ChemicalBook

Chemical Safety Data Sheet MSDS / SDS

2,4-Dinitrophenol

Revision Date:2025-02-01 Revision Number:1

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

Product identifier

Product name	: 2,4-Dinitrophenol
CBnumber	: CB6358550
CAS	: 51-28-5
EINECS Number	: 200-087-7
Synonyms	: 2,4-DINITROPHENOL,2,4-dnp

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
Address	: Building 1, Huihuang International, Shangdi 10th Street, Haidian District, Beijing
Telephone	: 010-86108875

SECTION 2: Hazards identification

GHS Label elements, including precautionary statements

Symbol(GHS)

Signal word Danger

Precautionary statements

P210 Keep away from heat/sparks/open flames/hot surfaces. — No smoking.

P260 Do not breathe dust/fume/gas/mist/vapours/spray.

P261 Avoid breathing dust/fume/gas/mist/vapours/spray.

P273 Avoid release to the environment.

P280 Wear protective gloves/protective clothing/eye protection/face protection.

P301+P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

P304+P340 IF INHALED: Remove victim to fresh air and Keep at rest in a position comfortable for breathing.

P311 Call a POISON CENTER or doctor/physician.

P320 Specific treatment is urgent (see … on this label).

P330 Rinse mouth.

P403+P233 Store in a well-ventilated place. Keep container tightly closed.

P405 Store locked up.

Hazard statements

H225 Highly Flammable liquid and vapour

H228 Flammable solid

H400 Very toxic to aquatic life

H373 May cause damage to organs through prolonged or repeated exposure

H370 Causes damage to organs

H330 Fatal if inhaled

H310 Fatal in contact with skin

H300 Fatal if swallowed

SECTION 3: Composition/information on ingredients

Substance

Product name	: 2,4-Dinitrophenol
Synonyms	: 2,4-DINITROPHENOL,2,4-dnp
CAS	: 51-28-5
EC number	: 200-087-7
MF	: C6H4N2O5
MW	: 184.11

SECTION 4: First aid measures

Description of first aid measures

General advice

First aider needs to protect himself. 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. Call a physician immediately.

In case of eye contact

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

If swallowed

If swallowed: give water to drink (two glasses at most). Seek medical advice immediately. In exceptional cases only, if medical care is not available within one hour, induce vomiting (only in persons who are wide awake and fully conscious), administer activated charcoal (20 - 40 g in a 10% slurry) and consult a doctor as quickly as possible.

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

Indication of any immediate medical attention and special treatment needed

No data available

SECTION 5: Firefighting measures

Extinguishing media

Suitable extinguishing media

Water Foam Carbon dioxide (CO2) Dry powder

Unsuitable extinguishing media

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

Special hazards arising from the substance or mixture

Carbon oxides Nitrogen oxides (NOx)

Mixture with combustible ingredients.

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

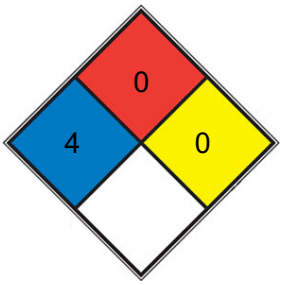
Advice for firefighters

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

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.

NFPA 704



■	HEALTH	4	Very short exposure could cause death or major residual injury (e.g. hydrogen cyanide, phosgene, methyl isocyanate, hydrofluoric acid)
■	FIRE	0	Materials that will not burn under typical fire conditions, including intrinsically noncombustible materials such as concrete, stone, and sand. Materials that will not burn in air when exposed to a temperature of 820 °C (1,500 °F) for a period of 5 minutes.(e.g. Carbon tetrachloride)
■	REACT	0	Normally stable, even under fire exposure conditions, and is not reactive with water (e.g. helium,N2)
□	SPEC. HAZ.		

SECTION 6: Accidental release measures

Personal precautions, protective equipment and emergency procedures

Advice for non-emergency personnel: Avoid generation and inhalation of dusts in all circumstances. 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.

Environmental precautions

Do not let product enter drains. Risk of explosion.

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. Dispose of properly. Clean up affected area. Avoid generation of dusts.

Reference to other sections

For disposal see section 13.

SECTION 7: Handling and storage

Precautions for safe handling

Advice on safe handling

Work under hood. Do not inhale substance/mixture.

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.

Conditions for safe storage, including any incompatibilities

Storage conditions

Tightly closed. Keep away from heat and sources of ignition. Keep locked up or in an area accessible only to qualified or authorized persons. Light sensitive. Heat sensitive.

Specific end use(s)

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

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SECTION 8: Exposure controls/personal protection

control parameter

Hazard composition and occupational exposure limits

Does not contain substances with occupational exposure limits.

Exposure controls

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

Body Protection

Flame retardant antistatic protective clothing.

Respiratory protection

required when dusts 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.

Recommended Filter type: Filter type P3

The entrepeneur has to ensure that maintenance, cleaning and testing of respiratory protective devices are carried out according to the instructions of the producer.

These measures have to be properly documented.

Control of environmental exposure

Do not let product enter drains. Risk of explosion.

SECTION 9: Physical and chemical properties

Information on basic physicochemical properties

Appearance	yellow crystalline
Odour	sweet
Odour Threshold	No data available d) pH 2,6 - 4,4 Melting point/freezing point Initial boiling point and boiling range Melting point/range: 108 - 112 °C - lit. No data available Flash point No data available Evaporation rate No data available Flammability (solid, The substance or mixture is a flammable solid with the category gas) 1. Upper/lower flammability or explosive limits No data available Vapour pressure 1,99 hPa at 18 °C Vapour density No data available Relative density 1,683 g/cm3 at 24 °C Water solubility 5,6 g/l at 18 °C - soluble Partition coefficient: n-octanol/water Autoignition temperature Decomposition temperature log Pow: 1,54 No data available No data available Viscosity Viscosity, kinematic: No data available Viscosity, dynamic: No data available Explosive properties Explosive when dry. Oxidizing properties No data available
Melting point/freezing point	Melting point/range: 108 - 112 °C - lit.
Initial boiling point and boiling range	108-112 °C (lit.)
Flash point	318.03°C (rough estimate)
Evaporation rate	11 °C
Flammability (solid, gas)	The substance or mixture is a flammable solid with the category 1.
Upper/lower flammability or explosive limits	No data available
Vapour pressure	1,99 hPa at 18 °C

Vapour density	39(x 10^{-5} mmHg) at 20 °C (Schwarzenbach et al., 1988)
Relative density	1,683 g/cm3 at 24 °C
Water solubility	5,6 g/l at 18 °C - soluble
Partition coefficient: n-octanol/water	log Pow: 1,54
Autoignition temperature	No data available
Decomposition temperature	No data available
Viscosity	Viscosity, kinematic: No data available Viscosity, dynamic: No data available
Explosive properties	Explosive when dry.
Oxidizing properties	No data available
Henry's Law Constant	5.70 x 10^{-8}(atm?m^3/mol) at 5 °C (average derived from six field experiments, Lüttke and Levsen, 1997)

Other safety information

Dissociation constant 4,09

SECTION 10: Stability and reactivity

Reactivity

The following applies in general to flammable organic substances and mixtures: in correspondingly fine distribution, when whirled up a dust explosion potential may generally be assumed.

Chemical stability

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

Possibility of hazardous reactions

No data available

Conditions to avoid

Heat. Explosive when dry. no information available

Incompatible materials

Strong oxidizing agents, Strong bases, Acid chlorides, Acid anhydrides

Hazardous decomposition products

In the event of fire: see section 5

SECTION 11: Toxicological information

Information on toxicological effects

Acute toxicity

No data available

Skin corrosion/irritation

No data available

Serious eye damage/eye irritation

No data available

Respiratory or skin sensitization

No data available

Germ cell mutagenicity

Test Type: Ames test

Test system: Salmonella typhimurium TA100, TA1535, TA98, TA1537, Escherichia coli WP2 uvrA

Method: Guidelines for Screening Mutagenicity Testing of Chemicals(Chemical Substances Control Law of Japan) and OECD Test Guideline 471

Metabolic activation: with and without metabolic activation

Result:This chemical possibly induced gene mutations in S. typhimurium TA98 without S9 mix. Toxicity was observed at and above 1250 µg/plate (TA1537) and 2500 µg/plate (TA100 and TA1535), at 2500 µg/plate (TA98), and 5000 µg/plate (WP2 uvrA) without S9 mix, and

Test Type: Chromosome aberration test in vitro

Test system: Chinese hamster lung (CHL/IU) cells

Method: Guidelines for Screening Mutagenicity Testing of Chemicals(Chemical Substances Control Law of Japan) and OECD Test Guideline 473

Metabolic activation: with and without metabolic activation

Result:With the 6 hr short-term treatment, structural chromosomal aberrations were induced at 1200 and 1500 µg/ mL (11.5 and 23.0 %) without S9 mix, and at 1200, 1500 and 1800 µg/ mL (17.0, 22.5 and 18.0 %) with S9 mix, respectively. Polyploidy was not induced

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.

Reproductive toxicity

No data available

Specific target organ toxicity - single exposure

No data available

Specific target organ toxicity - repeated exposure

Mixture may cause damage to organs through prolonged or repeated exposure.

Aspiration hazard

No data available

Toxicity

LD50 (subcutaneous) for rats 25 mg/kg (quoted, RTECS, 1985).

SECTION 12: Ecological information

Toxicity

Mixture

No data available

Persistence and degradability

No data available

Bioaccumulative potential

No data available

Mobility in soil

No data available

Results of PBT and vPvB assessment

This substance/mixture contains no components considered to be either persistent, bioaccumulative and toxic (PBT), or very persistent and very bioaccumulative (vPvB) at levels of 0.1% or higher.

Toxics Screening Level

The current ITSL for 2,4-Dinitrophenol (7 µg/m3) was derived on October 3, 2006.

Other adverse effects

No data available

Components

2,4-Dinitrophenol

Toxicity to fish LC50 - Cyprinodon variegatus (sheepshead minnow) - 13,0 - 36,3 mg/l - 96,0 h

LC50 - Lepomis macrochirus (Bluegill) - 1,76 - 5,9 mg/l - 96,0 h

NOEC - Cyprinodon variegatus (sheepshead minnow) - 10,0 mg/l - 96,0 h

static test LC50 - Oncorhynchus mykiss (rainbow trout) - 0,39 mg/l - 96 h

Toxicity to daphnia and other aquatic invertebrates

EC50 - Daphnia magna (Water flea) - 6,10 - 7,00 mg/l - 24 h

LC50 - Daphnia magna (Water flea) - 4,1 mg/l - 48 h

Toxicity to algae EC50 - Desmodesmus subspicatus (green algae) - 40,00 mg/l - 48 h

EC50 - SELENASTRUM - 5,55 - 17,40 mg/l - 72 h

SECTION 13: Disposal considerations

Waste treatment methods

Product

See www.retrologistik.com for processes regarding the return of chemicals and containers, or contact us there if you have further questions.

SECTION 14: Transport information

UN number

ADR/RID: 1320 IMDG: 1320 IATA: 1320

UN proper shipping name

	ADR/RID: DINITROPHENOL, WETTED IMDG: DINITROPHENOL, WETTED	
IATA: Dinitrophenol, wetted		
14.3	Transport hazard class(es)	
	ADR/RID: 4.1 (6.1) IMDG: 4.1 (6.1)	IATA: 4.1 (6.1)
14.4	Packaging group	
	ADR/RID: I IMDG: I	IATA: I
14.5	Environmental hazards	
	ADR/RID: yes IMDG Marine pollutant: yes	IATA: no
14.6	Special precautions for user	
	No data available	

SECTION 15: Regulatory information

Safety, health and environmental regulations/legislation specific for the substance or mixture

Regulations on the Safety Management of Hazardous Chemicals

China Catalog of Hazardous chemicals 2015:Listed. website: https://www.mem.gov.cn/

Measures for Environmental Management of New Chemical Substances

Chinese Chemical Inventory of Existing Chemical Substances (China IECSC):Listed. website: https://www.mee.gov.cn/

Vietnam National Chemical Inventory:Listed. website: https://chemicaldata.gov.vn/

United States Toxic Substances Control Act (TSCA) Inventory:Listed. website: https://www.epa.gov/

Philippines Inventory of Chemicals and Chemical Substances (PICCS):Listed. website: https://emb.gov.ph/

New Zealand Inventory of Chemicals (NZIoC):Listed. website: https://www.epa.govt.nz/

Korea Existing Chemicals List (KECL):Listed. website: http://ncis.nier.go.kr

European Inventory of Existing Commercial Chemical Substances (EINECS):Listed. website: https://echa.europa.eu/

EC Inventory:Listed.

SECTION 16: Other information

Abbreviations and acronyms

ADR: European Agreement concerning the International Carriage of Dangerous Goods by Road

CAS: Chemical Abstracts Service

EC50: Effective Concentration 50%

IATA: International Air Transportation Association

IMDG: International Maritime Dangerous Goods

LC50: Lethal Concentration 50%

LD50: Lethal Dose 50%

RID: Regulation concerning the International Carriage of Dangerous Goods by Rail

STEL: Short term exposure limit

TWA: Time Weighted Average

References

【1】CAMEO Chemicals, website: http://cameochemicals.noaa.gov/search/simple

【2】ChemIDplus, website: http://chem.sis.nlm.nih.gov/chemidplus/chemidlite.jsp

【3】ECHA - European Chemicals Agency, website: https://echa.europa.eu/

【4】eChemPortal - The Global Portal to Information on Chemical Substances by OECD, website: http://www.echemportal.org/echemportal/index?pageID=0&request_locale=en

【5】ERG - Emergency Response Guidebook by U.S. Department of Transportation, website: http://www.phmsa.dot.gov/hazmat/library/erg

【6】Germany GESTIS-database on hazard substance, website: http://www.dguv.de/ifa/gestis/gestis-stoffdatenbank/index-2.jsp

【7】HSDB - Hazardous Substances Data Bank, website: https://toxnet.nlm.nih.gov/newtoxnet/hsdb.htm

【8】IARC - International Agency for Research on Cancer, website: http://www.iarc.fr/

【9】IPCS - The International Chemical Safety Cards (ICSC), website: http://www.ilo.org/dyn/icsc/showcard.home

【10】Sigma-Aldrich, website: https://www.sigmaaldrich.com/

Other Information

Use all available methods for reducing body temperature.Because of its explosive properties, the compound is used in the form of a water paste.UN 0076 applies to the dry compound or wetted with less than 15% water (Hazard class 1, Subsidiary Risks 6.1). UN 1320 applies to compound wetted with no less than 15% waterCAS 25550-58-7 applies to unspecified isomers of dinitrophenol.