1. PRODUCT AND COMPANY IDENTIFICATION

Product name : Pentane
Product Number : 158941
Brand : Sigma-Aldrich
Product Use : For laboratory research purposes.
Supplier : Sigma-Aldrich
Manufacturer : Sigma-Aldrich Corporation
3050 Spruce Street
SAINT LOUIS MO  63103
USA
Telephone : +1 800-325-5832
Fax : +1 800-325-5052
Emergency Phone #: (314) 776-6555
Preparation Information : Sigma-Aldrich Corporation
Product Safety - Americas Region
1-800-521-8956

2. HAZARDS IDENTIFICATION

Emergency Overview

OSHA Hazards
Flammable liquid, Target Organ Effect

Target Organs
Central nervous system, Heart, Lungs

GHS Classification
Acute toxicity, Dermal (Category 5)
Acute toxicity, Oral (Category 5)
Specific target organ toxicity - single exposure (Category 3)
Aspiration hazard (Category 1)
Acute aquatic toxicity (Category 2)

GHS Label elements, including precautionary statements

Pictogram

Signal word Danger
Hazard statement(s)
H303 + H313 May be harmful if swallowed or in contact with skin.
H304 May be fatal if swallowed and enters airways.
H336 May cause drowsiness or dizziness.
H401 Toxic to aquatic life.
Precautionary statement(s)
P261 Avoid breathing dust/ fume/ gas/ mist/ vapours/ spray.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
P331 Do NOT induce vomiting.

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

NFPA Rating
Health hazard: 1
Fire: 4
Reactivity Hazard: 0

Potential Health Effects

Inhalation: May be harmful if inhaled. May cause respiratory tract irritation. Vapours may cause drowsiness and dizziness.

Skin: May be harmful if absorbed through skin. May cause skin irritation.

Eyes: May cause eye irritation.

Ingestion: May be harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Formula: \( C_5H_{12} \)
Molecular Weight: 72.15 g/mol

<table>
<thead>
<tr>
<th>CAS-No.</th>
<th>EC-No.</th>
<th>Index-No.</th>
<th>Concentration</th>
</tr>
</thead>
<tbody>
<tr>
<td>n-Pentane</td>
<td>109-66-0</td>
<td>203-692-4</td>
<td>601-006-00-1</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
Wash off with soap and plenty of water. Consult a physician.

In case of eye contact
Flush eyes with water as a precaution.

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

Conditions of flammability
Flammable in the presence of a source of ignition when the temperature is above the flash point. Keep away from heat/sparks/open flame/hot surface. No smoking.

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.

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

6. ACCIDENTAL RELEASE MEASURES

Personal precautions
Use personal protective equipment. Avoid breathing vapors, 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. Discharge into the environment must be avoided.

Methods and materials for containment and cleaning up
Soak 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.
Store under inert gas.

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>n-Pentane</td>
<td>109-66-0</td>
<td>TWA 600 ppm</td>
<td>1,800 mg/m³</td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>STEL 750 ppm</td>
<td>2,250 mg/m³</td>
<td>USA. OSHA - TABLE Z-1 Limits for Air Contaminants - 1910.1000</td>
</tr>
<tr>
<td></td>
<td></td>
<td>TWA 1,000 ppm</td>
<td>2,950 mg/m³</td>
<td>USA. Occupational Exposure Limits (OSHA) - Table Z-1 Limits for Air Contaminants</td>
</tr>
</tbody>
</table>

Remarks
The value in mg/m³ is approximate.

<table>
<thead>
<tr>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA 600 ppm</td>
<td></td>
<td>USA. ACGIH Threshold Limit Values (TLV)</td>
</tr>
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<td>TWA 600 ppm</td>
<td></td>
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</tr>
</tbody>
</table>

Peripheral neuropathy

<table>
<thead>
<tr>
<th>Value</th>
<th>Control parameters</th>
<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>TWA 120 ppm</td>
<td>350 mg/m³</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td>15 minute ceiling value</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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<thead>
<tr>
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<th>Basis</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 610 ppm</td>
<td>1,800 mg/m³</td>
<td>USA. NIOSH Recommended Exposure Limits</td>
</tr>
<tr>
<td>15 minute ceiling value</td>
<td></td>
<td></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 AXBEK (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, clear
- **Colour**: colourless

**Safety data**
- **pH**: no data available
- **Melting point/freezing point**: Melting point/range: -130 °C (-202 °F) - lit.
- **Boiling point**: 35 - 36 °C (95 - 97 °F) - lit.
- **Flash point**: -49.0 °C (-56.2 °F) - closed cup
- **Ignition temperature**: 260 °C (500 °F)
- **Autoignition temperature**: 260.0 °C (500.0 °F)
- **Lower explosion limit**: 1.4 % (V)
- **Upper explosion limit**: 8.3 % (V)
- **Vapour pressure**: 579.0 hPa (434.3 mmHg) at 20.0 °C (68.0 °F)  
  1,859.7 hPa (1,394.9 mmHg) at 55.0 °C (131.0 °F)
- **Density**: 0.626 g/mL at 25 °C (77 °F)
- **Water solubility**: no data available
- **Partition coefficient: n-octanol/water**: log Pow: 3.39
- **Relative vapour density**: no data available
- **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**
Vapours may form explosive mixture with air.

**Conditions to avoid**
no data available

**Materials to avoid**
Strong oxidizing agents
Hazardous decomposition products
Hazardous decomposition products formed under fire conditions. - Carbon oxides
Other decomposition products - no data available

11. TOXICOLOGICAL INFORMATION

Acute toxicity

**Oral LD50**
LD50 Oral - mouse - 5,000 mg/kg

**Inhalation LC50**
LC50 Inhalation - rat - 4 h - 364,000 mg/m3

**Dermal LD50**
LD50 Dermal - rabbit - 3,000 mg/kg

**Other information on acute toxicity**
no data available

**Skin corrosion/irritation**
Skin - rabbit - No skin irritation - OECD Test Guideline 404

**Serious eye damage/eye irritation**
no data available

**Respiratory or skin sensitization**
no data available

**Germ cell mutagenicity**
Genotoxicity in vitro - Ames test - S. typhimurium - 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)**
May cause drowsiness or dizziness.

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

**Aspiration hazard**
May be fatal if swallowed and enters airways.

**Potential health effects**

**Inhalation**
May be harmful if inhaled. May cause respiratory tract irritation. Vapours may cause drowsiness and dizziness.

**Ingestion**
May be harmful if swallowed. Aspiration hazard if swallowed - can enter lungs and cause damage.
Skin  May be harmful if absorbed through skin. May cause skin irritation.
Eyes   May cause eye irritation.

**Signs and Symptoms of Exposure**
Contact with eyes can cause: Redness, Blurred vision, Provokes tears. Prolonged or repeated contact with skin may cause: defatting, Dermatitis, Central nervous system depression, Damage to the lungs.

**Synergistic effects**
no data available

**Additional Information**
RTECS: RZ9450000

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12. **ECOLOGICAL INFORMATION**

**Toxicity**
Toxicity to daphnia and other aquatic invertebrates.

**EC50** - Daphnia magna (Water flea) - 9.74 mg/l - 48 h

**Persistence and degradability**

- **Biodegradability**
  - Biotic/Aerobic
  - Result: 70 % - Readily biodegradable.

**Bioaccumulative potential**

**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.
- Avoid release to the environment. Do not empty into drains.

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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.

**Contaminated packaging**
Dispose of as unused product.

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14. **TRANSPORT INFORMATION**

**DOT (US)**
- UN number: 1265  Class: 3
- Proper shipping name: Pentanes
- Marine pollutant: No
- Poison Inhalation Hazard: No
- Packing group: II

**IMDG**
- UN number: 1265  Class: 3
- Proper shipping name: PENTANES
- Marine pollutant: No
- Packing group: II
- EMS-No: F-E, S-D

**IATA**
- UN number: 1265  Class: 3
- Proper shipping name: Pentanes
- Packing group: II
15. REGULATORY INFORMATION

**OSHA Hazards**
Flammable liquid, Target Organ Effect

**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, Chronic Health Hazard

**Massachusetts Right To Know Components**

| n-Pentane | CAS-No. 109-66-0 | Revision Date 2007-03-01 |

**Pennsylvania Right To Know Components**

| n-Pentane | CAS-No. 109-66-0 | Revision Date 2007-03-01 |

**New Jersey Right To Know Components**

| n-Pentane | CAS-No. 109-66-0 | Revision Date 2007-03-01 |

**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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