

Chemical Safety Data Sheet MSDS / SDS

N-methyl-N,2,4,6-tetranitroaniline SDS

Revision Date:2024-04-25 Revision Number:1

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SECTION 1: Identification of the substance/mixture and of the company/undertaking**Product identifier**

Product name: N-methyl-N,2,4,6-tetranitroaniline

CAS: 479-45-8

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

Relevant identified uses: For R&D use only. Not for medicinal, household or other use.

Uses advised against: none

Company Identification

Company: Chemicalbook.in

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SECTION 2: Hazards identification**Classification of the substance or mixture**Explosives, Division 1.1
Acute toxicity - Category 3, Oral

Acute toxicity - Category 3, Dermal
Acute toxicity - Category 3, Inhalation
Specific target organ toxicity - repeated exposure, Category 2

GHS label elements, including precautionary statements

Pictogram(s)



Signal word

Danger

Hazard statement(s)

H201 Explosive; mass explosion hazard
H301 Toxic if swallowed
H311 Toxic in contact with skin
H331 Toxic if inhaled
H373 May cause damage to organs through prolonged or repeated exposure

Precautionary statement(s)

Prevention

P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
P230 Keep wetted with ...
P234 Keep only in original packaging.
P240 Ground and bond container and receiving equipment.
P250 Do not subject to grinding/shock/friction/...
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.
P260 Do not breathe dust/fume/gas/mist/vapours/spray.

Response

P370+P372+P380+P373 In case of fire: Explosion risk. Evacuate area. DO NOT fight fire when fire reaches explosives.
P301+P316 IF SWALLOWED: Get emergency medical help immediately.
P321 Specific treatment (see ... on this label).
P330 Rinse mouth.
P302+P352 IF ON SKIN: Wash with plenty of water/...

P316 Get emergency medical help immediately.
P361+P364 Take off immediately all contaminated clothing and wash it before reuse.
P304+P340 IF INHALED: Remove person to fresh air and keep comfortable for breathing.
P319 Get medical help if you feel unwell.

Storage

P401 Store in accordance with...
P405 Store locked up.
P403+P233 Store in a well-ventilated place. Keep container tightly closed.

Disposal

P503 Refer to manufacturer/supplier... for information on disposal/recovery/recycling.
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.

Other hazards which do not result in classification

no data available

SECTION 3: Composition/information on ingredients

Substance

Chemical name:	N-methyl-N,2,4,6-tetranitroaniline
Common names and synonyms:	N-methyl-N,2,4,6-tetranitroaniline
CAS number:	479-45-8
EC number:	207-531-9
Concentration:	100%

SECTION 4: First aid measures

Description of necessary first-aid measures

If inhaled

Fresh air, rest. Artificial respiration may be needed. Refer for medical attention.

Following skin contact

Remove contaminated clothes. Rinse skin with plenty of water or shower. Wear protective gloves when administering first aid.

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

Refer for medical attention .

Most important symptoms/effects, acute and delayed

Exposure Routes: inhalation, skin absorption, ingestion, skin and/or eye contact Symptoms: Sensitization dermatitis, itch, erythema (skin redness); edema on nasal folds, cheeks, neck; keratitis (inflammation of the cornea); sneezing; anemia; cough, coryza; irritability; malaise (vague feeling of discomfort), headache, lassitude (weakness, exhaustion), insomnia; nausea, vomiting; liver, kidney damage Target Organs: Eyes, skin, respiratory system, central nervous system, liver, kidneys (NIOSH, 2016)

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

Basic treatment: Establish a patent airway. Suction if necessary. Watch for signs of respiratory insufficiency and assist ventilations if necessary. Administer oxygen by nonrebreather mask at 10 to 15 L/min. Monitor for shock and treat if necessary . Anticipate seizures and treat if necessary . For eye contamination, flush eyes immediately with water. Irrigate each eye continuously with normal saline during transport . Do not use emetics. For ingestion, rinse mouth and administer 5 mL/kg up to 200 mL of water for dilution if the patient can swallow, has a strong gag reflex, and does not drool. Administer activated charcoal . Naphthalene and Related Compounds

SECTION 5: Firefighting measures

Suitable extinguishing media

Evacuation: If the material is on fire or involved in fire consider evacuation of one mile radius.

Specific hazards arising from the chemical

Excerpt from ERG Guide 112 [Explosives* - Division 1.1, 1.2, 1.3 or 1.5]: MAY EXPLODE AND THROW FRAGMENTS 1600 METERS (1 MILE) OR MORE IF FIRE REACHES CARGO. For information on "Compatibility Group" letters, refer to Glossary section. (ERG, 2016)

Special protective actions for fire-fighters

Do not attempt to extinguish large fire, evacuate area. In case of fire: keep drums, etc., cool by spraying with water. Combat fire from a sheltered position.

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Evacuate danger area! Consult an expert! Personal protection: particulate filter respirator adapted to the airborne concentration of the substance.

Environmental precautions

Evacuate danger area! Consult an expert! Personal protection: P3 filter respirator for toxic particles.

Methods and materials for containment and cleaning up

If tetryl is spilled, the following steps should be taken: 1. Remove all ignition sources. 2. Ventilate area of spill. 3. Attempt to reclaim spilled material; however, do not sweep or burn unless this is supervised by explosives experts.

SECTION 7: Handling and storage

Precautions for safe handling

NO open flames, NO sparks and NO smoking. NO contact with hot surfaces. Closed system, ventilation, explosion-proof electrical equipment and lighting. Prevent build-up of electrostatic charges (e.g., by grounding). Do NOT expose to friction or shock. Prevent deposition of dust. 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.

Conditions for safe storage, including any incompatibilities

Fireproof. Separated from strong oxidants. Keep in the dark. Keep in a separate building protected from shock. Keep solution in the dark.

SECTION 8: Exposure controls/personal protection

Control parameters

Occupational Exposure limit values

TLV: 1.5 mg/m³, as TWA.MAK: skin absorption (H); sensitization of skin (SH); carcinogen category: 3B

Biological limit values

no data available

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.

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

Eye/face protection

Wear safety goggles or eye protection in combination with breathing protection if powder.

Skin protection

Protective clothing.

Respiratory protection

Use local exhaust or breathing protection.

Thermal hazards

no data available

SECTION 9: Physical and chemical properties and safety characteristics

Physical state: Tetryl is a yellow crystalline solid high explosive. Toxic by ingestion and skin absorption. A skin irritant. Will explode if heated above 370°F. Used as a detonating explosive. The primary hazard is the blast of an instantaneous explosion and not flying projectiles and fragments.

Colour: Colorless to yellow, crystalline solid

Odour: Odorless.

Melting point/freezing point: 130°C

Boiling point or initial boiling point and boiling range:	503.7°C at 760mmHg
Flammability:	Combustible Solid (Class A Explosive)
Lower and upper explosion limit/flammability limit:	no data available
Flash point:	258.4°C
Auto-ignition temperature:	no data available
Decomposition temperature:	no data available
pH:	no data available
Kinematic viscosity:	no data available
Solubility:	0.02 % (NIOSH, 2016)
Partition coefficient n-octanol/water:	log Kow = 1.64 /Estimated/
Vapour pressure:	less than 1 mm Hg (NIOSH, 2016)
Density and/or relative density:	1.803g/cm ³
Relative vapour density:	no data available
Particle characteristics:	no data available

SECTION 10: Stability and reactivity

Reactivity

May decompose explosively on shock, friction or concussion. Decomposes explosively on heating to 187°C. Reacts with some

oxidants. This generates fire and explosion hazard.

Chemical stability

Is highly stable losing virtually no weight on prolonged storage at 80 deg C.

Possibility of hazardous reactions

Dangerous fire ... explosion riskDust explosion possible if in powder or granular form, mixed with air.During the measurement of the shock sensitivity of a mixture containing hydrazine, a drop of the hydrazine mixture fell on a tetryl explosive. The tetryl immediately burst into flames (ASESB 105).

Conditions to avoid

no data available

Incompatible materials

Contact of tetryl with some oxidizable materials may cause fires & explosions.

Hazardous decomposition products

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

SECTION 11: Toxicological information

Acute toxicity

Oral: no data available

Inhalation: no data available

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

no data available

Reproductive toxicity

no data available

STOT-single exposure

The substance is irritating to the eyes, skin and respiratory tract. The substance may cause effects on the nervous system.

STOT-repeated exposure

Repeated or prolonged contact may cause skin sensitization. Repeated or prolonged inhalation may cause asthma. The substance may have effects on the liver, kidneys and blood.

Aspiration hazard

Evaporation at 20°C is negligible; a harmful concentration of airborne particles can, however, be reached quickly when dispersed.

SECTION 12: Ecological information**Toxicity**

Toxicity to fish: no data available

Toxicity to daphnia and other aquatic invertebrates: no data available

Toxicity to algae: no data available

Toxicity to microorganisms: no data available

Persistence and degradability

Data from composting experiments suggest that biodegradation of tetryl may occur under some conditions(1). When tetryl-contaminated sediment was added to hay-horse feed or sewage sludge-wood chip compost, 90% of the tetryl was removed after 44 days(1). A first-order half-life of 1.2 weeks was calculated for tetryl in a manure-hay-sawdust compost(1). Tetryl was completely biodegraded in a laboratory reactor using a soil slurry amended with molasses over a 3 month operation period(2). Metabolites identified included trinitro-N-methylaniline, trinitrobenzeneamine, dinitrobenzenediamine, nitroaniline and aniline(2). In previous experiments using anoxic conditions and in the absence of co-substrates such as molasses, tetryl and trinitrotoluene (TNT) were not degraded(2).

Bioaccumulative potential

An estimated BCF of 4 was calculated for tetryl(SRC), using an estimated log Kow of 1.64(1) and a regression-derived equation(2). According to a classification scheme(3), this BCF suggests the potential for bioconcentration in aquatic organisms is low(SRC).

Mobility in soil

Using a structure estimation method based on molecular connectivity indices(1), the Koc for tetryl can be estimated to be 2,100(SRC). According to a classification scheme(2), this estimated Koc value suggests that tetryl is expected to have slight mobility in soil(SRC). It was demonstrated that nitroaromatic compounds (including tetryl) adsorb strongly to clay minerals in aqueous suspensions, particularly when exchangeable cations in the clays include ammonium and potassium(3).

Other adverse effects

no data available

SECTION 13: Disposal considerations

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

UN Number

ADR/RID: UN0208 (For reference only, please check.)

IMDG: UN0208 (For reference only, please check.)

IATA: UN0208 (For reference only, please check.)

UN Proper Shipping Name

ADR/RID: TRINITROPHENYLMETHYL- NITRAMINE (TETRYL)? (For reference only, please check.)

IMDG: TRINITROPHENYLMETHYL- NITRAMINE (TETRYL)? (For reference only, please check.)

IATA: TRINITROPHENYLMETHYL- NITRAMINE (TETRYL)? (For reference only, please check.)

Transport hazard class(es)

ADR/RID: 1.1D (For reference only, please check.)

IMDG: 1.1D (For reference only, please check.)

IATA: 1.1D (For reference only, please check.)

Packing group, if applicable

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

IMDG: (For reference only, please check.)

IATA: (For reference only, please check.)

Environmental hazards

ADR/RID: No

IMDG: No

IATA: No

Special precautions for user

no data available

Transport in bulk according to IMO instruments

no data available

SECTION 15: Regulatory information

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

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.

(PICCS)

Not Listed.

Vietnam National Chemical Inventory

Not Listed.

IECSC)

Not Listed.

Korea Existing Chemicals List (KECL)

Listed.

SECTION 16: Other information

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/>

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