1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND OF THE COMPANY/UNDERTAKING

Product identifier
Product Name: Benzyl isothiocyanate
Product Code: SC-204641

Recommended use of the chemical and restrictions on use
For research use only. Not intended for diagnostic or therapeutic use.

2. HAZARDS IDENTIFICATION

This chemical is considered hazardous by the 2012 OSHA Hazard Communication Standard (29 CFR 1910.1200).

Classification
Acute toxicity - Oral: Category 4
Acute toxicity - Dermal: Category 4
Acute toxicity - Inhalation (Dusts/Mists): Category 3
Skin corrosion/irritation: Category 1 Sub-category B
Serious eye damage/eye irritation: Category 1
Respiratory sensitization: Category 1
Skin sensitization: Category 1
Carcinogenicity: Category 2

Label elements
Signal word: Danger
Hazard statements:
- HARMFUL IF SWALLOWED
- Harmful in contact with skin
- Toxic if inhaled
- Causes severe skin burns and eye damage
- May cause allergy or asthma symptoms or breathing difficulties if inhaled
- May cause an allergic skin reaction
- Suspected of causing cancer

Symbols/Pictograms
Precautionary Statements - Prevention

- Obtain special instructions before use
- Do not handle until all safety precautions have been read and understood
- Use personal protective equipment as required
- Wash face, hands and any exposed skin thoroughly after handling
- Do not eat, drink or smoke when using this product
- Use only outdoors or in a well-ventilated area
- Do not breathe dust/fume/gas/mist/vapors/spray
- In case of inadequate ventilation wear respiratory protection
- Contaminated work clothing should not be allowed out of the workplace
- Wear protective gloves

Precautionary Statements - Response

- Immediately call a POISON CENTER or doctor/physician
- IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing
- Immediately call a POISON CENTER or doctor/physician
- Call a POISON CENTER or doctor/physician if you feel unwell
- Wash contaminated clothing before reuse
- IF ON SKIN (or hair): Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower
- If skin irritation or rash occurs: Get medical advice/attention
- IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing
- Immediately call a POISON CENTER or doctor/physician
- IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell
- Rinse mouth
- Do NOT induce vomiting

Precautionary Statements - Storage

- Store locked up
- Store in a well-ventilated place.
- Keep container tightly closed

Precautionary Statements - Disposal

- Dispose of contents/container to an approved waste disposal plant

Hazards not otherwise classified (HNOC)

- Hazards not otherwise classified (HNOC): Not applicable

Other Information

<table>
<thead>
<tr>
<th>NFPA</th>
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<tbody>
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<tr>
<td>Stability</td>
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<tr>
<td>Physical and chemical properties</td>
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<td></td>
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<tr>
<td>Physical hazards</td>
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<td></td>
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<tr>
<td>Personal protection</td>
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3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
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<tr>
<th>Chemical Name</th>
<th>CAS No</th>
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<th>Oral LD50</th>
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<td>&gt;98</td>
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</table>

4. FIRST AID MEASURES
First Aid Measures

General advice
Immediate medical attention is required.

Eye contact
Immediate medical attention is required. Rinse immediately with plenty of water, also under the eyelids, for at least 15 minutes. Keep eye wide open while rinsing. Do not rub affected area.

Skin Contact
Immediate medical attention is required. Wash off immediately with soap and plenty of water while removing all contaminated clothes and shoes. Wash off immediately with soap and plenty of water. Consult a physician if necessary.

Inhalation
Remove to fresh air. Call a physician or poison control center immediately. Oxygen or artificial respiration if needed. Call a physician. If not breathing, give artificial respiration. If breathing is difficult, give oxygen.

Ingestion
Do NOT induce vomiting. Drink plenty of water. Never give anything by mouth to an unconscious person. Immediate medical attention is required. Remove from exposure, lie down. Clean mouth with water and drink afterwards plenty of water. Call a physician or poison control center immediately.

Self-protection of the first aider
Use personal protective equipment as required. Avoid contact with skin, eyes or clothing.

Most important symptoms and effects, both acute and delayed
Symptoms
No information available.

Indication of any immediate medical attention and special treatment needed
Note to physicians
Product is a corrosive material. Use of gastric lavage or emesis is contraindicated. Possible perforation of stomach or esophagus should be investigated. Do not give chemical antidotes. Asphyxia from glottal edema may occur. Marked decrease in blood pressure may occur with moist rales, frothy sputum, and high pulse pressure. Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media
None.

Specific hazards arising from the chemical
Specific hazards arising from the chemical
The product causes burns of eyes, skin and mucous membranes. Thermal decomposition can lead to release of irritating and toxic gases and vapors. In the event of fire and/or explosion do not breathe fumes.

Hazardous combustion products

Explosion data
Sensitivity to Mechanical Impact
No information available.

Sensitivity to Static Discharge
No information available.

Protective equipment and precautions for firefighters
Protective equipment and precautions for firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures
Personal precautions
Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Evacuate personnel to safe areas. Keep people away from and upwind of spill/leak.

Environmental precautions
Environmental precautions
Do not allow into any sewer, on the ground or into any body of water. Should not be released into the environment. Do not flush into surface water or sanitary sewer system. Prevent further leakage or spillage if safe to do so. Prevent product from entering drains. See Section 12 for additional Ecological Information.

Methods and material for containment and cleaning up
Methods for containment
Prevent further leakage or spillage if safe to do so.

Methods for cleaning up
Take up mechanically, placing in appropriate containers for disposal. Dike far ahead of liquid spill for later disposal. Soak up with inert absorbent material. Clean contaminated surface thoroughly. Prevent product from entering drains. Dam up. After cleaning, flush away traces with water.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin, eyes or clothing. Use personal protective equipment as required. Ensure adequate ventilation, especially in confined areas. In case of insufficient ventilation, wear suitable respiratory equipment. Use only with adequate ventilation and in closed systems.

Conditions for safe storage, including any incompatibilities
Storage Conditions
Keep container tightly closed in a dry and well-ventilated place. Keep out of the reach of children. Keep containers tightly closed in a cool, well-ventilated place. Keep containers tightly closed in a dry, cool and well-ventilated place. Keep in properly labeled containers. Store at 4 °C.

Incompatible materials
Incompatible with strong acids and bases. Incompatible with oxidizing agents.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Control parameters
Exposure Guidelines
This product, as supplied, does not contain any hazardous materials with occupational exposure limits established by the region specific regulatory bodies.

Appropriate engineering controls
Engineering Controls
Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment
Eye/face protection
Tight sealing safety goggles. Face protection shield.

Skin and Body Protection
Wear protective gloves and protective clothing.

Respiratory protection
If exposure limits are exceeded or irritation is experienced, NIOSH/MSHA approved respiratory protection should be worn. Positive-pressure supplied air respirators may be required for high airborne contaminant concentrations. Respiratory protection must be provided in accordance with current local regulations.

General Hygiene Considerations
When using do not eat, drink or smoke. Wash contaminated clothing before reuse. Keep away from food, drink and animal feeding stuffs. Contaminated work clothing should not be allowed out of the workplace. Regular cleaning of equipment, work area and clothing is recommended. Avoid contact with skin, eyes or clothing. Take off all contaminated clothing and wash it before reuse. Wear suitable gloves and eye/face protection.

9. PHYSICAL AND CHEMICAL PROPERTIES
Physical State: liquid
Appearance: No information available
Odor: Pungent May be unpleasant

**Property**
- **pH**: No information available
- Melting point/freezing point: 41 °C
- Boiling point: 242 °C
- Flash point: 110 °C CC (closed cup)
- Density: 1.13 g/mL
- Evaporation rate: No information available
- Upper flammability limits: No information available
- Lower flammability limit: No information available
- Vapor pressure: 0.0
- Vapor density: No information available
- Specific gravity: 1.13
- Water solubility: No information available
- Solubility in other solvents: No information available
- Partition coefficient: 3.16
- Autoignition temperature: No information available
- Decomposition temperature: No information available
- Kinematic viscosity: No information available
- Explosive properties: No information available
- Oxidizing properties: No information available

**10. STABILITY AND REACTIVITY**

- **Reactivity**: Not applicable
- **Chemical stability**: Stable under recommended storage conditions.
- **Possibility of Hazardous Reactions**: Contact with acids may liberate toxic gas.
- **Hazardous Polymerization**: No information available.
- **Conditions to avoid**: Exposure to air or moisture over prolonged periods.
- **Incompatible materials**: Incompatible with strong acids and bases. Incompatible with oxidizing agents.

**11. TOXICOLOGICAL INFORMATION**

- **Information on likely routes of exposure**
  - Inhalation: No data available.
  - Eye contact: No data available.
  - Skin Contact: No data available.
  - Ingestion: No data available.

- **Information on toxicological effects**
  - Symptoms: No information available.

- **Delayed and immediate effects as well as chronic effects from short and long-term exposure**
  - Chronic Toxicity: Chronic exposure to corrosive fumes/gases may cause erosion of the teeth followed by jaw necrosis. Bronchial irritation with chronic cough and frequent attacks of pneumonia are common. Gastrointestinal disturbances may also be seen. Avoid repeated exposure. Possible risk of irreversible effects.

**Numerical measures of toxicity - Product Information**
- Unknown acute toxicity: No information available
- The following values are calculated based on chapter 3.1 of the GHS document
  - ATEmix (oral): 500 mg/kg
  - ATEmix (dermal): 1100 mg/kg
ATEmix (inhalation-dust/mist) 0.5 mg/l

12. ECOLOGICAL INFORMATION

Ecotoxicity
May cause long lasting harmful effects to aquatic life

100% of the mixture consists of components(s) of unknown hazards to the aquatic environment.

Persistence and degradability
No information available.

Bioaccumulation
No information available.

Mobility
No information available.

13. DISPOSAL CONSIDERATIONS

Disposal of wastes
Disposal should be in accordance with applicable regional, national and local laws and regulations.

Contaminated packaging
Do not reuse container.

Other Information
Waste codes should be assigned by the user based on the application for which the product was used.

US EPA Waste Number
D002

14. TRANSPORT INFORMATION

DOT
UN/ID no UN2922
Hazard Class 8
Subsidiary class 6.1
Packing Group III
Proper shipping name Corrosive liquids, toxic, n.o.s.
Description UN2922, Corrosive liquids, toxic, n.o.s. (Benzyl isothiocyanate), 8 (6.1), III
Emergency Response Guide Number 154

IMDG
UN/ID no UN2922
Hazard Class 8
Subsidiary hazard class 6.1
Packing Group III
Proper shipping name Corrosive liquid, toxic, n.o.s.
Description UN2922, Corrosive liquid, toxic, n.o.s. (Benzyl isothiocyanate), 8 (6.1), III
Special Provisions IB3, T7, TP1, TP28
EmS-No F-A, S-B

IATA
UN/ID no UN2922
Hazard Class 8
Subsidiary hazard class 6.1
Packing Group III
Proper shipping name Corrosive liquid, toxic, n.o.s.
Description UN2922, Corrosive liquid, toxic, n.o.s. (Benzyl isothiocyanate), 8 (6.1), III
15. REGULATORY INFORMATION

International Inventories
All of the components in the product are on the following Inventory lists
TSCA (United States): Canada (DSL/NDSL) Europe (EINECS/ELINCS/NLP) Australia (AICS) China (IECSC) ENCS (Japan):
Philippines (PICCS)

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<tr>
<th>Chemical Name</th>
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<th>NDSL</th>
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</tbody>
</table>

X - Listed

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List
EINECS/ELINCS - European Inventory of Existing Chemical Substances/European List of Notified Chemical Substances
ENCS - Japan Existing and New Chemical Substances
IECSC - China Inventory of Existing Chemical Substances
KECL - Korean Existing and Evaluated Chemical Substances
PICCS - Philippines Inventory of Chemicals and Chemical Substances

US Federal Regulations

SARA 313
Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

<table>
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<th>Hazard Category</th>
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<tr>
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<tr>
<td>Fire hazard</td>
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<tr>
<td>Sudden release of pressure hazard</td>
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<tr>
<td>Reactive hazard</td>
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</table>

CWA (Clean Water Act)
This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

US State Regulations

California Proposition 65
This product does not contain any Proposition 65 chemicals.

U.S. State Right-to-Know Regulations
This product does not contain any substances regulated by state right-to-know regulations

16. OTHER INFORMATION

Revision note
No information available

Disclaimer
The information provided in this Material Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

End of Safety Data Sheet