SECTION 1. Identification

Product identifier

Product number PX0170
Product name Pentane
CAS-No. 109-66-0

Relevant identified uses of the substance or mixture and uses advised against

Identified uses Reagent for analysis

Details of the supplier of the safety data sheet

Company EMD Millipore Corporation | 290 Concord Road, Billerica, MA 01821, United States of America | General Inquiries: +1-978-715-4321 | Monday to Friday, 9:00 AM to 4:00 PM Eastern Time (GMT-5)

Emergency telephone 800-424-9300 CHEMTREC (USA)
+1-703-527-3887 CHEMTREC (International)
24 Hours/day; 7 Days/week

SECTION 2. Hazards identification

GHS Classification
Flammable liquid, Category 2, H225
Specific target organ systemic toxicity - single exposure, Category 3, H336
Aspiration hazard, Category 1, H304
Chronic aquatic toxicity, Category 2, H411

For the full text of the H-Statements mentioned in this Section, see Section 16.

GHS-Labeling

Hazard pictograms

Signal Word
Danger

Hazard Statements
H225 Highly flammable liquid and vapor.
H304 May be fatal if swallowed and enters airways.
SAFETY DATA SHEET
according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number PX0170 Version 1.0
Product name Pentane

H336 May cause drowsiness or dizziness.
H411 Toxic to aquatic life with long lasting effects.

Precautionary Statements
P273 Avoid release to the environment.
P301 + P310 IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
P331 Do NOT induce vomiting.
P403 + P235 Store in a well-ventilated place. Keep cool.

OSHA Hazards
This material is considered hazardous by the OSHA Hazard Communication Standard (29 CFR 1910.1200). This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS and may deviate from the GHS information.

Other hazards
None known.

SECTION 3. Composition/information on ingredients

<table>
<thead>
<tr>
<th>Formula</th>
<th>CH₃(CH₂)₃CH₃</th>
<th>C₅H₁₂ (Hill)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Molar mass</td>
<td>72.15 g/mol</td>
<td></td>
</tr>
</tbody>
</table>

Hazardous ingredients

Chemical Name (Concentration)
CAS-No.
pentane (>= 90 % - <= 100 %)
109-66-0

Exact percentages are being withheld as a trade secret.

SECTION 4. First aid measures

Description of first-aid measures

Inhalation
After inhalation: fresh air. Consult doctor if feeling unwell.

Skin contact
After skin contact: wash off with plenty of water. Remove contaminated clothing.

Eye contact
After eye contact: rinse out with plenty of water with the eyelid held wide open. Call in ophthalmologist if necessary.

Ingestion
After swallowing: caution if victim vomits. Risk of aspiration! Keep airways free. Call a physician immediately.

Do not give milk. No digestible oils.

Subsequently administer: activated charcoal (20 - 40 g in 10% slurry).

Never give anything by mouth to an unconscious person.

Most important symptoms and effects, both acute and delayed
irritant effects, respiratory arrest, Drowsiness, narcosis, Convulsions, drowsiness

Indication of any immediate medical attention and special treatment needed
No information available.

SECTION 5. Fire-fighting measures

Extinguishing media

*Suitable extinguishing media*
- Carbon dioxide (CO2), Foam, Dry powder

*Unsuitable extinguishing media*
- For this substance/mixture no limitations of extinguishing agents are given.

Special hazards arising from the substance or mixture
- Combustible.
- Vapors are heavier than air and may spread along floors.
- Pay attention to flashback.
- Forms explosive mixtures with air at ambient temperatures.
- Development of hazardous combustion gases or vapors possible in the event of fire.

Advice for firefighters

*Special protective equipment for fire-fighters*
- Stay in danger area only with self-contained breathing apparatus. Prevent skin contact by keeping a safe distance or by wearing suitable protective clothing.

*Further information*
- Cool closed containers exposed to fire with water spray. Prevent fire extinguishing water from contaminating surface water or the ground water system.

SECTION 6. Accidental release measures

Personal precautions, protective equipment and emergency procedures
- Advice for non-emergency personnel: Avoid substance contact. Do not breathe vapors, aerosols.
- Keep away from open flames, hot surfaces and sources of ignition. Ensure adequate ventilation.
- Evacuate the danger area, observe emergency procedures, consult an expert.

Advice for emergency responders: Protective equipment see section 8.

Environmental precautions
- Do not empty into drains. Risk of explosion.

Methods and materials for containment and cleaning up
- Cover drains. Collect, bind, and pump off spills.
- Observe possible material restrictions (see sections 7 and 10).
- Take up with liquid-absorbent material (e.g. Chemizorb®). Dispose of properly. Clean up affected area.

SECTION 7. Handling and storage

Precautions for safe handling
- Observe label precautions.
Advice on protection against fire and explosion
Keep away from open flames, hot surfaces and sources of ignition. Take precautionary measures against static discharge.

Conditions for safe storage, including any incompatibilities
Keep container tightly closed in a dry and well-ventilated place. Keep away from heat and sources of ignition.
Store at room temperature.

SECTION 8. Exposure controls/personal protection

Exposure limit(s)

<table>
<thead>
<tr>
<th>Ingredients</th>
<th>Basis</th>
<th>Value</th>
<th>Threshold limits</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>pentane</td>
<td>Time Weighted Average (TWA):</td>
<td>600 ppm</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Recommended exposure limit (REL):</td>
<td>120 ppm</td>
<td>350 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Ceiling Limit Value and Time Period (if specified):</td>
<td>610 ppm</td>
<td>1,800 mg/m³</td>
<td>Ceiling Limit Value 15-min</td>
</tr>
<tr>
<td></td>
<td>PEL:</td>
<td>1,000 ppm</td>
<td>2,950 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Time Weighted Average (TWA):</td>
<td>600 ppm</td>
<td>1,800 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Short Term Exposure Limit (STEL):</td>
<td>750 ppm</td>
<td>2,250 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>OSHA_TRANS PEL:</td>
<td>1,000 ppm</td>
<td>2,950 mg/m³</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Z1A Time Weighted Average (TWA):</td>
<td>600 ppm</td>
<td>1,800 mg/m³</td>
<td></td>
</tr>
</tbody>
</table>

Engineering measures
Technical measures and appropriate working operations should be given priority over the use of personal protective equipment.

Individual protection measures
Protective clothing should be selected specifically for the workplace, depending on concentration and quantity of the hazardous substances handled. The chemical resistance of the protective equipment should be inquired at the respective supplier.

Hygiene measures
Immediately change contaminated clothing. Apply skin-protective barrier cream. Wash hands and face after working with substance.

Eye/face protection
Safety glasses

Hand protection
Chemical-resistant, impervious gloves complying with an approved standard should be worn at all times when handling chemical products if a risk assessment indicates this is necessary.

Other protective equipment:
Flame retardant antistatic protective clothing
Respiratory protection required when vapors/aerosols are generated. Use a properly fitted, air-purifying or air-fed respirator complying with an approved standard if a risk assessment indicates this is necessary. Respirator selection must be based on known or anticipated exposure levels, the hazards of the product and the safe working limits of the selected respirator.

### SECTION 9. Physical and chemical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physical state</td>
<td>liquid</td>
</tr>
<tr>
<td>Color</td>
<td>colorless</td>
</tr>
<tr>
<td>Odor</td>
<td>benzine-like</td>
</tr>
<tr>
<td>Odor Threshold</td>
<td>No information available.</td>
</tr>
<tr>
<td>pH</td>
<td>No information available.</td>
</tr>
<tr>
<td>Melting point</td>
<td>ca. -130 °C</td>
</tr>
<tr>
<td>Boiling point/boiling range</td>
<td>ca. 97 °F (36 °C) at 1,013 hPa</td>
</tr>
<tr>
<td>Flash point</td>
<td>-54 °F (-48 °C) Method: c.c. (calculated on the pure substance)</td>
</tr>
<tr>
<td>Evaporation rate</td>
<td>No information available.</td>
</tr>
<tr>
<td>Flammability (solid, gas)</td>
<td>No information available.</td>
</tr>
<tr>
<td>Lower explosion limit</td>
<td>1.4 %(V)</td>
</tr>
<tr>
<td>Upper explosion limit</td>
<td>8 %(V)</td>
</tr>
<tr>
<td>vapor pressure</td>
<td>ca. 570 hPa at 68 °F (20 °C)</td>
</tr>
<tr>
<td>Relative vapor density</td>
<td>2.49 (calculated on the pure substance)</td>
</tr>
<tr>
<td>Density</td>
<td>ca. 0.63 g/cm³ at 68 °F (20 °C)</td>
</tr>
<tr>
<td>Relative density</td>
<td>No information available.</td>
</tr>
<tr>
<td>Water solubility</td>
<td>ca. 0.4 g/l at 61 °F (16 °C)</td>
</tr>
</tbody>
</table>
Partition coefficient: n-octanol/water

Autoignition temperature

Decomposition temperature

Viscosity, dynamic

Explosive properties

Oxidizing properties

Ignition temperature

SECTION 10. Stability and reactivity

Reactivity

Vapors may form explosive mixture with air.

Chemical stability

The product is chemically stable under standard ambient conditions (room temperature).

Possibility of hazardous reactions

Violent reactions possible with:

Nitric acid, Strong oxidizing agents, halogens

Conditions to avoid

Warming.

A range from approx. 15 Kelvin below the flash point is to be rated as critical.

Incompatible materials

rubber, various plastics

Hazardous decomposition products

no information available

SECTION 11. Toxicological information

Information on toxicological effects

Likely route of exposure

Inhalation, Eye contact, Skin contact, Ingestion

Target Organs

Eyes

Skin

Respiratory system

Central nervous system
Acute oral toxicity
LD50 rat: > 2,000 mg/kg (RTECS)

Symptoms: Convulsions

Acute inhalation toxicity
LC50 rat: 364 mg/l; 4 h (RTECS)

Symptoms: mucosal irritations, drowziness, Drowsiness, narcosis, Inhalation may lead to the formation of oedemas in the respiratory tract.

Acute dermal toxicity
Symptoms: Skin disorders

Skin irritation
Repeated or prolonged exposure may cause skin irritation and dermatitis, due to degreasing properties of the product.
Repeated exposure may cause skin dryness or cracking.

Eye irritation
slight irritation

Genotoxicity in vitro
Ames test
Escherichia coli
Result: negative (IUCLID)

Specific target organ systemic toxicity - single exposure
May cause drowsiness or dizziness.

Specific target organ systemic toxicity - repeated exposure
The substance or mixture is not classified as specific target organ toxicant, repeated exposure.

Aspiration hazard
Aspiration hazard, Aspiration may cause pulmonary edema and pneumonitis.

Carcinogenicity

IARC
No ingredient of this product present at levels greater than or equal to 0.1% is identified as probable, possible or confirmed human carcinogen by IARC.

OSHA
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by OSHA.

NTP
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a known or anticipated carcinogen by NTP.

ACGIH
No ingredient of this product present at levels greater than or equal to 0.1% is identified as a carcinogen or potential carcinogen by ACGIH.
Further information
If swallowed
Convulsions, respiratory arrest
Handle in accordance with good industrial hygiene and safety practice.

SECTION 12. Ecological information
Ecotoxicity
No information available.

Persistence and degradability
No information available.

Bioaccumulative potential
Partition coefficient: n-octanol/water
log Pow: 3.39
(calculated)
(calculated on the pure substance) (Lit.) Bioaccumulation is not expected.

Mobility in soil
No information available.

Additional ecological information
Biological effects:
Endangers drinking-water supplies if allowed to enter soil or water.
Further information on ecology
Discharge into the environment must be avoided.

SECTION 13. Disposal considerations
The information presented only applies to the material as supplied. The identification based on characteristic(s) or listing may not apply if the material has been used or otherwise contaminated. It is the responsibility of the waste generator to determine the toxicity and physical properties of the material generated to determine the proper waste identification and disposal methods in compliance with applicable regulations. Disposal should be in accordance with applicable regional, national and local laws and regulations.

SECTION 14. Transport information
Land transport (DOT)
UN number UN 1265
Proper shipping name PENTANES
Class 3
Packing group II
Environmentally hazardous --

Air transport (IATA)
UN number UN 1265
Proper shipping name PENTANES
Class 3
Packing group II
Environmentally hazardous --
SAFETY DATA SHEET
according to the (US) Hazard Communication Standard (29 CFR 1910.1200)

Product number PX0170 Product name Pentane

Special precautions for user no

Sea transport (IMDG)
UN number UN 1265
Proper shipping name PENTANES
Class 3
Packing group II
Environmentally hazardous --
Special precautions for user yes
EmS F-E S-D

SECTION 15. Regulatory information
United States of America
OSHA Hazards
Flammable Liquid
Target organ effects
Eye irritant
Skin irritant
Respiratory irritant
Harmful if inhaled.
Harmful if swallowed.

This information is based on 29 CFR 1910.1200 criteria prior to adoption of the GHS, and may deviate from the GHS information on the label and in section 2.

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

SARA 313
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 302
SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.
Clean Water Act
This product does not contain any Hazardous Substances listed under the U.S. CleanWater Act, Section 311, Table 116.4A.
This product does not contain any Hazardous Chemicals listed under the U.S. CleanWater Act, Section 311, Table 117.3.
DEA List I
Not listed
DEA List II
Not listed

US State Regulations
Massachusetts Right To Know
Ingredients
pentane
Pennsylvania Right To Know
Ingredients
pentane
New Jersey Right To Know
Ingredients
pentane
California Prop 65 Components
This product does not contain any chemicals known to the State of California to cause cancer, birth, or any other reproductive defects.

Notification status
TSCA: All components of the product are listed in the TSCA-inventory.
DSL: All components of this product are on the Canadian DSL.

SECTION 16. Other information
Training advice
Provide adequate information, instruction and training for operators.

Full text of H-Statements referred to under sections 2 and 3.
H225 Highly flammable liquid and vapor.
H304 May be fatal if swallowed and enters airways.
H336 May cause drowsiness or dizziness.
H411 Toxic to aquatic life with long lasting effects.

Key or legend to abbreviations and acronyms used in the safety data sheet
Used abbreviations and acronyms can be looked up at www.wikipedia.org.
The information contained herein is based on the present state of our knowledge. It characterizes the product with regard to appropriate safety precautions. It does not represent a warranty of any product properties and we assume no liability for any loss or injury which may result from the use of this information. Users should conduct their own investigations to determine the suitability of the information.

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