Safety data sheet
Nitrogen, refrigerated, liquid.

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

1.1. Product identifier
Product name
Nitrogen, refrigerated, liquid.
Trade name
Gas Art. 220 Nitrogen liquid
Gas Art. 223 BIOGON® N E941 liquid

EC No (from EINECS): 231-783-9
CAS No: 7727-37-9
Index-Nr. -
Chemical formula N2
REACH Registration number:
Listed in Annex IV / V of Regulation (EC) No 1907 / 2006 (REACH), exempted from registration.

1.2. Relevant identified uses of the substance or mixture and uses advised against
Relevant identified uses
Industrial and professional. Perform risk assessment prior to use.
Uses advised against
Consumer use.

1.3. Details of the supplier of the safety data sheet
Company identification
Linde Gas GmbH, 4651 Stadl-Paura, Austria
E-Mail Address office@at.linde-gas.com

1.4. Emergency telephone number
Emergency phone numbers (24h): +43 50 4273

SECTION 2: Hazards identification

2.1. Classification of the substance or mixture

Classification acc. to Regulation (EC) No 1272 / 2008 / EC (CLP / GHS)
Press. Gas (Refrigerated liquefied gas) - Contains refrigerated gas; may cause cryogenic burns or injury.

Classification acc. to Directive 67 / 548 / EEC & 1999 / 45 / EC
Not classified as hazardous to health.
Asphyxiant in high concentrations.
Risk advice to man and the environment
Refrigerated liquefied gas. Contact with product may cause cold burns or frostbite.
In high concentrations may cause asphyxiation.

2.2. Label elements
- Labelling Pictograms

- Signal word

Warning

- Hazard Statements

H281	Contains refrigerated gas; may cause cryogenic burns or injury.
EIGA-As	Asphyxiant in high concentrations.

- Precautionary Statements

Precautionary Statement Prevention

P282	Wear cold insulating gloves / face shield / eye protection.

Precautionary Statement Response

P336+P315	Thaw frosted parts with lukewarm water. Do not rub affected area. Get immediate medical advice / attention.

Precautionary Statement Storage

P403	Store in a well-ventilated place.

Precautionary Statement Disposal
None.

2.3. Other hazards
Contact with liquid may cause cold burns / frost bite.

SECTION 3: Composition / information on ingredients

Substance / Mixture: Substance.

3.1. Substances
Nitrogen, refrigerated, liquid.
CAS No: 7727-37-9
Index-Nr.: -
EC No (from EINECS): 231-783-9
REACH Registration number:
Listed in Annex IV/V of Regulation (EC) No 1907/2006 (REACH), exempted from registration.
Contains no other components or impurities which will influence the classification of the product.

3.2. Mixtures
Not applicable.

SECTION 4: First aid measures

4.1. Description of first aid measures
First Aid General Information:
Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
First Aid Inhalation:
Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.
First Aid Skin / Eye:

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

4.2. Most important symptoms and effects, both acute and delayed
In high concentrations may cause asphyxiation. Symptoms may include loss of mobility / consciousness. Victim may not be aware of asphyxiation.

4.3. Indication of any immediate medical attention and special treatment needed
None.

SECTION 5: Fire fighting measures

5.1. Extinguishing media
Suitable extinguishing media
All known extinguishants can be used.

5.2. Special hazards arising from the substance or mixture
Specific hazards
Exposure to fire may cause containers to rupture / explode.
Hazardous combustion products
None.

5.3. Advice for fire-fighters
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
Gas tight chemically protective clothing (Type 1) in combination with self contained breathing apparatus.
Guideline:
EN 943-2:2002: Protective clothing against liquid and gaseous chemicals, aerosols and solid particles. Performance requirements for gas-tight (Type 1) chemical protective suits for emergency teams (ET).

SECTION 6: Accidental release measures

6.1. Personal precautions, protective equipment and emergency procedures
Evacuate area. Use protective clothing. Wear self-contained breathing apparatus when entering area unless atmosphere is proved to be safe. Ensure adequate air ventilation. Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. EN 137 Respiratory protective devices — Self-contained open-circuit compressed air breathing apparatus with full face mask — Requirements, testing, marking.

6.2. Environmental precautions
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous. Try to stop release.

6.3. Methods and material for containment and cleaning up
Ventilate area. Liquid spillages can cause embrittlement of structural materials.

6.4. Reference to other sections
See also sections 8 and 13.

SECTION 7: Handling and storage

7.1. Precautions for safe handling
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. Do not allow backfeed into the container. The substance must be handled in accordance with good industrial hygiene and safety procedures. Refer to supplier's handling instructions. Do not smoke while handling product. Only experienced and properly instructed persons should handle gases under pressure. Protect containers 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 container contents. When moving containers, even for short distances, use appropriate equipment eg. trolley, hand truck, fork truck etc. 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 container 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 container to another.

7.2. Conditions for safe storage, including any incompatibilities
Keep container below 50°C in a well ventilated place. Observe all regulations and local requirements regarding storage of containers. Cylinders should be stored in the vertical position and properly secured to prevent falling over. Containers should not be stored in conditions likely to encourage corrosion. 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.

7.3. Specific end use(s)
None.

SECTION 8: Exposure controls / personal protection

8.1. Control parameters

8.2. Exposure controls
Appropriate engineering controls
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. Oxygen detectors should be used when asphyxiating gases may be released. Consider work permit system e.g. for maintenance activities. Systems under pressure should be regularly checked for leakages. Provide adequate general or local ventilation. The substance is not classified for human health hazards or for environment

effects and it is not PBT or vPvB so that no exposure assessment or risk characterisation is required. For tasks where the intervention of workers is required, the substance must be handled in accordance with good industrial hygiene and safety procedures.

Personal protective equipment

Eye and face protection

Protect eyes, face and skin from liquid splashes. Safety eyewear, goggles or face-shield to EN166 should be used to avoid exposure to liquid splashes. Wear eye protection to EN 166 when using gases.

Skin protection

Hand protection

Advice: Wear cold insulating gloves.
Guideline: EN 511 Protective gloves against cold.

Advice: Wear working gloves and safety shoes while handling containers.

Body protection

Protect eyes, face and skin from contact with product.

Other protection

Wear working gloves and safety shoes while handling containers. EN ISO 20345 Personal protective equipment - Safety footwear.

Respiratory protection

Not required

Thermal hazards

If there is a risk of contact with the liquid, all protective equipment should be suitable for extremely low temperatures.

Environmental Exposure Controls

Specific risk management measures are not required beyond good industrial hygiene and safety procedures. 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

General information

Appearance / Colour: Colourless liquid.
Odour: None.
Melting point: -210 °C
Boiling point: -196 °C
Flash point: Not applicable for gases and gas mixtures.
Flammability range: Non flammable.
Vapour Pressure 20 °C: Not applicable.
Relative density, gas (Air=1): 0,97
Solubility in water: 20 mg / l
Autoignition temperature: Not applicable.
Explosive properties:
Explosive acc. EU legislation: Not explosive.
Explosive acc. transp. reg.: Not explosive.
Oxidising properties: Not applicable.
Molecular weight: 28 g / mol
Critical temperature: -147 °C
Relative density, liquid (Water=1): 0,8

9.2. Other information

Gas / vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

SECTION 10: Stability and reactivity

10.1. Reactivity

Unreactive under normal conditions.

10.2. Chemical stability

Stable under normal conditions.

10.3. Possibility of hazardous reactions

None.

10.4. Conditions to avoid

None.

10.5. Incompatible materials

Cryogenic liquids can cause embrittlement of some metals and alter the physical properties of other materials. No reaction with any common materials in dry or wet conditions.

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 toxicological effects

General

No known toxicological effects from this product.

SECTION 12: Ecological information

12.1. Toxicity

Can cause frost damage to vegetation.

12.2. Persistence and degradability

The substance is naturally occuring.

12.3. Bioaccumulative potential

Not applicable.

12.4. Mobility in soil

The substance is a gas, not applicable.

12.5. Results of PBT and vPvB assessment

Not classified as PBT or vPvB.

12.6. Other adverse effects

Not applicable.

SECTION 13: Disposal considerations

13.1. Waste treatment methods

Do not discharge into any place where its accumulation could be dangerous. Contact supplier if guidance is required. Vent to atmosphere in a well ventilated place. Consult supplier for specific recommendations.

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.
Gases in pressure containers excluding those, which are mentioned under 16 05 04
EWC Nr. 16 05 05

SECTION 14: Transport information

ADR/RID

14.1. UN number
1977

14.2. UN proper shipping name
Nitrogen, refrigerated, liquid

14.3. Transport hazard class(es)
Class: 2
Classification Code: 3A
Labels: 2.2
Hazard number: 22
Tunnel restriction code: (C/E)

14.4. Packing group (Packing Instruction)
P203

14.5. Environmental hazards
None.

14.6. Special precautions for user
None.

IMDG

14.1. UN number
1977

14.2. UN proper shipping name
Nitrogen, refrigerated, liquid

14.3. Transport hazard class(es)
Class: 2.2
Labels: 2.2
EmS: F-C, S-V

14.4. Packing group (Packing Instruction)
P203

14.5. Environmental hazards
None.

14.6. Special precautions for user
None.

14.7. Transport in bulk according to Annex II of MARPOL73/78 and the IBC Code
Not applicable.

IATA

14.1. UN number
1977

14.2. UN proper shipping name
Nitrogen, refrigerated, liquid

14.3. Transport hazard class(es)
Class: 2.2
Labels: 2.2

14.4. Packing group (Packing Instruction)
P202

14.5. Environmental hazards
None.

14.6. Special precautions for user
None.

Other transport information
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 they are firmly secured. Ensure adequate ventilation. Ensure compliance with applicable regulations.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture
Seveso Directive 96/82/EC: Not covered.

Other regulations
Council Directive 89/391/EEC on the introduction of measures to encourage improvements in the safety and health of workers at work
Directive 94/9/EC on equipment and protective systems intended for use in potentially explosive atmospheres (ATEX)
Directive 89/686/EEC on personal protective equipment
Council Directive 67/548/EEC on the approximation of laws, regulations and administrative provisions relating to the classification, packaging and labelling of dangerous substances
Directive 1999/45/EC concerning the approximation of the laws, regulations and administrative provisions of the Member States relating to the classification, packaging and labelling of dangerous preparations
Directive 97/23/EC on the approximation of the laws of the Member States concerning pressure equipment.

15.2. Chemical safety assessment
A CSA does not need to be carried out for this product.

SECTION 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

References

Various sources of data have been used in the compilation of this SDS, they include but are not exclusive to:

European Chemical Agency: Information on Registered Substances http://apps.echa.europa.eu/registered/registered-sub.aspx#search

European Chemical Agency: Guidance on the Compilation of Safety Data Sheets.

European Industrial Gases Association (EIGA) Doc. 169/11 Classification and Labelling guide.

ISO 10156:2010 Gases and gas mixtures -- Determination of fire potential and oxidizing ability for the selection of cylinder valve outlets.

Matheson Gas Data Book, 7th Edition.

National Institute for Standards and Technology (NIST) Standard Reference Database Number 69

The ESIS (European chemical Substances 5 Information System) platform of the former European Chemicals Bureau (ECB) ESIS (http://ecb.jrc.ec.europa.eu/esis/).

The European Chemical Industry Council (CEFIC) ERICards.

United States of America's National Library of Medicine's toxicology data network TOXNET (http://toxnet.nlm.nih.gov/index.html)

International Programme on Chemical Safety (http://www.inchem.org/)

Substance specific information from suppliers.

Linde safety advice

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

End of document