

Material Safety Data Sheet

Printing date 04/16/2007

Version 2

Reviewed on 04/16/2007

1 Identification of substance

· **Product details**

· **Trade name:** Nitric Oxide

· **Article number:** 047-01-0022BOC

· **Creation date:** 08/16/2006

· **Manufacturer/Supplier:**

BOC Canada Limited

5860 Chedworth Way

Mississauga, Ontario L5R 0A2

www.bocgases.ca

TELEPHONE NUMBER: (905) 501-1700

24-HOUR EMERGENCY TELEPHONE NUMBER: (905) 501-0802

EMERGENCY RESPONSE PLAN NO: 2-0101

Please ensure that this MSDS is received by the appropriate person

· **Information department:** Customer Service Centre: 1-866-385-5349

2 Composition/Data on components

· **Chemical characterization:**

· **CAS No. Description**

10102-43-9 Nitric Oxide

· **Identification number(s)**

· **EINECS Number:** 233-271-0

· **EU Number:** 007-002-00-0

3 Hazards identification

· **Hazard description:**



Toxic
Corrosive
Oxidizing

· **WHMIS-symbols:**

A - Compressed gas

C - Oxidizing materials

D1B - Toxic material causing immediate and serious toxic effects



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· HMIS-ratings (scale 0 - 4)

HEALTH	4	Health = 4
FIRE	3	Fire = 3
REACTIVITY	0	Reactivity = 0

· NFPA ratings (scale 0 - 4)

4	3	0
OX		

Health = 4
 Fire = 3
 Reactivity = 0

· Information pertaining to particular dangers for man and environment:

Contact with combustible material may cause fire.

Toxic by inhalation.

Causes severe burns.

· Classification system:

The classification is in line with internationally approved calculation standards. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

* 4 First aid measures

· General information:

Immediately remove any clothing soiled by the product.

Remove breathing apparatus only after contaminated clothing have been completely removed.

In case of irregular breathing or respiratory arrest provide artificial respiration.

· After inhalation:

Supply fresh air or oxygen; call for doctor.

In case of unconsciousness place patient stably on the body side position.

· **After skin contact:** Immediately wash with water and soap and rinse thoroughly.

· **After eye contact:** Rinse opened eye for several minutes under running water. Then consult a doctor.

· **After swallowing:** Not applicable

* 5 Fire fighting measures

· Suitable extinguishing agents:

CO₂, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.

· **Protective equipment:** Wear self-contained respiratory protective device.

* 6 Accidental release measures

· Person-related safety precautions:

Wear protective equipment. Keep unprotected persons away.

Ensure adequate ventillation.

Stop leak - ONLY if possible to do so without risk.

· Measures for environmental protection:

Prevent seepage into sewage system, workpits and/or cellars.

In case of gas release or seepage into the ground inform responsible authorities.

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- **Measures for cleaning/collecting:**
Use neutralizing agent.
Dispose contaminated material as waste according to item 13.
Ensure adequate ventilation.

* 7 Handling and storage

- **Handling:**
- **Information for safe handling:**
Ensure good ventilation/exhaustion at the workplace.
Open and handle cylinder with care.
Handle with care. Avoid jolting, friction, and impact.
Use only in well ventilated areas.
Store cylinders upright with valve protection cap in place and firmly secured to prevent falling or being knocked over.
If difficulty with operating cylinder valve is experienced discontinue use and contact supplier.
- **Information about protection against explosions and fires:**
Keep ignition sources away - Do not smoke.
Keep respiratory protective device available.
Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C. Do not pierce or burn, even after use.
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**
Do not expose cylinder to temperatures higher than 50°C (122 °F)
- **Information about storage in one common storage facility:**
Sources of ignition should be removed from storage area.
Store separately from cylinders containing flammables by a minimum distance of 20' or by a barrier of non-combustible material at least 5' high having a fire resistant rating of at least 30minutes.
- **Further information about storage conditions:**
Keep cylinder valve tightly closed.
Store cylinder in a well ventilated area.
Store in accordance with local fire code and/or building code or any pertaining regulations.

* 8 Exposure controls and personal protection

- **Additional information about design of technical systems:**
Adequate local ventilation.
Safety showers and eyewash stations should be nearby.
- **Components with limit values that require monitoring at the workplace:**

10102-43-9 Nitric Oxide (23-100%)	
EL	25 ppm
- **Additional information:** The lists that were valid during the creation were used as basis.
- **Personal protective equipment:**
- **General protective and hygienic measures:**
Keep away from foodstuffs, beverages and feed.
Immediately remove all soiled and contaminated clothing.
Wash hands before breaks and at the end of work.

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Store protective clothing separately.
 Avoid contact with the eyes and skin.
 Protective clothing should be kept free of oil and grease.
 PPE should be inspected and maintained regularly to retain its effectiveness.

· **Breathing equipment:**

Use atmosphere-supplying respirators (e.g. supplied-air: demand, pressure-demand, or continuous-flow or self-contained breathing apparatus: demand or pressure-demand or combination supplied-air with auxiliary self-contained air supply atmosphere-supplying respirator) in case of insufficient ventilation.

· **Protection of hands:**



Protective gloves.

· **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

· **Eye protection:** Safety glasses

9 Physical and chemical properties

· **General Information**

Form:	Gaseous.
Color:	Colorless
Odor:	Odorless

· **Change in condition**

Melting point/Melting range:	-163.6°C
Boiling point/Boiling range:	-151°C

· **Flash point:** Not applicable.

· **Flammability (solid, gaseous):** Contact with combustible material may cause fire.

· **Danger of explosion:** Explosive when mixed with combustible material.

10 Stability and reactivity

· **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.

· **Dangerous reactions** No dangerous reactions known.

· **Dangerous products of decomposition:**

In case of fire or thermal decomposition fumes of toxic nitrogen oxides are formed.

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11 Toxicological information

· **Acute toxicity:**

· **LD/LC50 values that are relevant for classification:**

10102-43-9 Nitric Oxide

Inhalative	LC50/1hr	115 ppm (rat)
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· **Primary irritant effect:**

· **on the skin:** Strong caustic effect on skin and mucous membranes.

· **on the eye:** Strong caustic effect.

· **Sensitization:** No sensitizing effects known.

· **Additional toxicological information:**

Swallowing will lead to a strong caustic effect on mouth and throat and to the danger of perforation of esophagus and stomach.

12 Ecological information

· **General notes:** Must not reach bodies of water or drainage ditch undiluted or unneutralized.

13 Disposal considerations

· **Product:**

· **Recommendation:**

Cylinder and unused product should be returned to vendor. Disposable cylinder must be disposed of in accordance with local regulations.

· **Uncleaned packagings:**

· **Recommendation:**

Cylinder and unused product should be returned to vendor. Disposable cylinder must be disposed of in accordance with local regulations.

· **Recommended cleansing agent:** None applicable.

14 Transport information

· **TDG and DOT regulations:**



· **Hazard class:**

2

· **Identification number:**

UN1660

· **Packing group:**

-

· **Proper shipping name (technical name):** NITRIC OXIDE, COMPRESSED

· **Label**

2.3+5.1+8

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· **Packaging group:** -

· **Maritime transport IMDG:**



· **IMDG Class:** 2.3
 · **UN Number:** 1660
 · **Label:** 2.3+5.1+8
 · **Packaging group:** -
 · **EMS Number:** F-C,S-W
 · **Marine pollutant:** No
 · **Propper shipping name:** NITRIC OXIDE, COMPRESSED

· **Air transport ICAO-TI and IATA-DGR:**



· **ICAO/IATA Class:** 2
 · **UN/ID Number:** 1660
 · **Label:** 2.3+5.1+8
 · **Packaging group:** -
 · **Propper shipping name:** NITRIC OXIDE, COMPRESSED

15 Regulations

· **Sara**

· **Section 355 (extremely hazardous substances):**

Substance is listed.

· **Section 313 (Specific toxic chemical listings):**

Substance is not listed.

· **TSCA (Toxic Substances Control Act):**

Substance is listed.

· **Proposition 65**

· **Chemicals known to cause cancer:**

Substance is not listed.

· **Chemicals known to cause reproductive toxicity for females:**

Substance is not listed.

· **Chemicals known to cause reproductive toxicity for males:**

Substance is not listed.

· **Chemicals known to cause developmental toxicity:**

Substance is not listed.

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· Cancerogenity categories**· EPA (Environmental Protection Agency)**

Substance is not listed.

· NTP (National Toxicology Program)

Substance is not listed.

· TLV (Threshold Limit Value established by ACGIH)

Substance is not listed.

· NIOSH-Ca (National Institute for Occupational Safety and Health)

Substance is not listed.

· OSHA-Ca (Occupational Safety & Health Administration)

Substance is not listed.

· Canadian substance listings:**· Canadian Domestic Substances List (DSL)**

Substance is listed.

· Canadian Ingredient Disclosure list (limit 0.1%)

Substance is not listed.

· Canadian Ingredient Disclosure list (limit 1%)

Substance is listed.

· Product related hazard informations:

The product was classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations.

· Hazard symbols:

Toxic
Corrosive
Oxidizing

· Risk phrases:

Contact with combustible material may cause fire.
Toxic by inhalation.
Causes severe burns.

· Safety phrases:

Wear suitable protective clothing.
In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

· **Department issuing MSDS:** Customer Service Centre: 1-866-385-5349

· **Contact:** Canada Technical Services: 1-866-385-5349

· *** Data compared to the previous version altered.**