1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Biphenyl
Product Number : B34656
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
Target Organ Effect, Irritant

Target Organs
Liver, Central nervous system, Peripheral nervous system.

GHS Label elements, including precautionary statements

Pictogram

Signal word Warning

Hazard statement(s)
H303 May be harmful if swallowed.
H315 Causes skin irritation.
H319 Causes serious eye irritation.
H371 May cause damage to organs.
H400 Very toxic to aquatic life.

Precautionary statement(s)
P260 Do not breathe dust/fume/gas/mist/vapours/spray.
P273 Avoid release to the environment.
P305 + P351 + P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.

HMIS Classification
Health hazard: 2
Chronic Health Hazard: *
Flammability: 1
Physical hazards: 0

NFPA Rating
Health hazard: 2
Fire: 1
Reactivity Hazard: 0

Potential Health Effects
Inhalation May be harmful if inhaled. Causes respiratory tract irritation.
Skin
May be harmful if absorbed through skin. Causes skin irritation.

Eyes
Causes eye irritation.

Ingestion
May be harmful if swallowed.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula : C_{12}H_{10}
Molecular Weight : 154.21 g/mol

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Concentration</th>
</tr>
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<tbody>
<tr>
<td>Biphenyl</td>
<td>92-52-4</td>
<td>202-163-5</td>
<td>601-042-00-8</td>
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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
Never give anything by mouth to an unconscious person. Rinse mouth with water. Consult a physician.

5. FIRE-FIGHTING MEASURES

Suitable extinguishing media
Use water spray, alcohol-resistant foam, dry chemical or carbon dioxide.

Special protective equipment for fire-fighters
Wear self contained breathing apparatus for fire fighting if necessary.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid dust formation. Avoid breathing dust. Ensure adequate ventilation.

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. 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. Normal measures for preventive fire protection.

Conditions for safe storage
Keep container tightly closed in a dry and well-ventilated place.

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</th>
<th>Update</th>
<th>Basis</th>
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</thead>
<tbody>
<tr>
<td>Parameters</td>
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<tr>
<td>Biphenyl 92-52-4</td>
<td>TWA 0.2 ppm</td>
<td></td>
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<td></td>
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<tr>
<td>Remarks</td>
<td>Pulmonary function</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>TWA 0.2 ppm 1 mg/m3</td>
<td>1989-01-19 USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
<td></td>
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</tr>
<tr>
<td>TWA 0.2 ppm 1 mg/m3</td>
<td>1997-08-04 USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
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The value in mg/m3 is approximate.

**Personal protective equipment**

**Respiratory protection**
Where risk assessment shows air-purifying respirators are appropriate use a dust mask type N95 (US) or type P1 (EN 143) respirator. Use respirators and components tested and approved under appropriate government standards such as NIOSH (US) or CEN (EU).

**Hand protection**
Handle with gloves.

**Eye protection**
Safety glasses with side-shields conforming to EN166

**Skin and body protection**
Choose body protection according to the amount and concentration of the dangerous substance at the work place.

**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: crystalline
- Colour: light yellow
- Odour: characteristic

**Safety data**
- pH: 5.5
- Melting point: 68 - 70 °C (154 - 158 °F) - lit.
- Boiling point: 255 °C (491 °F) - lit.
- Flash point: 110 °C (230 °F) - closed cup
- Ignition temperature: 540 °C (1,004 °F)
- Lower explosion limit: 0.6 % (V)
- Upper explosion limit: 5.8 % (V)
- Vapour pressure: 0.04 hPa (0.03 mmHg) at 20 °C (68 °F)
  5.5 hPa (4.1 mmHg) at 100 °C (212 °F)
  12.6 hPa (9.5 mmHg) at 115 °C (239 °F)
  95.7 hPa (71.8 mmHg) at 166 °C (331 °F)
- Density: 0.992 g/cm3
- Water solubility: 0.0075 g/l at 15 °C (59 °F)

10. STABILITY AND REACTIVITY
Chemical stability
Stable under recommended storage conditions.

Conditions to avoid
no data available

Materials to avoid
Strong oxidizing agents

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

11. TOXICOLOGICAL INFORMATION

Acute toxicity
LD50 Oral - rat - 2,140 mg/kg
LD50 Dermal - rabbit - > 5,010 mg/kg

Skin corrosion/irritation
Skin - rabbit - Severe skin irritation - 24 h - Draize Test

Serious eye damage/eye irritation
Eyes - rabbit - Mild eye irritation - Draize Test

Respiratory or skin sensitization
guinea pig -
Remarks: Did not cause sensitization on laboratory animals.

Germ cell mutagenicity
Genotoxicity in vitro - mouse - lymphocyte
DNA damage
Genotoxicity in vitro - mouse - lymphocyte
Mutation in mammalian somatic cells.
Genotoxicity in vitro - Hamster - Lungs
Mutation in microorganisms
Genotoxicity in vitro - Hamster - fibroblast
Sister chromatid exchange
Genotoxicity in vivo - rat - Oral
Unscheduled DNA synthesis
Genotoxicity in vivo - mouse - Oral
DNA damage

Carcinogenicity
Carcinogenicity - mouse - Oral
Carcinogenicity - mouse - Subcutaneous
Tumorigenic:Neoplastic by RTECS criteria. Lungs, Thorax, or Respiration:Tumors. Liver:Tumors.

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
Specific target organ toxicity - single exposure (GHS)
May cause damage to organs.

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**: 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
Liver injury may occur., Gastrointestinal disturbance

Additional Information
RTECS: DU8050000

12. ECOLOGICAL INFORMATION

Toxicity
- Toxicity to fish
  - LC50 - Pimephales promelas (fathead minnow) - 1.45 mg/l - 96.0 h
  - LC0 - Danio rerio (zebra fish) - 38 mg/l - 96.0 h
  - LC50 - Salmo gairdneri - 1.5 mg/l - 96.0 h
  - LC50 - Lepomis macrochirus (Bluegill) - 4.7 mg/l - 96.0 h

- Toxicity to daphnia and other aquatic invertebrates.
  - LC50 - Daphnia magna (Water flea) - 0.36 mg/l - 48 h

Persistence and degradability
- Biodegradability
  Method: Closed Bottle test
  Remarks: According to the results of tests of biodegradability this product is considered as being readily biodegradable.

Bioaccumulative potential
- Bioaccumulation
  - Leuciscus idus (Golden orfe) - 3 d
  - Bioconcentration factor (BCF): 281

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.
Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

13. DISPOSAL CONSIDERATIONS

Product
Observe all federal, state, and local environmental regulations. Contact a licensed professional waste disposal service to dispose of this material.

Contaminated packaging
Dispose of as unused product.

14. TRANSPORT INFORMATION
15. REGULATORY INFORMATION

OSHA Hazards
Target Organ Effect, 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

<table>
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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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