Section 1 - Product and Company Information

Product Name: 4-Nitrobenzaldehyde, 98%
Product Number: 130179
Brand: Aldrich Chemical
Company: Sigma-Aldrich
Address: 3050 Spruce Street
City, State, Zip, Country: SAINT LOUIS, MO 63103 US
Technical Phone: 800-355-6952
Fax: 800-355-6052
Emergency Phone: 314-776-6555

Section 2 - Composition/Information on Ingredient

<table>
<thead>
<tr>
<th>Substance Name</th>
<th>CAS #</th>
<th>SARA 313</th>
<th>EC No</th>
<th>Annex I Index Number</th>
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</thead>
<tbody>
<tr>
<td>4-NITROBENZALDEHYDE</td>
<td>555-16-9</td>
<td>No</td>
<td>209-064-6</td>
<td></td>
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</tbody>
</table>

Formula: C7H6N2O3
Synonyms: Benzaldehyde, 4-nitro-(9CI), p-Formylbenzenone, p-Nitrobenzaldehyde, 4-Nitrobenzaldehyde

Section 3 - Hazards Identification

Emergency Overview
Harmful. Irritating to eyes. May cause sensitization by skin contact. Harmful to aquatic organisms. May cause long-term adverse effects in the aquatic environment. Possible mutagen.

HMIS Rating
Health: 3* Flammability: 0 Reactivity: 0
NFPA Rating
Health: 3 Flammability: 0 Reactivity: 0
*additional chronic hazards present.
For additional information on toxicity, please refer to Section 11.

Section 4 - First Aid Measures

Oral Exposure
If swallowed, wash out mouth with water provided person is conscious. Call a physician.

Inhalation Exposure
If inhaled, remove to fresh air. If breathing becomes difficult, call a physician.

Section 5 - Fire Fighting Measures

Autoignition Temp: N/A
Extinguishing Media
Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

Firefighting
Protective Equipment
Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.
Specific Hazard(s)
Emits toxic fumes under fire conditions.

Section 6 - Accidental Release Measures

Procedure(s) of Personal Precaution(s)
Wear respirator, chemical safety goggles, rubber boots, and heavy rubber gloves.

Methods for Cleaning Up
Sweep up, place in a bag and hold for waste disposal. Avoid raising dust. Ventilate area and wash spill site after material pickup is complete.

Section 7 - Handling and Storage

Handling
Avoid breathing dust. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure.

Storage
Suitable: Keep tightly closed.

Section 8 - Exposure Controls / PPE

Engineering Controls
Mechanical exhaust required.

Personal Protective Equipment
Respiratory
Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU). Where risk assessment shows air-purifying respirators are appropriate use a dust mask type N95 (US) or type P1 (EN 143)

Other
Wear appropriate government approved respirator, chemical-resistant gloves, safety goggles, other protective clothing.
General Hygiene Measures
Wash thoroughly after handling. Wash contaminated clothing before reuse.

Section 9 - Physical/Chemical Properties

<table>
<thead>
<tr>
<th>Appearance</th>
<th>Color</th>
<th>Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical State</td>
<td>Slightly yellow</td>
<td>Powder</td>
</tr>
</tbody>
</table>

Molecular Weight: 151.12 AMU

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
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<tbody>
<tr>
<td>pH</td>
<td>N/A</td>
</tr>
<tr>
<td>BPG/VP Range</td>
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<tr>
<td>MP/OM Range</td>
<td>104 °C</td>
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<tr>
<td>Freezing Point</td>
<td>N/A</td>
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<tr>
<td>Vapor Pressure</td>
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<tr>
<td>Vapor Density</td>
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<tr>
<td>Saturated Vapor Conc.</td>
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<tr>
<td>SG/Density</td>
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<tr>
<td>bulk Density</td>
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<tr>
<td>Odor Threshold</td>
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<tr>
<td>Volatile%</td>
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</tr>
<tr>
<td>VOC Content</td>
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</tr>
<tr>
<td>Water Content</td>
<td>N/A</td>
</tr>
<tr>
<td>Solvent Content</td>
<td>N/A</td>
</tr>
<tr>
<td>Evaporation Rate</td>
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</tr>
<tr>
<td>Viscosity</td>
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<tr>
<td>Partition Coefficient</td>
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<tr>
<td>Decomposition Temp.</td>
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</tr>
<tr>
<td>Flash Point °F</td>
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</tr>
<tr>
<td>Flash Point °C</td>
<td>N/A</td>
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<tr>
<td>Explosion Limits</td>
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<tr>
<td>Flammability</td>
<td>N/A</td>
</tr>
<tr>
<td>Autoignition Temp.</td>
<td>N/A</td>
</tr>
<tr>
<td>Solubility</td>
<td>N/A</td>
</tr>
<tr>
<td>N/A = not available</td>
<td></td>
</tr>
</tbody>
</table>

Section 10 - Stability and Reactivity

Stability
Stable
Stable

Materials to Avoid
Strong oxidizing agents, strong bases, strong reducing agents.

Hazardous Decomposition Products
Carbon monoxide, Carbon dioxide, Nitrogen oxides.

Section 11 - Toxicological Information

Hazardous Polymerization
Will not occur.

Route of Exposure
Skin Contact
May cause skin irritation.

Skin Absorption
May be harmful if absorbed through the skin.

Eye Contact
Causes eye irritation.

Inhalation
May be harmful if inhaled. Material may be irritating to mucous membranes and upper respiratory tract.

Ingestion
May be harmful if swallowed.

Sensitization
Skin
May cause allergic skin reaction. The preceding data, or interpretation of data, was determined using Quantitative Structure Activity Relationship (QSAR) modeling.

Signs and Symptoms of Exposure
Prolonged exposure can cause: Nestic effect.

RTCS Number: CU736000

Toxicity Data
Oral - Rat: 4700 mg/kg (LD50)
Remarks: Behavioral Somnolence (general depressed activity), Lungs, Thorax, or Respiratory/Cyanosis, Blood Nenostotic anemia.

Skin - Rat: 16000 mg/kg (LD50)
Remarks: Behavioral Somnolence (general depressed activity), Lungs, Thorax, or Respiratory/Cyanosis, Blood Nenostotic anemia.

Intraperitoneal - Rat: 0.45 MG/KG (LD50)

Section 12 - Ecological Information

Acute Ecotoxicity Tests
Test Type
LC50 Fish

Species
Pimephales promelas (Fathead minnow)

Time: Value:
96.0 h 10.1 mg/L

Section 13 - Disposal Considerations

Appropriate Method of Disposal of Substance or Preparation
Contact a licensed professional waste disposal service to dispose of this material.
Dissolve or mix the material with a combustible solvent and burn in a chemical incinerator equipped with an afterburner and scrubber.
Observe all federal, state, and local environmental regulations.
Section 14 - Transport Information

DOT
Proper Shipping Name: None
Non-Hazardous for Transport: This substance is considered to be non-hazardous for transport.

IATA
Non-Hazardous for Air Transport: Non-hazardous for air transport.

Section 15 - Regulatory Information

EU Additional Classification
Symbol of Danger: X
Indication of Danger
Irritant
Risk Statements R: 36 43 S5/S3
Irritating to eyes. May cause sensitisation by skin contact. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety Statements S: 26 36/37 G1
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing and gloves. Avoid release to the environment. Refer to special instructions/safety data sheets.

US Classification and Label Text
Indication of Danger
Harmful
Risk Statements
Irritating to eyes. May cause sensitisation by skin contact. Harmful to aquatic organisms, may cause long-term adverse effects in the aquatic environment.
Safety Statements
In case of contact with eyes, rinse immediately with plenty of water and seek medical advice. Wear suitable protective clothing and gloves. Avoid release to the environment. Refer to special instructions/safety data sheets.

United States Regulatory Information
SARA Listed: No

Section 16 - Other Information

Disclaimer
For R&D use only. Not for drug, household or other uses.

Warranty
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. Sigma-Aldrich Inc. shall not be held liable in any manner for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale. Copyright 2007 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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