

SAFETY DATA SHEET**Nitrous oxide in cartridge**Release date: 17/05/2005
Revision date: 18/10/2024Version: 4.0
1/11**SECTION 1: Identification of the substance/mixture of the company/undertaking****1.1 Product identifier****Product name:** Nitrous oxide in cartridge**Trade name:** Cream charger**Additional identifiers****Chemical designation:** Nitrous oxide**Chemical formula:** N₂O**EU number:** -**CAS number:** 10024-97-2**EC number:** 233-032-0**REACH registration number:** 01-2119970538-25**1.2 Relevant identified uses of the substance or mixture and uses advised against****Identified uses:** Industrial food and/or health use
Uses advised against: Retail use The product of industrial or technical quality is not suitable for medical and/or food uses and inhalation.**1.3 Details of the supplier of the safety data sheet****Manufacturer/Supplier:** LISS Patrongyártó, Töltő és Forgalmazó Zrt.
9653 Répcelak Ipari park 6.Tel: +36 209 500 100 Email: liss@liss.hu**Distributor:** LISS Patrongyártó, Töltő és Forgalmazó Zrt.
9653 Répcelak Ipari park 6.Tel: +36 209 500 100 Email: liss@liss.hu**Person in charge:** LISS Patrongyártó, Töltő és Forgalmazó Zrt.
9653 Répcelak, Ipari park 6.Tel: +36 209 500 100 Email: liss@liss.hu**1.4. Emergency telephone number:** + 36 80 20 11 99 - Health Toxicological Information Services.
H-1096 Budapest, Nagyvárad tér 2.**SECTION 2: Hazards identification****2.1 Classification of substance or mixture****Classification according to EC 1272/2008 as amended.****Physical hazards****Oxidising gas:** Category 1 H270: May cause or intensify fire; oxidiser.**Gas under pressure:** Liquid gas H280: Contains gas under pressure; may explode if heated.**Health hazards****Target organ toxicity - single exposure:** Category 3 H336: May cause drowsiness or dizziness.

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2.2 Label elements**Includes:**

Warning: Danger

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

Precautionary statements

Prevention: P220: Keep/Store away from combustible materials.
P244: Keep reduction valves free from grease and oil.
P260: Do not breathe gas/mist.

Responses: P304+P340+P315: IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing. 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.

Disposal: Not applicable

2.3 Other hazards: Contact with the steaming liquid may cause frostbite.

SECTION 3: Composition and information on ingredients**3.1 Substances**

Chemical designation	Nitrous oxide
EU number:	-
CAS number:	10024-97-2
EC number:	233-032-0
REACH registration number:	01-2119970538-25
Purity:	100%

In this section, purity only serves for classification and does not reflect the actual purity of the delivered substance for which another documentation must be investigated.

Trade name:	Cream charger
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General: Move exposed individual to fresh air. In addition to using a self-contained respiratory apparatus, move the injured to fresh air. Keep them warm and calm. In case of respiratory arrest provide artificial respiration. Call a doctor on the spot.

4.1 Description of first aid measures

Inhalation: Move exposed individual to fresh air. In addition to using a self-contained respiratory apparatus, move the injured to fresh air. Keep them warmly and calmly. In case of respiratory arrest provide artificial respiration. Call a doctor on the spot.

Eye contact: Wash your eyes immediately with water. Remove contact lenses if present and easy to do so. Continue rinsing. Rinse the eyes at least for 15 minutes. Get prompt medical attention. If medical help is not available, continue rinsing the eyes for additional 15 minutes.

Skin contact: Contact with the steaming liquid may cause frostbite.

Ingestion: Ingestion does not belong to the potential exposures.

4.2 Most important symptoms and effects, both acute and delayed: In the case of a concentration higher than 75%, continuous inhalation may cause nausea, dizziness, difficulty in breathing and cramps. Due to the fast evaporative cooling, contact with the liquid gas may be harmful (freezing).

4.3 Indication of any immediate medical attention and special treatment needed

Hazards: In the case of a concentration higher than 75%, continuous inhalation may cause nausea, dizziness, difficulty in breathing and cramps. Due to the fast evaporative cooling, contact with the liquid gas may be harmful (freezing).

Treatment: Thaw frosted parts with lukewarm water. Do not rub the affected area. Get immediate medical advice/attention.

SECTION 5: Firefighting Measures

General fire hazards: Under the influence of heat, the container may break/explode.

5.1 Extinguishing media

Appropriate extinguishing media: Spray or mist. Dry powder. Foam. Carbon dioxide.

Inappropriate extinguishing media: Not applicable

5.2 Special hazards arising from the substance or mixture: Supports combustion.

Hazardous combustion products: During the thermal decomposition resulting from fire, the following toxic and/or corrosive gases may be generated: Nitrogen monoxide; nitrogen dioxide

5.3 Advice for firefighters

Special procedures: In case of fire: Stop leak if safe to do so. Use a fire extinguisher to stop fire. Remove ignition source or let it burn.

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Special protective equipment for firefighters:

Firefighters are expected to use standard protective equipment including fire retardant jacket, helmet with face guard, gloves, rubber boots and a self-contained breathing apparatus.

Directive: EN 469 Protective clothing for firefighters Performance requirements for protective clothing for firefighting. EN 15090 Footwear for firefighters. EN 659 Protective gloves for firefighters. EN 443 Helmets for firefighting in buildings and other structures. EN 137 Respiratory protective devices. Compressed air breathing apparatus. Requirements, testing, marking.

SECTION 6: Accidental release measures**6.1 Personal precautions, protective equipment and emergency procedures:**

Empty the area. Stop all sources of ignition if safe to do so. Ensure adequate ventilation. Do not allow it to enter sewers, basement, excavation or other places where its accumulation may be hazardous. Check the concentration of the released product.

6.2 Environmental precautions:

If safe to do so, do not allow additional leak or spill.

6.3 Methods and material for containment and cleaning up:

Ensure adequate ventilation.

6.4 Reference to other sections:

Refer sections 8 and 13.

SECTION 7: Handling and storage:**7.1 Precautions for safe handling:****7.1.1 Technical precautions**

provide ventilation, use protective equipment

7.1.2 Advice for safe handling

Avoid skin, eye, cloth contact. Avoid the inhalation of the product's mist, steam. Avoid the product's contact with oily, greasy surface. Only use equipment which is suitable for this product, the planned pressure and temperature.

7.2 Conditions for safe storage, including any incompatibilities:**7.2.1. Technical measures / Storage conditions**

keep in a dry, cool and well-ventilated place in its original, closed packing away from heat and source of ignition, and direct sunlight.

7.2.2 Incompatible products

it violently reacts with the sulfurous anhydride, amorphous boron, phosphine, ethers, aluminium, hydrazine, phenyl lithium and tungstate carbide causing fire and explosive hazard. The gas is a strong oxidising agent above 300 °C and may generate explosive mixtures with ammonia, carbon monoxide, hydrogen sulfide, oil, grease and fuels.

7.2.3 Packings

in retail packings and/or in bulk

7.3 Specific end uses (end uses):

none

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SECTION 8: Exposure controls and personal protection

8.1 Control parameters

Occupational exposure limits

Chemical designation	Type	Exposure limits	Source
Nitrous oxide	ÁK	180 mg/m ³	Occupational exposure limit value (OEL), Joint Decree No. 25/2000 (IX. 30.) of the Ministry of Health and the Ministry of Social and Family Affairs on the chemical safety of workplaces. (2007. 12.)
	CK	720 mg/m ³	Occupational exposure limit value (OEL), Joint Decree No. 25/2000 (IX. 30.) of the Ministry of Health and the Ministry of Social and Family Affairs on the chemical safety of workplaces. (2007.12.)

DNEL values

Component	Type	Value	Notes
Nitrous oxide	Employee - inhalation, long-term - systemic	183 mg/m ³	-

8.2 Protection against exposure

Ensure ventilation, use protective equipment. Avoid the inhalation of the product's mist, steam. Avoid skin, eye, and cloth contact.

8.2.1. Occupational exposure controls

8.2.1.1. Respiratory protection



in case of inadequate ventilation or extraction, use a respiratory apparatus. In a closed area use a self-contained respiratory apparatus.

8.2.1.2 Hand protection



protective gloves

8.2.1.3. Eye protection



tightly fitting protective glasses (EN 166)

8.2.1.4. Skin protection

apron, safety shoes (MSZ EN 345-1, SB)

8.2.2. Environmental exposure controls

avoid release to sewer, pits and basement.

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SECTION 9: Physical and chemical properties**9.1 Information on basic physical and chemical properties****External characteristics**

Physical state:	Gas
Form:	Liquid gas.
Colour:	Colourless
Odour:	Slightly sweet odour
Odour threshold:	The odour threshold is subjective and not suitable for the warning of excessive exposure.
pH value:	Not applicable.
Melting point:	-90.81 °C Other primary test
Boiling point:	-88.48 °C -88.5 °C (1,013 hPa) Experimental result, primary test
Sublimation point:	not applicable.
Critical temperature (°C):	36.4 °C
Flash point:	Not applicable to gases and gas mixtures.
Evaporation rate:	Not applicable to gases and gas mixtures.
Flammability (solid, gas):	It is a non-flammable gas but keeps burning at high temperatures
Explosive limit - Top (%)-:	not applicable.
Explosive limit - Lower (%)-:	not applicable.
Vapour pressure:	5719.51 kPa (25 °C)
Vapour density (air=1):	1.53 AIR = 1
Relative density:	1.226 (-89 °C)
Solubility	
Water:	1.5 g/l (15 °C)
Partition coefficient: (n-octanol/water):	0.36
Auto-ignition temperature:	not applicable.
Decomposition temperature:	575 °C
Viscosity	
Cinematic viscosity:	Not determined.
Dynamic viscosity:	0.014 mPa.s (25 °C)
Explosive properties:	Not applicable.
Oxidising properties:	Oxidising

9.2 OTHER INFORMATION:

Its gas/vapour is heavier than air. In closed areas, it may accumulate easily, especially on the floor or low-lying areas.

Molecular weight: 44.01 g/mol (N₂O)

SECTION 10: Stability and reactivity**10.1 Reactivity**

As regards reactivity, there are no additional hazards in addition to those included in this section.

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10.2 Chemical stability:	Stable under normal circumstances. At a temperature above 575 °C and at atmospheric pressure, the nitrous oxide degrades to its elements, nitrogen and oxygen. Nitrous oxide under pressure is also able to degrade at 300°C or above.
10.3 Possibility of hazardous reactions:	Violently oxidises organic substances. May react violently with flammable materials. May react violently with reducing agents.
10.4 Conditions to avoid:	Heat.
10.5 Incompatible materials:	May react violently with flammable materials. May react violently with reducing agents. Flammable materials Catalyst. Reducing agents. Organic substance. In respect of the material's compatibility, refer to the most recent version of ISO-11114.
10.6 Hazardous decomposition products:	The thermal decomposition may cause toxic substances which may be corrosive in the presence of moisture. No hazardous decomposition products would be expected under the normal conditions of use and storage. During the thermal decomposition resulting from fire, the following toxic and/or corrosive gases may be generated: Nitrous oxides.

SECTION 11: Toxicological information

General information: None

Information on the possible exposure route

Inhalation: Decreased production was reported in the case of health employees who are repeatedly exposed to the effect of nitrous oxide level higher than the occupational exposure limit due to the inadequately ventilated room. There is no documented confirmation or denial regarding the relationship between the cases and the nitrous oxide exposure. The substance may affect the bone marrow and the peripheral nervous system.

11.1 Information on toxicological effects**Acute toxicity - Ingestion
Product**

Based on the available data the criteria for classification is not possible.

**Acute toxicity - Skin contact
Product**

Based on the available data the criteria for classification is not possible.

**Acute toxicity - Inhalation
Product**

LC 50 (Mouse, 4 h): > 500000 ppm Notes: Gas Experimental result, primary test

**Toxicity with repeated dose
Product**

NOAEL (No observable adverse effect level) (Mouse (female, male), inhalation, 14 weeks): 50,000 ppm(m) inhalation Gas Experimental result, primary test

**Skin corrosion/Skin irritation
Product**

Based on the available data the criteria for classification is not possible.

**Serious eye damage/Eye irritation
Product**

Based on the available data the criteria for classification is not possible.

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Respiratory or skin sensitization**Product** Based on the available data the criteria for classification is not possible.**Germ cell mutagenicity****Product** Based on the available data the criteria for classification is not possible.**Carcinogenicity****Product** Based on the available data the criteria for classification is not possible.**Reproductive toxicity****Product** Based on the available data the criteria for classification is not possible.**Target organ toxicity - single exposure****Product** May cause drowsiness or dizziness.**Target organ toxicity - repeated exposure****Product** Based on the available data the criteria for classification is not possible.**Aspiration hazard****Product** Not applicable to gases and gas mixtures.**SECTION 12: Ecological information****12.1 Toxicity****Acute toxicity****Product** This product does not cause ecological damages.**12.2 Persistence and degradability****Product** Not applicable to gases and gas mixtures.**12.3 Bioaccumulation****Product** The respective product is expected to biologically degrade and does not survive for long in aquatic environment.**12.4 Mobility in soil****Product** Due to its high volatility, the soil or water pollution of the product is not possible.**12.5 Results of PBT and vPvB****assessment****Product** Not classified as PBT or vPvB substance.**12.6 Other adverse effects:****Global warming potential**Global warming potential: 298
When it is emitted in large volume, it may contribute to the greenhouse effect.

Nitrous oxide

UN / IPCC. Global warming potential of gases causing greenhouse effect (IPCC fourth evaluation report, climate change, table TS2)
- Global warming potential: 298,100 years

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The product became unsuitable for further use arising from the substance or formulation, the tools and packaging contaminated with the substance shall be transported to an authorised operator for additional utilisation/disposal. Refer to all state and local environmental regulations.

13.2 Packing disposal

Refer to all state and local environmental regulations; the packing may be treated similarly to the product.

13.3 EWC data

15 01 04 metal packaging waste

SECTION 14: Transport information**ADR/ADN/RID**

14.1 UN number:	UN 2037
14.2 Shipping name:	Small containers filled with gas (gas cartridges)
14.3 Hazard class(es)	
Class:	2
Risk label(s):	2.2, 5.1
Classification code	50
Hazard identification (Kemler) number:	25
Tunnel restriction code:	(E)
14.4 Packing group:	–
14.5 Environmental hazards:	none
14.6 Special precautions for user:	–

Further information

Chargers filled with Nitrous Oxide are not classified as dangerous goods for road, train transport purposes according to ADR/RID and for sea transport purposes according to IMDG special provision 191 and internationally according to UN Model Regulation special provision 191. The special provision 191 stipulates: "Receptacles, small, with a capacity not exceeding 50 ml, containing only non-toxic constituents are not subject to the requirements of ADR."

IMDG

14.1 UN number:	UN 2037
14.2 Shipping name:	Small containers filled with gas (gas cartridges)
14.3 Hazard class(es)	
Class:	2.2
Risk label(s):	2.2, 5.1
EmS No.:	F-D, S-U
14.3 Packing group:	–
14.5 Marine pollutant:	no
14.6 Special precautions for user:	–

Further information

Chargers filled with Nitrous Oxide are not classified as dangerous goods for road, train transport purposes according to ADR/RID and for sea transport purposes according to IMDG special provision 191 and internationally according to UN Model Regulation special provision 191. The special provision 191 stipulates: "Receptacles, small, with a capacity not exceeding 50 ml, containing only non-toxic constituents are not subject to the requirements of ADR."

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IATA

14.1 UN number:	UN 2037
14.2 Shipping name:	Small containers filled with gas (gas cartridges)
14.3 Hazard class(es)	
Class:	2.2
Risk label(s):	2.2, 5.1
14.4 Packing group:	–
14.5 Environmental hazards:	not applicable.
14.6 Special precautions for user:	–

OTHER INFORMATION

Passenger and cargo aircraft:	Authorised.
Only cargo aircraft:	Authorised.
PAX	203
CAO	203

14.7 Transport in bulk according to Annex II of MARPOL 73/78 and the IBC code: not applicable: not applicable.

Further information:

Avoid transport in vehicles which do not have a hold separate from the cab. The driver shall know the possible hazards of the freight and the measures to be taken in case of accident or danger. Before the product's transport make sure it is safe. Make sure that the valves of the container are closed and do not leak. Use valve protection. Ensure adequate ventilation.

SECTION 15: Regulatory information

15.1. Safety, health and environmental regulations/legislation specific for the substance or mixture:

15.1.1 Key regulations for the product

Act XCIII of 1993 on health and safety and related regulations
Act CLXXXV of 2012 on waste
Act XXV of 2000 on chemical safety
Government Decree No. 225/2015. (VIII. 7.) on the detailed rules of specific activities in connection with hazardous waste
Joint Decree No. 3/2002. (II. 8.) of the Ministry of Health and the Ministry of Social and Family Affairs on the minimum level of occupational safety requirements of workplaces
Decree No. 54/2014. (XII. 5.) of the Ministry of Internal Affairs on the National Fire Safety Regulations
Decree No. 44/2000. (XII. 20.) of the Ministry of Health on the detailed rules of specific procedures and activities in connection with hazardous substances and formulations
Decree No. 5/2020. (II.6.) of the Ministry of Innovation and Technology on the protection of the health and safety of workers from the risks related to chemical agents
EC Regulation 1907/2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)
EC Regulation 1272/2008 on the classification, labelling and packaging of substances and mixtures (CLP).
This Safety Data Sheet has been made in compliance with EU Regulation 830/2015.

15.1.2 Other respective regulation

EWC code numbers: 72/2013. (VIII. 27.) VM decree on the waste list
Road transport: 284/2023. (IV. 30.) Government decree (on the publication of Annexes "A" and "B" of the Agreement on the International Transport of Dangerous Goods by Road, as well as on some issues of its domestic application) and 39/2021. (VII. 30.) ITM Decree on the domestic application of Annexes "A" and "B" of the Agreement on the International Carriage of Dangerous Goods by Road (ADR)

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15.6. Chemical safety assessment:

N/A

SECTION 16: Other information

Information on revisions: 2.0 - Sections: 1, 2, 3, 4, 5, 6, 9, 10, 11, 12, 14, 8.1
2.1 - Revised according to EU Regulation 830/2015 Removal of DSD information

Full text of H statements in sections 2 and 3

H270 May cause or intensify fire; oxidiser.
H280 Contains gas under pressure; may explode if heated.
H336 May cause drowsiness or dizziness.

Information on training: Appropriate use of respiratory apparatus shall be exercised. Take special care to train the employees so that they become familiar with the product hazards.

Classification according to EC 1272/2008 as amended.

Ox. Gas 1, H270
Press. Gas Liq. Gas, H280
STOT SE 3, H336

16.1 General information

This information applies to the PRODUCT AS SOLD and complies with the undertaking's specification.
In case of products and mixtures, make sure that no new risk arises.
Information included in the data sheet is based on our best knowledge existing at the date of the safety data sheet's print. However, the revision of some data is in progress.
The attention of the users is drawn to the possibility of further hazards if the product is used for other purposes than recommended. This data sheet may be used and reproduced only for prevention and safety purposes.
References to legislation, regulations and practical rules, documents shall not be considered to be full.
The person taking over the product shall be liable to investigate all official documents in connection with the product use and handling.
It is also the responsibility of persons handling the product that all information necessary included in the safety data sheet and necessary for occupational safety, protection of health and environment forward all persons who get in contact with the product (use, storage, cleaning of containers, other procedures).

16.2 Technical advisory service

LISS Patrongyártó, Töltő és Forgalmazó Zrt.
Address: 9653 Répcelak, Ipari park 6.
Tel: +36 209 500 100

16.3 Sources of data used for the safety data sheet

Safety data sheet – LISS Kft (2005.05.17) LISS Product data sheet