



# SAFETY DATA SHEET

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Date : 24 / 5 / 2011

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## Nitrogen dioxide - Dinitrogen tetroxide

090



2.3 : Toxic gas.



5.1 : Oxidizing substances.



8 : Corrosive substance.

**Danger**



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

**Product identifier**  
**Trade name** : Nitrogen dioxide - Dinitrogen tetroxide  
**SDS Nr** : 090  
**Chemical description** : Nitrogen dioxide  
CAS No :010102-44-0  
EC No :233-272-6  
Index No :007-002-00-0  
**Chemical formula** : NO<sub>2</sub>  
**Registration-No.** : Registration deadline not expired.  
**Use** : Industrial and professional. Perform risk assessment prior to use.  
**Company identification** : SOL SpA  
Via G. Borgazzi 27  
20900 MONZA Italia  
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email: info@sol.it | <http://www.sol.it/msds2/msds.asp>  
**E-Mail address (competent person):** : msds@sol.it  
**Emergency telephone number** : +39.089.301.810

### 2 Hazards identification

#### Classification of the substance or mixture

**Hazard Class and Category Code**  
**Regulation EC 1272/2008 (CLP)**

- **Physical hazards** : Oxidizing gases - Category 1 - Danger (H270)  
Gases under pressure - Liquefied gas - Warning (H280)

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### 2 Hazards identification (continued)

- **Health hazards** : Acute toxicity, Inhalation - Category 1 - Danger (H330)  
Skin corrosion - Category 1B - Danger (H314)  
STOT SE : Corrosive to respiratory tract. (EUH071)

**Classification EC 67/548 or EC 1999/45** : T+; R26  
C; R34

### Label elements

Labelling Regulation EC 1272/2008 (CLP)

- **Hazard pictograms**



- **Hazard pictograms code** : GHS06 - GHS03 - GHS05 - GHS04
- **Signal word** : Danger
- **Hazard statements** : H330 : Fatal if inhaled.  
H270 : May cause or intensify fire; oxidiser.  
H314 : Causes severe skin burns and eye damage.  
H280 : Contains gas under pressure; may explode if heated.
- **Supplemental hazard information** : EUH071 : Corrosive to the respiratory tract.
- **Precautionary statements**
  - **Prevention** : P260 : Do not breathe gas, vapours.  
P280 : Wear protective gloves/protective clothing/eye protection/face protection.  
P244 : Keep valves and fittings free from oil and grease  
P220 : Keep/Store away from clothing/.../combustible materials.
  - **Response** : P304+P340+P315 : IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing. Get immediate medical advice / attention.  
P303+P361+P353+P315 : IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower. Get immediate medical advice / attention.  
P305+P351+P338+P315 : IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Get immediate medical advice / attention.  
P370+P376 : In case of fire: Stop leak if safe to do so.
  - **Storage** : P405 : Store locked up.  
P403 : Store in a well-ventilated place.

### Other hazards

**Other hazards** : None.

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### 3 Composition/information on ingredients

**Substance / Mixture** : Substance.

Substance name	Contents	CAS No	EC No	Index No	Registration no	Classification
Nitrogen dioxide	:	10102-44-0	233-272-6	007-002-00-0	NOTE 2	O: R8 T+: R26 C: R34  Acute Tox. 1 (H330) Ox. Gas 1 (H270) Skin Corr. 1B (H314) EUH071 Liq. Gas (H280)

Contains no other components or impurities which will influence the classification of the product.

Note 1: Listed in Annex IV / V REACH, exempted from registration.

Note 2: Registration deadline not expired.

Full text of R-phrases see chapter 16

### 4 First aid measures

#### First aid measures

**Indication of any immediate medical attention and special treatment needed** : Obtain emergency medical attention.**- Inhalation** : Remove victim to uncontaminated area wearing self contained breathing apparatus. Keep victim warm and rested. Call a doctor. Apply artificial respiration if breathing stopped.**- Skin/eye contact** : Immediately flush eyes thoroughly with water for at least 15 minutes. Remove contaminated clothing. Drench affected area with water for at least 15 minutes. Obtain medical assistance.**- Ingestion** : Ingestion is not considered a potential route of exposure.**Most important symptoms and effects, both acute and delayed** : Very toxic by inhalation.

May cause chemical burns to skin and cornea (with temporary disturbance to vision).

### 5 Fire-fighting measures

#### Extinguishing media

**- Suitable extinguishing media** : All known extinguishants can be used.**- Unsuitable extinguishing media** : None.

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

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### 5 Fire-fighting measures (continued)

- **Specific hazards** : Supports combustion.  
Exposure to fire may cause containers to rupture/explode.
- **Hazardous combustion products** : None that are more toxic than the product itself.

#### Advice for fire-fighters

- **Specific methods** : If possible, stop flow of product.  
Move away from the container and cool with water from a protected position.
- **Special protective equipment for fire fighters** : Use self-contained breathing apparatus and chemically protective clothing.

### 6 Accidental release measures

- Personal precautions, protective equipment and emergency procedures** : Evacuate unnecessary personnel.  
Ensure adequate air ventilation.  
Eliminate ignition sources.  
Use self-contained breathing apparatus and chemically protective clothing.
- Environmental precautions** : Try to stop release.  
Reduce vapour with fog or fine water spray.  
Prevent from entering sewers, basements and workpits, or any place where its accumulation can be dangerous.
- Methods and material for containment and cleaning up** : Ventilate area.  
Wash contaminated equipment or sites of leaks with copious quantities of water.  
Hose down area with water.

### 7 Handling and storage

- Precautions for safe handling** : Use no oil or grease.  
Open valve slowly to avoid pressure shock.  
Do not allow backfeed into the container.  
Refer to supplier's container handling instructions.  
Suck back of water into the container must be prevented.  
Use only properly specified equipment which is suitable for this product, its supply pressure and temperature. Contact your gas supplier if in doubt.
- Conditions for safe storage, including any incompatibilities** : Segregate from flammable gases and other flammable materials in store.  
Keep container below 50°C in a well ventilated place.
- Specific end use(s)** : Not established.

### 8 Exposure controls/personal protection

#### Control parameters

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#### 8 Exposure controls/personal protection (continued)

- Occupational Exposure Limits** : Nitrogen dioxide : TLV<sup>©</sup> -TWA [ppm] : 3  
Nitrogen dioxide : TLV<sup>©</sup> -STEL [ppm] : 5
- Recommended monitoring procedures** : Ensure adequate ventilation. Alarmed detectors should be used when toxic quantities may be released.
- Exposure controls**
- General** : Keep suitable chemically resistant protective clothing readily available for emergency use.  
Keep self contained breathing apparatus readily available for emergency use.  
Do not smoke while handling product.  
Ensure adequate ventilation.  
Protect eyes, face and skin from liquid splashes.
- Respiratory protection** : No special respiratory protection equipment is recommended under normal conditions of use with adequate ventilation.
- Hand protection** : Wear suitable gloves.
- Skin protection** : Skin protection appropriate to the conditions of use should be provided.
- Eye protection** : Even though no eye contact is expected under reasonable normal conditions of use, appropriate eye protection should be worn when handling this material.

#### 9 Physical and chemical properties

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

- Physical state at 20 °C** : Gas.
- Colour** : Brownish gas.
- Odour** : Poor warning properties at low concentrations.
- Molecular weight** : 46
- Melting point [°C]** : -11.2
- Boiling point [°C]** : 21.1
- Critical temperature [°C]** : 158
- Vapour pressure [20°C]** : 1 bar
- Relative density, gas (air=1)** : 2.8
- Relative density, liquid (water=1)** : 1.4
- Solubility in water [mg/l]** : No reliable data available.
- Flammability range [vol% in air]** : Oxidiser.
- Auto-ignition temperature [°C]** : Not applicable.

##### Other information

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#### 9 Physical and chemical properties (continued)

**Other data** : Gas/vapour heavier than air. May accumulate in confined spaces, particularly at or below ground level.

#### 10 Stability and reactivity

**Reactivity** : Oxidant. Strongly supports combustion. May react violently with combustible materials.

**Chemical stability** : Stable under normal conditions.

**Possibility of hazardous reactions** : Reacts with water to form corrosive acids.  
May react violently with combustible materials.  
May react violently with reducing agents.  
Violently oxidises organic material.  
May react violently with alkalis.

**Conditions to avoid** : Keep away from heat/sparks/open flames/hot surfaces. – No smoking.

**Incompatible materials** : Grease. Oil. Reducing agents, alkalis, finely divided metals. Moisture. Water.

**Hazardous decomposition products** : None that are more toxic than the product itself.

#### 11 Toxicological information

##### Information on toxicological effects

**Inhalation** : Delayed fatal pulmonary oedema possible.  
Severe corrosion to skin, eyes and respiratory tract at high concentrations.

**Dermal** : Corrosive to eyes and skin.

**Ocular** : Corrosive to eyes and skin.

**Ingestion** : Ingestion is not considered a potential route of exposure.

**Rat inhalation LC50 [ppm/4h]** : 57.5

#### 12 Ecological information

##### Ecological effects information

**Toxicity** : May cause pH changes in aqueous ecological systems.

**Persistence and degradability** : Not established.

**Bioaccumulative potential** : Not established.

**Mobility in soil** : Not established.

**Results of PBT and vPvB assessment** : Not applicable.

**Other adverse effects**

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### 13 Disposal considerations

#### Waste treatment methods

- General** : Avoid discharge to atmosphere.  
Gas may be scrubbed in alkaline solution under controlled conditions to avoid violent reaction.  
Do not discharge into any place where its accumulation could be dangerous.  
Contact supplier if guidance is required.
- Disposal method** : Consult supplier for specific recommendations.

### 14 Transport information

- UN number : 1067  
- Labelling ADR, IMDG, IATA



- : 5.1 : Oxidizing substances.  
2.3 : Toxic gas.  
8 : Corrosive substance.

#### Land transport

- ADR/RID**
- H.I. nr : 265  
- UN proper shipping name : DINITROGEN TETROXIDE (NITROGEN DIOXIDE)  
- Transport hazard class(es) : 2  
- ADR/RID Classification code : 2 TOC  
- Packing Instruction(s) - General : P200  
- Tunnel Restriction : C/D : Passage forbidden through tunnels of category C when carried in tanks.  
Passage forbidden through tunnels of category D and E.

#### Sea transport

- IMO-IMDG code**
- Proper shipping name : DINITROGEN TETROXIDE (NITROGEN DIOXIDE)  
- Class : 2.3  
- IMO Packing group : P200  
- IMDG-Marine pollution : NO  
- Emergency Schedule (EmS) - Fire : F-C

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### 14 Transport information (continued)

- Emergency Schedule (EmS) - Spillage : S-W

- Instructions - Packing : P200

#### Air transport

#### ICAO/IATA

- Proper shipping name : DINITROGEN TETROXIDE (NITROGEN DIOXIDE)

- Class : 2.3

- Passenger and Cargo Aircraft : DO NOT LOAD IN PASSENGER AIRCRAFT.

- Cargo Aircraft only : FORBIDDEN.

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 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.
- Ensure there is adequate ventilation.
- Compliance with applicable regulations.

### 15 Regulatory information

**Safety, health and environmental regulations/legislation specific for the substance or mixture** : Ensure all national/local regulations are observed.

**Seveso regulation 96/82/EC** : Listed

### 16 Other information

**List of full text of R-phrases in section 3.** : R8 : Contact with combustible material may cause fire.  
R26 : Very toxic by inhalation.  
R34 : Causes burns.

This Safety Data Sheet has been established in accordance with the applicable European Directives and applies to all countries that have translated the Directives in their national laws.

**DISCLAIMER OF LIABILITY** : Before using this product in any new process or experiment, a thorough material compatibility and safety study should be carried out. Whilst proper care has been taken in the preparation of this document, no liability for injury or damage resulting from its use can be accepted.  
Details given in this document are believed to be correct at the time of going to press.

End of document

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