



MATERIAL SAFETY DATA SHEET

according to the Global Harmonized System

Date of issue: 02/04/2013

Version 1.0

SECTION 1. Identification

Product identifier

Product number 806806
Product name 2-Nitrotoluene for synthesis

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

Identified uses Chemical for synthesis

Details of the supplier of the safety data sheet

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24 Hours/day; 7 Days/week

SECTION 2. Hazards identification

GHS Classification

Carcinogenicity, Category 1B, H350
Germ cell mutagenicity, Category 1B, H340
Reproductive toxicity, Category 2, H361f
Acute toxicity, Category 4, Oral, H302
Chronic aquatic toxicity, Category 2, H411

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

GHS-Labeling

Hazard pictograms



Signal Word
Danger

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Hazard Statements

H350 May cause cancer.
H340 May cause genetic defects.
H361f Suspected of damaging fertility.
H302 Harmful if swallowed.
H411 Toxic to aquatic life with long lasting effects.

Precautionary Statements

P201 Obtain special instructions before use.
P273 Avoid release to the environment.
P308 + P313 IF exposed or concerned: Get medical advice/ attention.

Restricted to professional users.

Other hazards

None known.

SECTION 3. Composition/information on ingredients

Formula	2-(NO ₂)C ₆ H ₄ CH ₃	C ₇ H ₇ NO ₂ (Hill)
CAS-No.	88-72-2	
Molar mass	137.13 g/mol	

Hazardous ingredients

Chemical Name (Concentration)

CAS-No.
2-nitrotoluene (>= 90 % - <= 100 %)
88-72-2

SECTION 4. First aid measures

Description of first-aid measures

General advice

First aider needs to protect himself.

Inhalation

After inhalation: fresh air. Call in physician.

Skin contact

After skin contact: wash off with plenty of water. Remove contaminated clothing. Consult a physician.

Eye contact

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

Ingestion

After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Pulmonary failure possible after aspiration of vomit. Call a physician immediately. Subsequently administer: activated charcoal (20 - 40 g in 10% slurry).

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed

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flush of face, neck and arms, Dizziness, Nausea, Vomiting, cardiovascular disorders, muscular weakness, confusion

Indication of any immediate medical attention and special treatment needed

Laxative: Sodium sulfate (1 tablespoon/1/4 l water).

SECTION 5. Fire-fighting measures

Extinguishing media

Suitable extinguishing media

Water, Carbon dioxide (CO₂), Foam, Dry powder

Unsuitable extinguishing media

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

Special hazards arising from the substance or mixture

Combustible material, Vapors are heavier than air and may spread along floors.

Forms explosive mixtures with air on intense heating.

Development of hazardous combustion gases or vapors possible in the event of fire.

Fire may cause evolution of:

nitrogen oxides

Advice for firefighters

Special protective equipment for fire-fighters

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

Further information

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

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Do not breathe vapors, aerosols. Avoid substance contact.

Ensure adequate ventilation. Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

Environmental precautions

Do not empty into drains.

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 carefully with liquid-absorbent material (e.g. Chemisorb®). Dispose of properly. Clean up affected area.

SECTION 7. Handling and storage

Precautions for safe handling

Observe label precautions.

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

Conditions for safe storage, including any incompatibilities

Tightly closed. Keep in a well-ventilated place. Keep locked up or in an area accessible only to qualified or authorized persons.

Store at +15°C to +25°C (+59°F to +77°F).

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

Ingredients

Basis	Value	Threshold limits	Remarks
<i>2-nitrotoluene 88-72-2</i>			
CAD AB OEL	Time Weighted Average (TWA):	2 ppm 11 mg/m ³	
	Skin designation:		Can be absorbed through the skin.
CAD BC OEL	Skin designation:		Can be absorbed through the skin.
CAD MB OEL	Time Weighted Average (TWA):	2 ppm	
	Time Weighted Average (TWA):	2 ppm	
	Skin designation:		Can be absorbed through the skin.
CAD ON OEL	Time Weighted Average (TWAEV):	2 ppm	
	Skin designation:		Can be absorbed through the skin.
OEL (QUE)	Time Weighted Average (TWA):	2 ppm 11 mg/m ³	
	Skin designation:		Can be absorbed through the skin.

Engineering measures

Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures

Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures

Immediately change contaminated clothing. Apply skin- protective barrier cream. Wash hands and face after working with substance. Work under hood. Do not inhale substance/mixture.

Eye/face protection

Safety glasses

Hand protection

Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

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Other protective equipment:
protective clothing

Respiratory protection

required when vapors/aerosols are generated.

Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

SECTION 9. Physical and chemical properties

Physical state	oily
Color	yellow
Odor	aromatic
Odor Threshold	No information available.
pH	6 - 8
Melting point	-4 - -3 °C
Boiling point/boiling range	430 - 432 °F (221 - 222 °C) at 1,013 hPa
Flash point	223 °F (106 °C)
Evaporation rate	No information available.
Flammability (solid, gas)	No information available.
Lower explosion limit	1.47 %(V)
Upper explosion limit	8.8 %(V)
Vapor pressure	0.1 hPa at 68 °F (20 °C)
Relative vapor density	4.73
Relative density	1.16 g/cm ³ at 68 °F (20 °C)
Water solubility	0.65 g/l at 68 °F (20 °C) (experimental)
Partition coefficient: n-octanol/water	log Pow: 2.30 (experimental) Bioaccumulation is not expected (log Pow <1). (Lit.)

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Autoignition temperature No information available.
Decomposition temperature No information available.
Viscosity, dynamic 2.37 mPa.s
Explosive properties No information available.
Ignition temperature 788 °F (420 °C)

SECTION 10. Stability and reactivity

Reactivity

Forms explosive mixtures with air on intense heating.

Chemical stability

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

Possibility of hazardous reactions

Exothermic reaction with:

Strong oxidizing agents

Risk of explosion with:

Sulfur trioxide, sulfuric acid, Reducing agents

increased reactivity with:

strong alkalis, Amines

Conditions to avoid

Strong heating (decomposition).

Strong heating.

A range from approx. 15 Kelvin below the flash point is to be rated as critical.

Incompatible materials

no information available

Hazardous decomposition products

in the event of fire: See section 5.

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Inhalation, Eye contact, Skin contact

Acute oral toxicity

LD50 rat: 891 mg/kg (RTECS)

Symptoms: Risk of aspiration upon vomiting., Aspiration may cause pulmonary edema and pneumonitis.

absorption

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Acute inhalation toxicity

Symptoms: Dizziness, Nausea, Vomiting
absorption

Acute dermal toxicity
absorption

Skin irritation

rabbit
Result: No irritation
(External MSDS)

Eye irritation

rabbit
Result: slight irritation
(External MSDS)

Genotoxicity in vitro

Mutagenicity (mammal cell test):
Result: negative
(Lit.)

Ames test
Salmonella typhimurium
Result: negative
(Lit.)

CMR effects

Carcinogenicity:
May cause cancer.
Mutagenicity:
May cause genetic defects.
Reproductive toxicity:
Suspected of damaging fertility.

Specific target organ systemic toxicity - single exposure

The substance or mixture is not classified as specific target organ toxicant, single exposure.

Specific target organ systemic toxicity - repeated exposure

The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard

Regarding the available data the classification criteria are not fulfilled.

Carcinogenicity

IARC	No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.
OSHA	No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.
NTP	No ingredient of this product present at levels greater than or

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ACGIH equal to 0.1% is identified as a known or anticipated carcinogen by NTP.
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

Further information

Systemic effects:

Methemoglobinemia with headache, cardiac arrhythmia, drop in blood pressure, dyspnoea, and spasms, key symptom: cyanosis (blue coloration of the blood).

Effect potentiated by: ethanol

After inhalation of vapors:

flush of face, neck and arms, muscular weakness, cardiovascular disorders, confusion

Absorption may result in damage of the following:

Liver, Kidney, spleen

Other information

The following applies to aromatic nitro compounds in general: systemic effect:

methemoglobinemia with headache, cardiac dysrhythmias, drop in blood pressure, dyspnoea, and spasms; principal sign: cyanosis (blue discoloration of the blood).

Further data:

This substance should be handled with particular care.

SECTION 12. Ecological information

Ecotoxicity

Toxicity to fish

LC50 *Poecilia reticulata* (guppy): 30.1 mg/l; 96 h (ECOTOX Database)

Toxicity to daphnia and other aquatic invertebrates

EC50 *Daphnia magna* (Water flea): 5.4 mg/l; 48 h (ECOTOX Database)

Persistence and degradability

Biodegradability

Readily biodegradable.

Bioaccumulative potential

Partition coefficient: n-octanol/water

log Pow: 2.30

(experimental)

Bioaccumulation is not expected (log Pow <1). (Lit.)

Mobility in soil

No information available.

Other adverse effects

Additional ecological information

Discharge into the environment must be avoided.

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SECTION 13. Disposal considerations

The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information

Land transport (DOT)

UN number UN 1664
Proper shipping name NITROTOLUENES, LIQUID
Class 6.1
Packing group II
Environmentally hazardous --

Air transport (IATA)

UN number UN 1664
Proper shipping name NITROTOLUENES, LIQUID
Class 6.1
Packing group II
Environmentally hazardous --
Special precautions for user no

Sea transport (IMDG)

UN number UN 1664
Proper shipping name NITROTOLUENES, LIQUID
Class 6.1
Packing group II
Environmentally hazardous --
Special precautions for user yes
EmS F-A S-A

SECTION 15. Regulatory information

United States of America

Canada

WHMIS Classification

D1A Very Toxic Material Causing Immediate and Serious Toxic Effects

D2A Very Toxic Material Causing Other Toxic Effects

Highly Toxic, Reproductive hazard, Mutagen

This product has been classified according to the hazard criteria of the CPR and the MSDS contains all of the information required by the CPR.

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Notification status

TSCA: On TSCA Inventory

DSL: All components of this product are on the Canadian DSL.

SECTION 16. Other information

Training advice

Provide adequate information, instruction and training for operators.

Full text of H-Statements referred to under sections 2 and 3.

H302	Harmful if swallowed.
H340	May cause genetic defects.
H350	May cause cancer.
H361f	Suspected of damaging fertility.
H411	Toxic to aquatic life with long lasting effects.

Key or legend to abbreviations and acronyms used in the safety data sheet

Used abbreviations and acronyms can be looked up at www.wikipedia.org.

Date of issue: 02/04/2013

The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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