**SAFETY DATA SHEET**
According to Regulation (EC) No 1907/2006 (REACH), Annex II, with all amendments and additions, and Commission Regulation (EU) 2020/878

# PACKAGING GASES AND GAS MIXTURES

**Created:** 2023-09-25
**Version No.:** 03
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## 1. IDENTIFICATION OF THE SUBSTANCE/MIXTURE AND OF THE COMPANY/UNDERTAKING

**1.1 Product Identifier**
Substance Name: Packaging gases and gas mixtures
NC - nitrogen, carbon dioxide;
OC - oxygen, carbon dioxide;
NCO - nitrogen, carbon dioxide, and oxygen
Components: Nitrogen, carbon dioxide, oxygen (E948/E290/E941)
Component Identification:

- Chemical Name: Carbon dioxide
  - EC No.: 204-696-9
  - CAS No.: 124-38-9
  - REACH Registration No.: Not applicable (exempt under Annex V of Regulation (EC) No 1907/2006)
- Chemical Name: Nitrogen
  - EC No.: 231-787-9
  - CAS No.: 7727-37-9
  - REACH Registration No.: Not applicable (exempt under Annex V of Regulation (EC) No 1907/2006)
- Chemical Name: Oxygen
  - EC No.: 231-956-9
  - CAS No.: 7782-44-7
  - Identification No.: 008-001-00-8
  - REACH Registration No.: Not applicable (exempt under Annex V of Regulation (EC) No 1907/2006)

**1.2 Identified Uses and Uses Advised Against**
**1.2.1 Identified Uses:** Used in the food industry (for packaging and storage of dairy, meat, and other products) in accordance with (EU) No. 231/2012, which sets specifications for food additives listed in Annexes II and III of Regulation (EC) No. 1333/2008.
**1.2.2 Uses Advised Against:** None
**1.3 Supplier Information**
Manufacturer/Supplier: UAB "Gaschema"
Address: Jonalaukio k. 1, Jonavos rajono savivaldybė, LT-55295, Lithuania
Country: Republic of Lithuania
Phone No.: +370 349 56259
Website: www.gaschema.lt
Responsible Person: Z. Andriulaitienė
Email: z.andriulaitiene@gaschema.lt
**1.4 Emergency Telephone Number**
*Emergency number for Poison Information and Control Office in Lithuania:* phone: +370 5 2362052; mobile: +370 687 53378; website: http://www.apsinuodijau.lt; general Emergency Number: 112; Emergency Services Available: 24/7; Language of Assistance: Lithuanian
*Poison Control Centers in the European Economic Area:* Ireland (Dublin): +353 1 8379964; Austria (Vienna): +43 1 406 43 43; Belgium (Brussels): +32 70 245 245; Bulgaria (Sofia): +359 2 9154 409; Czech Republic (Prague): +420 224 919 293; Denmark (Copenhagen): 82 12 12 12; Estonia (Tallinn): 112; Greece (Athens): +30 10 779 3777; Iceland (Reykjavik): +354 525 111, +354 543 2222; Italy (Rome): +39 06 305 4343; Latvia (Riga): +371 704 2468; Malta (Valletta): 2425 0000; Norway (Oslo): 22 591300; Netherlands (Bilthoven): +31 30 274 88 88; France (Paris): +33 1 40 0548 48; Finland (Helsinki): +358 9 471 977; Hungary (Budapest): 06 80 20 11 99; Germany (Berlin): +49 30 19240.

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## 2. HAZARDS IDENTIFICATION

**2.1 Classification of the Substance or Mixture**
2.1.1 According to Regulation (EC) No 1272/2008:
- Liquefied oxidizing gases, H270, H280
- Liquefied gases, H280

2.1.2 Additional Information:
The full text of hazard statements is provided in Section 16.

**2.2 Label Elements**
Labeling according to Regulation (EC) No. 1272/2008:


GHS04


GHS02

Signal Word: Danger
Hazard Statements:
- **H270:** May cause or intensify fire; oxidizer.
- **H280:** Contains gas under pressure; may explode if heated.

Precautionary Statements:
- **P403:** Store in a well-ventilated place.
- **P250:** Do not subject to shock.
- **P220:** Keep away from combustible materials (for mixtures with oxygen content over 23%).
- **P244:** Keep reduction valves free from grease and oil (for mixtures with oxygen content over 23%).
- **P370+P376:** In case of fire: Stop leakage if safe to do so.

**2.3 Other Hazards**
According to Annex XIII of Regulation (EC) No 1907/2006, the PBT or vPvB assessment does not apply to inorganic substances.

## 3. COMPOSITION/INFORMATION ON INGREDIENTS

**3.1.** According to Regulation (EC) No 1907/2006, the product is classified as a mixture.
**3.2 Mixtures**
Hazardous Components:

| CAS No. | EC No. | REACH Registration No. | % (by weight) | Name | Classification (EC No. 1272/2008) |
|---|---|---|---|---|---|
| 7782-44-7 | 231-956-9 | Exempted from registration according to Annex V of Regulation (EC) No. 1907/2006. | 5 - 95 | Oxygen | Oxidizing Gas 1, H270; Pressurized Gas, H280 |
| 124-38-9 | 204-696-9 | Exempted from registration according to Annex V of Regulation (EC) No. 1907/2006. | 5 - 50 | Carbon dioxide | Pressurized Gas, H280 |
| 7727-37-9 | 231-787-9 | Exempted from registration according to Annex V of Regulation (EC) No. 1907/2006. | 50 - 95 | Nitrogen | Pressurized Gas, H280 |

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## 4. FIRST AID MEASURES

**4.1 Description of First Aid Measures**
**Inhalation:** Remove affected person to fresh air, provide oxygen if needed, and seek medical attention.
**Skin Contact:** Not applicable to gases.
**Eye Contact:** Rinse eyes thoroughly with water. Seek medical advice.
**Ingestion:** Not applicable to gases.
**4.2 Most Important Symptoms and Effects (Acute and Delayed)** No delayed effects known.
**4.3 Indication of Any Immediate Medical Attention and Special Treatment Needed** None required.

## 5. FIREFIGHTING MEASURES

**5.1 Gesinimo priemonės**
**Suitable extinguishing media:** All known extinguishing agents can be used.
**Unsuitable extinguishing media:** None.
**5.2 Special Hazards Arising from the Substance or Mixture**
Hazardous combustion products: Oxygen release may enhance combustion.
**5.3 Advice for Firefighters**
*Use self-contained breathing apparatus (SCBA) in enclosed areas. Avoid inhalation of released gases.*

## 6. ACCIDENTAL RELEASE MEASURES

**6.1 Personal Precautions, Protective Equipment, and Emergency Procedures**
*For non-emergency personnel:* Use personal protective equipment as specified in Section 8. Ensure proper ventilation.
*For emergency responders:* Use appropriate protective equipment and ensure adequate ventilation.
**6.2 Environmental Precautions**
Try to stop the gas leakage. Prevent gas from entering drains, basements, or confined spaces where accumulation may be hazardous.
**6.3 Methods and Material for Containment and Cleaning Up**
Gas cylinders should be handled carefully, and valves should be opened slowly to prevent pressure surges.
**6.4 Reference to Other Sections**
See Section 8 for personal protective equipment and Section 13 for disposal considerations.

## 7. HANDLING AND STORAGE

**7.1 Precautions for Safe Handling**
**Requirements and recommendations for use:** Do not use any lubricants. Open the cylinder valve slowly to avoid pressure surges.
**Storage requirements:** Gas cylinders must be stored in a manner that prevents exposure to significant temperature fluctuations. Storage areas must be clean, dry, well-ventilated, and free from easily flammable materials. Separate storage conditions must be maintained for different gases, as well as for empty and full cylinders.
**Limitations on the maximum quantity of the chemical substance or preparation that may be stored under specified conditions:** Not regulated.
**7.2 Conditions for safe storage, including any incompatibilities:**
Incompatible chemicals that must not be stored together: flammable and explosive substances, organic solvents, and oils must not be present.
**Requirements for the packaging of the chemical substance or mixture:** cylinders must comply with the requirements of pressure vessel regulations.

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**7.3 Specific end use(s):**
Used in the food industry (for packaging and storage of dairy, meat, and other products) in accordance with Regulation (EU) No. 231/2012, which lays down specifications for food additives listed in Annexes II and III of Regulation (EC) No. 1333/2008 of the European Parliament and of the Council.

## 8. EXPOSURE CONTROLS/PERSONAL PROTECTION

**8.1 Control Parameters**
Occupational exposure limit values: Long-term exposure limit (LTEL) – 9000 mg/m³ $CO_2$ according to the Lithuanian hygiene norm HN 23.

**8.2 Exposure Control**
Consider a work permit system, e.g., for maintenance activities. Ensure proper ventilation. Avoid oxygen-enriched environments (>23.5%). Gas detectors must be used when oxidizing gases may be released into the environment. Ensure ventilation, including appropriate local exhaust, is sufficient to prevent exceeding the occupational exposure limit. Pressurized systems should be regularly checked for leaks. Permanent sealed connections (e.g., welded pipes) are preferred. Do not eat, drink, or smoke when using the product.

**8.2.1 Appropriate engineering controls:** Supply and exhaust ventilation.

**8.2.2 Personal protective equipment (PPE):**
A risk assessment must be carried out and documented at each workplace to identify hazards related to product use and to select PPE suitable for the identified risks. Consider the recommendations below. Keep self-contained breathing apparatus easily accessible for emergency use. Select protective clothing according to the task and associated hazards.

- **Eye and face protection:** Use eye protection compliant with EN 166 when handling gases. Recommendation: EN 166 Personal Eye Protection.
- **Skin protection:** Wear work clothing.
- **Hand protection:** Wear protective gloves when handling containers. Recommendation: EN 388 Protective gloves against mechanical risks.
- **Other protection:** Wear dense cotton protective clothing (jacket, trousers) and safety footwear when handling containers. Recommendation: ISO 20345 Personal Protective Equipment.
- **Respiratory protection:** Not required.
- **Thermal hazard protection:** Not required.

**8.2.3 Environmental exposure controls:** Not required.
No specific risk management measures are required beyond good industrial hygiene and safety practices. Do not eat, drink, or smoke while using the product.

## 9. PHYSICAL AND CHEMICAL PROPERTIES

**9.1 Information on Basic Physical and Chemical Properties**

| Property | Value |
|---|---|
| Physical State, color | Colorless gas |
| Odor | Odorless |
| Important information on health, safety, and the environment: | |
| Hydrogen ion concentration value, pH: | Not applicable |
| Boiling point / boiling range: | $O_2$: -182.87°C, $N_2$: -186°C, $CO_2$: -78°C |
| Flash Point | Not applicable |
| Flammability | Non-flammable |
| Explosive Properties | None |
| Oxidizing Properties | $O_2$ is an oxidizer (for OC mixtures only) |

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| | |
|---|---|
| Density | $O_2$: 1.337 kg/m³, $N_2$: 1.17 kg/m³, $CO_2$: 1.849 kg/m³ |
| Vapor density: | not determined |
| Evaporation rate: | unknown |
| Melting/Freezing Point | $O_2$: -218°C, $N_2$: -209°C, $CO_2$: -78°C |

**9.2 Other Information**
No additional information available.

## 10. STABILITY AND REACTIVITY

**10.1 Reactivity**
Chemical stability and hazardous chemical reactions: stable under normal conditions.
**10.2 Chemical Stability**
**10.3 Possibility of Hazardous Reactions**
Need for stabilizers: not required. Exothermic reaction possibility: none.
**10.4 Conditions to Avoid:** high environmental temperature.
**10.5 Incompatible Materials:** flammable and highly flammable materials, reducers, oils, fats, when oxygen is present in the gas mixture. For additional information on compatibility, refer to ISO 11114.
**10.6 Hazardous Decomposition Products:** none.

## 11. TOXICOLOGICAL INFORMATION

**11.1 Toxicological Information (substance):** non-toxic
**11.1.1 Acute toxicity:** non-toxic.
**11.1.2 Skin corrosion and/or irritation:** does not irritate.
**11.1.3 Respiratory or skin sensitization:** none.
**11.1.4 Mutagenic effects on germ cells:** none.
**11.1.5 Carcinogenicity:** no effects identified according to IARC (International Agency for Research on Cancer).
**11.1.6 Reproductive toxicity:** none.
**11.1.7 Specific target organ toxicity (STOT) (single exposure):** not characteristic.
**11.1.8 Specific target organ toxicity (STOT) (repeated exposure):** not characteristic.
**11.1.9 Aspiration hazard:** none.

## 12. ECOLOGICAL INFORMATION

**12.1 Toxicity:** non-toxic.
**12.2 Persistence and degradability:** no data available.
**12.3 Bioaccumulative potential:** does not exhibit bioaccumulative effects.
**12.4 Mobility in soil:** no data available.
**12.5 PBT and vPvB assessment results:** No PBT or vPvB criteria assessment is conducted for inorganic substances according to Annex XIII of Regulation (EC) No 1907/2006.
**12.6 Other adverse effects:** none.

## 13. WASTE DISPOSAL

**13.1 Waste from residues:** Waste from NCO gas mixtures is classified as hazardous waste under Regulation (EC) No. 1357/2014, assigned code HP 2 "Oxidizing", hazard phrase code H270 "May cause or enhance fire; oxidizer". Waste from NCO and all other packaging gas mixtures is classified as hazardous waste under code HP 15 "Waste which may exhibit any of the above-mentioned hazardous properties that were not exhibited by the primary waste", hazard phrase EUH044 "May explode if heated in a closed container", hazard phrase codes H280 "Contains gas under pressure; may explode if heated".
It may only be released into the environment in a well-ventilated area. When releasing into the environment, regulate the release rate and avoid oils and other flammable materials. Do not dispose of in an area where material

accumulation could pose a danger. Follow the EIGA practice code Doc.30 "Gas disposal", available for download at http://www.eiga.org, for recommendations on proper disposal methods. For consultation, contact the supplier. When using cylinders, it is prohibited to fully deplete the gas; the pressure in the cylinder must not be lower than 0.5 bar.
Waste from packaging gas mixtures in Lithuania must be handled in accordance with the Waste Management Act of the Republic of Lithuania, and in other countries, according to national legislation requirements.
**13.2 Packaging Waste:** Waste from internal packaging/cylinders, tanks, and containers of NCO brand is classified as hazardous waste under Regulation (EC) No. 1357/2014. The codes for these wastes depend on the remaining amount of unremoved oxygen in the packaging waste composition. For internal packaging/cylinders, tanks, containers containing 20% oxygen, the waste is assigned code HP 2 "Oxidizing", hazard phrase code H270 "May cause or enhance fire; oxidizer". For all other brands, the code HP 15 "Waste which may exhibit any of the above-mentioned hazardous properties that were not exhibited by the primary waste" is assigned, with hazard phrase EUH044 "May explode if heated in a closed container", and hazard phrase codes H280 "Contains gas under pressure; may explode if heated".
Empty cylinders with damaged valves must be returned to the BPS cylinder filling station. When releasing gases from such cylinders, the company's approved instructions must be followed. Users of the gases supplied in cylinders must protect them from temperature, mechanical, chemical, and other types of damage. After the cylinder is fully emptied and the valve is removed, no compressed gas remains inside the cylinder. The cylinder, according to Regulation (EC) No. 1357/2014, is classified as non-hazardous waste.
Packaging waste must be transferred to waste management companies. In Lithuania, this waste must be managed in accordance with the Packaging and Packaging Waste Management Act of the Republic of Lithuania, applicable waste management rules, and in other countries – according to national legal requirements.
Until the packaging is fully emptied, the labeling as required by Regulation (EC) No. 1272/2008 may not be removed from it.

## 14. INFORMATION ON TRANSPORTATION

**14.1 UN Number:** 1956, 3156 for oxidising gases (mixtures containing more than 23% oxygen).
**14.2 UN Proper Shipping Name:** Compressed gas, N.O.S.; Compressed gases, oxidizing, N.O.S. (for mixtures with more than 23% oxygen content)
**14.3 Transport hazard class(es): 2;**
Label 2.2,
2.2, 5.1 (for mixtures with more than 23% oxygen content)




**14.4 Packaging group:** None
**14.5 Environmental hazard:** When the amount of packaging gases or gas mixtures does not exceed 1000 kg per transport unit, the ADR requirements outlined in section 1.1.3.6.3 of the 2001 revised ADR edition apply partially.
**14.6 Special precautions for users:** Avoid transporting in vehicles where the cargo space is not separated from the driver's cabin. Ensure that the vehicle driver is aware of the potential hazards of the cargo and knows what to do in case of an accident or emergency. Before transporting product containers:

- Ensure proper ventilation.
- Ensure containers are securely fastened.
- Ensure the container valve is closed and there are no leaks.

- Ensure the release valve cap or plug (if present) is properly secured.
- Ensure the valve protective device (if present) is properly fastened.

Other transportation information:
Avoid transporting in vehicles where the cargo space is not separated from the driver's cabin. Ensure that the vehicle driver is aware of the potential hazards of the cargo and knows what to do in case of an accident or emergency. Before transporting product containers:

- Ensure containers are securely fastened.
- Ensure the container valve is closed and there are no leaks.
- Ensure the release valve cap or plug (if present) is properly secured.
- Ensure the valve protective device (if present) is properly fastened.
- Ensure proper ventilation.
- Comply with applicable regulations.

**14.7 Transport of unpackaged cargo according to MARPOL 73/78 Annex II and IBC Code:**
Not applicable.

## 15. INFORMATION ON REGULATORY REQUIREMENTS

**15.1 Safety, health, and environmental legislation related to the specific chemical substance or mixture:**

- According to the European Parliament and Council Regulation (EC) No. 1272/2008 on the classification, labeling, and packaging of chemicals and mixtures, which amends and repeals directives 67/548/EEC and 1999/45/EC and partially amends Regulation (EC) No. 1907/2006;
- European Parliament and Council Regulation (EC) No. 1907/2006 concerning the registration, evaluation, authorization, and restriction of chemicals (REACH);
- COMMISSION REGULATION (EU) No. 453/2010 amending Regulation (EC) No. 1907/2006 concerning the registration, evaluation, authorization, and restriction of chemicals (REACH);
- According to COMMISSION REGULATION (EU) No. 1357/2014, amending Annex III of European Parliament and Council Directive 2008/98/EC on waste and repealing certain directives;
- Hygiene standard HN 23 "Occupational exposure limit values for chemicals. General requirements for measurement and assessment of exposure";
- Valid "Regulations on Employee Protection from Chemical Agents at Work" and "Regulations on Employee Protection from Carcinogens and Mutagens at Work";
- Hygiene standard HN 36 "Prohibited and restricted substances";
- The current "Waste Management Act of the Republic of Lithuania";
- Current "Waste Management Rules";
- Current "Rules for Labeling and Indicating Prices of Goods Sold in the Republic of Lithuania";
- Hygiene standard HN 24 "Safety and quality requirements for drinking water";
- Commission Regulation (EU) No. 231/2012 establishing specifications for food additives listed in Annexes II and III of Regulation (EC) No. 1333/2008 of the European Parliament and Council;
- Valid standard LST EN 1089-3 "Transportable gas cylinders. Identification of gas cylinders (except LPG) Part 3. Color coding";
- Valid "Temporary Rules for the Use of Seamless Cylinders";
- European Agreement concerning the International Carriage of Dangerous Goods by Road (ADR);
- Rules for the International Carriage of Dangerous Goods by Rail (RID);
- International Maritime Dangerous Goods Code (IMDG).

Information provided on the chemical substance packaging (container) label:

**15.2 Chemical safety assessment**
Since all the components of the packaging gases and gas mixtures are exempt from registration under Annex V of Regulation (EC) No. 1907/2006, a chemical safety assessment has not been performed.

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## 16. OTHER INFORMATION

Explanation of abbreviations used:

- **H270**: "May cause or increase fire, oxidizer";
- **H280**: "Contains gas under pressure, may explode if heated";
- **H281**: "Contains refrigerated gas, may cause cryogenic burns or injury";
- **P410+P403**: "Protect from sunlight. Store in a well-ventilated place";
- **P250**: "Do not strike";
- **P244**: "Ensure no grease or oil comes into contact with pressure-reducing valves";
- **P220**: "Keep/store away from flammable materials";
- **P370+P376**: "In case of fire: stop leak if safe to do so";
- **P403**: "Store in a well-ventilated place";
- **ADR**: European Agreement concerning the International Carriage of Dangerous Goods by Road;
- **RID**: International Regulations concerning the Transport of Dangerous Goods by Rail;
- **SMGS**: Agreement on International Goods Transport by Rail.

The information in this Safety Data Sheet is intended for all individuals whose work involves the chemical substance or preparation. The data reflects our current knowledge and is provided to describe the chemical product in terms of safety and health at work, as well as environmental protection. This information will be updated as new data becomes available regarding the substance's health and environmental effects, or preventative measures to reduce or completely avoid hazards. The information in this Safety Data Sheet does not disclose other properties of the chemical substance or preparation.

End of the Safety Data Sheet.