETOC TRA model.

SECTION 4	**GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO**
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	

Section 4.2 -Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site- specific chemical safety assessment is required.

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Exposure Scenario - Consumer

SECTION 1	**EXPOSURE SCENARIO TITLE**
Title	Use as a propellant - Consumer
Use Descriptor	**Sector of Use**: SU 21 **Product Categories**: PC1, PC3, PC4, PC8, PC9a, PC39 **Environmental Release Categories**: ERC 8A, ERC 8D
Scope of process	Use as a propellant in household consumer aerosol products.

SECTION 2	**OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES**
Section 2.1	**Control of Consumer Exposure**
Product Characteristics	
Physical form of product	Gas/liquefied gas
Concentration of substance in product.	Unless otherwise stated:
	Covers concentration up to (%): 50 %
Amounts Used	
Unless otherwise stated:	
for each use event, covers amount up to (g):	10
Frequency and Duration of Use	
Unless otherwise stated:	
covers use up to (times/day of use):	4
Covers use up to (hours/event):	0,25
Other Operational Conditions affecting Exposure	
Unless otherwise stated:	
Covers use under typical household ventilation.	

Product Categories	**OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES**
General measures applicable to all Product Categories.	Covers use in room size of 2,5 m3
	No specific risk management measure identified beyond those operational conditions stated.

Section 2.2	**Control of Environmental Exposure**
Substance is a unique structure.	
Not biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	0,1
Regional use tonnage (tonnes/year):	3000
Fraction of Regional tonnage used locally:	0,1
Annual site tonnage (tonnes/year):	300
Maximum daily site tonnage (kg/day):	820
Frequency and Duration of Use	
Emission Days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	1
Release fraction to wastewater from process (initial release prior to RMM):	0
Release fraction to soil from process (initial release prior to RMM):	0
Conditions and Measures related to municipal sewage treatment plant	
Estimated substance removal from wastewater via domestic sewage treatment (%)	0

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Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	0
Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and Measures related to external treatment of waste for disposal	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to external recovery of waste	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	**EXPOSURE ESTIMATION**
Section 3.1 - Health	
The ECETOC TRA tool has been used to estimate consumer exposures unless otherwise indicated. The Consexpo model has been used to estimate consumer exposures unless otherwise indicated.	

Section 3.2 - Environment	
Used ECETOC TRA model.	

SECTION 4	**GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO**
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	

Section 4.2 -Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site- specific chemical safety assessment is required.

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Exposure Scenario - Article

SECTION 1	**EXPOSURE SCENARIO TITLE**
Title	Service life of foam article. - Consumer
Use Descriptor	**Sector of Use**: SU 21 **Product Categories**: PC32 **Article Categories**: AC13 **Environmental Release Categories**: ERC 10A, ERC 11A
Scope of process	Article service life of foam boards in construction. Consumer and environmental exposure by low releases during service life.

SECTION 2	**OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES**

Section 2.1	**Control of Consumer Exposure**
Product Characteristics	
Physical form of product	Gas trapped in foam matrix.
Concentration of substance in product.	Unless otherwise stated: 24Kg in 45 m2 of foam product.
Amounts Used	Unless otherwise stated: Concentration in foam product (%):
Frequency and Duration of Use	Unless otherwise stated: Covers exposure up to 24 hour/event.
Other Operational Conditions affecting Exposure	
Unless otherwise stated: Covers use in room size of 2,7 m3. Air Change Rate per hour:	
Article Categories	**OPERATIONAL CONDITIONS AND RISK MANAGEMENT MEASURES**
Plastic articles Service life of foam article.	No specific risk management measure identified beyond those operational conditions stated.
Section 2.2	**Control of Environmental Exposure**
Substance is a unique structure.	
Not biodegradable.	
Amounts Used	
Fraction of EU tonnage used in region:	0,1
Regional use tonnage (tonnes/year):	300
Fraction of Regional tonnage used locally:	0,002
Annual site tonnage (tonnes/year):	0,6
Maximum daily site tonnage (kg/day):	1,6
Frequency and Duration of Use	
Emission Days (days/year):	365
Environmental factors not influenced by risk management	
Local freshwater dilution factor:	10
Local marine water dilution factor:	100
Other Operational Conditions affecting Environmental Exposure	
Release fraction to air from process (initial release prior to RMM):	1
Release fraction to wastewater from process (initial release prior to RMM):	0
Release fraction to soil from process (initial release prior to RMM):	0
Conditions and Measures related to municipal sewage treatment plant	
Total efficiency of removal from wastewater after onsite and offsite (domestic treatment plant) RMMs (%)	0

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Assumed domestic sewage treatment plant flow (m3/d)	2.000
Conditions and measures related to disposal of articles at end of service life	
External treatment and disposal of waste should comply with applicable local and/or regional regulations.	
Conditions and measures related to recovery of articles at the end of service life	
External recovery and recycling of waste should comply with applicable local and/or regional regulations.	

SECTION 3	**EXPOSURE ESTIMATION**
Section 3.1 - Health	
The Consexpo model has been used to estimate consumer exposures unless otherwise indicated.	

Section 3.2 - Environment
Used ECETOC TRA model.

SECTION 4	**GUIDANCE TO CHECK COMPLIANCE WITH THE EXPOSURE SCENARIO**
Section 4.1 - Health	
Predicted exposures are not expected to exceed the DN(M)EL when the Risk Management Measures/Operational Conditions outlined in Section 2 are implemented. Where other Risk Management Measures/Operational Conditions are adopted, then users should ensure that risks are managed to at least equivalent levels.	

Section 4.2 -Environment
Guidance is based on assumed operating conditions which may not be applicable to all sites; thus, scaling may be necessary to define appropriate site-specific risk management measures.
Required removal efficiency for air can be achieved using on-site technologies, either alone or in combination.
If scaling reveals a condition of unsafe use (i.e., RCRs > 1), additional RMMs or a site-specific chemical safety assessment is required.