1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Imidazole
Product Number: I5513
Brand: Sigma
Supplier: Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63118
USA
Telephone: +1 800-325-5532
Fax: +1 800-325-5552
Emergency Phone # (For both supplier and manufacturer): (314) 775-6555
Preparation Information: Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview
OSHA Hazards
Harmful by ingestion. Corrosive, Teratogen
GHS Classification
Acute toxicity, Oral (Category 4)
Skin corrosion (Category 1B)
Serious eye damage (Category 1)
Reproductive toxicity (Category 1B)
GHS Label elements, including precautionary statements
Pictogram
Signal word: Danger
Hazard statement(s)
H302: Harmful if swallowed.
H314: Causes severe skin burns and eye damage.
H360: May damage fertility or the unborn child.
Precautionary statement(s)
P201: Obtain special instructions before use.
P260: Wear protective gloves/ protective clothing/ eye protection/ face protection.
P305 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P303: Immediately call a POISON CENTER or doctor/physician.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: 1,3-Diaza-2,4-cyclopentadiene
Glyoxaline
Formula: C₃H₄N₂
Molecular Weight: 68.08 g/mol
Component | Concentration
--- | ---
Imidazole | |
CAS-No. | 286-32-4
EC-No. | 208-019-2
Registration number | 01-2119485825-24-XXXX

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. 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
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), Hydrogen cyanide (hydrocyanic acid).

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. 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.
Methods and materials for containment and cleaning up
Pick up and arrange disposal without creating dust. Sweep up and shovel. 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.

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 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 CEIN (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® (Alchrich Z677272, Size N)

Splash protection
Material: Nitrile rubber
Minimum layer thickness: 0.11 mm
Break through time: > 30 min

Material tested: Dermatril® (Alchrich Z677272, Size N)

Data source: KCL GmbH, D-36124 Eichenzell, phone +49 (0)6659 87300, 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 skin protection 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
Handle in accordance with good industrial hygiene and safety practice. Wash hands before breaks and at the end of workday.

9. PHYSICAL AND CHEMICAL PROPERTIES

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appearance</td>
<td>Crystalline</td>
</tr>
<tr>
<td>Colour</td>
<td>White, light yellow</td>
</tr>
<tr>
<td>pH</td>
<td>9.5 - 11 at 6.6 g/l at 25 °C (71 °F)</td>
</tr>
<tr>
<td>Melting point</td>
<td>9 - 11 at 100 g/l at 23 °C (73 °F)</td>
</tr>
<tr>
<td>Melting point/Range</td>
<td>88 - 91 °C (190 - 196 °F)</td>
</tr>
<tr>
<td>Boiling point</td>
<td>256 °C (493 °F)</td>
</tr>
<tr>
<td>Flash point</td>
<td>&gt; 135 °C (&gt; 275 °F) - ISO 279 - see user defined text</td>
</tr>
<tr>
<td>Ignition temperature</td>
<td>480 °C (886 °F)</td>
</tr>
<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>0.003 hPa (0.002 mHg) at 20 °C (68 °F)</td>
</tr>
<tr>
<td>Density</td>
<td>1.030 g/cm³</td>
</tr>
<tr>
<td>Water solubility</td>
<td>6.6 g/l at 20 °C (68 °F) - completely soluble</td>
</tr>
<tr>
<td>Octanol/water</td>
<td>633 g/l at 20 °C (68 °F)</td>
</tr>
<tr>
<td>Partition coefficient</td>
<td>Log Pow: -0.02 at 25 °C (77 °F)</td>
</tr>
<tr>
<td>Odour</td>
<td>Aromatic-like</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
No data available.

Materials to avoid
Acids, Acid anhydrides, Strong oxidizing agents

Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx), Hydrogen cyanide (hydrocyanic acid)

Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity
Oral LD50
LD50 Oral - rat - 970 mg/kg
Inhalation LC50
no data available

Dermal LD50
no data available

Other information on acute toxicity
no data available

Skin corrosion/irritation
Skin - rabbit - Corrosive

Serious eye damage/eye irritation
Eyes - rabbit - Risk of serious damage to eyes. - Draize Test

Respiratory or skin sensitization
no data available

Germ cell mutagenicity
Did not show mutagenic effects in animal experiments. Tests on bacterial or mammalian cell cultures did not show mutagenic effects.

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
May damage the unborn child.

Presumed human reproductive toxicant. May damage the unborn child.

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

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

Aspiration hazard
no data available

Potential health effects

Inhalation
May be harmful if inhaled. Material is extremely destructive to the tissue of the mucous membranes and upper respiratory tract.

Ingestion
Harmful if swallowed.

Skin
Harmful if absorbed through skin. Causes skin burns.

Eyes
Causes eye burns.

Signs and Symptoms of Exposure
No information available.

Synergistic effects
no data available

12. ECOLOGICAL INFORMATION

Toxicity
Toxicity to fish: static test LC50 - Leuciscus idus (Golden orfe) - 280 mg/l - 48 h
Toxicity to daphnia: EC50 - Daphnia - 341.5 mg/l - 48 h
Toxicity to other aquatic invertebrates: static test EC50 - Scenedesmus quadricauda (Green algae) - 133 mg/l - 72 h
Toxicity to algae: static test EC50 - Scenedesmus quadricauda (Green algae) - 133 mg/l - 72 h
Toxicity to bacteria: see user defined free test - other microorganisms - 45 mg/l - 0.5 h

Persistence and degradability
Biodegradability: aerobic
Result: 88% - Readily biodegradable.

Bioaccumulative potential
no data available

Mobility In soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
no data available

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
Disposal of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN number: 3063 Class: 8 Packing group:II
Proper shipping name: Corrosive solid, basic, organic, n.o.s. (imidazole)
Reportable Quantity (RQ): Marine pollutant: No
Perish In P.digital Hazard: No

IMDG
UN number: 3063 Class: 8 Packing group:II EMS-No: F-A, S-B
Proper shipping name: CORROSIVE SOLID, BASIC, ORGANIC, N.O.S. (imidazole)
Marine pollutant: No

IATA
UN number: 3063 Class: 8 Packing group:II
Proper shipping name: Corrosive solid, basic, organic, n.o.s. (imidazole)

15. REGULATORY INFORMATION

OSHA Hazards
Harmful by Ingestion. Corrosive, Teratogen
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
SARA 313: This material does not contain any chemical components with known CAS numbers that exceed the threshold (De Minimis) reporting levels established by SARA Title III, Section 313.

SARA 311/312 Hazards
Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components
No components are subject to the Massachusetts Right to Know Act.

Pennsylvania Right To Know Components

| Imidazole | CAS-No. 288-32-4 | Revision Date |

New Jersey Right To Know Components

| Imidazole | CAS-No. 288-32-4 | Revision Date |

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.

19. OTHER INFORMATION

Further information
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