

## Material Safety Data Sheet

Date Printed: 13/OCT/2004

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Version 1.6

According to 91/155/EEC

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1 - Product and Company Information

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Product Name PENTANE, 99+%, HPLC GRADE  
Product Number 270415

Company Sigma-Aldrich Pte Ltd  
#08-01 Citilink Warehouse  
Singapore 118529  
Singapore

Technical Phone # 65 271 1089  
Fax 65 271 1571

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2 - Composition/Information on Ingredients

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| Product Name | CAS #    | EC no     | Annex I<br>Index Number |
|--------------|----------|-----------|-------------------------|
| N-PENTANE    | 109-66-0 | 203-692-4 | 601-006-00-1            |

Formula C5H12  
Molecular Weight 72.15 AMU  
Synonyms Amyl hydride \* Pentan (Polish) \* Pentane  
(ACGIH:OSHA) \* Pentanen (Dutch) \* Pentani  
(Italian) \* Skellysolve A

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3 - Hazards Identification

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## SPECIAL INDICATION OF HAZARDS TO HUMANS AND THE ENVIRONMENT

Extremely flammable. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Harmful: may cause lung damage if swallowed. Repeated exposure may cause skin dryness or cracking. Vapors may cause drowsiness and dizziness.

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4 - First Aid Measures

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## AFTER INHALATION

If inhaled, remove to fresh air. If not breathing give artificial respiration. If breathing is difficult, give oxygen.

## AFTER SKIN CONTACT

In case of skin contact, flush with copious amounts of water for at least 15 minutes. Remove contaminated clothing and shoes. Call a physician.

## AFTER EYE CONTACT

In case of contact with eyes, flush with copious amounts of water for at least 15 minutes. Assure adequate flushing by separating the eyelids with fingers. Call a physician.

## AFTER INGESTION

If swallowed, wash out mouth with water provided person is conscious. Call a physician.

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## 5 - Fire Fighting Measures

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### EXTINGUISHING MEDIA

Suitable: Water spray. Carbon dioxide, dry chemical powder, or appropriate foam.

### SPECIAL RISKS

Specific Hazard(s): Flammable liquid. Emits toxic fumes under fire conditions.

Explosion Hazards: Vapor may travel considerable distance to source of ignition and flash back. Container explosion can occur under fire conditions. In advanced or massive fires the area should be evacuated and the fire should be fought from a remote explosion-resistant location.

### SPECIAL PROTECTIVE EQUIPMENT FOR FIREFIGHTERS

Wear self-contained breathing apparatus and protective clothing to prevent contact with skin and eyes.

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## 6 - Accidental Release Measures

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### PERSONAL PRECAUTION PROCEDURES TO BE FOLLOWED IN CASE OF LEAK OR SPILL

Evacuate area. Shut off all sources of ignition.

### PROCEDURE(S) OF PERSONAL PRECAUTION(S)

Wear self-contained breathing apparatus, rubber boots, and heavy rubber gloves.

### METHODS FOR CLEANING UP

Cover with dry-lime, sand, or soda ash. Place in covered containers using non-sparking tools and transport outdoors. Ventilate area and wash spill site after material pickup is complete.

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## 7 - Handling and Storage

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### HANDLING

Directions for Safe Handling: Do not breathe vapor. Avoid contact with eyes, skin, and clothing. Avoid prolonged or repeated exposure. Open carefully.

### STORAGE

Conditions of Storage: Keep container closed. Keep away from heat, sparks, and open flame. Store in a cool dry place. Store under nitrogen.

SPECIAL REQUIREMENTS: May develop pressure. Refrigerate before opening.

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## 8 - Exposure Controls / Personal Protection

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### ENGINEERING CONTROLS

Safety shower and eye bath. Use nonsparking tools. Mechanical exhaust required.

### GENERAL HYGIENE MEASURES

Wash thoroughly after handling. Wash contaminated clothing before reuse.

### EXPOSURE LIMITS

| Country | Source | Type | Value      |
|---------|--------|------|------------|
| Poland  |        | NDS  | 1800 MG/M3 |

|        |       |            |
|--------|-------|------------|
| Poland | NDSCh | 2300 MG/M3 |
| Poland | NDSP  | -          |

#### EXPOSURE LIMITS - DENMARK

|        |      |                        |
|--------|------|------------------------|
| Source | Type | Value                  |
| OEL    | TWA  | 1,500 mg/m3<br>500 ppm |

#### EXPOSURE LIMITS - GERMANY

|          |      |                          |
|----------|------|--------------------------|
| Source   | Type | Value                    |
| TRGS 900 | OEL  | 2,950 mg/m3<br>1,000 ppm |

Remarks: 4

#### EXPOSURE LIMITS - NORWAY

|        |      |                      |
|--------|------|----------------------|
| Source | Type | Value                |
|        | OEL  | 750 mg/m3<br>250 ppm |

#### EXPOSURE LIMITS - SWITZERLAND

|        |      |                        |
|--------|------|------------------------|
| Source | Type | Value                  |
| OEL    | OEL  | 1,800 mg/m3<br>600 ppm |

#### EXPOSURE LIMITS - UNITED KINGDOM

|        |      |                        |
|--------|------|------------------------|
| Source | Type | Value                  |
| OEL    | LTEL | 1,800 mg/m3<br>600 ppm |
| OEL    | STEL | 750 ppm                |

#### PERSONAL PROTECTIVE EQUIPMENT

Respiratory Protection: Government approved respirator.

Hand Protection: Compatible chemical-resistant gloves.

Eye Protection: Chemical safety goggles.

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### 9 - Physical and Chemical Properties

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|            |  |
|------------|--|
| Appearance | Physical State: Clear liquid<br>Color: Colorless |
|------------|--|

| Property              | Value                        | At Temperature or Pressure |
|-----------------------|------------------------------|----------------------------|
| pH                    | N/A                          |                            |
| BP/BP Range           | 35 - 36 °C                   |                            |
| MP/MP Range           | -130 °C                      |                            |
| Flash Point           | -49 °C                       | Method: closed cup         |
| Flammability          | N/A                          |                            |
| Autoignition Temp     | 260 °C                       |                            |
| Oxidizing Properties  | N/A                          |                            |
| Explosive Properties  | N/A                          |                            |
| Explosion Limits      | Lower: 1.4 %<br>Upper: 8.3 % |                            |
| Vapor Pressure        | 434.28 mmHg                  | 20 °C                      |
| SG/Density            | 0.626 g/cm3                  |                            |
| Partition Coefficient | Log Kow: 3.39                |                            |
| Viscosity             | N/A                          |                            |
| Vapor Density         | 2.48 g/l                     |                            |
| Saturated Vapor Conc. | N/A                          |                            |
| Evaporation Rate      | N/A                          |                            |
| Bulk Density          | N/A                          |                            |
| Decomposition Temp.   | N/A                          |                            |
| Solvent Content       | N/A                          |                            |

|                    |          |
|--------------------|----------|
| Water Content      | < 0.01 % |
| Surface Tension    | N/A      |
| Conductivity       | N/A      |
| Miscellaneous Data | N/A      |
| Solubility         | N/A      |

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## 10 - Stability and Reactivity

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### STABILITY

Stable: Stable.

Materials to Avoid: Strong oxidizing agents.

### HAZARDOUS DECOMPOSITION PRODUCTS

Hazardous Decomposition Products: Carbon monoxide, Carbon dioxide.

### HAZARDOUS POLYMERIZATION

Hazardous Polymerization: Will not occur

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## 11 - Toxicological Information

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RTECS NUMBER: RZ9450000

### ACUTE TOXICITY

LC50

Inhalation

Rat

364,000 mg/m3

4H

LD50

Intravenous

Mouse

446 MG/KG

### SIGNS AND SYMPTOMS OF EXPOSURE

Contact with eyes can cause redness, tearing, and blurred vision. Prolonged or repeated contact with skin can cause defatting and dermatitis. CNS depression. Damage to the lungs.

### ROUTE OF EXPOSURE

Skin Contact: May cause skin irritation.

Skin Absorption: May be harmful if absorbed through the skin.

Eye Contact: May cause eye irritation.

Inhalation: Material may be irritating to mucous membranes and upper respiratory tract. May be harmful if inhaled.

Ingestion: May be harmful if swallowed.

### TARGET ORGAN INFORMATION

Central nervous system. Heart. Lungs.

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## 12 - Ecological Information

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BIOACCUMULATION POTENTIAL: Indication of bioaccumulation.

### ECOTOXICOLOGICAL EFFECTS

Test Type: EC50 Daphnia

Species: Daphnia magna

Time: 48 h

Value: 9.74 mg/l

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## 13 - Disposal Considerations

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### SUBSTANCE DISPOSAL

Contact a licensed professional waste disposal service to dispose of this material. Burn in a chemical incinerator equipped with an afterburner and scrubber but exert extra care in igniting as this material is highly flammable. Observe all federal, state, and local environmental regulations.

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## 14 - Transport Information

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### RID/ADR

UN#: 1265  
Class: 3  
PG: II  
Proper Shipping Name: Pentanes

### IMDG

UN#: 1265  
Class: 3  
PG: II  
Proper Shipping Name: Pentanes  
Marine Pollutant: No  
Severe Marine Pollutant: No

### IATA

UN#: 1265  
Class: 3  
PG: II  
Proper Shipping Name: Pentanes  
Inhalation Packing Group I: No

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## 15 - Regulatory Information

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### CLASSIFICATION AND LABELING ACCORDING TO EU DIRECTIVES

ANNEX I INDEX NUMBER: 601-006-00-1

NOTA: C, 4, 6

INDICATION OF DANGER: F+ Xn N

Extremely Flammable. Harmful. Dangerous for the environment.

R-PHRASES: 12 51/53 65 66 67

Extremely flammable. Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment. Harmful: may cause lung damage if swallowed. Repeated exposure may cause skin dryness or cracking. Vapors may cause drowsiness and dizziness.

S-PHRASES: 9 16 29 33 61 62

Keep container in a well-ventilated place. Keep away from sources of ignition - no smoking. Do not empty into drains. Take precautionary measures against static discharges. Avoid release to the environment. Refer to special instructions/safety data sheets. If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label.

### COUNTRY SPECIFIC INFORMATION

#### Germany

WGK: 1

#### SWITZERLAND

SWISS POISON CLASS: 5

## NORWAY

Labelling for organic solvents where the package is 1liter or more.

YL-tall m3/l: 1680

YL-group: 4

Risk phrases: 20

Harmful by inhalation.

Safety phrases: 38 42 210

In case of insufficient ventilation, wear suitable respiratory equipment. During fumigation/spraying wear suitable respiratory equipment. Use compressed air- or fresh air line breathing apparatus in confined spaces.

Declaration Number: 7381

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## 16 - Other Information

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### WARRANTY

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 Inc., 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. Copyright 2004 Sigma-Aldrich Co. License granted to make unlimited paper copies for internal use only.

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