2-FLUOROBENZONITRILE, 99%

1. Product Identification
   
   **Synonyms:** Benzonitrile, o-fluoro-; o-Cyanofluorobenzene; o-Fluorobenzonitrile
   **CAS No.:** 394-47-8
   **Molecular Weight:** 121.11
   **Chemical Formula:** C7H4FN
   **Product Codes:** F0068

2. Composition/Information on Ingredients
   
<table>
<thead>
<tr>
<th>CAS#</th>
<th>Chemical Name</th>
<th>Percent</th>
<th>EINECS/ELINCS</th>
</tr>
</thead>
<tbody>
<tr>
<td>394-47-8</td>
<td>2-Fluorobenzonitrile</td>
<td>99</td>
<td>206-897-7</td>
</tr>
</tbody>
</table>

3. Hazards Identification
   
   **EMERGENCY OVERVIEW**
   
   Appearance: colorless to light brown clear liquid. Flash Point: 73 deg C.
   **Warning:** Harmful if swallowed, inhaled, or absorbed through the skin. Causes respiratory tract irritation. Causes eye and skin irritation. Combustible liquid and vapor. The toxicological properties of this material have not been fully investigated.
   **Target Organs:** Eyes, skin, mucous membranes.

   **Potential Health Effects**
   **Eye:** May cause eye irritation.
   **Skin:** May cause skin irritation. Harmful if absorbed through the skin. May be metabolized to cyanide which in turn acts by inhibiting cytochrome oxidase impairing cellular respiration. Most nitrile compounds are well absorbed through intact skin, and may cause delayed onset of symptoms following exposure by this route.
   **Ingestion:** Harmful if swallowed. May cause irritation of the digestive tract. The toxicological properties of this substance have not been fully investigated. Metabolism may release cyanide, which may result in headache, dizziness, weakness, collapse, unconsciousness and possible death.
   **Inhalation:** Harmful if inhaled. May cause respiratory tract irritation. The toxicological properties of this substance have not been fully investigated. Inhalation may result in symptoms similar to cyanide poisoning which include tachypnea, hyperpnea (abnormally rapid or deep breathing), and dyspnea (labored breathing) followed rapidly by respiratory depression. Pulmonary edema may occur.
   **Chronic:** May be metabolized to cyanide which in turn acts by inhibiting cytochrome oxidase impairing cellular respiration. Exposure to small amounts of cyanide compounds over long periods of time is reported to cause loss of appetite, headache, weakness, nausea, dizziness, and symptoms of irritation of the upper respiratory tract and eyes.

4. First Aid Measures
   
   **Eyes:** In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Get medical aid.
5. Fire Fighting Measures

**General Information:** As in any fire, wear a self-contained breathing apparatus in pressure-demand, MSHA/NIOSH (approved or equivalent), and full protective gear. During a fire, irritating and highly toxic gases may be generated by thermal decomposition or combustion. Combustible liquid and vapor. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Combustion by-products include oxides of nitrogen and hydrogen cyanide.

**Flash Point:** 73 deg C (163.40 deg F)

**Autoignition Temperature:** Not available.

**Explosion Limits, Lower:** Not available.

**Upper:** Not available.

**NFPA Rating:** (estimated) Health: 2; Flammability: 2; Instability: 0

6. Accidental Release Measures

**General Information:** Use proper personal protective equipment as indicated in Section 8.

**Spills/Leaks:** Absorb spill with inert material (e.g. vermiculite, sand or earth), then place in suitable container. Remove all sources of ignition. Provide ventilation.

7. Handling and Storage

**Handling:** Wash thoroughly after handling. Use with adequate ventilation. Avoid contact with eyes, skin, and clothing. Keep container tightly closed. Avoid ingestion and inhalation. Keep away from heat and flame.

**Storage:** Keep away from heat and flame. Store in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances.

8. Exposure Controls, Personal Protection

**Engineering Controls:** Facilities storing or utilizing this material should be equipped with an eyewash facility and a safety shower. Use adequate ventilation to keep airborne concentrations low.

**Exposure Limits**

<table>
<thead>
<tr>
<th>Chemical Name</th>
<th>ACGIH</th>
<th>NIOSH</th>
<th>OSHA - Final PELs</th>
</tr>
</thead>
<tbody>
<tr>
<td>2-Fluorobenzonitrile</td>
<td>none listed</td>
<td>none listed</td>
<td>none listed</td>
</tr>
</tbody>
</table>

**OSHA Vacated PELs:** 2-Fluorobenzonitrile: No OSHA Vacated PELs are listed for this chemical.

**Personal Protective Equipment**

**Eyes:** Wear chemical splash goggles.

**Skin:** Wear appropriate protective gloves to prevent skin exposure.

**Clothing:** Wear appropriate protective clothing to prevent skin exposure.

**Respirators:** Follow the OSHA respirator regulations found in 29 CFR 1910.134 or European Standard EN 149. Use a NIOSH/MSHA or European Standard EN 149 approved respirator if exposure limits are exceeded or if irritation or other symptoms are experienced.

9. Physical and Chemical Properties

**Physical State:** Clear liquid

**Appearance:** Colorless to light brown

**Odor:** None reported.
10. Stability and Reactivity

**Chemical Stability:** Stable under normal temperatures and pressures.

**Conditions to Avoid:** Exposure to flame, heat.

**Incompatibilities with Other Materials:** Strong oxidizing agents, strong acids, strong bases.

**Hazardous Decomposition Products:** Nitrogen oxides, carbon monoxide, irritating and toxic fumes and gases, carbon dioxide, cyanide fumes, hydrogen fluoride gas, fluoride fumes.

**Hazardous Polymerization:** Has not been reported.

11. Toxicological Information

**RTECS#:**

CAS#: 394-47-8 unlisted.

LD50/LC50:
Not available.

**Carcinogenicity:**
CAS#: 394-47-8: Not listed by ACGIH, IARC, NTP, or CA Prop 65.

**Epidemiology:** No information found

**Teratogenicity:** No information found

**Reproductive Effects:** No information found

**Mutagenicity:** No information found

**Neurotoxicity:** No information found

**Other Studies:**

12. Ecological Information

No information available.

13. Disposal Considerations

Chemical waste generators must determine whether a discarded chemical is classified as a hazardous waste. US EPA guidelines for the classification determination are listed in 40 CFR Parts 261.3. Additionally, waste generators must consult state and local hazardous waste regulations to ensure complete and accurate classification.

**RCRA P-Series:** None listed.

**RCRA U-Series:** None listed.

14. Transport Information
15. Regulatory Information

US FEDERAL

TSCA
   CAS# 394-47-8 is listed on the TSCA inventory.

Health & Safety Reporting List
   None of the chemicals are on the Health & Safety Reporting List.

Chemical Test Rules
   None of the chemicals in this product are under a Chemical Test Rule.

Section 12b
   None of the chemicals are listed under TSCA Section 12b.

TSCA Significant New Use Rule
   None of the chemicals in this material have a SNUR under TSCA.

CERCLA Hazardous Substances and corresponding RQs
   None of the chemicals in this material have an RQ.

SARA Section 302 Extremely Hazardous Substances
   None of the chemicals in this product have a TPQ.

Section 313
   No chemicals are reportable under Section 313.

Clean Air Act:
   This material does not contain any hazardous air pollutants.
   This material does not contain any Class 1 Ozone depletors.
   This material does not contain any Class 2 Ozone depletors.

Clean Water Act:
   None of the chemicals in this product are listed as Hazardous Substances under the CWA.
   None of the chemicals in this product are listed as Priority Pollutants under the CWA.
   None of the chemicals in this product are listed as Toxic Pollutants under the CWA.

OSHA:
   None of the chemicals in this product are considered highly hazardous by OSHA.

STATE
   CAS# 394-47-8 is not present on state lists from CA, PA, MN, MA, FL, or NJ.

California Prop 65
   California No Significant Risk Level: None of the chemicals in this product are listed.

European/International Regulations

European Labeling in Accordance with EC Directives

Hazard Symbols:
   XN

Risk Phrases:
   R 20/21/22 Harmful by inhalation, in contact with skin and if swallowed.
   R 36/37/38 Irritating to eyes, respiratory system and skin.

Safety Phrases:
   S 26 In case of contact with eyes, rinse immediately with plenty of water and seek medical advice.
   S 36/37/39 Wear suitable protective clothing, gloves and eye/face protection.

WGK (Water Danger/Protection)
   CAS# 394-47-8: No information available.

Canada - DSL/NDSL
   CAS# 394-47-8 is listed on Canada's NDSL List.

Canada - WHMIS
   This product has a WHMIS classification of B3, D1B, D2B.
   This product has been classified in accordance with the hazard criteria of the Controlled Products Regulations and the MSDS contains all of the information required by those regulations.

Canadian Ingredient Disclosure List

<table>
<thead>
<tr>
<th>Shipping Name:</th>
<th>DOT regulated - small quantity provisions apply (see 49CFR173.4)</th>
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</thead>
<tbody>
<tr>
<td>Hazard Class:</td>
<td></td>
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<tr>
<td>UN Number:</td>
<td></td>
</tr>
<tr>
<td>Packing Group:</td>
<td></td>
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</tbody>
</table>

Canada TDG
   No information available.
16. Other Information

Product Use:
Laboratory Reagent.

Revision Information:

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