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

### 1.1. Product identifier

Trade name : Nitrous oxide, Nitrous oxide N25, Laughing gas, Medical nitrous oxide, Medical laughing gas, Alphagaz N2O

SDS no : NOAL_0093A

Other means of identification : Nitrous oxide

CAS-No. : 10024-97-2

EC-No. : 233-032-0

EC Index-No. : ---

REACH registration No : 01-2119970538-25

Chemical formula : N2O

### 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.
Aerosol propellant.
Use for manufacture of electronic/photovoltaic components.
Food applications.
Contact supplier for more information on uses.

Uses advised against : Do not inhale product on purpose because of the risk of asphyxiation.
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 NORWAY AS
Drammensveien 64 B
3050 Mjøndalen - NORWAY
T + 47 32 27 41 40
info.norway@airliquide.com

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

### 1.4. Emergency telephone number

Emergency telephone number : 112 / Giftinformasjon: + 47 22 59 13 00
Availability
(24 / 7)

## 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 : Liquefied gas | H280 |
| Health hazards | Specific target organ toxicity – Single exposure, Category 3, Narcosis | H336 |

### 2.2. Label elements

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

Hazard pictograms (CLP) :

GHS03 GHS04 GHS07

Signal word (CLP) : Danger

Hazard statements (CLP) : H270 - May cause or intensify fire; oxidiser.
H280 - Contains gas under pressure; may explode if heated.
H336 - May cause drowsiness or dizziness.

Precautionary statements (CLP)

- Prevention : P261 - Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 - Use only outdoors or in a well-ventilated area.
P220 - Keep away from clothing and other combustible materials.
P244 - Keep valves and fittings free from oil and grease.
P220 - Keep away from clothing and other combustible materials.
- Response : 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.
P312 - Call a POISON CENTRE or doctor if you feel unwell.
- 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

Contact with liquid may cause cold burns/frostbite.
Not classified as PBT or vPvB.
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] |
|---|---|---|---|
| Nitrous oxide | CAS-No.: 10024-97-2<br>EC-No.: 233-032-0<br>EC Index-No.: ---<br>REACH registration No: 01-2119970538-25 | 100 | Ox. Gas 1, H270<br>Press. Gas (Liq.), H280<br>STOT SE 3, H336 |

*Contains no other components or impurities which will influence the classification of the product.*

**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 : In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing. Obtain medical assistance.
- 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

In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination.
See section 11.

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

Obtain medical assistance.

## 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.
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
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.
See section 5.3 of the SDS for more information.

### 6.2. Environmental precautions

Try to stop release.

### 6.3. Methods and material for containment and cleaning up

Keep area evacuated and free from ignition sources until any spilled liquid has evaporated (ground free from frost).

### 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.
For more guidance on safe use, refer to the EIGA Doc.176 “Safe practices for storage and handling of Nitrous oxide", downloadable at http://www.eiga.eu.” and consult your supplier.
Temperatures above 150°C (300°F) shall be avoided by all practical means, to reduce the likelihood of an explosive decomposition of the nitrous oxide.
Clean all surfaces in direct contact with nitrous oxide as for oxygen service.
Nitrous oxide transfer pumps shall be provided with an interlock to prevent dry running.
Use self-limiting heating devices. Direct contact electric immersion heaters are not allowed.
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.
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.
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

| Nitrous oxide (10024-97-2) | |
|---|---|
| **Austria - Occupational Exposure Limits** | |
| Local name | Distickstoffmonoxid |
| MAK (mg/m³) | 180 mg/m³ |
| MAK (OEL TWA) [ppm] | 100 ppm |
| MAK (OEL STEL) | 720 mg/m³ |
| MAK (OEL STEL) [ppm] | 400 ppm |
| **Belgium - Occupational Exposure Limits** | |
| Local name | Diazote (oxyde de) # Diazote (oxyde de) |
| OEL TWA | 91 mg/m³ |
| OEL TWA [ppm] | 50 ppm |

| | |
|---|---|
| **Croatia - Occupational Exposure Limits** | |
| Local name | Didušikov oksid |
| GVI (OEL TWA) [1] | 90 mg/m³ |
| GVI (OEL TWA) [2] | 50 ppm |
| **Czech Republic - Occupational Exposure Limits** | |
| Local name | Oxid dusný |
| PEL (OEL TWA) | 180 mg/m³ |
| PEL (OEL TWA) [ppm] | 100 ppm |
| NPK-P (OEL C) | 360 mg/m³ |
| NPK-P (OEL C) [ppm] | 200 ppm |
| **Denmark - Occupational Exposure Limits** | |
| Local name | Dinitrogenoxid (Kvælstofforilte) |
| OEL TWA [1] | 90 mg/m³ |
| OEL TWA [2] | 50 ppm |
| **Estonia - Occupational Exposure Limits** | |
| Local name | Dilämmastikoksiid (naerugaas) |
| OEL TWA | 180 mg/m³ |
| OEL TWA [ppm] | 100 ppm |
| OEL STEL | 900 mg/m³ |
| OEL STEL [ppm] | 500 ppm |
| **Finland - Occupational Exposure Limits** | |
| Local name | Typpioksiduuli |
| HTP (OEL TWA) [1] | 180 mg/m³ |
| HTP (OEL TWA) [2] | 100 ppm |
| **Germany - Occupational Exposure Limits (TRGS 900)** | |
| Local name | Distickstoffoxid |
| AGW (OEL TWA) [1] | 180 mg/m³ |
| AGW (OEL TWA) [2] | 100 ppm |
| Remark | DFG,Y |
| **Hungary - Occupational Exposure Limits** | |
| Local name | DINITROGÉN-OXID |
| AK (OEL TWA) | 180 mg/m³ |
| CK (OEL STEL) | 720 mg/m³ |
| **Ireland - Occupational Exposure Limits** | |
| Local name | Nitrous oxide |

| | |
|---|---|
| OEL TWA [1] | 90 mg/m³ |
| OEL TWA [2] | 50 ppm |
| **Lithuania - Occupational Exposure Limits** | |
| Local name | Diazoto oksidas (azoto suboksidas) |
| IPRV (OEL TWA) | 180 mg/m³ |
| IPRV (OEL TWA) [ppm] | 100 ppm |
| TPRV (OEL STEL) | 900 mg/m³ |
| TPRV (OEL STEL) [ppm] | 500 ppm |
| **Poland - Occupational Exposure Limits** | |
| Local name | Tlenek diazotu |
| NDS (OEL TWA) | 90 mg/m³ |
| **Portugal - Occupational Exposure Limits** | |
| Local name | Óxido nitroso |
| OEL TWA [ppm] | 50 ppm |
| **Slovenia - Occupational Exposure Limits** | |
| Local name | didušikov oksid |
| OEL TWA | 180 mg/m³ |
| OEL TWA [ppm] | 100 ppm |
| OEL STEL | 720 mg/m³ |
| OEL STEL [ppm] | 400 ppm |
| **Spain - Occupational Exposure Limits** | |
| Local name | Óxido de dinitrógeno (Protóxido de nitrógeno) |
| VLA-ED (OEL TWA) [1] | 92 mg/m³ |
| VLA-ED (OEL TWA) [2] | 50 ppm |
| **Sweden - Occupational Exposure Limits** | |
| Local name | Dikväveoxid |
| NGV (OEL TWA) | 180 mg/m³<br>180 mg/m³ |
| NGV (OEL TWA) [ppm] | 100 ppm<br>100 ppm |
| KTV (OEL STEL) | 900 mg/m³<br>900 mg/m³ |
| KTV (OEL STEL) [ppm] | 500 ppm<br>500 ppm |
| **United Kingdom - Occupational Exposure Limits** | |
| Local name | Nitrous oxide |
| WEL TWA (OEL TWA) [1] | 183 mg/m³ |

| | |
|---|---|
| WEL TWA (OEL TWA) [2] | 100 ppm |
| **Iceland - Occupational Exposure Limits** | |
| Local name | Díköfnunarefnisoxíð (dínítrógenoxíð, glaðloft, hláturgas) |
| OEL TWA | 90 mg/m³ |
| OEL TWA [ppm] | 50 ppm |
| **Norway - Occupational Exposure Limits** | |
| Local name | Dinitrogenoksid |
| Grenseverdi (OEL TWA) [1] | 90 mg/m³ |
| Grenseverdi (OEL TWA) [2] | 50 ppm |
| **Switzerland - Occupational Exposure Limits** | |
| Local name | Distickstoffmonoxid |
| MAK (OEL TWA) [1] | 182 mg/m³<br>182 mg/m³ |
| MAK (OEL TWA) [2] | 100 ppm<br>100 ppm |
| KZGW (OEL STEL) | 364 mg/m³<br>364 mg/m³ |
| KZGW (OEL STEL) [ppm] | 200 ppm<br>200 ppm |
| Remark | $R2_F$ $R2_D$ - ZNS, Blut, Leber$^{KT\ HU}$ - NIOSH |
| **USA - ACGIH - Occupational Exposure Limits** | |
| Local name | Nitrous oxide |
| ACGIH OEL TWA [ppm] | 50 ppm |
| Remark (ACGIH) | CNS impair; hematologic eff |

| **Nitrous oxide (10024-97-2)** | |
|---|---|
| **Austria - Occupational Exposure Limits** | |
| Local name | Distickstoffmonoxid |
| MAK (mg/m³) | 180 mg/m³ |
| MAK (OEL TWA) [ppm] | 100 ppm |
| MAK (OEL STEL) | 720 mg/m³ |
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| **Belgium - Occupational Exposure Limits** | |
| Local name | Diazote (oxyde de) # Diazote (oxyde de) |
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| OEL TWA [ppm] | 50 ppm |

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| **Croatia - Occupational Exposure Limits** | |
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| GVI (OEL TWA) [1] | 90 mg/m³ |
| GVI (OEL TWA) [2] | 50 ppm |
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| **Denmark - Occupational Exposure Limits** | |
| Local name | Dinitrogenoxid (Kvælstofforilte) |
| OEL TWA [1] | 90 mg/m³ |
| OEL TWA [2] | 50 ppm |
| **Estonia - Occupational Exposure Limits** | |
| Local name | Dilämmastikoksiid (naerugaas) |
| OEL TWA | 180 mg/m³ |
| OEL TWA [ppm] | 100 ppm |
| OEL STEL | 900 mg/m³ |
| OEL STEL [ppm] | 500 ppm |
| **Finland - Occupational Exposure Limits** | |
| Local name | Typpioksiduuli |
| HTP (OEL TWA) [1] | 180 mg/m³ |
| HTP (OEL TWA) [2] | 100 ppm |
| **Germany - Occupational Exposure Limits (TRGS 900)** | |
| Local name | Distickstoffoxid |
| AGW (OEL TWA) [1] | 180 mg/m³ |
| AGW (OEL TWA) [2] | 100 ppm |
| Remark | DFG,Y |
| **Hungary - Occupational Exposure Limits** | |
| Local name | DINITROGÉN-OXID |
| AK (OEL TWA) | 180 mg/m³ |
| CK (OEL STEL) | 720 mg/m³ |
| **Ireland - Occupational Exposure Limits** | |
| Local name | Nitrous oxide |

| | |
|---|---|
| OEL TWA [1] | 90 mg/m³ |
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| **Lithuania - Occupational Exposure Limits** | |
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| Local name | Tlenek diazotu |
| NDS (OEL TWA) | 90 mg/m³ |
| **Portugal - Occupational Exposure Limits** | |
| Local name | Óxido nitroso |
| OEL TWA [ppm] | 50 ppm |
| **Slovenia - Occupational Exposure Limits** | |
| Local name | didušikov oksid |
| OEL TWA | 180 mg/m³ |
| OEL TWA [ppm] | 100 ppm |
| OEL STEL | 720 mg/m³ |
| OEL STEL [ppm] | 400 ppm |
| **Spain - Occupational Exposure Limits** | |
| Local name | Óxido de dinitrógeno (Protóxido de nitrógeno) |
| VLA-ED (OEL TWA) [1] | 92 mg/m³ |
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| Local name | Dikväveoxid |
| NGV (OEL TWA) | 180 mg/m³<br>180 mg/m³ |
| NGV (OEL TWA) [ppm] | 100 ppm<br>100 ppm |
| KTV (OEL STEL) | 900 mg/m³<br>900 mg/m³ |
| KTV (OEL STEL) [ppm] | 500 ppm<br>500 ppm |
| **United Kingdom - Occupational Exposure Limits** | |
| Local name | Nitrous oxide |
| WEL TWA (OEL TWA) [1] | 183 mg/m³ |

| | |
|---|---|
| WEL TWA (OEL TWA) [2] | 100 ppm |
| **Iceland - Occupational Exposure Limits** | |
| Local name | Díköfnunarefnisoxíð (dínítrógenoxíð, glaðloft, hláturgas) |
| OEL TWA | 90 mg/m³ |
| OEL TWA [ppm] | 50 ppm |
| **Norway - Occupational Exposure Limits** | |
| Local name | Dinitrogenoksid |
| Grenseverdi (OEL TWA) [1] | 90 mg/m³ |
| Grenseverdi (OEL TWA) [2] | 50 ppm |
| **Switzerland - Occupational Exposure Limits** | |
| Local name | Distickstoffmonoxid |
| MAK (OEL TWA) [1] | 182 mg/m³<br>182 mg/m³ |
| MAK (OEL TWA) [2] | 100 ppm<br>100 ppm |
| KZGW (OEL STEL) | 364 mg/m³<br>364 mg/m³ |
| KZGW (OEL STEL) [ppm] | 200 ppm<br>200 ppm |
| Remark | $R2_F$ $R2_D$ - ZNS, Blut, Leber[KT HU] - NIOSH |
| **USA - ACGIH - Occupational Exposure Limits** | |
| Local name | Nitrous oxide |
| ACGIH OEL TWA [ppm] | 50 ppm |
| Remark (ACGIH) | CNS impair; hematologic eff |

| **Nitrous oxide (10024-97-2)** | |
|---|---|
| DNEL: Derived no effect level (Workers) | |
| Long-term - systemic effects, inhalation | 183 mg/m³ |

| **Nitrous oxide (10024-97-2)** | |
|---|---|
| DNEL: Derived no effect level (Workers) | |
| Long-term - systemic effects, inhalation | 183 mg/m³ |

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

**8.2. Exposure controls**

**8.2.1. Appropriate engineering controls**

Provide adequate general and local exhaust ventilation.
Product to be handled in a closed system.
Systems under pressure should be regularly checked for leakages.
Ensure exposure is below occupational exposure limits (where available).
Gas detectors should be used when oxidising 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 when transfilling or breaking transfer connections.
Standard EN 166 - Personal eye-protection - specifications.

• Skin protection

- Hand protection : Wear working gloves when handling gas containers.
Standard EN 388 - Protective gloves against mechanical risk, performance level 1 or higher.
Wear cold insulating gloves when transfilling or breaking transfer connections.
Standard EN 511 - Cold insulating gloves.

- Other : Consider the use of flame resistant safety clothing.
Standard EN ISO 14116 - Limited flame spread materials.
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.
Consult respiratory device supplier´s product information for the selection of the appropriate device.
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 : Colourless.

Odour : Sweetish. Poor warning properties at high concentrations.
Odour threshold is subjective and inadequate to warn of overexposure.

pH : Not applicable for gases and gas mixtures.

Melting point / Freezing point : -90.81 °C
-90.81 °C

Boiling point : -88.5 °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] | : | 50.8 bar(a) |
| Vapour pressure [50°C] | : | Not applicable. |
| Density | : | Not applicable |
| Vapour density | : | Not applicable for gases and gas mixtures. |
| Relative density, liquid (water=1) | : | 1.2 |
| Relative density, gas (air=1) | : | 1.5 |
| Water solubility | : | 1500 mg/l |
| Partition coefficient n-octanol/water (Log Kow) | : | 0.4 |
| 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) | : | 0.6 |
| Critical temperature [°C] | : | 36.4 °C |

#### 9.2.2. Other safety characteristics

| | | |
|---|---|---|
| Molar mass | : | 44 g/mol |
| Evaporation rate | : | Not applicable for gases and gas mixtures. |
| Gas group | : | Press. Gas (Liq.) |
| Other data | : | Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level. |

## 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.
At temperatures over 575°C and at atmospheric pressure, nitrous oxide decomposes into nitrogen and oxygen.
In the presence of catalysts (e.g. halogen products, mercury, nickel, platinum) the rate of decomposition increases and decomposition can occur at even lower temperatures.
Nitrous oxide dissociation is irreversible and exothermic, leading to a considerable rise in pressure.

### 10.3. Possibility of hazardous reactions

None.
Violently oxidises organic material.

Reactivity : This mixture contains components with the following reactivity : Violently oxidises organic material.

### 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.
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** : Inhalation causes narcotic effects.

| | |
|---|---|
| LC50 Inhalation - Rat [ppm] | 500000 ppm/4h |

| **Nitrous oxide (10024-97-2)** | |
|---|---|
| LC50 Inhalation - Rat [ppm] | 500000 ppm/4h |

**Skin corrosion/irritation** : No known effects from this product.

**Serious eye damage/irritation** : No known effects from this product.

**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** : May cause drowsiness or dizziness.

**STOT-repeated exposure** : At low concentrations:
Neurologic effect.
Hemotoxic effect.

**Target organ(s)** : Erythrocytes.
Kidneys.
liver.
Central nervous system.

**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] : Study scientifically unjustified.

EC50 72h - Algae [mg/l] : Study scientifically unjustified.

LC50 96 h - Fish [mg/l] : Study scientifically unjustified.

| **Nitrous oxide (10024-97-2)** | |
|---|---|
| EC50 48h - Daphnia magna [mg/l] | Study scientifically unjustified. |

| Nitrous oxide (10024-97-2) | |
|---|---|
| EC50 72h - Algae [mg/l] | Study scientifically unjustified. |
| LC50 96 h - Fish [mg/l] | Study scientifically unjustified. |

**12.2. Persistence and degradability**

Assessment : Not applicable for inorganic products.
Study scientifically unjustified.

**12.3. Bioaccumulative potential**

Assessment : Not expected to bioaccumulate due to the low log Kow (log Kow < 4).
See section 9.

**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 : Not classified as PBT or vPvB.

**12.6. Endocrine disrupting properties**

The substance/mixture has no endocrine disrupting properties.

**12.7. Other adverse effects**

Other adverse effects : No known effects from this product.
Effect on the ozone layer : None.
Global warming potential [CO2=1] : 298
Effect on global warming : Contains greenhouse gas(es).
When discharged in large quantities may contribute to the greenhouse effect.

## SECTION 13: Disposal considerations

**13.1. Waste treatment methods**

Contact supplier if guidance is required.
May be vented to atmosphere in a well ventilated place.
Discharge to atmosphere in large quantities should be avoided.
Do not discharge into any place where its accumulation could be dangerous.
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. : 1070

## 14.2. UN proper shipping name

**Transport by road/rail (ADR/RID)** : NITROUS OXIDE
**Transport by air (ICAO-TI / IATA-DGR)** : Nitrous oxide
**Transport by sea (IMDG)** : NITROUS OXIDE

## 14.3. Transport hazard class(es)

**Labelling** :


2.2 : Non-flammable, non-toxic gases.
5.1 : Oxidizing substances.

**Transport by road/rail (ADR/RID)**
Class : 2
Classification code : 2O
Hazard identification number : 25
Tunnel Restriction : C/E - Tank carriage : Passage forbidden through tunnels of category C, D and E. Other carriage : Passage forbidden through tunnels of category E

**Transport by air (ICAO-TI / IATA-DGR)**
Class / Div. (Sub. risk(s)) : 2.2 (5.1)

**Transport by sea (IMDG)**
Class / Div. (Sub. risk(s)) : 2.2 (5.1)
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 : 200.
Cargo Aircraft only : 200.
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 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 : None.

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** | |
|---|---|
| H270 | May cause or intensify fire; oxidiser. |
| H280 | Contains gas under pressure; may explode if heated. |
| H336 | May cause drowsiness or dizziness. |
| Ox. Gas 1 | Oxidising Gases, Category 1 |
| Press. Gas (Liq.) | Gases under pressure : Liquefied gas |
| STOT SE 3 | Specific target organ toxicity – Single exposure, Category 3, Narcosis |

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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