

SAFETY DATA SHEETS

According to the UN GHS revision 10

Version: 1.1
Creation Date: July 15, 2024
Revision Date: March 22, 2025

SECTION 1: Identification

1.1 GHS Product identifier

Product name 2-Nitropropane

1.2 Other means of identification

Product number C3D-5817
Other names Nipar S-20; sec-Nitropropane; Propane, 2-nitro-

1.3 Recommended use of the chemical and restrictions on use

Identified uses For laboratory and Industrial use only.
Uses advised against no data available

1.4 Supplier's details

Company CATO Research Chemicals Inc.
Address 3/F,Building B,No.179 BASIGO, Guangpu Rd East,Huangpu Dist,Guangzhou
Telephone +86-20-81960175

1.5 Emergency phone number

Emergency phone number +86-20-81960175
Service hours 'Monday to Friday, 9am-5pm (Standard time zone: UTC/GMT +8 hours).

SECTION 2: Hazard identification

2.1 Classification of the substance or mixture

Flammable liquids, Category 3
Acute toxicity - Category 4, Oral
Acute toxicity - Category 4, Inhalation
Carcinogenicity, Category 1B

2.2 GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H226 Flammable liquid and vapour
H302 Harmful if swallowed
H332 Harmful if inhaled
H350 May cause cancer

Precautionary statement(s)

Prevention

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.
P280 Wear protective gloves/protective clothing/eye protection/face protection/hearing protection/...
P264 Wash ... thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P271 Use only outdoors or in a well-ventilated area.
P203 Obtain, read and follow all safety instructions before use.

Response	P303+P361+P353 IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse affected areas with water [or shower]. P370+P378 In case of fire: Use ... to extinguish. P301+P317 IF SWALLOWED: Get medical help. P330 Rinse mouth. P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing. P317 Get medical help. P318 IF exposed or concerned, get medical advice.
Storage	P403+P235 Store in a well-ventilated place. Keep cool. P405 Store locked up.
Disposal	P501 Dispose of contents/container to an appropriate treatment and disposal facility in accordance with applicable laws and regulations, and product characteristics at time of disposal.

2.3 Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

3.1 Substances

Chemical name	Common names and synonyms	CAS number	EC number	Concentration
2-Nitropropane	2-nitropropane	79-46-9	201-209-1	≈ 99%

SECTION 4: First-aid measures

4.1 Description of necessary first-aid measures

If inhaled

Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower.

Following eye contact

First rinse with plenty of water for several minutes (remove contact lenses if easily possible), then refer for medical attention.

Following ingestion

Rinse mouth. Refer for medical attention .

4.2 Most important symptoms/effects, acute and delayed

Inhalation causes respiratory tract irritation, headache, dizziness, nausea, and diarrhea. Ingestion causes irritation of mouth and stomach. Contact with liquid irritates eyes and causes mild irritation of skin. (USCG, 1999)

4.3 Indication of immediate medical attention and special treatment needed, if necessary

Flush eyes with abundant water

SECTION 5: Fire-fighting measures

5.1 Suitable extinguishing media

Use water spray, dry chemical, foam, or carbon dioxide. Use water spray to keep fire exposed containers cool. Fight fire from protected location or maximum possible distance. nitropropanes

5.2 Specific hazards arising from the chemical

Special Hazards of Combustion Products: Toxic oxides of nitrogen may form in fire. (USCG, 1999)

5.3 Special protective actions for fire-fighters

Use water spray, powder, alcohol-resistant foam, carbon dioxide. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

SECTION 6: Accidental release measures

6.1 Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Personal protection: self-contained breathing apparatus. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.2 Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: self-contained breathing apparatus. Remove all ignition sources. Collect leaking and spilled liquid in sealable containers as far as possible. Absorb remaining liquid in sand or inert absorbent. Then store and dispose of according to local regulations.

6.3 Methods and materials for containment and cleaning up

After covering the spills with soda ash, mix and spray with water. Scoop into a bucket of water and leave it stand for two hours. Neutralize with 6M-hydrochloric acid and pass into drain with sufficient water.

SECTION 7: Handling and storage

7.1 Precautions for safe handling

NO open flames, NO sparks and NO smoking. Above 24°C use a closed system, ventilation and explosion-proof electrical equipment. Handling in a well ventilated place. Wear suitable protective clothing. Avoid contact with skin and eyes. Avoid formation of dust and aerosols. Use non-sparking tools. Prevent fire caused by electrostatic discharge steam.

7.2 Conditions for safe storage, including any incompatibilities

Fireproof. Separated from strong bases, strong acids, amines, powdered metals and food and feedstuffs. Store in a cool, dry, well ventilated location. Separate from amines, alkalies, acids, oxidizing materials, metal oxides, and combustibles. Outside or detached storage is preferred nitropropanes

SECTION 8: Exposure controls/personal protection

8.1 Control parameters

Occupational Exposure limit values

TLV: 10 ppm as TWA; A3 (confirmed animal carcinogen with unknown relevance to humans). EU-OEL: 18 mg/m³, 5 ppm as TWA. MAK: skin absorption (H); carcinogen category: 2

Biological limit values

no data available

8.2 Appropriate engineering controls

Ensure adequate ventilation. Handle in accordance with good industrial hygiene and safety practice. Set up emergency exits and the risk-elimination area.

8.3 Individual protection measures, such as personal protective equipment (PPE)

Eye/face protection

Wear face shield or eye protection in combination with breathing protection.

Skin protection

Protective gloves. Protective clothing.

Respiratory protection

Use ventilation, local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state	Liquid.
Colour	Colourless.
Odour	Pleasant fruity odor.
Melting point/freezing point	-91.3 °C.
Boiling point or initial boiling point and boiling range	120.3 °C. Atm. press.: 1 013 hPa.
Flammability	Class IC Flammable Liquid: Fl.P. at or above 73°F and below 100°F.
Lower and upper explosion limit/flammability limit	Lower flammable limit: 2.6% by volume; Upper flammable limit: 11.0% by volume
Flash point	26 °C. Atm. press.: 102.03 kPa.
Auto-ignition temperature	>= 389 - <= 399 °C. Atm. press.: >= 99.9 - <= 101.04 kPa.
Decomposition temperature	no data available
pH	no data available
Kinematic viscosity	0.721 cP at 25 deg C
Solubility	greater than or equal to 0.1 mg/mL at 66° F (NTP, 1992)
Partition coefficient n-octanol/water	log Pow = 1.35. Temperature: 20 °C.
Vapour pressure	17.32 hPa. Temperature: 20 °C.; 23.03 hPa. Temperature: 25 °C.
Density and/or relative density	0.99 g/cm ³ . Temperature: 20 °C.
Relative vapour density	~3 (vs air)
Particle characteristics	no data available

SECTION 10: Stability and reactivity



10.1 Reactivity

100 ppm; NIOSH considers 2-nitropropane to be a potential occupational carcinogen. Decomposes on burning. This produces toxic fumes including nitrogen oxides. Mixtures with acids, amines, inorganic bases and heavy metal oxides are shock-sensitive. Attacks some forms of plastic, rubber and coatings.

10.2 Chemical stability

It is stable under ordinary circumstances, but may undergo explosive decomposition under conditions of extreme shock combined with heavy confinement and elevated temperature.

10.3 Possibility of hazardous reactions

A very dangerous fire hazard when exposed to heat, open flame or oxidizers. 2-NITROPROPANE is sensitive to heat. Can react with amines/heavy metal oxides, strong acids, strong alkalis, and chlorosulfonic acid. (NTP, 1992). The heat of adsorption of this compound on carbon, such as that found in cartridge respirators, is extremely high. Metal oxide catalysts, such as copper oxide or manganese oxide, can initiate ignition, therefore carbon respirators should not be used in environments that have a high vapor concentration of this material.

10.4 Conditions to avoid

no data available

10.5 Incompatible materials

Mixing oleum and 2-nitropropane in a closed container caused the temperature and pressure to increase.

10.6 Hazardous decomposition products

When heated to decomposition it emits toxic fumes of /nitrogen oxides/.

SECTION 11: Toxicological information

Acute toxicity

- Oral: LD50 Sprague-Dawley Rat oral 720 mg/kg
- Inhalation: LC50 Sprague-Dawley Rat (male) inhalation 400 ppm/6 hr
- Dermal: no data available

Skin corrosion/irritation

no data available

Serious eye damage/irritation

no data available

Respiratory or skin sensitization

no data available

Germ cell mutagenicity

no data available

Carcinogenicity

A3; Confirmed animal carcinogen with unknown relevance to humans.

Reproductive toxicity

No information is available on the reproductive or developmental effects of 2-nitropropane in humans. One animal study has reported fetal toxicity (delayed fetal heart development) following injection of 2-nitropropane in rats.

STOT-single exposure

The vapour is irritating to the eyes and respiratory tract. The substance is mildly irritating to the skin. The substance may cause effects on the central nervous system. Exposure far above the OEL could cause liver impairment and death.

STOT-repeated exposure

The substance defats the skin, which may cause dryness or cracking. This substance is possibly carcinogenic to humans.

Aspiration hazard

A harmful contamination of the air can be reached rather quickly on evaporation of this substance at 20°C.

SECTION 12: Ecological information

12.1 Toxicity

- Toxicity to fish: LC50 - Pimephales promelas - > 612.5 mg/L - 96 h.
- Toxicity to daphnia and other aquatic invertebrates: EC50 - Daphnia magna - 19 mg/L - 48 h.
- Toxicity to algae: EC50 - Pseudokirchneriella subcapitata (previous names: Raphidocelis subcapitata, Selenastrum capricornutum) - > 887 mg/L - 72 h.
- Toxicity to microorganisms: EC50 - activated sludge of a predominantly domestic sewage - 310 mg/L - 30 min. Remarks: Respiration rate.

12.2 Persistence and degradability

AEROBIC: 2-Nitropropane, present at 2.0 and 9.9 mg/L, reached 14 and 8% of its theoretical BOD, respectively in 4 weeks using an activated sludge inoculum at 2 mg/L and a closed bottle test(1). When 2-nitropropane was incubated with activated sludge, 0.8% mineralization occurred in 5 days(2,3). During a closed bottle biodegradability test, using a municipal sewage plant effluent inoculum, 0.1% degradation of 2-nitropropane occurred within 28 days(2,3). Aerobic C14 studies performed with soil microorganisms resulted in 3.0% conversion to CO₂ in 35 days(2,3). During this time 28.8% was lost as volatile products during the aerobic studies(2,3). Half-lives of 2-nitropropane measured during aerobic batch laboratory microcosm experiments were 0.66 days in an acid clay soil (0.94% OC, pH 4.8) and 0.5 days in a basic sandy loam soil (3.25% OC, pH 7.8)(4,5). However, experiments were not corrected for potential loss due to volatilization(4,5).

12.3 Bioaccumulative potential

A BCF value of 1 was measured for fish (Golden ide) in a static 3-day test with 2-nitropropane present at 50 ppb(1). BCF values of <0.9-1.1 and <8.4 were determined using orange-red killifish (*Oryzias latipes*) which were exposed over an 8-week period(2). According to a classification scheme(3), these BCF values suggest the potential for bioconcentration in aquatic organisms is low(SRC).

12.4 Mobility in soil

Based on Freundlich adsorption constants of 0.99354 for a Texas sandy silt loam soil (3.25% OC, pH 7.8) and 0.354 for a Mississippi sandy loam soil (0.94% OC, pH 4.8), Koc values determined for these two soils are 0.11 and 3.8, respectively(1). According to a classification scheme(2), these Koc values suggest that 2-nitropropane is expected to have very high mobility in soil. The pK_a of 2-nitropropane is 7.68(3), indicating that this compound will partially exist in anion form in the environment and anions generally do not adsorb more strongly to organic carbon and clay than their neutral counterparts(4).

12.5 Other adverse effects

no data available

SECTION 13: Disposal considerations

13.1 Disposal methods

Product

The material can be disposed of by removal to a licensed chemical destruction plant or by controlled incineration with flue gas scrubbing. Do not contaminate water, foodstuffs, feed or seed by storage or disposal. Do not discharge to sewer systems.

Contaminated packaging

Containers can be triply rinsed (or equivalent) and offered for recycling or reconditioning. Alternatively, the packaging can be punctured to make it unusable for other purposes and then be disposed of in a sanitary landfill. Controlled incineration with flue gas scrubbing is possible for combustible packaging materials.

SECTION 14: Transport information

14.1 UN Number

ADR/RID: UN2608 (For reference only, please check.) IMDG: UN2608 (For reference only, please check.) IATA: UN2608 (For reference only, please check.)

14.2 UN Proper Shipping Name

ADR/RID: NITROPROPANES (For reference only, please check.) IMDG: NITROPROPANES (For reference only, please check.) IATA: NITROPROPANES (For reference only, please check.)

14.3 Transport hazard class(es)

ADR/RID: 3 (For reference only, please check.) IMDG: 3 (For reference only, please check.) IATA: 3 (For reference only, please check.)

14.4 Packing group, if applicable

ADR/RID: III (For reference only, please check.) IMDG: III (For reference only, please check.) IATA: III (For reference only, please check.)

14.5 Environmental hazards

ADR/RID: No IMDG: No IATA: No

14.6 Special precautions for user

no data available

14.7 Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

15.1 Safety, health and environmental regulations specific for the product in question

Chemical name	Common names and synonyms	CAS number	EC number
2-nitropropane	2-nitropropane	79-46-9	201-209-1
European Inventory of Existing Commercial Chemical Substances (EINECS)			Listed.

EC Inventory	Listed.
United States Toxic Substances Control Act (TSCA) Inventory	Listed.
China Catalog of Hazardous chemicals 2015	Listed.
New Zealand Inventory of Chemicals (NZIoC)	Listed.
Philippines Inventory of Chemicals and Chemical Substances (PICCS)	Listed.
Vietnam National Chemical Inventory	Listed.
Chinese Chemical Inventory of Existing Chemical Substances (China IECSC)	Listed.
Korea Existing Chemicals List (KECL)	Listed.

SECTION 16: Other information

Information on revision

Creation Date July 15, 2024
Revision Date March 22, 2025

Abbreviations and acronyms

- CAS: Chemical Abstracts Service
- ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road
- RID: Regulation concerning the International Carriage of Dangerous Goods by Rail
- IMDG: International Maritime Dangerous Goods
- IATA: International Air Transportation Association
- TWA: Time Weighted Average
- STEL: Short term exposure limit
- LC50: Lethal Concentration 50%
- LD50: Lethal Dose 50%
- EC50: Effective Concentration 50%

References

- IPCS - The International Chemical Safety Cards (ICSC), website: <http://www.ilo.org/dyn/icsc/showcard.home>
- HSDB - Hazardous Substances Data Bank, website: <https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm>
- IARC - International Agency for Research on Cancer, website: <http://www.iarc.fr/>
- eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en
- CAMEO Chemicals, website: <http://cameochemicals.noaa.gov/search/simple>
- ChemIDplus, website: <http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp>
- ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: <http://www.phmsa.dot.gov/hazmat/library/erg>
- Germany GESTIS-database on hazard substance, website: <http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp>
- ECHA - European Chemicals Agency, website: <https://echa.europa.eu/>

Other Information

Depending on the degree of exposure, periodic medical examination is suggested. The odour warning when the exposure limit value is exceeded is insufficient. Do NOT take working clothes home.

Any questions regarding this SDS, Please send your inquiry to info@cato-chem.com

Disclaimer: 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. We as supplier shall not be held liable for any damage resulting from handling or from contact with the above product.