1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Benzaldehyde
Product Number : B1334
Brand : Sigma-Aldrich
Company : Sigma-Aldrich
3050 Spruce Street
SAINT LOUIS MO 63103
USA
Telephone : +18003255832
Fax : +18003255052
Emergency Phone # : (314) 776-6555

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Combustible Liquid, Target Organ Effect, Harmful by ingestion., Harmful by skin absorption., Skin and respiratory sensitizer, Irritant

Target Organs
Central nervous system, Liver, Kidney

GHS Label elements, including precautionary statements

Pictogram

Signal word Danger

Hazard statement(s)
H227 Combustible liquid
H302 + H312 Harmful if swallowed or in contact with skin.
H315 + H320 Causes skin and eye irritation.
H317 May cause an allergic skin reaction.
H334 May cause allergy or asthma symptoms or breathing difficulties if inhaled.
H401 Toxic to aquatic life.
H412 Harmful to aquatic life with long lasting effects.

Precautionary statement(s)
P210 Keep away from heat/sparks/open flames/hot surfaces. - No smoking.
P261 Avoid breathing dust/fume/gas/mist/vapours/spray.
P264 Wash skin thoroughly after handling.
P270 Do not eat, drink or smoke when using this product.
P272 Contaminated work clothing should not be allowed out of the workplace.
P273 Avoid release to the environment.
P280 Wear protective gloves/protective clothing/eye protection/face protection.
P285 In case of inadequate ventilation wear respiratory protection.
P301 + P312 IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
P302 + P352 IF ON SKIN: Wash with plenty of soap and water.
P304 + P341 IF INHALED: If breathing is difficult, remove victim to fresh air and keep at rest in a position comfortable for breathing.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
P322 Specific measures (see supplemental first aid instructions on this label).
P330 Rinse mouth.
P333 + P313 If skin irritation or rash occurs: Get medical advice/attention.
P337 + P313 If eye irritation persists: Get medical advice/attention.
P342 + P311 If experiencing respiratory symptoms: Call a POISON CENTER or doctor/physician.
P362 Take off contaminated clothing and wash before reuse.
P370 + P378 In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
P403 + P235 Store in a well-ventilated place. Keep cool.
P501 Dispose of contents/container to an approved waste disposal plant.

HMIS Classification
- Health hazard: 3
- Chronic Health Hazard: *
- Flammability: 2
- Physical hazards: 1

NFPA Rating
- Health hazard: 3
- Fire: 2
- Reactivity Hazard: 1

Potential Health Effects
- Inhalation: May be harmful if inhaled. Causes respiratory tract irritation.
- Skin: Harmful if absorbed through skin. Causes skin irritation.
- Eyes: Causes eye irritation.
- Ingestion: Harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

<table>
<thead>
<tr>
<th>Synonyms</th>
<th>Artificial essential oil of almond</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formula</td>
<td>C7H6O</td>
</tr>
<tr>
<td>Molecular Weight</td>
<td>106.12 g/mol</td>
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</table>

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Concentration</th>
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<tbody>
<tr>
<td>100-52-7</td>
<td>202-860-4</td>
<td>605-012-00-5</td>
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</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
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.

If swallowed
Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
For small (incipient) fires, use media such as "alcohol" foam, dry chemical, or carbon dioxide. For large fires, apply water from as far as possible. Use very large quantities (flooding) of water applied as a mist or spray; solid streams of water may be ineffective. Cool all affected containers with flooding quantities of water.
Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

Further information
Under fire conditions, material may decompose to form flammable and/or explosive mixtures in air. Use water spray to cool unopened containers.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid breathing vapors, mist or gas. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapours accumulating to form explosive concentrations. Vapours can accumulate in low areas.

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
Contain spillage, and then collect with an electrically protected vacuum cleaner or by wet-brushing and place in container for disposal according to local regulations (see section 13). 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.
Keep away from sources of ignition - No smoking. Take measures to prevent the build up of electrostatic charge.

Conditions for safe storage
Store under nitrogen. 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.
Air, light, and moisture 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>Update</th>
<th>Basis</th>
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<tr>
<td>Benzaldehyde</td>
<td>100-52-7</td>
<td>TWA</td>
<td>2 ppm</td>
<td>2008-01-01</td>
<td>USA. Workplace Environmental Exposure Levels (WEEL)</td>
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<tr>
<td>Remarks</td>
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<td></td>
<td></td>
<td>Dermal Sensitization Notation</td>
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<td></td>
<td></td>
<td>STEL</td>
<td>4 ppm</td>
<td>2008-01-01</td>
<td>USA. Workplace Environmental Exposure Levels (WEEL)</td>
</tr>
</tbody>
</table>

Personal protective equipment

Respiratory protection
Where risk assessment shows air-purifying respirators are appropriate use a full-face respirator with multi-purpose combination (US) or type ABEK (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 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.

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**
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

#### Appearance
- Form: liquid
- Colour: colourless

#### Safety data
- pH: 5.9 at 20 °C (68 °F)
- Melting point: -26 °C (-15 °F) - lit.
- Boiling point: 178 - 179 °C (352 - 354 °F) - lit.
- Flash point: 64 °C (147 °F) - closed cup
- Ignition temperature: 190 °C (374 °F)
- Lower explosion limit: 1.4 %(V)
- Upper explosion limit: 8.5 %(V)
- Vapour pressure: 5 hPa (4 mmHg) at 45 °C (113 °F)
- Density: 1.044 g/cm³ at 20 °C (68 °F)
- Water solubility: slightly soluble
- Partition coefficient: n-octanol/water
  - log Pow: 1.5
- Relative vapour density: 3.66 - (Air = 1.0)

### 10. STABILITY AND REACTIVITY

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

#### Conditions to avoid
- Heat, flames and sparks. Extremes of temperature and direct sunlight.

#### Materials to avoid
- Strong oxidizing agents, Strong reducing agents, Strong bases, Alkali metals, Aluminium, Iron, phenols, Oxygen

#### Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides

### 11. TOXICOLOGICAL INFORMATION

#### Acute toxicity
- LD50 Oral - rat - 1,300 mg/kg
- LD50 Dermal - rabbit - 1,250 mg/kg

#### Skin corrosion/irritation
- Skin - rabbit - Skin irritation - 24 h

#### Serious eye damage/eye irritation
- Eyes - rabbit - Mild eye irritation
Respiratory or skin sensitization
May cause allergic respiratory and skin reactions

Germ cell mutagenicity
Laboratory experiments have shown mutagenic effects.

Carcinogenicity
This product is or contains a component that is not classifiable as to its carcinogenicity based on its IARC, ACGIH, NTP, or EPA classification.

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

Specific target organ toxicity - single exposure (GHS)
no data available

Specific target organ toxicity - repeated exposure (GHS)
no data available

Aspiration hazard
no data available

Potential health effects

Inhalation
May be harmful if inhaled. Causes respiratory tract irritation.

Ingestion
Harmful if swallowed.

Skin
Harmful if absorbed through skin. Causes skin irritation.

Eyes
Causes eye irritation.

Signs and Symptoms of Exposure
Central nervous system depression, Prolonged or repeated exposure to skin causes defatting and dermatitis.

Additional Information
RTECS: CU4375000

12. ECOLOGICAL INFORMATION

Toxicity

Toxicity to fish
LC50 - Lepomis macrochirus - 1.07 mg/l - 96 h
mortality LOEC - Pimephales promelas (fathead minnow) - 0.45 mg/l - 7 d
mortality NOEC - Pimephales promelas (fathead minnow) - 0.22 mg/l - 7 d
LC50 - Leuciscus idus (Golden orfe) - 62 mg/l - 48 h

Toxicity to daphnia and other aquatic invertebrates.
EC50 - Daphnia magna (Water flea) - 50 mg/l - 24 h

Persistence and degradability

Biodegradability
Biotic/Aerobic
Result: 95 % - Readily biodegradable.
Bioaccumulative potential
no data available

Mobility in soil
no data available

PBT and vPvB assessment
no data available

Other adverse effects
An environmental hazard cannot be excluded in the event of unprofessional handling or disposal.
Toxic to aquatic life.
no data available

13. DISPOSAL CONSIDERATIONS

Product
This combustible material may be burned in a chemical incinerator equipped with an afterburner and scrubber. Offer surplus and non-recyclable solutions to a licensed disposal company. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION

DOT (US)
UN-Number: 1990 Class: 9 Packing group: III
Proper shipping name: Benzaldehyde
Marine pollutant: No
Poison Inhalation Hazard: No

IMDG
UN-Number: 1990 Class: 9 Packing group: III EMS-No: F-A, S-A
Proper shipping name: BENZALDEHYDE
Marine pollutant: No

IATA
UN-Number: 1990 Class: 9 Packing group: III
Proper shipping name: Benzaldehyde

15. REGULATORY INFORMATION

OSHA Hazards
Combustible Liquid, Target Organ Effect, Harmful by ingestion., Harmful by skin absorption., Skin and respiratory sensitizers, Irritant

DSL Status
All components of this product are on the Canadian DSL list.

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
Fire Hazard, Acute Health Hazard, Chronic Health Hazard

Massachusetts Right To Know Components

<table>
<thead>
<tr>
<th>Component</th>
<th>CAS-No.</th>
<th>Revision Date</th>
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<td>Benzaldehyde</td>
<td>100-52-7</td>
<td>2007-03-01</td>
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</table>
Pennsylvania Right To Know Components

Benzaldehyde

New Jersey Right To Know Components

Benzaldehyde

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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The above information is believed to be correct but does not purport to be all inclusive and shall be used only as a guide. The information in this document is based on the present state of our knowledge and is applicable to the product with regard to appropriate safety precautions. It does not represent any guarantee of the properties of the product. Sigma-Aldrich Co., shall not be held liable for any damage resulting from handling or from contact with the above product. See reverse side of invoice or packing slip for additional terms and conditions of sale.