1. PRODUCT AND COMPANY IDENTIFICATION

Product name: Formamide
Product Number: F9007
Brand: Sigma
Supplier: Sigma-Aldrich
350 Spruce Street
SAINT LOUIS MO 63103
USA
Telephone: +1 800-325-5832
Fax: +1 800-325-6062
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, Irritant, Teratogen, Reproductive Hazard, Mutagen
Target Organs
Blood, Central nervous system, Liver, Kidney
GHS Classification
Acute toxicity, Inhalation (Category 3)
Serious eye damage (Category 1)
Germ cell mutagenicity (Category 1B)
Reproductive toxicity (Category 1B)
GHS Label elements, including precautionary statements
Pictogram: Danger
Signal word: Hazards
H318: Causes serious eye damage.
H331: Toxic if inhaled.
H340: May cause genetic defects.
H350: May damage fertility or the unborn child.
Precautionary statement(s)
P201: Obtain special instructions before use.
P261: Avoid breathing dust/ vapour/ gas.
P280: Wear protective gloves/ eye protection/ face protection.
P261 + P351 + P338: IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P311: Call a POISON CENTER or doctor/ physician.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms: Amide C1, Formic amide
Formula: CH2NO
Molecular Weight: 45.04 g/mol

Formamide Included in the Candidate List of Substances of Very High Concern (SVHC) according to Regulation (EC) No. 1907/2006 (REACH)
CAS-No. 75-17-2
EC-No. 200-042-0
Index-No. E16-025-20-6
Registration number 01-2119496034-35-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
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.

If swallowed
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)

6. ACCIDENTAL RELEASE MEASURES

SIGMA-ALDRICH
Personal precautions
Wear respiratory protection. Avoid breathing vapours, mist or gas. Ensure adequate ventilation. Evacuate personnel to safe areas.

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
Scrape up with inert absorbent material and dispose of as hazardous waste. Keep in suitable, closed containers for disposal.

7. HANDLING AND STORAGE

Precautions for safe handling
Avoid contact with skin and eyes. Avoid inhalation of vapour or mist.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage.

Recommended storage temperature: 2 - 8 °C

8. EXPOSURE CONTROLS/PERSOINAL 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>Formamide</td>
<td>75-12-7</td>
<td>TWA</td>
<td>10 ppm</td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
<tr>
<td>Remaks</td>
<td></td>
<td></td>
<td></td>
<td>Skin &amp; eye irritation Liver &amp; kidney damage Danger of cutaneous absorption</td>
</tr>
<tr>
<td>TWA</td>
<td>20 ppm</td>
<td>20 mg/m³</td>
<td></td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
</tr>
<tr>
<td>STEL</td>
<td>30 ppm</td>
<td>45 mg/m³</td>
<td></td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
</tr>
<tr>
<td>TWA</td>
<td>10 ppm</td>
<td>15 mg/m³</td>
<td></td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
</tbody>
</table>

Personal protective equipment
Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multipurpose combination (US) or type ABK (EN 14387) 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 CE (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.

Full contact
Material: Nitrile rubber
Minimum layer thickness: 0.2 mm
Break through time: > 480 min
Material tested: Dermat® P (KCL 743 / Aldrich 2877388, Size M)

data source: KCL GmbH, D-38124 Elchenzell, phone +49 (0)6556 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 glove. This recommendation is advisory only and must be evaluated by an industrial hygienist and safety officer 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
Tightly fitting safety goggles. Facemask (8-inch minimum). 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: liquid, clear
Colour: colourless

Safety data
pH: 7.1 at 23 °C
Melting point/freezing point: -3°C (37 °F) - lit.
Boiling point: 210 °C (410 °F) - lit.
Flash point: 150 °C (302 °F) - closed cup
Ignition temperature: 500 °C (932 °F)
Auto-ignition temperature: no data available
Lower explosion limit: 2.7 % (V)
Upper explosion limit: 19 % (V)
Vapour pressure: 0.11 hPa (0.08 mmHg) at 20 °C (68 °F) 40.00 hPa (300.00 mmHg) at 129 °C (264 °F) 1.29 hPa (0.97 mmHg) at 70 °C (158 °F)
Density: 1.134 g/cm³ at 25 °C (77 °F)
Water solubility: completely miscible
Partition coefficient (octanol/water): log Pow: -0.82
Relative density: 1.56
Odour: no data available
Odour Threshold: no data available
Evaporation rate: no data available

10. STABILITY AND REACTIVITY

Chemical stability
Stable under recommended storage conditions.

Possibility of hazardous reactions
no data available

Conditions to avoid
no data available

Matersials to avoid
Acids, Bases, Oxidizing agents
Hazardous decomposition products
Other decomposition products - no data available
Hazardous decomposition products formed under fire conditions. - Carbon oxides, nitrogen oxides (NOx)

Thermal decomposition
> 90 °C

11. TOXICOLOGICAL INFORMATION

Acute toxicity
Oral LD50
LD50 Oral - rat - 5,577 mg/kg
Inhalation LC50
LC50 Inhalation - rat - 6 h - 3900 ppm
Dermal LD50
LD50 Dermal - rabbit - 17,000 mg/kg
Other information on acute toxicity
no data available

Skin corrosion/irritation
no data available

Serious eye damage/eye irritation
Eyes - rabbit - Severe eye irritation

Respiratory or skin sensitisation
Did not cause sensitisation on laboratory animals.

Germ cell mutagenicity
In vivo tests showed 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
Reproductive toxicity - rat - Oral
Effects on fertility, post-implantation mortality (e.g., dead and/or resorbed implants per total number of implants), effects on embryo or fetus: Fetal toxicity (except death, e.g., stunted fetus).
May cause reproductive disorders.

no data available

Teratogenicity
Developmental Toxicity - rat - Skin
Effects on embryo or fetus: Fetal death.
May cause congenital malformation in the fetus.
Presumed human reproductive toxicant

no data available

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. Causes respiratory tract irritation.
Ingestion: May be harmful if swallowed.
Skin: May be harmful if absorbed through skin. Causes skin irritation.
Eyes: Causes eye irritation.

Signs and Symptoms of Exposure
Gastrointestinal disturbance. To the best of our knowledge, the chemical, physical, and toxicological properties have not been thoroughly investigated.

Synergistic effects
no data available

Additional Information
RTECS: LQ052500

12. ECOLOGICAL INFORMATION

Toxicity
Toxicity to fish
LC50 - Leuciscus idus (Golden orfe) - 4,600 - < 6,300 mg/l - 96 h
Toxicity to daphnia and other aquatic invertebrates
EC50 - Daphnia magna (Water flea) - 500 mg/l - 48 h
Toxicity to algae
- Desmodesmus subspicatus (green algae) - 1,141 mg/l - 72 h
Toxicity to bacteria
- Pseudomonas putida - > 10,000 mg/l - 17 h

Persistence and degradability
Readily biodegradable, according to appropriate OECD test.

Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
Adsorbed organic bound halogens (AOX)
Remarks: Product does not contain any organic halogens.

no data available

13. DISPOSAL CONSIDERATIONS

Product
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. Offer surplus and non-acceptable solutions to a licensed disposal company.

Contaminated packaging
Dispose of as unused product.
14. TRANSPORT INFORMATION

DOT (US)
Not dangerous goods

IMDG
Not dangerous goods

IATA
Not dangerous goods

15. REGULATORY INFORMATION

OSHA Hazards
Target Organ Effect, Irritant, Teratogen, Reproductive hazard, Mutagen

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

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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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