1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Potassium cyanide
Product Number : 60178
Brand : Sigma
Supplier : Sigma-Aldrich
  3050 Spruce Street
  SAINT LOUIS MO  63103
  USA
Telephone : +1 800-325-5832
Fax : +1 800-325-5052
Emergency Phone # (For both supplier and manufacturer) : (314) 776-6555
Preparation Information : Sigma-Aldrich Corporation
  Product Safety - Americas Region
  1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Target Organ Effect, Highly toxic by inhalation, Highly toxic by ingestion, Highly toxic by skin absorption

Target Organs
Blood, Central nervous system, Cardiovascular system., Thyroid

GHS Classification
Corrosive to metals (Category 1)
Acute toxicity, Oral (Category 2)
Acute toxicity, Inhalation (Category 2)
Acute toxicity, Dermal (Category 1)
Specific target organ toxicity - single exposure (Category 1)
Specific target organ toxicity - repeated exposure (Category 1)
Acute aquatic toxicity (Category 1)

GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)
H290 May be corrosive to metals.
H300 + H310 + H330 Fatal if swallowed, in contact with skin or if inhaled
H370 Causes damage to organs.
H372 Causes damage to organs through prolonged or repeated exposure.
H400 Very toxic to aquatic life.

Precautionary statement(s)
P260 Do not breathe dust/ fume/ gas/ mist/ vapours/ spray.
P264 Wash hands thoroughly after handling.
P273 Avoid release to the environment.
P280 Wear protective gloves/ protective clothing.
P284 Wear respiratory protection.
P302 + P350 IF ON SKIN: Gently wash with plenty of soap and water.
P310 Immediately call a POISON CENTER or doctor/physician.

Other hazards
Contact with acids liberates very toxic gas.

HMIS Classification
- Health hazard: 4
- Chronic Health Hazard: *
- Flammability: 0
- Physical hazards: 0

NFPA Rating
- Health hazard: 4
- Fire: 0
- Reactivity Hazard: 0

Potential Health Effects
Inhalation May be fatal if inhaled. May cause respiratory tract irritation.
Skin May be fatal if absorbed through skin. May cause skin irritation.
Eyes May cause eye irritation.
Ingestion May be fatal if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS
Formula: CKN
Molecular Weight: 65.12 g/mol

<table>
<thead>
<tr>
<th>Component</th>
<th>Concentration</th>
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<tr>
<td>CAS-No.</td>
<td>151-50-8</td>
</tr>
<tr>
<td>EC-No.</td>
<td>205-792-3</td>
</tr>
<tr>
<td>Index-No.</td>
<td>006-007-00-5</td>
</tr>
</tbody>
</table>

4. FIRST AID MEASURES

General advice
Consult a physician. Show this safety data sheet to the doctor in attendance. Move out of dangerous area.

If inhaled
If breathed in, move person into fresh air. If not breathing, give artificial respiration. Consult a physician.

In case of skin contact
Take off contaminated clothing and shoes immediately. Wash off with soap and plenty of water. Take victim immediately to hospital. Consult a physician.

In case of eye contact
Rinse thoroughly with plenty of water for at least 15 minutes and consult a physician. Continue rinsing eyes during transport to hospital.

If swallowed
Do NOT induce vomiting. 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
Dry chemical Dry sand Alcohol-resistant foam

Extinguishing media which shall not be used for safety reasons
Water Carbon dioxide (CO2)

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), Potassium oxides, Hydrogen cyanide (hydrocyanic acid)

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.

Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. Do not flush with water. Keep in suitable, closed containers for disposal.

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. hygroscopic
Never allow product to get in contact with water during storage. Do not store near acids. Light sensitive.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Components with workplace control parameters

<table>
<thead>
<tr>
<th>Components</th>
<th>CAS-No.</th>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Potassium cyanide</td>
<td>151-50-8</td>
<td>TWA</td>
<td>5 mg/m3</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
</tr>
<tr>
<td>Remarks</td>
<td>TWA</td>
<td>5 mg/m3</td>
<td></td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Skin contact does contribute to exposure.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>TWA 5 mg/m3</td>
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</tr>
<tr>
<td></td>
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<td></td>
<td>Skin contact does contribute to exposure.</td>
<td></td>
</tr>
<tr>
<td>Skin designation</td>
<td>C</td>
<td>5 mg/m3</td>
<td></td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>Upper Respiratory Tract irritation Headache Nausea Thyroid effects Danger of cutaneous absorption varies</td>
<td>TWA</td>
<td>5 mg/m3</td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants -</td>
<td></td>
</tr>
</tbody>
</table>
Personal protective equipment

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate use a full-face particle respirator type N100 (US) or type P3 (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: > 480 min
Material tested: Dermatril® (Aldrich Z677272, Size M)

**Splash protection**
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: > 30 min
Material tested: Dermatril® (Aldrich Z677272, Size M)

data source: KCL GmbH, D-36124 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 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: solid
- Colour: white

**Safety data**
- pH: 11.5 at 20 g/l at 20 °C (68 °F)
- Melting point/freezing point: Melting point/range: 634 °C (1,173 °F)
- Boiling point: 1,625 °C (2,957 °F)
- Flash point: no data available
- Ignition temperature: no data available
<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autoignition temperature</td>
<td>no data available</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>no data available</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>no data available</td>
</tr>
<tr>
<td>Vapour pressure</td>
<td>no data available</td>
</tr>
<tr>
<td>Density</td>
<td>1.520 g/cm³</td>
</tr>
<tr>
<td>Water solubility</td>
<td>400 g/l at 20 °C (68 °F) - soluble</td>
</tr>
<tr>
<td>Partition coefficient: n-octanol/water</td>
<td>log Pow: 0.44</td>
</tr>
<tr>
<td>Relative vapour density</td>
<td>no data available</td>
</tr>
<tr>
<td>Odour</td>
<td>no data available</td>
</tr>
<tr>
<td>Odour Threshold</td>
<td>no data available</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>no data available</td>
</tr>
</tbody>
</table>

10. STABILITY AND REACTIVITY

**Chemical stability**
Stable under recommended storage conditions.

**Possibility of hazardous reactions**
no data available

**Conditions to avoid**
Avoid moisture.

**Materials to avoid**
Acids, Strong oxidizing agents, Iodine, permanganates, e.g. potassium permanganate, Peroxides, Metallic salts, Chloral hydrate, Alkaloids, Chlorates

**Hazardous decomposition products**
Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx), Potassium oxides, Hydrogen cyanide (hydrocyanic acid)
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

**Acute toxicity**

**Oral LD50**
no data available

LDLO Oral - Human - 2.857 mg/kg
LD50 Oral - mouse - 8.5 mg/kg
LD50 Oral - rabbit - 5 mg/kg
LD50 Oral - rat - 6 mg/kg

**Inhalation LC50**
no data available

**Dermal LD50**
no data available

**Other information on acute toxicity**
LD50 Intraperitoneal - rat - 4 mg/kg
Remarks: Lungs, Thorax, or Respiration:Other changes.
LD50 Subcutaneous - rat - 7.814 mg/kg
LD50 Intravenous - rat - 3.6 mg/kg

LD50 Intraperitoneal - mouse - 5.991 mg/kg
Remarks: Behavioral: Convulsions or effect on seizure threshold. Lungs, Thorax, or Respiration: Respiratory stimulation.

LD50 Subcutaneous - mouse - 6.5 mg/kg
LD50 Intravenous - mouse - 2.6 mg/kg

LD50 Subcutaneous - dog - 6 mg/kg
Remarks: Behavioral: Convulsions or effect on seizure threshold.

LD50 Intravenous - cat - 2.2 mg/kg
LD50 Intraperitoneal - rabbit - 3.972 mg/kg
Remarks: Blood: Other changes.

LD50 Subcutaneous - rabbit - 4 mg/kg
Remarks: Lungs, Thorax, or Respiration: Other changes.

LD50 Intramuscular - rabbit - 3.256 mg/kg
LD50 Ocular - rabbit - 7.87 mg/kg

LD50 Intramuscular - Pigeon - 4 mg/kg

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
no data available

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
Genotoxicity in vitro - Hamster - fibroblast - with or without metabolic activation - negative

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)
Ingestion - Causes damage to organs. - Heart, Testes

Specific target organ toxicity - repeated exposure (Globally Harmonized System)
Causes damage to organs through prolonged or repeated exposure.

Aspiration hazard
no data available

Potential health effects

| Inhalation | May be fatal if inhaled. May cause respiratory tract irritation. |
| Ingestion  | May be fatal if swallowed.                                      |
| Skin       | May be fatal if absorbed through skin. May cause skin irritation.|
| Eyes       | May cause eye irritation.                                       |

Signs and Symptoms of Exposure
Lung irritation, Cyanosis, Central nervous system depression, To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated., May cause argyria (a slate-gray or bluish discoloration of the skin and deep tissues due to the deposit of insoluble albuminate of silver), Material is extremely destructive to tissue of the mucous membranes and upper respiratory tract, eyes, and skin., Inhalation may provoke the following symptoms:, spasm, inflammation and edema of the bronchi, Aspiration or inhalation may cause chemical pneumonitis., pulmonary edema, Lungs, CNS depression with hypertension or circulatory failure, and respiratory depression

Synergistic effects
no data available

Additional Information
Repeated dose toxicity - rat - male - Oral - No observed adverse effect level - 40 mg/kg
RTECS: Not available

12. ECOLOGICAL INFORMATION

Toxicity

| Toxity to fish | LC50 - Oncorhynchus mykiss (rainbow trout) - 0.052 mg/l - 96.0 h |
|                | LC50 - Lepomis macrochirus - 0.45 mg/l - 96.0 h |
| Toxity to daphnia and other aquatic invertebrates | EC50 - Daphnia magna (Water flea) - 2 mg/l - 48 h |
|              | EC50 - Daphnia magna (Water flea) - 0.53 mg/l - 24 h |
|              | EC50 - Daphnia magna (Water flea) - 2 mg/l - 48 h |
|              | EC50 - Daphnia magna (Water flea) - 0.53 mg/l - 24 h |
| Toxity to algae | IC50 - Scenedesmus quadricauda (Green algae) - 0.03 mg/l - 192 h |
| Toxity to bacteria | - Bacteria - 0.6 - 2.3 mg/l - 0.5 h |

Persistence and degradability

| Biodegradability       | aerobic |
| Result: 99 % - Readily biodegradable. |

Bioaccumulative potential
Bioaccumulation is unlikely.

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects

| Chemical Oxygen Demand (COD) | < 1 mg/g |
Very toxic to aquatic life with long lasting effects.
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.

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. Dissolve 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: 1680  Class: 6.1  Packing group: I
Proper shipping name: Potassium cyanide, solid
Reportable Quantity (RQ): 10 lbs
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN number: 1680  Class: 6.1  Packing group: I  EMS-No: F-A, S-A
Proper shipping name: POTASSIUM CYANIDE, SOLID
Marine pollutant: Marine pollutant

IATA
UN number: 1680  Class: 6.1  Packing group: I
Proper shipping name: Potassium cyanide, solid

15. REGULATORY INFORMATION

OSHA Hazards
Target Organ Effect, Highly toxic by inhalation, Highly toxic by ingestion, Highly toxic by skin absorption

SARA 302 Components
The following components are subject to reporting levels established by SARA Title III, Section 302:

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
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</tr>
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<tbody>
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<td>151-50-8</td>
<td>2007-03-01</td>
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SARA 313 Components
The following components are subject to reporting levels established by SARA Title III, Section 313:

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SARA 311/312 Hazards
Acute Health Hazard, Chronic 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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