



AIR LIQUIDE

# SAFETY DATA SHEET

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## Nitrous oxide (refrigerated)

SDS\_093R\_CLP



2.2 : Non flammable, non toxic gas.



5.1 : Oxidizing substances.

### Danger



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

**Product identifier**  
**Trade name** : Nitrous oxide (refrigerated)  
**SDS Nr** : SDS\_093R\_CLP  
**Chemical description** : Nitrous oxide (refrigerated)  
CAS No :010024-97-2  
EC No :233-032-0  
Index No :---  
**Chemical formula** : N2O  
**Registration-No.** : Registration deadline not expired.  
**Use** : Industrial and professional. Perform risk assessment prior to use.  
**Company identification** : Air Liquide UK Ltd.  
Station Road  
Coleshill  
Birmingham B46 1JY United Kingdom  
**E-Mail address (competent person):** : David Hopper  
**Emergency telephone number** : 01675 462695

## 2 Hazards identification

### Classification of the substance or mixture

**Hazard Class and Category Code**  
**Regulation EC 1272/2008 (CLP)**

• **Physical hazards** : Oxidizing gases - Category 1 - Danger (H270)  
Gases under pressure - Refrigerated liquefied gas - Warning (H281)

**Classification EC 67/548 or EC 1999/45** : Not included in Annex VI.  
O; R8

### Label elements

**Labelling Regulation EC 1272/2008 (CLP)**

• **Hazard pictograms**



**Air Liquide UK Ltd.**

Station Road Coleshill Birmingham B46 1JY United Kingdom

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### 2 Hazards identification (continued)

- **Hazard pictograms code** : GHS03 - GHS04
- **Signal word** : Danger
- **Hazard statements** : H270 : May cause or intensify fire; oxidiser.  
H281 : Contains refrigerated gas; may cause cryogenic burns or injury.
- **Precautionary statements**
  - **Prevention** : P244 : Keep valves and fittings free from oil and grease  
P220 : Keep/Store away from clothing/.../combustible materials.  
P282 : Wear cold insulating gloves/face shield/eye protection.
  - **Response** : P336+P315 : Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice / attention.  
P370+P376 : In case of fire: Stop leak if safe to do so.
  - **Storage** : P403 : Store in a well-ventilated place.

**Labelling EC 67/548 or EC 1999/45**
**Symbol(s)** : O : Oxidizing


- R Phrase(s)** : R8 : Contact with combustible material may cause fire.
- S Phrase(s)** : S9 : Keep container in a well-ventilated place.  
S17 : Keep away from combustible material.  
S36 : Wear suitable protective clothing.

#### Other hazards

**Other hazards** : Asphyxiant in high concentrations.

### 3 Composition/information on ingredients

**Substance / Preparation** : Substance.

Substance name	Contents	CAS No	EC No	Index No	Registration no	Classification
Nitrous oxide (refrigerated)	100 %	10024-97-2	233-032-0	----	NOTE 2	O; R8 ----- Ox. Gas 1 (H270) Ox. Gas 1 (H270) Press. Gas (H281)

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

Note 1: Listed in Annex IV / V REACH, exempted from registration.

Note 2: Registration deadline not expired.

Full text of R-phrases see chapter 16

### 4 First aid measures

**First aid measures**

- **Inhalation** : In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation.  
In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of co-ordination.  
Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.

**Nitrous oxide (refrigerated)****SDS\_093R\_CLP****4 First aid measures (continued)**

- **Skin/eye contact** : Immediately flush eyes thoroughly with water for at least 15 minutes.  
In case of frostbite spray with water for at least 15 minutes. Apply a sterile dressing.  
Obtain medical assistance.
- **Ingestion** : Ingestion is not considered a potential route of exposure.

**5 Fire-fighting measures**

- Specific hazards** : Exposure to fire may cause containers to rupture/explode.  
Supports combustion.
- Hazardous combustion products** : If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition :  
Nitric oxide/nitrogen dioxide.
- Extinguishing media**
- **Suitable extinguishing media** : All known extinguishants can be used.
- Specific methods** : If possible, stop flow of product.  
Move away from the container and cool with water from a protected position.  
If leaking do not spray water onto container. Water surrounding area (from protected position) to contain fire.
- Special protective equipment for fire fighters** : Use self-contained breathing apparatus and chemically protective clothing.

**6 Accidental release measures**

- Personal precautions** : Evacuate area.  
Ensure adequate air ventilation.  
Eliminate ignition sources.  
Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe.  
Use protective clothing.
- Environmental precautions** : Try to stop release.  
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
- Clean up methods** : Ventilate area.  
Keep area evacuated and free from ignition sources until any spilled liquid has evaporated. (Ground free from frost).

**7 Handling and storage**

- Handling** : Use no oil or grease.  
Open valve slowly to avoid pressure shock.  
Suck back of water into the container must be prevented.  
Do not allow backfeed into the container.  
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.  
Keep away from ignition sources (including static discharges).  
Refer to supplier's container handling instructions.
- Storage** : Segregate from flammable gases and other flammable materials in store.  
Keep container below 50°C in a well ventilated place.



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## 8 Exposure controls/personal protection

- Personal protection** : Do not smoke while handling product.  
Ensure adequate ventilation.  
Protect eyes, face and skin from liquid splashes.
- Occupational Exposure Limits** : Nitrous oxide (refrigerated) : TLV© -TWA [ppm] : 50

## 9 Physical and chemical properties

- Physical state at 20 °C** : Gas.
- Colour** : Colourless liquid.
- Odour** : Sweetish.  
Poor warning properties at high concentrations.
- Molecular weight** : 44
- Melting point [°C]** : -90.81
- Boiling point [°C]** : -88.5
- Critical temperature [°C]** : 36.4
- Vapour pressure [20°C]** : 50.8 bar
- Relative density, gas (air=1)** : 1.5
- Relative density, liquid (water=1)** : 1.2
- Solubility in water [mg/l]** : 2.2
- Flammability range [vol% in air]** : Oxidiser.
- Auto-ignition temperature [°C]** : Not applicable.
- Other data** : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

## 10 Stability and reactivity

- Stability and reactivity** : May react violently with combustible materials.  
May react violently with reducing agents.  
Violently oxidises organic material.  
Thermal decomposition yields toxic products which can be corrosive in the presence of moisture. At temperatures over 575°C and at atmospheric pressure, nitrous oxide decomposes into nitrogen and oxygen. Pressurized nitrous oxide can also decompose at temperatures equal or greater than 300°C. 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.  
Liquid spillages can cause embrittlement of structural materials.
- Hazardous decomposition products** : None.

## 11 Toxicological information

- Toxicity information** : No known toxicological effects from this product.

## 12 Ecological information

- Ecological effects information** : Can cause frost damage to vegetation.  
When discharged in large quantities may contribute to the greenhouse effect.



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## 12 Ecological information (continued)

Global warming potential [CO2=1] : 298

## 13 Disposal considerations

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

## 14 Transport information

UN number : 2201

• Labelling ADR, IMDG, IATA



: 5.1 : Oxidizing substances.  
2.2 : Non flammable, non toxic gas.

Land transport

ADR/RID

H.I. nr : 225

UN proper shipping name : NITROUS OXIDE, REFRIGERATED LIQUID

Transport hazard class(es) : 2

- ADR/RID Classification code : 3 O

- Packing Instruction(s) - General : P203

- 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

Sea transport

- IMO-IMDG code

• Proper shipping name : NITROUS OXIDE, REFRIGERATED LIQUID

• Class : 2.2

- IMO Packing group : P203

- Emergency Schedule (EmS) - Fire : F-C

- Emergency Schedule (EmS) - Spillage : S-W

- Instructions - Packing : P203

Air transport

- ICAO/IATA

- Proper shipping name : NITROUS OXIDE, REFRIGERATED LIQUID

• Class : 2.2

• Passenger and Cargo Aircraft :



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## 14 Transport information (continued)

## • Cargo Aircraft only

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 that containers are firmly secured.
- Ensure cylinder 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.
- Ensure there is adequate ventilation.
- Compliance with applicable regulations.

## 15 Regulatory information

**Safety, health and environmental regulations/legislation specific for the substance or mixture** : Ensure all national/local regulations are observed.

**Seveso regulation 96/82/EC** : Listed

## 16 Other information

Asphyxiant in high concentrations.  
May cause frostbite.

The hazard of asphyxiation is often overlooked and must be stressed during operator training.

**List of full text of R-phrases in section 3.** : R8 : Contact with combustible material may cause fire.

This Safety Data Sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national laws.

**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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