

## SAFETY DATA SHEET

Version 6.7  
Revision Date 03/02/2024  
Print Date 04/13/2024

**SECTION 1: Identification of the substance/mixture and of the company/undertaking****1.1 Product identifiers**

Product name : 2,4-Dinitrophenol

Product Number : D198501  
Brand : Aldrich

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

Identified uses : Laboratory chemicals, Synthesis of substances

Uses advised against : The product is being supplied under the TSCA R&D Exemption (40 CFR Section 720.36). It is the recipient's responsibility to comply with the requirements of the R&D exemption. The product may not be used for a non-exempt commercial purpose under TSCA unless appropriate consent is granted in writing by MilliporeSigma.

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

Company : Sigma-Aldrich Inc.  
3050 SPRUCE ST  
ST. LOUIS MO 63103  
UNITED STATES

Telephone : +1 314 771-5765  
Fax : +1 800 325-5052

**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 29 CFR 1910 (OSHA HCS)**

Flammable solids (Category 1), H228  
Acute toxicity, Oral (Category 2), H300  
Acute toxicity, Inhalation (Category 3), H331  
Acute toxicity, Dermal (Category 3), H311  
Specific target organ toxicity - repeated exposure (Category 1), H372

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Short-term (acute) aquatic hazard (Category 1), H400

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 Statements

|             |                                                                 |
|-------------|-----------------------------------------------------------------|
| H228        | Flammable solid.                                                |
| H300        | Fatal if swallowed.                                             |
| H311 + H331 | Toxic in contact with skin or if inhaled.                       |
| H372        | Causes damage to organs through prolonged or repeated exposure. |
| H400        | Very toxic to aquatic life.                                     |

Precautionary Statements

|                    |                                                                                                          |
|--------------------|----------------------------------------------------------------------------------------------------------|
| P210               | Keep away from heat/ sparks/ open flames/ hot surfaces. No smoking.                                      |
| P240               | Ground/bond container and receiving equipment.                                                           |
| P241               | Use explosion-proof electrical/ ventilating/ lighting/ equipment.                                        |
| P260               | Do not breathe dust.                                                                                     |
| 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.                                                          |
| P273               | Avoid release to the environment.                                                                        |
| P280               | Wear protective gloves/ eye protection/ face protection.                                                 |
| P301 + P310 + P330 | IF SWALLOWED: Immediately call a POISON CENTER/ doctor. Rinse mouth.                                     |
| P302 + P352 + P312 | IF ON SKIN: Wash with plenty of water. Call a POISON CENTER/ doctor if you feel unwell.                  |
| P304 + P340 + P311 | IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/ doctor. |
| P314               | Get medical advice/ attention if you feel unwell.                                                        |
| P362               | Take off contaminated clothing and wash before reuse.                                                    |
| P370 + P378        | In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.                     |
| P391               | Collect spillage.                                                                                        |
| P403 + P233        | Store in a well-ventilated place. Keep container tightly closed.                                         |
| 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

Desensitized explosive

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## SECTION 3: Composition/information on ingredients

### 3.2 Mixtures

Synonyms :  $\alpha$ -Dinitrophenol

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Molecular weight : 184.11 g/mol

| Component                |              | Classification                                                                                                    | Concentration     |
|--------------------------|--------------|-------------------------------------------------------------------------------------------------------------------|-------------------|
| <b>2,4-Dinitrophenol</b> |              |                                                                                                                   |                   |
| CAS-No.                  | 51-28-5      | Expl. 1.1; Acute Tox. 2;<br>Acute Tox. 3; STOT RE 1;<br>Aquatic Acute 1; H201,<br>H300, H331, H311, H372,<br>H400 | >= 70 - < 90<br>% |
| EC-No.                   | 200-087-7    |                                                                                                                   |                   |
| Index-No.                | 609-041-00-4 |                                                                                                                   |                   |

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

First aiders need to protect themselves. 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.

### 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 (CO2) 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.

Explosive decomposition possible on heating.

Avoid shock and friction.

Risk of explosion.

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**

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: Avoid generation and inhalation of dusts in all circumstances. Avoid substance contact. Ensure adequate ventilation. 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.

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

**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.

**Advice on protection against fire and explosion**

Keep away from open flames, hot surfaces and sources of ignition.

**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

### 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.

### Storage class

Storage class (TRGS 510): 4.1B: Flammable solid hazardous materials

## 7.3 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

### 8.1 Control parameters

#### Ingredients with workplace control parameters

Contains no substances with occupational exposure limit values.

### 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

##### Body Protection

protective clothing

##### Respiratory protection

Recommended Filter type: Filter type P3

The entrepreneur 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.  
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.

#### Control of environmental exposure

Do not let product enter drains.

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## SECTION 9: Physical and chemical properties

### 9.1 Information on basic physical and chemical properties

|                                                 |                                                                    |
|-------------------------------------------------|--------------------------------------------------------------------|
| a) Appearance                                   | Form: crystalline<br>Color: yellow                                 |
| b) Odor                                         | sweet                                                              |
| c) Odor Threshold                               | No data available                                                  |
| d) pH                                           | 2.6 - 4.4                                                          |
| e) Melting point/freezing point                 | Melting point/range: 108 - 112 °C (226 - 234 °F) - lit.            |
| f) Initial boiling point and boiling range      | No data available                                                  |
| g) Flash point                                  | ( )No data available                                               |
| h) Evaporation rate                             | No data available                                                  |
| i) Flammability (solid, gas)                    | The substance or mixture is a flammable solid with the category 1. |
| j) Upper/lower flammability or explosive limits | No data available                                                  |
| k) Vapor pressure                               | 1.99 hPa at 18 °C (64 °F)                                          |
| l) Vapor density                                | No data available                                                  |
| m) Density                                      | 1.683 g/cm <sup>3</sup> at 24 °C (75 °F)                           |
| Relative density                                | No data available                                                  |
| n) Water solubility                             | 5.6 g/l at 18 °C (64 °F) - soluble                                 |
| o) Partition coefficient: n-octanol/water       | log Pow: 1.54                                                      |
| p) Autoignition temperature                     | No data available                                                  |
| 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

Dissociation constant 4.09

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## SECTION 10: Stability and reactivity

### 10.1 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.

### 10.2 Chemical stability

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

### 10.3 Possibility of hazardous reactions

No data available

### 10.4 Conditions to avoid

Heat. Explosive when dry.  
no information available

### 10.5 Incompatible materials

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

### 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

#### Mixture

#### Acute toxicity

Oral: No data available

Inhalation: No data available

Dermal: 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

No data available

#### 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.

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

OSHA: No component of this product present at levels greater than or equal to 0.1% is on OSHA's list of regulated carcinogens.

**Reproductive toxicity**

No data available

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

Mixture causes damage to organs through prolonged or repeated exposure.

**Aspiration hazard**

No data available

**11.2 Additional Information**

To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Other dangerous properties can not be excluded.

This substance should be handled with particular care.

Handle in accordance with good industrial hygiene and safety practice.

**Components****2,4-Dinitrophenol****Acute toxicity**

Acute toxicity estimate Oral - 30 mg/kg

(Expert judgment)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Acute toxicity estimate Inhalation - 4.0 h - 0.51 mg/l - dust/mist

(Expert judgment)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

Acute toxicity estimate Dermal - 300 mg/kg

(Expert judgment)

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

**Skin corrosion/irritation**

Skin - Rabbit

Result: slight irritation

Remarks: (ECHA)

**Serious eye damage/eye 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

**Specific target organ toxicity - single exposure**

No data available

**Specific target organ toxicity - repeated exposure**

Oral - Causes damage to organs through prolonged or repeated exposure.

Remarks: Classified according to Regulation (EU) 1272/2008, Annex VI (Table 3.1/3.2)

**Aspiration hazard**

No data available

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**SECTION 12: Ecological information****12.1 Toxicity****Mixture**

No data available

**12.2 Persistence and degradability**

No data available

**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**

No data available

**Components****2,4-Dinitrophenol**

No data available

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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.

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## SECTION 14: Transport information

#### DOT (US)

UN number: 1320 Class: 4.1 (6.1) Packing group: I  
Proper shipping name: Dinitrophenol, wetted  
Reportable Quantity (RQ): 11 lbs  
Poison Inhalation Hazard: No

#### IMDG

UN number: 1320 Class: 4.1 (6.1) Packing group: I EMS-No: F-B, S-J  
Proper shipping name: DINITROPHENOL, WETTED  
Marine pollutant : yes  
Marine pollutant : yes

#### IATA

UN number: 1320 Class: 4.1 (6.1) Packing group: I  
Proper shipping name: Dinitrophenol, wetted

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## SECTION 15: Regulatory information

#### SARA 302 Components

This material does not contain any components with a section 302 EHS TPQ.

#### SARA 313 Components

The following components are subject to reporting levels established by SARA Title III, Section 313:

|                   | CAS-No. | Revision Date |
|-------------------|---------|---------------|
| 2,4-Dinitrophenol | 51-28-5 | 2007-07-01    |

#### SARA 311/312 Hazards

Fire Hazard, Acute Health Hazard

#### Massachusetts Right To Know Components

|                   | CAS-No.   | Revision Date |
|-------------------|-----------|---------------|
| 2,4-Dinitrophenol | 51-28-5   | 2007-07-01    |
| water             | 7732-18-5 |               |

#### Pennsylvania Right To Know Components

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**SECTION 16: Other information****Further information**

The information is believed to be correct but is not exhaustive and will be used solely as a guideline, which is based on current knowledge of the chemical substance or mixture and is applicable to appropriate safety precautions for the product. 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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Version: 6.7

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