Safety data sheet
Nitrous oxide, refrigerated liquid

1 IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY

Product name
Nitrous oxide, refrigerated liquid
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 - Contains refrigerated gas; may cause cryogenic burns or injury.
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.
Asphyxiant in high concentrations.
Risk advice to man and the environment
Refrigerated liquefied gas. Contact with productmay cause cold burns or frostbite.
Label Elements

- Labelling Pictograms

- Signal word
Danger

- Hazard Statements

H281	Contains refrigerated gas; may cause cryogenic burns or injury.
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.
P282	Wear cold insulating gloves/face shield/eye protection.

Precautionary Statement Reaction

P370 + P376	In case of fire: Stop leak if safe to do so.
P336+P315	Thaw frosted parts with lukewarm water. Do no rub affected area. Get immediate medical advice/attention.

Precautionary Statement Storage

P403	Store in a well-ventilated place.

Precautionary Statement Disposal

3 COMPOSITION/INFORMATION ON INGREDIENTS

Substance/Preparation: Substance.
Components/Impurities
Nitrous oxide, refrigerated liquid
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:
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 air ventilation. Use protective clothing. Eliminate ignition sources.
Environmental precautions
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Try to stop release.
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. Segregate from flammable gases and other flammable materials in store. 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 handling instructions.
Storage

8 EXPOSURE CONTROLS/PERSONAL PROTECTION

Exposure limit value

Value type	value	Note
Germany - AGW	100 ppm	TRGS 900

Personal protection
Do not smoke while handling product. Protect eyes, face and skin from liquid splashes. Ensure adequate ventilation.

9 PHYSICAL AND CHEMICAL PROPERTIES

General information
Appearance/Colour: Colourless liquid.
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
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. Liquid spillages can cause embrittlement of structural materials. May decompose violently at high temperature and/or pressure or in the presence of a catalyst Above 575°C N20 decompose at normal pressure in his elements nitrogen and oxygen. The escaping oxygen results in a higher fire hazard. The decomposition can build up a high pressure, which may cause containers to rupture. Under pressure N20 can decompose above 300°C in nitrogen and oxygen. 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.

11 TOXICOLOGICAL INFORMATION

General
No known toxicological effects from this product.

12 ECOLOGICAL INFORMATION

General
Can cause frost damage to vegetation.
Global Warming Potential GWP
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13 DISPOSAL CONSIDERATIONS

General
Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required.
EWC Nr. 16 05 05

14 TRANSPORT INFORMATION

ADR/RID

Class	2	Classification Code	3O

UN number and proper shipping name
UN 2201 Nitrous oxide, refrigerated, liquid
UN 2201 Nitrous oxide, refrigerated, liquid

Labels	2.2, 5.1	Hazard number	225
Packing Instruction	P203		

IMDG

Class	2.2

UN number and proper shipping name
UN 2201 Nitrous oxide, refrigerated, liquid

Labels	2.2
Packing Instruction	P203
EmS	FC, SW

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. Ensure adequate ventilation. Avoid transport on vehicles where the load space is not separated from the driver's compartment. Before transporting product containers ensure that they are firmly secured. Ensure compliance with applicable regulations.

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. Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out.
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
Linde safety advice

No. 1	Handling of refrigerated liquid gases
No. 11	Transport of gas receptacles in vehicles
No. 3	Oxygen deficiency

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