1. PRODUCT AND COMPANY IDENTIFICATION

Product name: 4-Nitrophenol
Product Number: 241326
Supplier: Sigma-Aldrich
Supplier Address: 3050 Spruce Street
SAINT LOUIS MO 63103 USA
Telephone: +1 800-325-5832
Emergency Phone #: (314) 776-4355
Preparation Information: Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8558

2. HAZARDS IDENTIFICATION

Emergency Overview
OSHA Hazards
Toxic by inhalation, Toxic by ingestion, Harmful by skin absorption.
Target Organs
Blood, Central nervous system, Eyes
GHS Classification
Acute toxicity, Inhalation (Category 4)
Acute toxicity, Dermal (Category 4)
Acute toxicity, Oral (Category 3)
Acute aquatic toxicity (Category 2)
OHSA Label elements, including precautionary statements
Pictogram: ☭
Signal word: Danger
Hazard statement(s)
H301: Toxic if swallowed.
H312 + H332: Harmful in contact with skin or if inhaled.
H401: Toxic to aquatic life.
Precautionary statement(s)
P280: Wear protective gloves/ protective clothing
P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Component: p-Nitrophenol
CAS-No.: 100-02-7
EC-No.: 202-811-7
Index No.: 600-015-00-2

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.
Inhalation
If breathed in, move person into fresh air. IF NOT BREATHING, give artificial respiration. Consult a physician.
In case of skin contact
Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.
In case of eye contact
Flush eyes with water as a precaution.
If swallowed
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIREFIGHTING MEASURES

Conditions of flammability
Not flammable or combustible.
Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.
Special protective equipment for firefighters
Wear self-contained breathing apparatus for fire fighting if necessary.
Hazardous combustion products
Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx)

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Wear respiratory protection. Avoid dust formation. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas. Avoid breathing dust.
Environmental precautions
Prevent further leakage or spillage if safe to do so. Do not let product enter drains. Discharge into the environment must be avoided.
7. HANDLING AND STORAGE
Precautions for safe handling
Avoid contact with skin and eyes. Avoid formation of dust and aerosols.
Provide appropriate exhaust ventilation at places where dust is formed.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Contains no substances with occupational exposure limit values.

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N99 (US) or type P2 (EN 143) respirator cartridges as a backup to engineering controls. If the respirator is the sole means of protection, use a full-face supplied air respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

Hand protection
Handle with gloves. Gloves must be inspected prior to use. Use proper glove removal technique (without touching glove's outer surface) to avoid skin contact with this product. Dispose of contaminated gloves after use in accordance with applicable laws and good laboratory practices. Wash and dry hands.

Immersion protection
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: > 460 min
Material tested: Dermat® (Aldrich ZS77272, Size M)

Splash protection
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: > 30 min
Material tested: Dermat® (Aldrich ZS77272, Size M)

data source: KCL GmbH, D-56164 Eichenzell, phone +49 (0)6659 873000, e-mail sales@kcl.de, test method: EN374
If used in solution, or mixed with other substances, and under conditions which differ from EN 374, contact the supplier of the CE approved gloves. This recommendation is advisory only and must be evaluated by an Industrial Hygienist familiar with the specific situation of anticipated use by our customers. It should not be construed as an offering an approval for any specific use scenario.

Eye protection
Face shield and safety glasses Use equipment for eye protection tested and approved under appropriate government standards such as NIOSH (US) or EN 166 (EU).

Skin and body protection
Complete suit protecting against chemicals, the type of protective equipment must be selected according to the concentration and amount of the dangerous substance at the specific workplace.

Hygiene measures
Avoid contact with skin, eyes and clothing. Wash hands before breaks and immediately after handling the product.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance
Form: crystalline
Colour: light yellow

Safety data
pH: 4.4 at 5.0000 g/l at 24.0 °C (75.2 °F)
Melting point/freezing point: 110 - 115 °C (230 - 239 °F) - lit.
Boiling point: 279 °C (534 °F) - lit.
Flash point: 169.0 °C (338.2 °F) - closed cup
Ignition temperature: 283 °C (541 °F)
Autoignition temperature: 283.0 °C (541.4 °F)
Lower explosion limit: no data available
Upper explosion limit: no data available
Vapour pressure: 9.2 hPa (69.9 mmHg) at 165.0 °C (329.0 °F)
9.6 hPa (71.6 mmHg) at 129.0 °C (262.0 °F)
Density: 1.48 g/cm³ at 20.00 °C (68.00 °F)
Water solubility: 15 g/l
Partition coefficient: log Pow: 1.91
Relative vapour density: no data available
Odour: no data available
Odour threshold: no data available
Evaporation rate: no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
no data available

Conditions to avoid
no data available

Materials to avoid
Strong oxidizing agents, strong bases

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx)
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity
Oral LD50
LD50 Oral - rat: 252 mg/kg
LD50 Oral - mouse: 360 mg/kg
Remarks: Behavioral/Somatolimine (general depressed activity). Behavioral Convulsions or effect on seizure threshold.
Lungs, Thorax, or Respiratory/Dyspnea.
Inhalation LC50
Dermal LD50
Dermal - rat: 1,024 mg/kg
Other Information on 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  
no data available

Carcinogenicity  
IARC: No component of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

ACGIH: No component of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.

NTP: No component 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 identified as a carcinogen or potential carcinogen by OSHA.

Reproductive toxicity  
no data available

Teratogenicity  
no data available

Specific target organ toxicity - single exposure (Globally Harmonized System)  
no data available

Specific target organ toxicity - repeated exposure (Globally Harmonized System)  
The substance or mixture is classified as specific target organ toxicant, repeated exposure, category 2.

Aspiration hazard  
no data available

Potential health effects  

Inhalation  Toxic if inhaled. May cause respiratory tract irritation.

Ingestion  Toxic if swallowed.

Skin  May cause skin irritation.

Eyes  May cause eye irritation.

Signs and Symptoms of Exposure  
Absorption into the body leads to the formation of methemoglobin which in sufficient concentration causes cyanosis. Onset may be delayed 2 to 4 hours or longer. Depending on the intensity and duration of exposure, effects may vary from mild irritation to severe destruction of tissue. Damage to the eyes.

Synergistic effects  
no data available

Additional information  
RTECS: GM2275000

12. ECOLOGICAL INFORMATION  

Toxicity  

Toxicity to fish  
LC50 - Oxyrinchus variegatus (three-striped minnow) - 0.70 - 1.30 mg/l - 96 h

LC50 - Oncorhynchus mykiss (rainbow trout) - 3.60 - 18.00 mg/l - 96 h

LC50 - Pimephales promelas (fathead minnow) - 30.40 - 67.00 mg/l - 96 h

NOEC: Oncorhynchus mykiss (rainbow trout) - 5.31 mg/l - 14 d

Toxicity to daphnia and other aquatic invertebrates  
EC50 - Daphnia magna (Water flea) - 3.10 - 24.60 mg/l - 48 h

Toxicity to algae  
EC50 - No information available - 11.00 mg/l - 48 h

Persistence and degradability  

Bioaccumulative potential  
Bioaccumulation: Pimephales promelas (fathead minnow) - 28 d

Bioconcentration factor (BCF): 380

Mobility in soil  
no data available

PBT and vPvB assessment  
no data available

Other adverse effects  
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal. Toxic to aquatic life. Do not empty into drains.

13. DISPOSAL CONSIDERATIONS  

Product  
Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material. Dispose of or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.

Contaminated packaging  
Dispose of as unused product.

14. TRANSPORT INFORMATION  

DOT (US)  
UN number: 1603 Class: 6.1  Packing group: III

Proper shipping name: Nitrophenols

Reportable Quantity (RQ): 100 lbs

Marine pollutant: No

Poison Inhalation Hazard: No

IMDG  
UN number: 1603 Class: 6.1  Packing group: III

EMS-No: F-A, S-A

Proper shipping name: NITROPHENOLS (cr., m., p.)

Marine pollutant: No

IATA  
UN number: 1603 Class: 6.1  Packing group: III

Proper shipping name: Nitrophenols

15. REGULATORY INFORMATION  

OSHA Hazards  
Toxic by inhalation, Toxic by ingestion, Harmful by skin absorption.

SARA 302 Components  
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Components  
The following components are subject to reporting levels established by SARA Title III, Section 313:
<table>
<thead>
<tr>
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<th>Revision Date</th>
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**SARA 311/312 Hazards**

**Acute Health Hazard**

**Massachusetts Right To Know Components**

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**Pennsylvania Right To Know Components**

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**New Jersey Right To Know Components**

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**California Prop. 65 Components**

This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

**16. OTHER INFORMATION**

Further Information

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