SECTION 1: IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

1.1. Product identifier

Trade name: **NEOGAS™**
Chemical name: Dinitrogen oxide
CAS no.: 10024-97-2
EC no.: 233-032-0
Index no.: Not applicable
REACH registration no.: Not applicable (according to Art. 2 (5b))

1.2. Relevant identified uses of the substance or mixture and uses advised against

Identified use: Food additive.
Uses advised against: Other uses than those listed above.

1.3. Details of the supplier of the safety data sheet

Supplier: **Rammlied Ltd.**
Address: Suite 3383, Level 3, Tower Business Centre, Tower st., Birkirkara BKR4013, Malta, EU
Telephone No: +356 7770 7006
E-Mail: info@neogas.eu

1.4. Emergency telephone number

+356 7770 7006

SECTION 2: HAZARDS IDENTIFICATION

2.1. Classification of the substance or mixture

Classification / Hazard	According to Regulation (EC) no. 1272/2008 (CLP)
for physical-chemical properties:	Ox. Gas 1, H270 May cause or intensify fire; oxidiser. Press. Gas (Ref. Liq.), H281 Contains refrigerated gas; may cause cryogenic burns or injury.
for health hazards:	STOT SE 3, H336 May cause drowsiness or dizziness.
for environmental hazards:	Not classified

2.2. Label elements

Hazard pictogram(s): GHS03  GHS04  GHS07 
Signal word(s): DANGER

Hazard statement(s):

H270 May cause or intensify fire; oxidiser.
H281 Contains refrigerated gas; may cause cryogenic burns or injury.
H336 May cause drowsiness or dizziness.

Precautionary statement(s):

P220 Keep away from clothing and other combustible materials.
P282 Wear cold insulating gloves and either face shield or eye protection.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P370+P376 W In case of fire: Stop leak if safe to do so.
P403 Store in a well-ventilated place.
P501 Dispose of contents to appropriately labelled containers in accordance with national regulation.

2.3. Other hazards

The substance does not fulfil the PBT/vPvB criteria set out in Annex XIII of REACH regulation.

The substance included in the list established in accordance with Article 59(1) for having endocrine disrupting properties or is identified to have endocrine disrupting properties in accordance with the criteria set out in Commission Delegated Regulation (EU) 2017/2100 or Commission Regulation (EU) 2018/605.

SECTION 3: COMPOSITION/INFORMATION ON INGREDIENTS

3.1. Substances

Chemical name: Dinitrogen oxide
CAS no.: 10024-97-2
EC no.: 233-032-0
Index no.: Not applicable
Molecular formula: N_2O
Content: 100%

3.2. Mixtures

Not applicable.

SECTION 4: FIRST AID MEASURES

4.1. Description of first aid measures

Inhalation:

Remove victim to uncontaminated area wearing self-contained breathing apparatus. Keep victim warm and rested. Call a doctor. If breathing has stopped, give artificial respiration.

Contact with skin:

In case of frostbite, sprinkle with water for at least 15 minutes. Apply a sterile dressing. Consult a physician.

Contact with eyes:

Rinse immediately with plenty of water. Consult a physician.

Ingestion:

Ingestion is not considered a potential route of exposure.

4.2. Most important symptoms and effects, both acute and delayed

In low concentrations may cause narcotic effects. Symptoms may include dizziness, headache, nausea and loss of coordination.

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

Do not take any action that would put anyone at risk unless you are properly trained. In case of symptoms or doubts, seek medical advice. Show the safety data sheet or label/ packaging to a person providing first aid. Decision on the rescue procedure is taken by a doctor following thorough examination of victim's condition.

SECTION 5: FIREFIGHTING MEASURES

5.1. Extinguishing media

Suitable Extinguishing Media: Water spray or fog. Use extinguishing media suitable for the surrounding environment.

Unsuitable Extinguishing Media: Water jet.

5.2. Special hazards arising from the substance or mixture

Oxidizing agent; vigorously accelerates combustion. Contact with flammable materials may cause fire or explosion.

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.

5.3. Advice for firefighters

Exposure to fire and heat radiation may cause gas receptacles to rupture.
Cool endangered receptacles with water spray jet from a protected position.
Prevent water used in emergency cases from entering sewers and drainage systems.
If possible, stop flow of product.
Use water spray or fog to knock down fire fumes if possible.
Move containers away from the fire area if this can be done without risk.

Wear gas tight chemically protective clothing in combination with self contained breathing apparatus.

SECTION 6: ACCIDENTAL RELEASE MEASURES

6.1. Personal precautions, protective equipment and emergency procedures

High-pressure, oxidizing gas. Evacuate personnel to a safe area. Appropriate self-contained breathing apparatus may be required. Approach suspected leak area with caution. Remove all sources of ignition. Vapour can spread from spill. Contact with flammable materials may cause fire or explosion. Ventilate area or move container to a well-ventilated area. Before entering the area, especially a confined area, check the atmosphere with an appropriate device. Gas/vapour is heavier than air. May accumulate in confined spaces, especially at or below ground level. Use adequate personal protective equipment as required in Section 8 of the safety data sheet.

6.2. Environmental precautions

Try to stop release. Avoid contamination of groundwater and surface water, waterways, sewers and soil. Notify relevant authorities in the event of contamination.

6.3. Methods and material for containment and cleaning up

Wait until any spilled liquid has evaporated (ground free from frost). Liquid spillages can cause embrittlement of structural materials. Ventilate the room.

6.4. Reference to other sections

Refer to Sections 8 and 13 of the safety data sheet.

SECTION 7: HANDLING AND STORAGE

7.1. Precautions for safe handling

Use only lubricants and seals approved for the specific gas.
Consider pressure relief device(s) in gas installations.
Ensure the complete gas system was (or is regularly) checked for leaks before use.
Do not smoke while handling product.
Keep equipment free from oil and grease.
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature.
Contact your gas supplier if in doubt.
Avoid suck back of water, acid and alkalis.
Do not breathe gas.
Avoid release of product into atmosphere.
Temperatures above 150°C shall be avoided by all practical means, to reduce the likelihood of an explosive decomposition of the nitrous oxide.
Clean all surfaces in direct contact with nitrous oxide as for oxygen service.
Nitrous oxide transfer pumps shall be provided with an interlock to prevent dry running.
Use self-limiting heating devices. Direct contact electric immersion heaters are not allowed.
Refer to supplier's container handling instructions.
Do not allow backfeed into the container.
Protect cylinders from physical damage; do not drag, roll, slide or drop.
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.
If user experiences any difficulty operating cylinder valve discontinue use and contact supplier.
Never attempt to repair or modify container valves or safety relief devices.
Damaged valves should be reported immediately to the supplier.
Keep container valve outlets clean and free from contaminants particularly oil and water.
Replace valve outlet caps or plugs and container caps where supplied as soon as container is disconnected from equipment.
Close container valve after each use and when empty, even if still connected to equipment.
Never attempt to transfer gases from one cylinder/container to another.
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.
Suck back of water into the container must be prevented.
Open valve slowly to avoid pressure shock.

7.2. Conditions for safe storage, including any incompatibilities

Containers should not be stored in conditions likely to encourage corrosion.
Container valve guards or caps should be in place.
Containers should be stored in the vertical position and properly secured to prevent them from falling over.
Stored containers should be periodically checked for general condition and leakage.
Keep container below 50°C in a well-ventilated place.
Segregate from flammable gases and other flammable materials in store.
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)

Food additive. Refer to section 1.2 of the safety data sheet.

SECTION 8: EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters

Dinitrogen oxide (CAS 10024-97-2) – Poland: NDS: 90 mg/m^3, NDSCh: -, NDSP: - , EU: OELs: -

Regulation of the Minister of Family, Labour and Social Policy of 12 June 2018 on maximum permissible concentration and intensity of agents harmful to health in the working environment (Journal of Laws of 2018, item 1286; 2020, item 61; 2021 item 325)
Directive 2000/39/EC with amendments.

DNEL worker, long term exposure, systemic effects, via inhalation: 183 mg/m^3
PNEC: no hazard identified

8.2. Exposure controls

Appropriate engineering controls:

Provide adequate general and local exhaust ventilation. Product to be handled in a closed system. Systems under pressure should be regularly checked for leakages. Ensure exposure is below occupational exposure limits (where available). Gas detectors should be used when oxidising gases may be released.

Eye/face protection:

Protect eyes and face against liquid splashes. Use safety glasses when handling cylinders (EN 166).

Skin protection:

Use work gloves when working with gas containers. EN 388 - protective gloves against mechanical risks. Use protective gloves to protect against cold when reloading the product or disconnecting the reloading connections. EN 511 - protective gloves against cold. Use flame-retardant protective clothing and safety shoes.

Respiratory protection:

Gas filters can be used if all external conditions are known, e.g., the type and concentration of pollutants and the time of use. If exposure limits may be exceeded for a short time, for example when connecting and disconnecting containers, use gas filters and a full-face mask. For the selection of the appropriate respiratory protection equipment, please refer to the information provided by the equipment manufacturer. Gas filters do not protect against oxygen deficiency. Keep self-contained breathing apparatus ready for emergency use. Self-contained breathing apparatus is recommended when unknown exposure is expected, e.g., during maintenance work on the system.

Thermal hazards:

Wear cold insulating gloves when transfilling or breaking transfer connections.

Environmental exposure controls:

None.

SECTION 9: PHYSICAL AND CHEMICAL PROPERTIES

9.1. Information on basic physical and chemical properties

a) Physical state	: Liquefied gas
b) Colour	: Colourless
c) Odour	: Sweetish
d) Melting point/freezing point	: - 90.81°C
e) Boiling point or initial boiling point and boiling range	: -88.5°C
f) Flammability	: Not applicable
g) Lower and upper explosion limit	: Not applicable
h) Flash point	: Not applicable

i) Auto-ignition temperature	: Not applicable
j) Decomposition temperature	: Not applicable
k) pH	: Not applicable
l) Kinematic viscosity	: Not applicable
m) Solubility	: Water: 1.5 g/l at 15°C, soluble in water
n) Partition coefficient n-octanol/water (log value)	: Not applicable
o) Vapour pressure	: Not applicable
p) Density and/or relative density	: 1.2 mg/cm^3 at -89°C, 1.99 mg/cm^3 at 0°C
q) Relative vapour density	: Not applicable
r) Particle characteristics	: Not applicable

9.2. Other information

Oxidising gases: May cause or intensify fire; oxidiser.

SECTION 10: STABILITY AND REACTIVITY

10.1. Reactivity

The substance is not reactive. Hazardous polymerization does not occur.

10.2. Chemical stability

The substance is stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

At temperatures over 575°C and at atmospheric pressure, nitrous oxide decomposes into nitrogen and oxygen.

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.

10.3. Possibility of hazardous reactions

Violently oxidises organic material.

10.4. Conditions to avoid

Heat. Avoid moisture in the installations.

10.5. Incompatible materials

Flammable materials.

Organic materials.

Avoid oil, grease and all other combustible materials.

10.6. Hazardous decomposition products

Not known.

SECTION 11: TOXICOLOGICAL INFORMATION

11.1. Information on hazard classes as defined in Regulation (EC) No 1272/2008

Acute toxicity:

Based on available data, the classification criteria are not met.

> 900061 mg/m^3 (>500000 ppm, 4h, inhalation, rat)

Skin corrosion/irritation:

Based on available data, the classification criteria are not met.

Serious eye damage/irritation:

Based on available data, the classification criteria are not met.

Respiratory or skin sensitisation:

Based on available data, the classification criteria are not met.

Germ cell mutagenicity:

Based on available data, the classification criteria are not met.

Carcinogenicity:

Based on available data, the classification criteria are not met.

Reproductive toxicity:

Based on available data, the classification criteria are not met.

STOT-single exposure:
May cause drowsiness or dizziness.

STOT-repeated exposure:
Based on available data, the classification criteria are not met.

Aspiration hazard:
Based on available data, the classification criteria are not met.

11.2. Information on other hazards

In high concentrations may cause asphyxiation. Symptoms may include loss of mobility/consciousness. Asphyxiation may bring about unconsciousness without warning and so rapidly that victim may be unable to protect themselves.

SECTION 12: ECOLOGICAL INFORMATION

12.1. Toxicity

Based on available data, the classification criteria are not met.

12.2. Persistence and degradability

Not applicable – an inorganic gas.

12.3. Bioaccumulative potential

Nitrous oxide is an inorganic gas with a low octanol-water partition coefficient of 0.4. Bioaccumulation is therefore unlikely.

12.4. Mobility in soil

Because of its high volatility, the product is unlikely to cause ground or water pollution. Partition into soil is unlikely.

12.5. Results of PBT and vPvB assessment

Not applicable – inorganic substance.

12.6. Endocrine disrupting properties

The substance has no endocrine disrupting properties.

12.7. Other adverse effects

When discharged in large quantities may contribute to the greenhouse effect.

SECTION 13: DISPOSAL CONSIDERATIONS

13.1. Waste treatment methods

Contact supplier if guidance is required.
Discharge to atmosphere in large quantities should be avoided.
Do not discharge into any place where its accumulation could be dangerous.
Ensure that the emission levels from local regulations or operating permits are not exceeded.
Return unused product in original cylinder to supplier.
Dispose of in compliance with applicable legislation

Recommended waste code:
16 05 04* Gases in pressure containers (including halons) containing dangerous substances.
Directive 2008/98/EC of the European Parliament and of the Council of the Member State.

SECTION 14: TRANSPORT INFORMATION

14.1. UN number or ID number	UN 1070
14.2. UN proper shipping name	ADR/RID : NITROUS OXIDE ICAO/IATA : NITROUS OXIDE IMDG : NITROUS OXIDE
14.3. Transport hazard class(es)	ADR/RID : 2 ICAO/IATA : 2.2 (5.1) IMDG : 2.2 (5.1)
14.4. Packing group	Not applicable
14.5. Environmental hazards	No

14.6. Special precautions for user

Special transport precautions: 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 there is adequate ventilation.
- 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.

14.7. Maritime transport in bulk according to IMO instruments

Not applicable

SECTION 15: REGULATORY INFORMATION

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

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EC and 2000/21/EC

Commission Regulation (EU) 2020/878 of 18 June 2020 amending Annex II to Regulation (EC) No 1907/2006 of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)

Regulation (EC) No 1272/2008 of the European Parliament and of the Council of 16 December 2008 on classification, labelling and packaging of substances and mixtures, amending and repealing Directives 67/548/EEC and 1999/45/EC, and amending Regulation (EC) No 1907/2006

Regulation (EU) 2016/425 of the European Parliament and of the Council of 9 March 2016 on personal protective equipment and repealing Council Directive 89/686/EEC

REACH Annex XVII (restrictions): Not applicable

REACH Annex XIV (authorisation): Not applicable

SVHC Candidate List: Not applicable

15.2. Chemical safety assessment

Not applicable - the substance is exempt from REACH registration.

SECTION 16: OTHER INFORMATION

Classification method (mixture):

Not applicable.

Changes made in the safety data sheet during revision:

General review.

Legend to abbreviations and acronyms used in the safety data sheet:

NDS Threshold Limit Value
NDSCh Short Term Exposure Limit
NDSP Threshold Limit Value-Ceiling
OELs Occupational Exposure Limits
vPvB Very persistent and very bioaccumulative (substance)
PBT Persistent, bioaccumulative and toxic (substance)
PNEC Predicted No Effect Concentration
DNEL Derived No Effect Levels
LC50 Concentration of a tested substance causing 50% lethality during a specified time interval

Literature references and sources for data:

Regulations/legislations mentioned in sections 2 – 15 of safety data sheet. ECHA webpage.

List of relevant hazard statements and/or precautionary statements, which are not written out in full under Sections 2 to 15:

Not applicable.

Advice on any training appropriate for workers to ensure protection of human health and the environment:

We recommend to familiarize personnel with standard procedures on handling chemicals.

Exposure scenario:

Not applicable - the substance is exempt from REACH registration.

Information in this safety data sheet is correct to the best of our knowledge, information and belief at the date of its publication. Information provided herein serves only as guidelines for safe work, use, processing, storage, and waste management. It cannot be considered as a warranty or quality certificate. This information applies only to specific material designated and may not be suitable for such material used in combination with any other materials or in any other manner not described in this document. The author assumes no responsibility or liability for the improper use of the information contained in this safety data sheet.