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

1.1. Product identifier

Trade name : Nitric oxide
SDS no : NOAL_0088
Other means of identification : Nitric oxide
CAS-No. : 10102-43-9
EC-No. : 233-271-0
EC Index-No. : ---

REACH registration No : Registration deadline not expired.

Chemical formula : NO

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

Relevant identified uses : Industrial and professional uses. Perform risk assessment prior to use.
Test gas/Calibration gas.
Laboratory use.
Chemical reaction / Synthesis.
Use for manufacture of electronic/photovoltaic components.
Contact supplier for more information on uses.

Uses advised against : Consumer use.
Uses other than those listed above are not supported, contact your supplier for more information on other uses.

1.3. Details of the supplier of the safety data sheet

Company identification

Supplier
AIR LIQUIDE Denmark A/S
Høje Taastrupvej 42
2630 Taastrup - DENMARK
T +45 76 25 25 25
info.denmark@airliquide.com

E-Mail address (competent person) : eunordic-sds@airliquide.com

1.4. Emergency telephone number

Emergency telephone number : 112
(24 / 7)
Availability

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

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

Physical hazards	Oxidising Gases, Category 1	H270
	Gases under pressure : Compressed gas	H280
Health hazards	Acute toxicity (inhalation:gas) Category 1	H330
	Skin corrosion/irritation, Category 1, Sub-Category 1B	H314
	Serious eye damage/eye irritation, Category 1	H318

2.2. Label elements

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

Hazard pictograms (CLP) :

GHS03 GHS04 GHS05 GHS06

Signal word (CLP) : Danger

Hazard statements (CLP) : H314 - Causes severe skin burns and eye damage.
H270 - May cause or intensify fire; oxidiser.
H280 - Contains gas under pressure; may explode if heated.
H330 - Fatal if inhaled.
EUH071 - Corrosive to the respiratory tract.

Precautionary statements (CLP)

- Prevention : P280 - Wear protective gloves/protective clothing/eye protection/face protection/hearing protection.
P271 - Use only outdoors or in a well-ventilated area.
P220 - Keep away from clothing and other combustible materials.
P260 - Do not breathe dust/fume/gas/mist/vapours/spray.
P244 - Keep valves and fittings free from oil and grease.
P284 - Wear respiratory protection.
P264 - Wash hands, forearms and face thoroughly after handling.
P220 - Keep away from clothing and other combustible materials.

- Response : P321 - Specific treatment (see supplemental first aid instruction on this label).
P320 - Specific treatment is urgent (see supplemental first aid instruction on this label).
P370+P376 - In case of fire: Stop leak if safe to do so.
P304+P340 - IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P310 - Immediately call a POISON CENTER or doctor.
P301+P330+P331 - IF SWALLOWED: Rinse mouth. Do NOT induce vomiting.
P303+P361+P353 - IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water .
P305+P351+P338 - IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

- Storage : P403+P233 - Store in a well-ventilated place. Keep container tightly closed.
P405 - Store locked up.
P403 - Store in a well-ventilated place.
P410+P403 - Protect from sunlight. Store in a well-ventilated place.

- Disposal considerations : P501 - Dispose of contents/container to hazardous or special waste collection point, in accordance with local, regional, national and/or international regulation.

2.3. Other hazards

None.
The substance/mixture has no endocrine disrupting properties.

SECTION 3: Composition/information on ingredients

3.1. Substances

Name	Product identifier	Composition [V-%]:	Classification according to Regulation (EC) No. 1272/2008 [CLP]
Nitric oxide	CAS-No.: 10102-43-9 EC-No.: 233-271-0 EC Index-No.: --- REACH registration No: *2	100	Ox. Gas 1, H270 Press. Gas (Comp.), H280 Acute Tox. 1 (Inhalation:gas), H330 Skin Corr. 1B, H314 Eye Dam. 1, H318

Contains no other components or impurities which will influence the classification of the product.
**1: Listed in Annex IV / V REACH, exempted from registration.*
**3: Registration not required: Substance manufactured or imported < 1t/y.*

3.2. Mixtures Not established.

SECTION 4: First aid measures

4.1. Description of first aid measures

- Inhalation : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Perform cardiopulmonary resuscitation if breathing stopped.
- Skin contact : Remove contaminated clothing. Drench affected area with water for at least 15 minutes.
- Eye contact : Immediately flush eyes thoroughly with water for at least 15 minutes.
- Ingestion : Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

May cause severe chemical burns to skin and cornea. Suitable first-aid treatment should be immediately available. Seek medical advice before using product.
Prolonged exposure to small concentrations may result in pulmonary oedema.
Delayed adverse effects possible.
Material is destructive to tissue of the mucuous membranes and upper respiratory tract.
Cough, shortness of breath, headache, nausea.
See section 11.

4.3. Indication of any immediate medical attention and special treatment needed

Obtain medical assistance.
Treat with corticosteroid spray as soon as possible after inhalation.

SECTION 5: Firefighting measures

5.1. Extinguishing media

- Suitable extinguishing media : Water spray or fog.
  Product does not burn, use fire control measures appropriate for the surrounding fire.
- Unsuitable extinguishing media : Do not use water jet to extinguish.

5.2. Special hazards arising from the substance or mixture

Specific hazards : Supports combustion.
Exposure to fire may cause containers to rupture/explode.

Hazardous combustion products : Nitric oxide/nitrogen dioxide.

5.3. Advice for firefighters

Specific methods : Use fire control measures appropriate for the surrounding fire. Exposure to fire and heat radiation may cause gas receptacles to rupture. Cool endangered receptacles with water spray jet from a protected position. Prevent water used in emergency cases from entering sewers and drainage systems.
If possible, stop flow of product.
Use water spray or fog to knock down fire fumes if possible.
Move containers away from the fire area if this can be done without risk.

Special protective equipment for fire fighters : Wear gas tight chemically protective clothing in combination with self contained breathing apparatus.
Standard EN 943-2: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Gas-tight chemical protective suits for emergency teams.
Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask.

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures

For non-emergency personnel : Act in accordance with local emergency plan.
Try to stop release.
Evacuate area.
Ensure adequate air ventilation.
Stay upwind.
See section 8 of the SDS for more information on personal protective equipment

For emergency responders : Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.
Use chemically protective clothing.
Monitor concentration of released product.
See section 5.3 of the SDS for more information.

6.2. Environmental precautions

Reduce vapour with fog or fine water spray.
Try to stop release.

6.3. Methods and material for containment and cleaning up

Hose down area with water.
Wash contaminated equipment or sites of leaks with copious quantities of water.

6.4. Reference to other sections

See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling

Safe use of the product : Do not breathe gas.
Avoid release of product into atmosphere.
The product must be handled in accordance with good industrial hygiene and safety procedures.
Only experienced and properly instructed persons should handle gases under pressure.
Consider pressure relief device(s) in gas installations.
Ensure the complete gas system was (or is regularily) checked for leaks before use.
Do not smoke while handling product.
Avoid exposure, obtain special instructions before use.
Keep equipment free from oil and grease. For more guidance, refer to the EIGA Doc. 33 - Cleaning of Equipment for Oxygen Service downloadable at http://www.eiga.eu.
Use no oil or grease.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
Installation of a cross purge assembly between the container and the regulator is recommended.
Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service.
Avoid suck back of water, acid and alkalis.

Safe handling of the gas receptacle : Refer to supplier's container handling instructions.
Do not allow backfeed into the container.
Protect containers from physical damage; do not drag, roll, slide or drop.
When moving cylinders, even for short distances, use a cart (trolley, hand truck, etc.) designed to transport cylinders.
Leave valve protection caps in place until the container has been secured against either a wall or bench or placed in a container stand and is ready for use.
If user experiences any difficulty operating valve discontinue use and contact supplier.
Never attempt to repair or modify container valves or safety relief devices.
Damaged valves should be reported immediately to the supplier.
Keep container valve outlets clean and free from contaminants particularly oil and water.
Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
Close container valve after each use and when empty, even if still connected to equipment.
Never attempt to transfer gases from one cylinder/container to another.
Never use direct flame or electrical heating devices to raise the pressure of a container.
Do not remove or deface labels provided by the supplier for the identification of the content of the container.
Suck back of water into the container must be prevented.
Open valve slowly to avoid pressure shock.

7.2. Conditions for safe storage, including any incompatibilities

Observe all regulations and local requirements regarding storage of containers.
Containers should not be stored in conditions likely to encourage corrosion.
Container valve guards or caps should be in place.
Containers should be stored in the vertical position and properly secured to prevent them from falling over.
Stored containers should be periodically checked for general condition and leakage.
Keep container below 50°C in a well ventilated place.
Segregate from flammable gases and other flammable materials in store.
Store containers in location free from fire risk and away from sources of heat and ignition.
Keep away from combustible materials.

7.3. Specific end use(s)

None.

SECTION 8: Exposure controls/personal protection

8.1. Control parameters

Nitric oxide (10102-43-9)	
EU - Indicative Occupational Exposure Limit (IOEL)	
Local name	Nitrogen monoxide
IOEL TWA	2.5 mg/m³
IOEL TWA [ppm]	2 ppm
Remark	SCOEL Recommendations (2014)
Austria - Occupational Exposure Limits	
Local name	Stickstoffmonoxid
MAK (mg/m³)	30 mg/m³
MAK (OEL TWA) [ppm]	25 ppm

Belgium - Occupational Exposure Limits	
Local name	Azote (oxyde d') # Stikstofmonoxide
OEL TWA	31 mg/m³
OEL TWA [ppm]	25 ppm
Bulgaria - Occupational Exposure Limits	
Local name	Азотен оксид
OEL TWA	20 mg/m³
Remark	• (Химични агенти, за които са определени гранични стойности във въздуха на работната среда за Европейската общност)
Croatia - Occupational Exposure Limits	
Local name	Dušikov monoksid
GVI (OEL TWA) [1]	30 mg/m³
GVI (OEL TWA) [2]	25 ppm
Remark	EU
Czech Republic - Occupational Exposure Limits	
Local name	Nitrosní plyny (Nox), oxidy dusíku
PEL (OEL TWA)	10 mg/m³
NPK-P (OEL C)	20 mg/m³
Denmark - Occupational Exposure Limits	
Local name	Nitrogenoxid (Nitrøse gasser)
OEL TWA [1]	30 mg/m³
OEL TWA [2]	25 ppm
Estonia - Occupational Exposure Limits	
Local name	Lämmastikoksiid
OEL TWA	30 mg/m³
OEL TWA [ppm]	25 ppm
OEL STEL	60 mg/m³
OEL STEL [ppm]	50 ppm
Finland - Occupational Exposure Limits	
Local name	Typpioksidi
HTP (OEL TWA) [1]	31 mg/m³
HTP (OEL TWA) [2]	25 ppm
France - Occupational Exposure Limits	
Local name	Azote (oxyde d')
VME (OEL TWA)	30 mg/m³
VME (OEL TWA) [ppm]	25 ppm

Remark	Valeurs recommandées/admises
Greece - Occupational Exposure Limits	
OEL TWA	30 mg/m³
OEL TWA [ppm]	25 ppm
Hungary - Occupational Exposure Limits	
Local name	NITROGÉN-MONOXID
AK (OEL TWA)	30 mg/m³
Ireland - Occupational Exposure Limits	
Local name	Nitric oxide
OEL TWA [1]	30 mg/m³
OEL TWA [2]	25 ppm
OEL STEL	45 mg/m³
OEL STEL [ppm]	35 ppm
Latvia - Occupational Exposure Limits	
Local name	Slāpekļamonoksīds
OEL TWA	30 mg/m³
OEL TWA [ppm]	25 ppm
Lithuania - Occupational Exposure Limits	
Local name	Azoto oksidas
IPRV (OEL TWA)	30 mg/m³
IPRV (OEL TWA) [ppm]	25 ppm
TPRV (OEL STEL)	60 mg/m³
TPRV (OEL STEL) [ppm]	50 ppm
Malta - Occupational Exposure Limits	
Local name	Nitrogen monoxide
OEL TWA	30 mg/m³
OEL TWA [ppm]	25 ppm
Netherlands - Occupational Exposure Limits	
Local name	Stikstofmonoxide
TGG-8u (OEL TWA)	0.25 mg/m³
Poland - Occupational Exposure Limits	
Local name	Tlenek azotu
NDS (OEL TWA)	3.5 mg/m³
NDSCh (OEL STEL)	7 mg/m³

Portugal - Occupational Exposure Limits	
Local name	Óxido nítrico
OEL TWA [ppm]	25 ppm
Romania - Occupational Exposure Limits	
Local name	Monoxid de azot
OEL TWA	30 mg/m³
OEL TWA [ppm]	24 ppm
Slovakia - Occupational Exposure Limits	
NPHV (OEL TWA) [1]	30 mg/m³
NPHV (OEL TWA) [2]	25 ppm
Slovenia - Occupational Exposure Limits	
Local name	dušikov monoksid
OEL TWA	30 mg/m³
OEL TWA [ppm]	25 ppm
Spain - Occupational Exposure Limits	
Local name	Monóxido de nitrógeno
VLA-ED (OEL TWA) [1]	31 mg/m³
VLA-ED (OEL TWA) [2]	25 ppm
Remark	VLBm (Agente químico al que se aplica el Valor Límite Biológico de los inductores de la metahemoglobina), VLI (Agente químico para el que la U.E. estableció en su día un valor límite indicativo. Todos estos agentes químicos figuran al menos en una de las directivas de valores límite indicativos publicadas hasta ahora (ver Anexo C. Bibliografía). Los estados miembros disponen de un tiempo fijado en dichas directivas para su transposición a los valores límites de cada país miembro. Una vez adoptados, estos valores tienen la misma validez que el resto de los valores adoptados por el país).
Sweden - Occupational Exposure Limits	
Local name	Kväveoxid
NGV (OEL TWA)	30 mg/m³
NGV (OEL TWA) [ppm]	25 ppm
KTV (OEL STEL)	60 mg/m³
KTV (OEL STEL) [ppm]	50 ppm
Iceland - Occupational Exposure Limits	
Local name	Köfnunarefnisoxíð
OEL TWA	30 mg/m³
OEL TWA [ppm]	25 ppm
Norway - Occupational Exposure Limits	
Local name	Nitrogenoksid

Grenseverdi (OEL TWA) [1]	30 mg/m³
Grenseverdi (OEL TWA) [2]	25 ppm
Switzerland - Occupational Exposure Limits	
Local name	Stickstoffmonoxid
MAK (OEL TWA) [1]	30 mg/m³
MAK (OEL TWA) [2]	25 ppm
Remark	NitHb, OAW - DFG, NIOSH
USA - ACGIH - Occupational Exposure Limits	
Local name	Nitric oxide
ACGIH OEL TWA [ppm]	25 ppm
Remark (ACGIH)	Hypoxia/cyanosis; nitrosyl-Hb form

DNEL (Derived-No Effect Level) : None available.

PNEC (Predicted No-Effect Concentration) : None available.

8.2. Exposure controls

8.2.1. Appropriate engineering controls

Product to be handled in a closed system and under strictly controlled conditions.
Provide adequate general and local exhaust ventilation.
Preferably use permanent leak-tight installations (e.g. welded pipes).
Systems under pressure should be regularly checked for leakages.
Ensure exposure is below occupational exposure limits (where available).
Gas detectors should be used when toxic gases may be released.
Consider the use of a work permit system e.g. for maintenance activities.

8.2.2. Individual protection measures, e.g. personal protective equipment

A risk assessment should be conducted and documented in each work area to assess the risks related to the use of the product and to select the PPE that matches the relevant risk.
The following recommendations should be considered:
PPE compliant to the recommended EN/ISO standards should be selected.

• Eye/face protection : Wear goggles and a face shield when transfilling or breaking transfer connections.
Standard EN 166 - Personal eye-protection - specifications.
Provide readily accessible eye wash stations and safety showers.

• Skin protection

- Hand protection : Wear working gloves when handling gas containers.
Wear chemically resistant protective gloves.
Standard EN 388 - Protective gloves against mechanical risk, performance level 1 or higher.
Standard EN 374 - Protective gloves against chemicals.
Consult glove manufacturer´s product information on material suitability and material thickness.
The breakthrough time of the selected gloves must be greater than the intended use period.

- Other : Keep suitable chemically resistant protective clothing readily available for emergency use.
Standard EN943-1 - Full protective suits against liquid, solid and gaseous chemicals.
Wear safety shoes while handling containers.
Standard EN ISO 20345 - Personal protective equipment - Safety footwear.

• Respiratory protection	:	Gas filters may be used if all surrounding conditions e.g. type and concentration of the contaminant(s) and duration of use are known. Use gas filters with full face mask, where exposure limits may be exceeded for a short-term period, e.g. connecting or disconnecting containers. Standard EN 137 - Self-contained open-circuit compressed air breathing apparatus with full face mask. Recommended: Filter NO (blue). Gas filters do not protect against oxygen deficiency. Standard EN 14387 - Gas filter(s), combined filter(s) and standard EN136, full face masks . Keep self contained breathing apparatus readily available for emergency use. Self contained breathing apparatus is recommended, where unknown exposure may be expected, e.g. during maintenance activities on installation systems.
• Thermal hazards	:	None in addition to the above sections.

8.2.3. Environmental exposure controls

Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

SECTION 9: Physical and chemical properties

9.1. Information on basic physical and chemical properties

Appearance		
- Physical state at 20°C / 101.3kPa	:	Gas
- Colour	:	Brownish gas.
Odour	:	Poor warning properties at low concentrations. Odour threshold is subjective and inadequate to warn of overexposure.
pH	:	Not applicable for gases and gas mixtures.
Melting point / Freezing point	:	-164 °C -164 °C
Boiling point	:	-152 °C
Flash point	:	Not applicable for gases and gas mixtures.
Flammability	:	Non flammable.
Explosive limits	:	Non flammable.
Lower explosion limit	:	Not available
Upper explosion limit	:	Not available
Vapour pressure [20°C]	:	Not applicable.
Vapour pressure [50°C]	:	Not applicable.
Density	:	Not applicable
Vapour density	:	Not applicable for gases and gas mixtures.
Relative density, liquid (water=1)	:	1.3
Relative density, gas (air=1)	:	1
Water solubility	:	67 mg/l
Partition coefficient n-octanol/water (Log Kow)	:	Not applicable for inorganic products.
Auto-ignition temperature	:	Non flammable.
Decomposition temperature	:	Not applicable.
Viscosity, kinematic	:	No reliable data available.
Particle characteristics	:	Not applicable for gases and gas mixtures.

9.2. Other information

9.2.1. Information with regard to physical hazard classes

Explosive properties	:	Not applicable.
Oxidising properties	:	Oxidiser.
- Coefficient of oxygen equivalency (Ci)	:	0.3
Critical temperature [°C]	:	-93 °C

9.2.2. Other safety characteristics

Molar mass	:	30 g/mol

Evaporation rate : Not applicable for gases and gas mixtures.
Gas group : Compressed gas

SECTION 10: Stability and reactivity

10.1. Reactivity

No reactivity hazard other than the effects described in sub-sections below.

10.2. Chemical stability

Stable under normal conditions.
Decomposes at room temperature to other nitrogen oxides and nitrogen. Oxidises in air to form nitrogen dioxide which is extremely reactive.

10.3. Possibility of hazardous reactions

None.
Violently oxidises organic material.
None under normal use.

10.4. Conditions to avoid

Avoid moisture in installation systems.
Water, humidity.

10.5. Incompatible materials

May react violently with combustible materials.
May react violently with reducing agents.
Keep equipment free from oil and grease. For more guidance, refer to the EIGA Doc. 33 - Cleaning of Equipment for Oxygen Service downloadable at http://www.eiga.eu.
With water causes rapid corrosion of some metals.
Reacts with water to form corrosive acids.
May react violently with alkalis.
For additional information on compatibility refer to ISO 11114.

10.6. Hazardous decomposition products

Under normal conditions of storage and use, hazardous decomposition products should not be produced.

SECTION 11: Toxicological information

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity : Fatal if inhaled.
Delayed fatal pulmonary oedema possible.

LC50 Inhalation - Rat [ppm]	57.5 ppm/4h

Skin corrosion/irritation : Causes severe skin burns and eye damage.
Serious eye damage/irritation : Causes serious eye damage.
Respiratory or skin sensitisation : No known effects from this product.
Germ cell mutagenicity : No known effects from this product.
Carcinogenicity : No known effects from this product.
Toxic for reproduction : Fertility : No known effects from this product.
Toxic for reproduction : unborn child : No known effects from this product.
STOT-single exposure : Severe corrosion to the respiratory tract at high concentrations.
STOT-repeated exposure : Severe corrosion to the respiratory tract at high concentrations.

Aspiration hazard : Not applicable for gases and gas mixtures.

11.2. Information on other hazards

Other information : The substance/mixture has no endocrine disrupting properties.

SECTION 12: Ecological information

12.1. Toxicity

Assessment : No data available.

EC50 48h - Daphnia magna [mg/l] : No data available.
EC50 72h - Algae [mg/l] : No data available.
LC50 96 h - Fish [mg/l] : No data available.

12.2. Persistence and degradability

Assessment : Not applicable for inorganic products.

12.3. Bioaccumulative potential

Assessment : No data available.

12.4. Mobility in soil

Assessment : Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

12.5. Results of PBT and vPvB assessment

Assessment : No data available.

12.6. Endocrine disrupting properties

The substance/mixture has no endocrine disrupting properties.

12.7. Other adverse effects

Other adverse effects : May cause pH changes in aqueous ecological systems.
Effect on the ozone layer : None.
Effect on global warming : No known effects from this product.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Contact supplier if guidance is required.
Must not be discharged to atmosphere.
Gas may be scrubbed in alkaline solution under controlled conditions to avoid violent reaction.
Ensure that the emission levels from local regulations or operating permits are not exceeded.
Refer to the EIGA code of practice Doc.30 "Disposal of Gases", downloadable at http://www.eiga.org for more guidance on suitable disposal methods.
Return unused product in original container to supplier.

List of hazardous waste codes (from Commission Decision 2000/532/EC as amended) : 16 05 04 *: Gases in pressure containers (including halons) containing hazardous substances.

13.2. Additional information

External treatment and disposal of waste should comply with applicable local and/or national regulations.

SECTION 14: Transport information

14.1. UN number or ID number

In accordance with ADR / RID / IMDG / IATA / ADN

UN-No. : 1660

14.2. UN proper shipping name

Transport by road/rail (ADR/RID) : NITRIC OXIDE, COMPRESSED

Transport by air (ICAO-TI / IATA-DGR) : Nitric oxide, compressed

Transport by sea (IMDG) : NITRIC OXIDE, COMPRESSED

14.3. Transport hazard class(es)

Labelling :

2.3 : Toxic gases.
5.1 : Oxidizing substances.
8 : Corrosive substances.

Transport by road/rail (ADR/RID)

Class : 2

Classification code : 1TOC

Tunnel Restriction : D - Passage forbidden through tunnels of category D and E

Transport by sea (IMDG)

Class / Div. (Sub. risk(s)) : 2.3 (5.1, 8)

Emergency Schedule (EmS) - Fire : F-C

Emergency Schedule (EmS) - Spillage : S-W

14.4. Packing group

Transport by road/rail (ADR/RID) : Not established.

Transport by air (ICAO-TI / IATA-DGR) : Not established.

Transport by sea (IMDG) : Not established.

14.5. Environmental hazards

Transport by road/rail (ADR/RID) : None.

Transport by air (ICAO-TI / IATA-DGR) : None.

Transport by sea (IMDG) : None.

14.6. Special precautions for user

Packing Instruction(s)

Transport by road/rail (ADR/RID) : P200

Transport by air (ICAO-TI / IATA-DGR)

Passenger and Cargo Aircraft : Forbidden.

Cargo Aircraft only : Forbidden.

Transport by sea (IMDG) : P200

Special transport precautions : Avoid transport on vehicles where the load space is not separated from the driver's compartment.
Ensure vehicle driver is aware of the potential hazards of the load and knows what to do in the event of an accident or an emergency.
Before transporting product containers:
- Ensure there is adequate ventilation.
- Ensure that containers are firmly secured.
- Ensure valve is closed and not leaking.
- Ensure valve outlet cap nut or plug (where provided) is correctly fitted.
- Ensure valve protection device (where provided) is correctly fitted.

14.7. Maritime transport in bulk according to IMO instruments

Not applicable.

SECTION 15: Regulatory information

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

EU-Regulations

Restrictions on use	:	None.
National legislation	:	Ensure all national/local regulations are observed.
Seveso Directive : 2012/18/EU (Seveso III)	:	Covered.

National regulations

Ensure all national/local regulations are observed.

Germany

Water hazard class (WGK)	:	WGK 1, Slightly hazardous to water (Classification according to AwSV)
National Rules and Recommendations	:	[German regulations] BetriebssicherheitsV mit TRBSen insbesondere TRBS 3145 / TRGS 725 Ortsbewegliche Druckgasbehälter", TRBS 2141, BGRegel 500 Teil 2.33: "Umgang mit Gasen", GefahrstoffV mit Technischen Regeln Gefährliche Stoffe TRGS insbesondere TRGS 407 "Tätigkeiten mit Gasen - Gefährdungsbeurteilung", TRGS 400, 500, 510, 900."

Netherlands

SZW-lijst van kankerverwekkende stoffen	:	The substance is not listed
SZW-lijst van mutagene stoffen	:	The substance is not listed
SZW-lijst van reprotoxische stoffen – Borstvoeding	:	The substance is not listed
SZW-lijst van reprotoxische stoffen – Vruchtbaarheid	:	The substance is not listed
SZW-lijst van reprotoxische stoffen – Ontwikkeling	:	The substance is not listed

Denmark

Danish National Regulations	:	Young people below the age of 18 years are not allowed to use the product

Switzerland

Storage class (LK)	:	LK 2 - Liquefied or pressurized gases

15.2. Chemical safety assessment

A CSA has not yet been carried out.

SECTION 16: Other information

Indication of changes	:	Safety data sheet in accordance with commission regulation (EU) No 2020/878.

Abbreviations and acronyms : ATE - Acute Toxicity Estimate
CLP - Classification Labelling Packaging Regulation; Regulation (EC) No 1272/2008
REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals Regulation (EC) No 1907/2006
EINECS - European Inventory of Existing Commercial Chemical Substances
CAS# - Chemical Abstract Service number
PPE - Personal Protection Equipment
LC50 - Lethal Concentration to 50 % of a test population
RMM - Risk Management Measures
PBT - Persistent, Bioaccumulative and Toxic
vPvB - Very Persistent and Very Bioaccumulative
STOT- SE : Specific Target Organ Toxicity - Single Exposure
CSA - Chemical Safety Assessment
EN - European Standard
UN - United Nations
ADR - European Agreement concerning the International Carriage of Dangerous Goods by Road
IATA - International Air Transport Association
IMDG code - International Maritime Dangerous Goods
RID - Regulations concerning the International Carriage of Dangerous Goods by Rail
WGK - Water Hazard Class
STOT - RE : Specific Target Organ Toxicity - Repeated Exposure
UFI : Unique Formula Identifier

Training advice : Users of breathing apparatus must be trained.
Ensure operators understand the toxicity hazard.

Further information : Classification in accordance with the procedures and calculation methods of Regulation (EC) 1272/2008 (CLP).
Key literature references and sources of data are maintained in EIGA doc 169 : 'Classification and Labelling Guide', downloadable at http://www.Eiga.eu .

Full text of H- and EUH-statements	
Acute Tox. 1 (Inhalation:gas)	Acute toxicity (inhalation:gas) Category 1
EUH071	Corrosive to the respiratory tract.
Eye Dam. 1	Serious eye damage/eye irritation, Category 1
H270	May cause or intensify fire; oxidiser.
H280	Contains gas under pressure; may explode if heated.
H314	Causes severe skin burns and eye damage.
H318	Causes serious eye damage.
H330	Fatal if inhaled.
Ox. Gas 1	Oxidising Gases, Category 1
Press. Gas (Comp.)	Gases under pressure : Compressed gas
Skin Corr. 1B	Skin corrosion/irritation, Category 1, Sub-Category 1B

DISCLAIMER OF LIABILITY : Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
Details given in this document are believed to be correct at the time of going to press.
Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.

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