

# SAFETY DATA SHEET

Version 8.7  
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## SECTION 1: Identification of the substance/mixture and of the company/undertaking

### 1.1 Product identifiers

Product name : Nitromethane for synthesis

Product Number : 8.20894  
Catalogue No. : 820894  
Brand : Sigma-Aldrich  
Index-No. : 609-036-00-7  
CAS-No. : 75-52-5

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

Identified uses : Chemical for synthesis

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

Company : SIGMA-ALDRICH CANADA LTD.  
2149 WINSTON PARK DRIVE  
OAKVILLE ON L6H 6J8  
CANADA

Telephone : +1 905 829-9500  
Fax : +1 905 829-9292

### 1.4 Emergency telephone

Emergency Phone # : 800-424-9300 CHEMTREC (USA)  
+1-703-527-3887 CHEMTREC  
(International)  
24 Hours/day; 7 Days/week

## SECTION 2: Hazards identification

### 2.1 Classification of the substance or mixture

#### GHS Classification in accordance with Hazardous Products Regulations (HPR) (SOR/2015-17)

Flammable liquids (Category 3), H226  
Acute toxicity, Oral (Category 4), H302  
Acute toxicity, Inhalation (Category 4), H332  
Carcinogenicity (Category 2), H351  
Reproductive toxicity (Category 2), H361  
Physical hazards not otherwise classified (Category 1)

For the full text of the H-Statements mentioned in this Section, see Section 16.

### 2.2 GHS Label elements, including precautionary statements

Pictogram



Signal word

Danger

Hazard statement(s)

H226 Flammable liquid and vapor.  
H302 + H332 Harmful if swallowed or if inhaled.  
H351 Suspected of causing cancer.  
H361 Suspected of damaging fertility or the unborn child.

Precautionary statement(s)

P201 Obtain special instructions before use.  
P202 Do not handle until all safety precautions have been read and understood.  
P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.  
P233 Keep container tightly closed.  
P240 Ground and bond container and receiving equipment.  
P241 Use explosion-proof electrical/ ventilating/ lighting/ equipment.  
P242 Use non-sparking tools.  
P243 Take action to prevent static discharges.  
P261 Avoid breathing dust/ fume/ gas/ mist/ vapors/ spray.  
P264 Wash skin thoroughly after handling.  
P270 Do not eat, drink or smoke when using this product.  
P271 Use only outdoors or in a well-ventilated area.  
P280 Wear protective gloves/ protective clothing/ eye protection/ face protection.  
P301 + P312 + P330 IF SWALLOWED: Call a POISON CENTER/ doctor if you feel unwell. Rinse mouth.  
P303 + P361 + P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water.  
P304 + P340 + P312 IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor if you feel unwell.  
P308 + P313 IF exposed or concerned: Get medical advice/ attention.  
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.  
P403 + P235 Store in a well-ventilated place. Keep cool.  
P405 Store locked up.  
P501 Dispose of contents/ container to an approved waste disposal plant.

### 2.3 Hazards not otherwise classified (HNOC) or not covered by GHS

- none

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## SECTION 3: Composition/information on ingredients

### 3.1 Substances

Formula : CH<sub>3</sub>NO<sub>2</sub>  
Molecular weight : 61.04 g/mol  
CAS-No. : 75-52-5  
EC-No. : 200-876-6  
Index-No. : 609-036-00-7

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| Component           | Classification  | Concentration * |
|---------------------|---|-----------------|
| <b>nitromethane</b> |   |                 |
|                     | Flam. Liq. 3; Acute Tox. 4;<br>Carc. 2; Repr. 2; PHNOC<br>1; H226, H302, H332,<br>H351, H361, | <= 100 %        |
| * Weight %          |   |                 |

For the full text of the H-Statements mentioned in this Section, see Section 16.

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## SECTION 4: First aid measures

### 4.1 Description of first-aid measures

#### General advice

Show this material safety data sheet to the doctor in attendance.

#### If inhaled

After inhalation: fresh air. Immediately call in physician. If breathing stops: immediately apply artificial respiration, if necessary also oxygen.

#### In case of skin contact

In case of skin contact: Take off immediately all contaminated clothing. Rinse skin with water/ shower. Consult a physician.

#### In case of eye contact

After eye contact: rinse out with plenty of water. Call in ophthalmologist. Remove contact lenses.

#### If swallowed

After swallowing: immediately make victim drink water (two glasses at most). Consult a physician.

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

The most important known symptoms and effects are described in the labelling (see section 2.2) and/or in section 11

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

No data available

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## SECTION 5: Firefighting measures

### 5.1 Extinguishing media

#### Suitable extinguishing media

Water Foam Carbon dioxide (CO<sub>2</sub>) Dry powder

#### Unsuitable extinguishing media

For this substance/mixture no limitations of extinguishing agents are given.

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

Carbon oxides

Nitrogen oxides (NO<sub>x</sub>)

Combustible.

Avoid shock and friction.

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Explosive decomposition possible on heating.  
Vapors are heavier than air and may spread along floors.  
Forms explosive mixtures with air at elevated temperatures.  
Development of hazardous combustion gases or vapours possible in the event of fire.

### **5.3 Advice for firefighters**

Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

### **5.4 Further information**

Remove container from danger zone and cool with water. Suppress (knock down) gases/vapors/mists with a water spray jet. Prevent fire extinguishing water from contaminating surface water or the ground water system.

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## **SECTION 6: Accidental release measures**

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

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact. Ensure adequate ventilation. Keep away from heat and sources of ignition. Evacuate the danger area, observe emergency procedures, consult an expert. For personal protection see section 8.

### **6.2 Environmental precautions**

Do not let product enter drains. Risk of explosion.

### **6.3 Methods and materials for containment and cleaning up**

Cover drains. Collect, bind, and pump off spills. Observe possible material restrictions (see sections 7 and 10). Take up with liquid-absorbent material (e.g. Chemizorb® ). Dispose of properly. Clean up affected area.

### **6.4 Reference to other sections**

For disposal see section 13.

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## **SECTION 7: Handling and storage**

### **7.1 Precautions for safe handling**

#### **Advice on safe handling**

Work under hood. Do not inhale substance/mixture. Avoid generation of vapours/aerosols.

#### **Advice on protection against fire and explosion**

Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

#### **Hygiene measures**

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance. For precautions see section 2.2.

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

Recommended storage temperature see product label.

#### **Storage class**

Storage class (TRGS 510): 4.1A: Other explosive hazardous materials

### **7.3 Specific end use(s)**

Apart from the uses mentioned in section 1.2 no other specific uses are stipulated

## SECTION 8: Exposure controls/personal protection

### 8.1 Control parameters

#### Components with workplace control parameters

| Components   | CAS-No.  | Value | Control parameters               | Basis   |
|--------------|--|-------|----------------------------------|---|
| nitromethane | 75-52-5  | TWAEV | 100 ppm<br>250 mg/m <sup>3</sup> | Québec. Regulation respecting occupational health and safety, Schedule 1, Part 1: Permissible exposure values for airborne contaminants |
|              |  | TWA   | 20 ppm<br>50 mg/m <sup>3</sup>   | Canada. Alberta, Occupational Health and Safety Code (table 2: OEL)   |
| Remarks      | Occupational exposure limit is based on irritation effects and its adjustment to compensate for unusual work schedules is not required |       |                                  |   |
|              |  | TWA   | 20 ppm                           | Canada. British Columbia OEL  |
|              | IARC '2B' applies to substances deemed possibly carcinogenic to humans.  |       |                                  |   |
|              |  | TWA   | 20 ppm                           | USA. ACGIH Threshold Limit Values (TLV)   |

### 8.2 Exposure controls

#### Appropriate engineering controls

Immediately change contaminated clothing. Apply preventive skin protection. Wash hands and face after working with substance.

#### Personal protective equipment

##### Eye/face protection

Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166(EU). Safety glasses

##### Skin protection

This recommendation applies only to the product stated in the safety data sheet, supplied by us and for the designated use. When dissolving in or mixing with other substances and under conditions deviating from those stated in EN374 please contact the supplier of CE-approved gloves (e.g. KCL GmbH, D-36124 Eichenzell, Internet: [www.kcl.de](http://www.kcl.de)).

Splash contact

Material: Viton®

Minimum layer thickness: 0.7 mm

Break through time: 120 min

Material tested: Vitoject® (KCL 890 / Aldrich Z677698, Size M)

##### Body Protection

Flame retardant antistatic protective clothing.

### Respiratory protection

required when vapours/aerosols are generated. Our recommendations on filtering respiratory protection are based on the following standards: DIN EN 143, DIN 14387 and other accompanying standards relating to the used respiratory protection system.

### Control of environmental exposure

Do not let product enter drains. Risk of explosion.

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## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

|   |  |
|---|--|
| a) Appearance                                   | Form: liquid<br>Color: colorless                                       |
| b) Odor   | characteristic   |
| c) Odor Threshold                               | No data available  |
| d) pH   | No data available  |
| e) Melting point/freezing point                 | Melting point: -28.4 °C (-19.1 °F)                                     |
| f) Initial boiling point and boiling range      | 101.2 °C 214.2 °F at 1,013.25 hPa                                      |
| g) Flash point                                  | 35 °C (95 °F) - closed cup - ISO 1523                                  |
| h) Evaporation rate                             | No data available  |
| i) Flammability (solid, gas)                    | No data available  |
| j) Upper/lower flammability or explosive limits | Upper explosion limit: 63.0 %(V)<br>Lower explosion limit: 7.3 %(V)    |
| k) Vapor pressure                               | No data available  |
| l) Vapor density                                | 2.11 - (Air = 1.0)   |
| m) Density                                      | 1.127 g/cm <sup>3</sup>  |
| Relative density                                | No data available  |
| n) Water solubility                             | 104.5 g/l at 25 °C (77 °F)   |
| o) Partition coefficient: n-octanol/water       | log Pow: -0.24 at 21.8 °C (71.2 °F) - Bioaccumulation is not expected. |
| p) Autoignition temperature                     | 418 °C (784 °F) at 1,013.25 hPa  |
| q) Decomposition temperature                    | No data available  |
| r) Viscosity                                    | No data available  |
| s) Explosive properties                         | No data available  |
| t) Oxidizing properties                         | none   |

### 9.2 Other safety information

|                 |  |
|-----------------|--|
| Surface tension | 73.6 mN/m at 1g/l at 21 °C (70 °F) - OECD Test Guideline 115 |
|-----------------|--|

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Relative vapor density                      2.11 - (Air = 1.0)

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## **SECTION 10: Stability and reactivity**

### **10.1 Reactivity**

explosible sensitive to shock highly reactive  
Vapor/air-mixtures are explosive at intense warming.

### **10.2 Chemical stability**

heat-sensitive  
The product is chemically stable under standard ambient conditions (room temperature) .

### **10.3 Possibility of hazardous reactions**

Exothermic reaction with:

Hydrocarbons

perchlorates

Risk of explosion with:

acids

anilines

strong alkalis

phosphoric acid

Nitric acid

metallic oxides

organic halides

silver salt

aluminium chloride

alkali hydroxides

Ammonia

iodides

Halogenated hydrocarbon

Chloroform

oxyhalogenic compounds

Organic Substances

Oxidizing agents

Acetone

powdered aluminium

formic acid

ammonium hydroxide

Bases

calcium hypochlorite

Sodium hydroxide

lithium aluminium hydride

sodium carbonate

hydrides

nitrous acid

conc. sulfuric acid

Potassium hydroxide

Calcium hydroxide

Morpholine

Bromoform

Hydrazine hydrate

with

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Methanol  
formaldehyde  
with  
Air  
Amines  
with  
Heavy metals  
with  
alkali hydroxides  
Formation of explosive salts possible.

#### **10.4 Conditions to avoid**

Avoid shock and friction.  
Heating.

#### **10.5 Incompatible materials**

various plastics

#### **10.6 Hazardous decomposition products**

In the event of fire: see section 5

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### **SECTION 11: Toxicological information**

#### **11.1 Information on toxicological effects**

##### **Acute toxicity**

LD50 Oral - Rat - male and female - 1,478 mg/kg

Remarks: (ECHA)

Symptoms: Nausea, Vomiting, Diarrhea

LC50 Inhalation - Rabbit - 4 h - 14.34 mg/l - vapor

Remarks: (ECHA)

Symptoms: Irritation symptoms in the respiratory tract.

LD50 Dermal - Rabbit - male and female - > 2,000 mg/kg

(OECD Test Guideline 402)

No data available

##### **Skin corrosion/irritation**

Skin - Rabbit

Result: No skin irritation - 4 h

(OECD Test Guideline 404)

##### **Serious eye damage/eye irritation**

Eyes - Rabbit

Result: No eye irritation

Remarks: (ECHA)

##### **Respiratory or skin sensitization**

Intracutaneous test - Guinea pig

Result: negative

Remarks: (ECHA)

##### **Germ cell mutagenicity**

Test Type: Ames test

Test system: Salmonella typhimurium

Metabolic activation: with and without metabolic activation



Method: OECD Test Guideline 471  
Result: negative  
Test Type: Mutagenicity (mammal cell test): chromosome aberration.  
Test system: Chinese hamster ovary cells  
Metabolic activation: with and without metabolic activation  
Method: OECD Test Guideline 473  
Result: negative

Test Type: Micronucleus test  
Species: Mouse  
Cell type: Bone marrow  
Application Route: inhalation (vapor)  
Method: OECD Test Guideline 474  
Result: negative

**Carcinogenicity**

Suspected of causing cancer.

**Reproductive toxicity**

Suspected of damaging the unborn child.

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

No data available

**Aspiration hazard**

No data available

**11.2 Additional Information**

Repeated dose toxicity - Rat - male and female - Oral - 28 Days - LOAEL (Lowest observed adverse effect level) - 100 mg/kg  
Remarks: (ECHA)

Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer.  
To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

After absorption:

Methaemoglobinemia

Absorption may result in damage of the following:

Liver  
Kidney

Other dangerous properties can not be excluded.

Handle in accordance with good industrial hygiene and safety practice.

Stomach - Irregularities - Based on Human Evidence

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## SECTION 12: Ecological information

### 12.1 Toxicity

|   |   |
|---|---|
| Toxicity to fish                                    | static test LC50 - Pimephales promelas (fathead minnow) - > 659.2 mg/l - 96 h (APHA 231)  |
| Toxicity to daphnia and other aquatic invertebrates | static test EC50 - Daphnia magna (Water flea) - > 103 mg/l - 48 h (OECD Test Guideline 202)   |
| Toxicity to algae                                   | static test ErC50 - Pseudokirchneriella subcapitata (green algae) - > 102 mg/l - 72 h (OECD Test Guideline 201)   |
| Toxicity to bacteria                                | static test EC50 - activated sludge - 310 mg/l - 30 min (OECD Test Guideline 209)<br>Remarks: (in analogy to similar products)<br>The value is given in analogy to the following substances: 1-nitropropane |

### 12.2 Persistence and degradability

|                  |  |
|------------------|--|
| Biodegradability | aerobic - Exposure time 28 d<br>Result: 9.9 % - Not readily biodegradable.<br>(OECD Test Guideline 301D) |
|------------------|--|

### 12.3 Bioaccumulative potential

No data available

### 12.4 Mobility in soil

No data available

### 12.5 Results of PBT and vPvB assessment

PBT/vPvB assessment not available as chemical safety assessment not required/not conducted

### 12.6 Endocrine disrupting properties

No data available

### 12.7 Other adverse effects

Discharge into the environment must be avoided.

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## SECTION 13: Disposal considerations

### 13.1 Waste treatment methods

#### Product

Waste material must be disposed of in accordance with the national and local regulations. Leave chemicals in original containers. No mixing with other waste. Handle uncleaned containers like the product itself. See [www.retrologistik.com](http://www.retrologistik.com) for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

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## SECTION 14: Transport information

### TDG

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UN number: 1261 Class: 3 Packing group: II  
Proper shipping name: NITROMETHANE  
Labels: 3  
ERG Code: 129  
Marine pollutant: no

**IMDG**

UN number: 1261 Class: 3 Packing group: II EMS-No: F-E, S-D  
Proper shipping name: NITROMETHANE

**IATA**

UN number: 1261 Class: 3 Packing group: II  
Proper shipping name: Nitromethane  
IATA Passenger: Not permitted for transport

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**SECTION 15: Regulatory information**

This product has been classified in accordance with the hazard criteria of the Hazardous Products Regulations (HPR) and the SDS contains all the information required by the HPR.

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**SECTION 16: Other information**

**Further information**

The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Corporation and its Affiliates shall not be held liable for any damage resulting from handling or from contact with the above product. See [www.sigma-aldrich.com](http://www.sigma-aldrich.com) and/or the reverse side of invoice or packing slip for additional terms and conditions of sale.

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