# Nitrogen Dioxide (0.0001% - 0.005%,) Oxygen (19.5 - 23.5%,) in balance Nitrogen

Safety Data Sheet 50022MSA

according to Federal Register / Vol. 77, No. 58 / Monday, March 26, 2012 / Rules and Regulations

Date of issue: 02/09/2015 Version: 1.0

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

### 1.1. Product identifier

Product form : Mixture

Product name : Nitrogen Dioxide (0.0001% - 0.005%,) Oxygen (19.5 - 23.5%,) in balance Nitrogen

MSA P/N : 710332, 711068, 711084, 808977, 10028082, 10028068, 10150599

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

Use of the substance/mixture : Test gas/Calibration gas.

### 1.3. Details of the supplier of the safety data sheet

Manufacturer:
Calgaz, divison of Air Liquide
821 Chesapeake Drive
Cambridge, MD 21613

U.S. Supplier
Mine Safety Appliances Company
100 Cranberry Woods Drive
Cranberry Township
Pennsylvania U.S.A. 16066

1-800-MSA-2222
www.msanet.com/prism

### 1.4. Emergency telephone number

Emergency number : CHEMTREC: 1-800-424-9300
Internationally: 1-703-527-3887

## SECTION 2: Hazards identification

### 2.1. Classification of the substance or mixture

**Classification (GHS-US)**

Ox. Gas 1 H270
Compressed gas H280

Full text of H-phrases: see section 16

### 2.2. Label elements

**GHS-US labeling**

Hazard pictograms (GHS-US) :

GHS03 GHS04

Signal word (GHS-US) : Danger

Hazard statements (GHS-US) : H270 - May cause or intensify fire; oxidizer
H280 - Contains gas under pressure; may explode if heated

Precautionary statements (GHS-US) : P220 - Keep/Store away from clothing, combustible materials
P244 - Keep reduction valves/valves and fittings free from oil and grease
P370+P376 - In case of fire: Stop leak if safe to do so
P403 - Store in a well-ventilated place
P410+P403 - Protect from sunlight. Store in a well-ventilated place

### 2.3. Other hazards

No additional information available

### 2.4. Unknown acute toxicity (GHS-US)

Not applicable

## SECTION 3: Composition/information on ingredients

### 3.1. Substance

Not applicable

### 3.2. Mixture

| Name | Product identifier | % | Classification (GHS-US) |
|---|---|---|---|
| Nitrogen | (CAS No) 7727-37-9 | 76.495 - 80.4999 | Compressed gas, H280 |
| Oxygen | (CAS No) 7782-44-7 | 19.5 - 23.5 | Ox. Gas 1, H270 |
| Nitrogen dioxide | (CAS No) 10102-44-0 | 0.0001 - 0.005 | Ox. Gas 1, H270<br>Liquefied gas, H280<br>Acute Tox. 1 (Inhalation:gas), H330<br>Skin Corr. 1B, H314<br>Eye Dam. 1, H318<br>STOT SE 2, H371 |

Full text of H-phrases: see section 16

## SECTION 4: First aid measures

### 4.1. Description of first aid measures

First-aid measures after inhalation : Adverse effects not expected from this product.

First-aid measures after skin contact : Adverse effects not expected from this product.

First-aid measures after eye contact : Adverse effects not expected from this product.

First-aid measures after ingestion : Ingestion is not considered a potential route of exposure.

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

Symptoms/injuries after inhalation : Adverse effects not expected from this product.

Symptoms/injuries after skin contact : Adverse effects not expected from this product.

Symptoms/injuries after eye contact : Adverse effects not expected from this product.

Symptoms/injuries after ingestion : Ingestion is not considered a potential route of exposure.

Symptoms/injuries upon intravenous administration : Not known.

Chronic symptoms : None known. Adverse effects not expected from this product.

### 4.3. Indication of any immediate medical attention and special treatment needed

If you feel unwell, seek medical advice. If breathing is difficult, give oxygen. Obtain medical attention if breathing difficulty persists.

## SECTION 5: Firefighting measures

### 5.1. Extinguishing media

Suitable extinguishing media : Use extinguishing media appropriate for surrounding fire.

Unsuitable extinguishing media : Do not use water jet to extinguish.

### 5.2. Special hazards arising from the substance or mixture

Fire hazard : The product is not flammable.

Explosion hazard : Product is not explosive. Heat may build pressure, rupturing closed containers, spreading fire and increasing risk of burns and injuries.

Reactivity : None known.

### 5.3. Advice for firefighters

Firefighting instructions : In case of fire: Evacuate area. Fight fire remotely due to the risk of explosion. Use water spray or fog for cooling exposed containers. Exercise caution when fighting any chemical fire.

Protection during firefighting : Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire fighters. Do not enter fire area without proper protective equipment, including respiratory protection.

## SECTION 6: Accidental release measures

### 6.1. Personal precautions, protective equipment and emergency procedures

General measures : Ensure adequate ventilation.

#### 6.1.1. For non-emergency personnel

Protective equipment : Wear protective equipment consistent with the site emergency plan.

Emergency procedures : Escape the danger area by the closest safe route. Close doors and windows of adjacent premises. Keep containers closed. Mark the danger area. Seal off low-lying areas. Keep upwind.

#### 6.1.2. For emergency responders

Protective equipment : Standard protective clothing and equipment (e.g., Self Contained Breathing Apparatus) for fire fighters. Equip cleanup crew with proper protection.

Emergency procedures : Evacuate and limit access. Ventilate area.

### 6.2. Environmental precautions

Try to stop release if safe to do so.

### 6.3. Methods and material for containment and cleaning up

For containment : Try to stop release if safe to do so.

Methods for cleaning up : Dispose of this material and its container in accordance with local regulations.

### 6.4. Reference to other sections

See also Sections 8 and 13.

## SECTION 7: Handling and storage

### 7.1. Precautions for safe handling

Additional hazards when processed : Pressurized container: Do not pierce or burn, even after use. Use equipment rated for cylinder pressure.

Precautions for safe handling : Do not handle until all safety precautions have been read and understood. Use only outdoors or in a well-ventilated area.

Safe handling of the gas receptacle : Protect cylinders from physical damage; do not drag, roll, slide or drop. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. Keep container valve outlets clean and free from contaminants particularly oil and water.

Safe use of the product : The substance must be handled in accordance with good industrial hygiene and safety procedures. Only experienced and properly instructed persons should handle gases under pressure. Consider pressure relief device(s) in gas installations. Ensure the complete gas system was (or is regularily) checked for leaks before use. Do not remove or deface labels provided by the supplier for the identification of the cylinder contents. 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.

Hygiene measures : Do not eat, drink or smoke when using this product.

### 7.2. Conditions for safe storage, including any incompatibilities

Technical measures : None known.

Storage conditions : Do not expose to temperatures exceeding 52°C (125°F). Keep container closed when not in use. Protect cylinder from physical damage. Store in well ventilated area.

Incompatible products : Reducing agents. None known.

Incompatible materials : Flammable materials.

Storage area : Store in a well-ventilated place. Store away from heat.

### 7.3. Specific end use(s)

Test gas/Calibration gas.

## SECTION 8: Exposure controls/personal protection

### 8.1. Control parameters

| Nitrogen Dioxide (0.0001% - 0.005%,) Oxygen (19.5 - 23.5%,) in balance Nitrogen | |
|---|---|
| ACGIH | Not applicable |
| OSHA | Not applicable |

| Nitrogen dioxide (10102-44-0) | | |
|---|---|---|
| ACGIH | ACGIH TWA (ppm) | 0.2 ppm |
| OSHA | OSHA PEL (Ceiling) (mg/m³) | 9 mg/m³ |
| OSHA | OSHA PEL (Ceiling) (ppm) | 5 ppm |

| Oxygen (7782-44-7) | |
|---|---|
| ACGIH | Not applicable |

| Oxygen (7782-44-7) | |
|---|---|
| OSHA | Not applicable |

| Nitrogen (7727-37-9) | |
|---|---|
| ACGIH | Not applicable |
| OSHA | Not applicable |

### 8.2. Exposure controls

Appropriate engineering controls : Ensure exposure is below occupational exposure limits. Provide adequate general and local exhaust ventilation. Systems under pressure should be regularly checked for leakages. Consider work permit system e.g. for maintenance activities.

Hand protection : Wear working gloves when handling gas containers. 29CFR 1910.138: Hand Protection.

Eye protection : Wear safety glasses with side shields. 29 CFR 1910.133: Eye and Face Protection.

Skin and body protection : Wear suitable protective clothing, e.g. - lab coats, coveralls or flame resistant clothing.

Respiratory protection : None necessary during normal and routine operations. See Sections 5 & 6.

Thermal hazard protection : None necessary during normal and routine operations.

Environmental exposure controls : Refer to local regulations for restriction of emissions to the atmosphere. See section 13 for specific methods for waste gas treatment.

Other information : Wear safety shoes while handling containers. 29 CFR 1910.136: Foot Protection.

## SECTION 9: Physical and chemical properties

### 9.1. Information on basic physical and chemical properties

Physical state : Gas

Appearance : Reddish brown. Clear, colorless gas.

Molecular mass : Not applicable for gas-mixtures.

Color : Reddish brown;Colorless

Odor : Pungent.;Odorless

Odor threshold : No data available

pH : Not applicable for gas-mixtures.

Relative evaporation rate (butyl acetate=1) : No data available

Relative evaporation rate (ether=1) : Not applicable for gas-mixtures.

Melting point : No data available

Freezing point : No data available

Boiling point : No data available

Flash point : No data available

Auto-ignition temperature : No data available

Decomposition temperature : No data available

Flammability (solid, gas) : See Sect. 2.1 & 2.2

Vapor pressure : Not applicable.

Relative vapor density at 20 °C : No data available

Relative density : No data available

Relative gas density : Lighter or similar to air.

Solubility : Water: Solubility in water of component(s) of the mixture :
• : • : 39 mg/l • : 20 mg/l

Log Pow : Not applicable for gas-mixtures.

Log Kow : Not applicable for gas-mixtures.

Viscosity, kinematic : Not applicable.

Viscosity, dynamic : Not applicable.

Explosive properties : Not flammable. Not applicable - not flammable.

Oxidizing properties : Supports combustion. May cause or intensify fire; oxidizer. Not combustible but enhances combustion of other substances.

Explosive limits : Not applicable - not flammable

### 9.2. Other information

Additional information : None.

## SECTION 10: Stability and reactivity

### 10.1. Reactivity

None known.

### 10.2. Chemical stability

Stable under normal conditions.

### 10.3. Possibility of hazardous reactions

May react violently with reducing agents. Can form explosive mixtures with flammable materials.

### 10.4. Conditions to avoid

Refer to Section 10 on Incompatible Materials. None under recommended storage and handling conditions (see section 7).

### 10.5. Incompatible materials

Flammable materials. Reducing agents.

### 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

Acute toxicity : Not classified

| **Nitrogen dioxide (10102-44-0)** | |
|---|---|
| LC50 inhalation rat (ppm) | 57.5 ppm/4h |
| ATE US (gases) | 10.000 ppmV/4h |
| **Oxygen (7782-44-7)** | |
| LC50 inhalation rat (ppm) | 800000 ppm/4h |
| **Nitrogen (7727-37-9)** | |
| LC50 inhalation rat (ppm) | 820000 ppm/4h |

Skin corrosion/irritation : Not classified
pH: Not applicable for gas-mixtures.

Serious eye damage/irritation : Not classified
pH: Not applicable for gas-mixtures.

Respiratory or skin sensitization : Not classified

Germ cell mutagenicity : Not classified

Carcinogenicity : Not classified

Reproductive toxicity : Not classified

Specific target organ toxicity (single exposure) : Not classified

Specific target organ toxicity (repeated exposure) : Not classified

Aspiration hazard : Not classified

Symptoms/injuries after inhalation : Adverse effects not expected from this product.

Symptoms/injuries after skin contact : Adverse effects not expected from this product.

Symptoms/injuries after eye contact : Adverse effects not expected from this product.

Symptoms/injuries after ingestion : Ingestion is not considered a potential route of exposure.

Symptoms/injuries upon intravenous administration : Not known.

Chronic symptoms : None known. Adverse effects not expected from this product.

## SECTION 12: Ecological information

### 12.1. Toxicity

Ecology - general : No ecological damage caused by this product.

### 12.2. Persistence and degradability

| Nitrogen Dioxide (0.0001% - 0.005%,) Oxygen (19.5 - 23.5%,) in balance Nitrogen | |
|---|---|
| Persistence and degradability | No data available. |

| Nitrogen dioxide (10102-44-0) | |
|---|---|
| Persistence and degradability | Not applicable for inorganic gases. |

| Oxygen (7782-44-7) | |
|---|---|
| Persistence and degradability | No ecological damage caused by this product. |

| Nitrogen (7727-37-9) | |
|---|---|
| Persistence and degradability | No ecological damage caused by this product. |

### 12.3. Bioaccumulative potential

| Nitrogen Dioxide (0.0001% - 0.005%,) Oxygen (19.5 - 23.5%,) in balance Nitrogen | |
|---|---|
| Log Pow | Not applicable for gas-mixtures. |
| Log Kow | Not applicable for gas-mixtures. |
| Bioaccumulative potential | No data available. |

| Nitrogen dioxide (10102-44-0) | |
|---|---|
| Log Pow | Not applicable for inorganic gases. |
| Bioaccumulative potential | No data available. |

| Oxygen (7782-44-7) | |
|---|---|
| Log Pow | Not applicable for inorganic gases. |
| Bioaccumulative potential | No ecological damage caused by this product. |

| Nitrogen (7727-37-9) | |
|---|---|
| Log Pow | Not applicable for inorganic gases. |
| Bioaccumulative potential | No ecological damage caused by this product. |

### 12.4. Mobility in soil

| Nitrogen Dioxide (0.0001% - 0.005%,) Oxygen (19.5 - 23.5%,) in balance Nitrogen | |
|---|---|
| Mobility in soil | No data available. |

| Nitrogen dioxide (10102-44-0) | |
|---|---|
| Ecology - soil | Because of its high volatility, the product is unlikely to cause ground or water pollution. |

| Oxygen (7782-44-7) | |
|---|---|
| Ecology - soil | No ecological damage caused by this product. |

| Nitrogen (7727-37-9) | |
|---|---|
| Ecology - soil | No ecological damage caused by this product. |

### 12.5. Other adverse effects

Effect on ozone layer : None.

Effect on the global warming : No known ecological damage caused by this product.

## SECTION 13: Disposal considerations

### 13.1. Waste treatment methods

Waste treatment methods : Contact supplier if guidance is required. 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.

Waste disposal recommendations : Refer to the CGA Pamphlet P-63 "Disposal of Gases" available at www.cganet.com for more guidance on suitable disposal methods.

## SECTION 14: Transport information

In accordance with DOT

| | | |
|---|---|---|
| Transport document description | : | UN3156 Compressed gas, oxidizing, n.o.s. (Oxygen, Nitrogen Dioxide) |
| UN-No.(DOT) | : | UN3156 |
| Proper Shipping Name (DOT) | : | Compressed gas, oxidizing, n.o.s. |
| Hazard labels (DOT) | : | 2.2 - Non-flammable gas<br>5.1 - Oxidizer |


| | | |
|---|---|---|
| DOT Symbols | : | G - Identifies PSN requiring a technical name |
| DOT Special Provisions (49 CFR 172.102) | : | A14 - This material is not authorized to be transported as a limited quantity or consumer commodity in accordance with 173.306 of this subchapter when transported aboard an aircraft. |
| DOT Packaging Exceptions (49 CFR 173.xxx) | : | 306 |
| DOT Packaging Non Bulk (49 CFR 173.xxx) | : | 302 |
| DOT Packaging Bulk (49 CFR 173.xxx) | : | 314;315 |
| DOT Quantity Limitations Passenger aircraft/rail (49 CFR 173.27) | : | 75 kg |
| DOT Quantity Limitations Cargo aircraft only (49 CFR 175.75) | : | 150 kg |
| DOT Vessel Stowage Location | : | D - The material must be stowed ‘‘on deck only’’ on a cargo vessel and on a passenger vessel carrying a number of passengers limited to not more than the larger of 25 passengers or one passenger per each 3 m of overall vessel length, but the material is prohibited on passenger vessels in which the limiting number of passengers is exceeded. |

### Additional information

| | | |
|---|---|---|
| Other information | : | No supplementary information available. |
| 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. |

### ADR

| | | |
|---|---|---|
| Transport document description | : | UN 3156 COMPRESSED GAS, OXIDIZING, N.O.S., 2.2 (5.1), (E) |
| Class (ADR) | : | 2 - Gases |
| Hazard identification number (Kemler No.) | : | 25 |
| Classification code (ADR) | : | 10 |
| Hazard labels (ADR) | : | 2.2 - Non-flammable compressed gas<br>5.1 - Oxidizer |


| | | |
|---|---|---|
| Tunnel restriction code (ADR) | : | E |
| LQ | : | 0 |
| Excepted quantities (ADR) | : | E0 |

### Transport by sea

| | | |
|---|---|---|
| UN-No. (IMDG) | : | 3156 |
| Proper Shipping Name (IMDG) | : | COMPRESSED GAS, OXIDIZING, N.O.S. |
| Class (IMDG) | : | 2.2 - Non-flammable, non-toxic gases |

### Air transport

| | | |
|---|---|---|
| UN-No.(IATA) | : | 3156 |
| Proper Shipping Name (IATA) | : | COMPRESSED GAS, OXIDIZING, N.O.S. |
| Class (IATA) | : | 2 |

## SECTION 15: Regulatory information

### 15.1. US Federal regulations

| **Nitrogen dioxide (10102-44-0)** | |
|---|---|
| Listed on the United States TSCA (Toxic Substances Control Act) inventory<br>Listed on the United States SARA Section 302 | |
| SARA Section 302 Threshold Planning Quantity (TPQ) | 100 |

| **Oxygen (7782-44-7)** |
|---|
| Listed on the United States TSCA (Toxic Substances Control Act) inventory |

| **Nitrogen (7727-37-9)** |
|---|
| Listed on the United States TSCA (Toxic Substances Control Act) inventory |

### 15.2. International regulations

#### CANADA

| **Nitrogen dioxide (10102-44-0)** | |
|---|---|
| Listed on the Canadian DSL (Domestic Sustances List) | |
| WHMIS Classification | Class A - Compressed Gas<br>Class C - Oxidizing Material<br>Class D Division 1 Subdivision A - Very toxic material causing immediate and serious toxic effects<br>Class D Division 2 Subdivision B - Toxic material causing other toxic effects<br>Class E - Corrosive Material |

| **Oxygen (7782-44-7)** | |
|---|---|
| Listed on the Canadian DSL (Domestic Sustances List) | |
| WHMIS Classification | Class A - Compressed Gas<br>Class C - Oxidizing Material |

| **Nitrogen (7727-37-9)** | |
|---|---|
| Listed on the Canadian DSL (Domestic Sustances List) | |
| WHMIS Classification | Class A - Compressed Gas |

#### EU-Regulations

| **Nitrogen dioxide (10102-44-0)** |
|---|
| Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) |

| **Oxygen (7782-44-7)** |
|---|
| Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) |

| **Nitrogen (7727-37-9)** |
|---|
| Listed on the EEC inventory EINECS (European Inventory of Existing Commercial Chemical Substances) |

#### Classification according to Regulation (EC) No. 1272/2008 [CLP]

Not classified

#### Classification according to Directive 67/548/EEC [DSD] or 1999/45/EC [DPD]

#### 15.2.2. National regulations

| **Nitrogen dioxide (10102-44-0)** |
|---|
| Listed on the AICS (Australian Inventory of Chemical Substances)<br>Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China)<br>Listed on the Japanese ENCS (Existing & New Chemical Substances) inventory<br>Listed on the Korean ECL (Existing Chemicals List)<br>Listed on NZIoC (New Zealand Inventory of Chemicals)<br>Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances)<br>Listed on the Canadian IDL (Ingredient Disclosure List) |

| Oxygen (7782-44-7) |
|---|
| Listed on the AICS (Australian Inventory of Chemical Substances) |
| Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) |
| Listed on the Korean ECL (Existing Chemicals List) |
| Listed on NZIoC (New Zealand Inventory of Chemicals) |
| Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) |

| Nitrogen (7727-37-9) |
|---|
| Listed on the AICS (Australian Inventory of Chemical Substances) |
| Listed on IECSC (Inventory of Existing Chemical Substances Produced or Imported in China) |
| Listed on the Korean ECL (Existing Chemicals List) |
| Listed on NZIoC (New Zealand Inventory of Chemicals) |
| Listed on PICCS (Philippines Inventory of Chemicals and Chemical Substances) |

### 15.3. US State regulations

| Nitrogen dioxide (10102-44-0) |
|---|
| U.S. - Massachusetts - Right To Know List |
| U.S. - New Jersey - Right to Know Hazardous Substance List |
| U.S. - Pennsylvania - RTK (Right to Know) - Environmental Hazard List |
| U.S. - Pennsylvania - RTK (Right to Know) List |

| Oxygen (7782-44-7) |
|---|
| U.S. - Massachusetts - Right To Know List |
| U.S. - New Jersey - Right to Know Hazardous Substance List |
| U.S. - Pennsylvania - RTK (Right to Know) List |

| Nitrogen (7727-37-9) |
|---|
| U.S. - Massachusetts - Right To Know List |
| U.S. - New Jersey - Right to Know Hazardous Substance List |
| U.S. - Pennsylvania - RTK (Right to Know) List |

## SECTION 16: Other information

Indication of changes : Revised safety data sheet in accordance with OSHA final rule on GHS implementation promulgated March 26, 2012.

Other information : This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this product.

Full text of H-phrases:

| | |
|---|---|
| Acute Tox. 1 (Inhalation:gas) | Acute toxicity (inhalation:gas) Category 1 |
| Compressed gas | Gases under pressure Compressed gas |
| Eye Dam. 1 | Serious eye damage/eye irritation Category 1 |
| Liquefied gas | Gases under pressure Liquefied gas |
| Ox. Gas 1 | Oxidizing gases Category 1 |
| Skin Corr. 1B | Skin corrosion/irritation Category 1B |
| STOT SE 2 | Specific target organ toxicity (single exposure) Category 2 |
| H270 | May cause or intensify fire; oxidizer |
| H280 | Contains gas under pressure; may explode if heated |
| H314 | Causes severe skin burns and eye damage |
| H318 | Causes serious eye damage |
| H330 | Fatal if inhaled |
| H371 | May cause damage to organs |

SDS US (GHS HazCom 2012)

*This Safety Data Sheet is offered pursuant to OSHA's Hazard Communication Standard, 29 CFR, 1910.1200. Other government regulations must be reviewed for applicability to this gas mixture. To the best of Calgaz's knowledge, the information contained herein is reliable and accurate as of this date; however, accruacy, suitability or completeness are not guaranteed and no warranties of any type, either express or implied, are provided. The information contained herein relates only to this specific product. If this gas mixture is combined with other materials, all component properties must be considered. Data may be changed from time to time. Be sure to consult the latest edition.*