

Safety data sheet Nitrous oxide.

Creation date : 27.01.2005
Revision date : 05.01.2011

Version : 2.0

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1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

Product name

Nitrous oxide.
EC No (from EINECS): 233-032-0
CAS No: 10024-97-2
Index-Nr.

Chemical formula N₂O

REACH Registration number:

Not available.

Known uses

Not known.

Company identification

Linde AG, Linde Gas Division, Seitnerstraße 70, D-82049 Pullach
E-Mail Address Info@de.linde-gas.com
Emergency phone numbers (24h): 089-7446-0

2 HAZARDS IDENTIFICATION

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

Press. Gas (Liquefied gas) - Contains gas under pressure; may explode if heated.
Ox. Gas 1 - May cause or intensify fire; oxidiser.

Classification acc. to Directive 67/548/EEC & 1999/45/EC:

Proposed by the industry

O; R8

Contact with combustible material may cause fire.

Risk advice to man and the environment

Liquefied gas.

Contact with liquid may cause cold burns/frost bite.

Label Elements
- Labelling Pictograms

- Signal word

Danger

- Hazard Statements

H280 Contains gas under pressure; may explode if heated.
H270 May cause or intensify fire; oxidiser.

- Precautionary Statements
Precautionary Statement Prevention

P220 Keep away from combustible materials.
P244 Keep valves and fittings free from oil and grease.

Precautionary Statement Reaction

P370 + P376 In case of fire: Stop leak if safe to do so.

Precautionary Statement Storage

P403 Store in a well-ventilated place.

Precautionary Statement Disposal

None.

3 COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Preparation: Substance.

Components/Impurities

Nitrous oxide.

CAS No: 10024-97-2

Index-Nr.:

EC No (from EINECS): 233-032-0

REACH Registration number:

Not available.

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

4 FIRST AID MEASURES

Inhalation

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Victim may not be aware of asphyxiation. 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.

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

Supports combustion. Exposure to fire may cause containers to rupture/explode. Non flammable.

Hazardous combustion products

If involved in a fire the following toxic and/or corrosive fumes may be produced by thermal decomposition:

Nitrogen dioxide, Nitric oxide.

Suitable extinguishing media

All known extinguishants can be used.

Specific methods

If possible, stop flow of product. Move container away or cool with water from a protected position.

Special protective equipment for fire fighters

Use self-contained breathing apparatus and chemically protective clothing.

6 ACCIDENTAL RELEASE MEASURES

Personal precautions

Evacuate area. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate ventilation. Eliminate ignition sources. Monitor concentration of released product. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.

Environmental precautions

Try to stop release.

Clean up methods

Ventilate area.

7 HANDLING AND STORAGE

Handling

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Use no oil or grease. Do not allow backfeed into the container. Suck back of water into the container must be prevented. 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). The substance must be handled in accordance with good industrial hygiene and safety procedures. Open valve slowly to avoid pressure shock. Refer to supplier's handling instructions. Purge system with dry inert gas (e.g. helium or nitrogen) before gas is introduced and when system is placed out of service. Avoid suckback of water, acid and alkalis. Do not smoke while handling product. Only experienced and properly instructed persons should handle gases under pressure. Protect cylinders from physical damage; do not drag, roll, slide or drop. 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 cylinder contents. 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. Ensure the complete gas system has been (or is regularly) checked for leaks before use. If user experiences any difficulty operating cylinder valve discontinue use and contact supplier. Close container valve after each use and when empty, even if still connected to equipment. Never attempt to repair or modify container valves or safety relief devices. Damaged valves should be reported immediately to the supplier. Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment. Keep container valve outlets clean and free from contaminants particularly oil and water. Never attempt to transfer gases from one cylinder/container to another. Keep equipment free from oil and grease

Storage

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

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit value

Value type	value	Note
Germany - AGW	100 ppm	TRGS 900
TLV (ACGIH)	50 ppm	ACGIH 1995 - 1996

Personal protection

Do not smoke while handling product. Ensure adequate ventilation. Carry working gloves and protection shoes while handling gas cylinders.

9 PHYSICAL AND CHEMICAL PROPERTIES

General information

Appearance/Colour: Colourless gas.

Odour: Sweetish. Poor warning properties at high concentrations.

Important information on environment, health and safety

Molecular weight: 44 g/mol

Melting point: -90,81 °C

Boiling point: -88,5 °C

Critical temperature: 36,4 °C

Autoignition temperature: Not applicable.

Flammability range: Not applicable.

Relative density, gas: 1,4

Relative density, liquid: 1,2

Vapour Pressure 20 °C: 50,8 bar

Solubility mg/l water: 2,2 mg/l

Maximum filling pressure (bar): 50 bar

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 reducing agents. May react violently with combustible materials. Violently oxidises organic material. Liquid spillages can cause embrittlement of structural materials. At temperatures above 575°C and at atmospheric pressure, nitrous oxide decomposes into nitrogen and oxygen. The escaping oxygen results in a higher fire hazard. Under pressure N₂O can decompose above 300°C in nitrogen and oxygen. The decomposition can build up a high pressure, which may cause containers to rupture. The decomposition is promoted by catalysts such as nickel, gold or platinum. Thermal decomposition yields toxic products which can be corrosive in the presence of moisture.

Hazardous decomposition products

Statements on decomposition

Thermal decomposition yields toxic products which can be corrosive in the presence of moisture.

11 TOXICOLOGICAL INFORMATION

General

No known toxicological effects from this product.

12 ECOLOGICAL INFORMATION

General

No known ecological damage caused by this product.

Global Warming Potential GWP

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13 DISPOSAL CONSIDERATIONS

General

May be vented to atmosphere in a well ventilated place. Discharge to atmosphere in large quantities should be avoided. Do not discharge into areas where there is a risk of forming an explosive mixture with air. Waste gas should be flared through a suitable burner with flash back arrestor. Contact supplier if guidance is required.

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14 TRANSPORT INFORMATION

ADR/RID

Class 2 Classification Code 20

UN number and proper shipping name

UN 1070 Nitrous oxide

UN 1070 Nitrous oxide

Labels 2.2, Hazard number 25
5.1

Packing Instruction P200

IMDG

Class 2.2

UN number and proper shipping name

UN 1070 Nitrous oxide

Labels 2.2,
5.1

Packing Instruction P200

EmS FC, SW

IATA

Class 2.2

UN number and proper shipping name

UN 1070 Nitrous oxide

Labels 2.2,
5.1

Packing Instruction P200

Other transport information

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 they are firmly secured. Ensure that the cylinder valve is closed and not leaking. Ensure that the valve outlet cap nut or plug (where provided) is correctly fitted. Ensure that the valve protection device (where provided) is correctly fitted. Ensure adequate ventilation. Ensure compliance with applicable regulations. Avoid transport on vehicles where the load space is not separated from the driver's compartment.

15 REGULATORY INFORMATION

Further national regulations

Pressure Vessel Regulation

Gefahrstoffverordnung (GefStoffV)

Technische Regeln für Gefahrstoffe (TRGS)

Regulations for the prevention of industrial accidents

Water pollution class

according to §19 WGH Annex 1 : WGK 1 (slightly water endangering)

TA-Luft

Not classified according to TA-Luft.

16 OTHER INFORMATION

Ensure all national/local regulations are observed. The hazard of asphyxiation is often overlooked and must be stressed during operator training. Contact with liquid may cause cold burns/frost bite.

Advice

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. Details given in this document are believed to be correct at the time of going to press.

Further information

Kühn-Birett: Merkblätter gefährliche Arbeitsstoffe

Hommel: Handbook of dangerous goods

Linde safety advice

No. 3 Oxygen deficiency

No. 7 Safe handling of gas cylinders and cylinder bundles

No. 11 Transport of gas receptacles in vehicles

End of document