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|---------------------|---|
| Health              | 2 |
| Fire                | 4 |
| Reactivity          | 0 |
| Personal Protection | H |

## Material Safety Data Sheet n-Pentane 99% MSDS

### Section 1: Chemical Product and Company Identification

**Product Name:** n-Pentane 99%

**Catalog Codes:** 11088,21088,21089,31088,61088

**CAS#:** 109-66-0

**RTECS:** RZ9450000

**TSCA:** TSCA 8(b) inventory: Pentane

**CI#:** Not available.

**Synonym:** Amyl Hydride

**Chemical Name:** Pentane

**Chemical Formula:** C5-H12

#### Contact Information:

**Finar Limited**

184-186/P, Chacharwadi Vasna,

Sarkhej-Bavla Highway,

Ta.: Sanand, Dist.: Ahmedabad,

Email: info@finarchemicals.com

Web: www.finarchemicals.com

### Section 2: Composition and Information on Ingredients

#### Composition:

| Name    | CAS #    | % by Weight |
|---------|----------|-------------|
| Pentane | 109-66-0 | 100         |

**Toxicological Data on Ingredients:** Pentane: VAPOR (LC50): Acute: 364000 mg/m 4 hours [Rat].

### Section 3: Hazards Identification

#### Potential Acute Health Effects:

Hazardous in case of skin contact (irritant), of eye contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

#### Potential Chronic Health Effects:

Hazardous in case of ingestion, of inhalation. Slightly hazardous in case of skin contact (sensitizer). CARCINOGENIC EFFECTS: Not available. MUTAGENIC EFFECTS: Not available. TERATOGENIC EFFECTS: Not available. DEVELOPMENTAL TOXICITY: Not available. The substance may be toxic to kidneys, the nervous system, liver, skin, central nervous system (CNS). Repeated or prolonged exposure to the substance can produce target organs damage.

### Section 4: First Aid Measures

**Eye Contact:**

Check for and remove any contact lenses. In case of contact, immediately flush eyes with plenty of water for at least 15 minutes. Cold water may be used. WARM water MUST be used. Get medical attention.

**Skin Contact:**

In case of contact, immediately flush skin with plenty of water. Cover the irritated skin with an emollient. Remove contaminated clothing and shoes. Wash clothing before reuse. Thoroughly clean shoes before reuse. Get medical attention.

**Serious Skin Contact:**

Wash with a disinfectant soap and cover the contaminated skin with an anti-bacterial cream. Seek medical attention.

**Inhalation:**

If inhaled, remove to fresh air. If not breathing, give artificial respiration. If breathing is difficult, give oxygen. Get medical attention if symptoms appear.

**Serious Inhalation:**

Evacuate the victim to a safe area as soon as possible. Loosen tight clothing such as a collar, tie, belt or waistband. If breathing is difficult, administer oxygen. If the victim is not breathing, perform mouth-to-mouth resuscitation. Seek medical attention.

**Ingestion:**

If swallowed, do NOT induce vomiting. Never give anything by mouth to an unconscious person. Aspiration hazard if swallowed- can enter lungs and cause damage. Loosen tight clothing such as a collar, tie, belt or waistband. Get medical attention.

**Serious Ingestion:** Not available.

## Section 5: Fire and Explosion Data

**Flammability of the Product:** Flammable.

**Auto-Ignition Temperature:** 260°C (500°F)

**Flash Points:** CLOSED CUP: -49°C (-56.2°F). (TAG)

**Flammable Limits:** LOWER: 1.5% UPPER: 7.8%

**Products of Combustion:** These products are carbon oxides (CO, CO<sub>2</sub>).

**Fire Hazards in Presence of Various Substances:**

Extremely flammable in presence of open flames and sparks, of heat. Flammable in presence of oxidizing materials. Non-flammable in presence of shocks.

**Explosion Hazards in Presence of Various Substances:**

Risks of explosion of the product in presence of static discharge: Not available. Slightly explosive in presence of heat, of oxidizing materials. Non-explosive in presence of shocks.

**Fire Fighting Media and Instructions:**

Flammable liquid, soluble or dispersed in water. SMALL FIRE: Use DRY chemical powder. LARGE FIRE: Use alcohol foam, water spray or fog. Cool containing vessels with water jet in order to prevent pressure build-up, autoignition or explosion.

**Special Remarks on Fire Hazards:**

EXTREMELY FLAMMABLE. Vapor may travel considerable distance to source of ignition and flash back.

**Special Remarks on Explosion Hazards:** Not available.

## Section 6: Accidental Release Measures

**Small Spill:** Absorb with an inert material and put the spilled material in an appropriate waste disposal.

**Large Spill:**

Flammable liquid. Keep away from heat. Keep away from sources of ignition. Stop leak if without risk. Absorb with DRY earth, sand or other non-combustible material. Do not touch spilled material. Prevent entry into sewers, basements or confined

areas; dike if needed. Be careful that the product is not present at a concentration level above TLV. Check TLV on the MSDS and with local authorities.

## Section 7: Handling and Storage

### Precautions:

Keep away from heat. Keep away from sources of ignition. Ground all equipment containing material. Do not ingest. Do not breathe gas/fumes/ vapor/spray. Wear suitable protective clothing. In case of insufficient ventilation, wear suitable respiratory equipment. If ingested, seek medical advice immediately and show the container or the label. Avoid contact with skin and eyes. Keep away from incompatibles such as oxidizing agents.

### Storage:

Store in a segregated and approved area. Keep container in a cool, well-ventilated area. Keep container tightly closed and sealed until ready for use. Avoid all possible sources of ignition (spark or flame). Do not store above 25°C (77°F).

## Section 8: Exposure Controls/Personal Protection

### Engineering Controls:

Provide exhaust ventilation or other engineering controls to keep the airborne concentrations of vapors below their respective threshold limit value. Ensure that eyewash stations and safety showers are proximal to the work-station location.

### Personal Protection:

Splash goggles. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Gloves.

### Personal Protection in Case of a Large Spill:

Splash goggles. Full suit. Vapor respirator. Boots. Gloves. A self contained breathing apparatus should be used to avoid inhalation of the product. Suggested protective clothing might not be sufficient; consult a specialist BEFORE handling this product.

### Exposure Limits:

TWA: 600 STEL: 750 from ACGIH (TLV) [United States] TWA: 1800 STEL: 2210 from ACGIH (TLV) [United States] Consult local authorities for acceptable exposure limits.

## Section 9: Physical and Chemical Properties

**Physical state and appearance:** Liquid.

**Odor:** Pleasant. Gasoline-like

**Taste:** Not available.

**Molecular Weight:** 72.15g/mole

**Color:** Colorless.

**pH (1% soln/water):** Not available.

**Boiling Point:** 36.1°C (97°F)

**Melting Point:** -130°C (-202°F)

**Critical Temperature:** 196.6°C (385.9°F)

**Specific Gravity:** 0.6262 (Water = 1)

**Vapor Pressure:** 56.8 kPa (@ 20°C)

**Vapor Density:** 2.49 (Air = 1)

**Volatility:** Not available.

**Odor Threshold:** 2.2 ppm

**Water/Oil Dist. Coeff.:** The product is more soluble in oil;  $\log(\text{oil/water}) = 3.4$

**Ionicity (in Water):** Not available.

**Dispersion Properties:** See solubility in water, diethyl ether, acetone.

**Solubility:**

Partially soluble in diethyl ether, acetone. Very slightly soluble in cold water. Solubility in water: 0.36g/l water @ 16 deg. C. Solubility in water: 9.9 g in 100 kg water @ 25 deg. C. Solubility in water: 0.04 g in 100 g of water @ 20 deg. C Soluble in chloroform. Solubility in acetone, benzene, ethanol > 10%

## Section 10: Stability and Reactivity Data

**Stability:** The product is stable.

**Instability Temperature:** Not available.

**Conditions of Instability:** Heat, ignition sources, incompatible materials.

**Incompatibility with various substances:** Reactive with oxidizing agents.

**Corrosivity:** Non-corrosive in presence of glass.

**Special Remarks on Reactivity:** Not available.

**Special Remarks on Corrosivity:** It will attack some forms of plastics, rubber, and coatings.

**Polymerization:** Will not occur.

## Section 11: Toxicological Information

**Routes of Entry:** Absorbed through skin. Eye contact. Inhalation. Ingestion.

**Toxicity to Animals:**

WARNING: THE LC50 VALUES HEREUNDER ARE ESTIMATED ON THE BASIS OF A 4-HOUR EXPOSURE. Acute toxicity of the vapor (LC50): 364000 mg/m<sup>3</sup> 4 hours [Rat].

**Chronic Effects on Humans:**

May cause damage to the following organs: kidneys, the nervous system, liver, skin, central nervous system (CNS).

**Other Toxic Effects on Humans:**

Hazardous in case of skin contact (irritant), of ingestion, of inhalation. Slightly hazardous in case of skin contact (permeator).

**Special Remarks on Toxicity to Animals:**

Lowest Published Lethal Dose: LCL [Mouse] - Route: Inhalation; Dose 325 gm/m<sup>3</sup>/2H

**Special Remarks on Chronic Effects on Humans:** Not available.

**Special Remarks on other Toxic Effects on Humans:**

Acute Potential Health Effects: Skin: It can cause skin irritaiton with itching, drying erythema, hyperpigmentation, hyperemia, dermatitis, burning sensations, followed by formation of blisters. It may be aborbed by the skin and cause systemic effects. Eyes: It is a strong eye irritant. Symptoms may include pain, corneal irritation, and nystagmus Inhalation: It is a mild respiratory tract (nose, throat, lungs) irritant causing causing coughing, wheezing, and/or shortness of breath. Inhalation exposure to an airborne concentration of 5,000 ppm for 10 minutes appears to have no ill effect in humans, while 90,000 to 120,000 ppm can affect behavior/central nervous system and cause symptoms of central nervous system depression and narcosis. Symptoms of central nervous system depression include nausea, headache, weakness, dizziness, excitement, confusion, lightheadedness, sleepiness, seizures, inability to concentrate, loss of coordination and judgement, coma, and death with exposure to large amounts. It may also affect the cardiovascular system (dysrhythmias), and metabolism (weight loss/loss of appetite/anorexia ). Airborne concentration of approximately 130,000 ppm can be fatal by asphyxiation; therefore, there is not a wide margin of safety concentrations causing central nervous system effects and death. Ingestion: Pulmonary aspiration of even a small amount can produce acute lung injury, potentially fatal chemical pneumonitis, and hemorrhage. In extreme cases, respiratory arrest secondary to hypoxia following pneumonitis may occur. It may also affect behavior/central nervous

system (symptoms similar to acute inhalation), and cardiovascular system (symptoms similar to acute inhalation). Chronic Potential Health Effects: Skin: Prolonged or repeated skin contact can cause defatting dermatitis with dryness and cracking. Long-term dermal exposure may also cause kidney damage. Ingestion or inhalation: Prolonged or repeated ingestion or inhalation Can cause central nervous system damage. Central nervous system damage symptoms may include numbness, "pins and needles", and weakness of arms and legs. It may also cause liver damage, adn kidney damage (renal tubular necrosis, glomerulonephritis, nephritis, proteinuria, hematuria) and may affect metabolism (weight loss).

## Section 12: Ecological Information

**Ecotoxicity:** Not available.

**BOD5 and COD:** Not available.

**Products of Biodegradation:**

Possibly hazardous short term degradation products are not likely. However, long term degradation products may arise.

**Toxicity of the Products of Biodegradation:** The product itself and its products of degradation are not toxic.

**Special Remarks on the Products of Biodegradation:** Not available.

## Section 13: Disposal Considerations

**Waste Disposal:**

Waste must be disposed of in accordance with federal, state and local environmental control regulations.

## Section 14: Transport Information

**DOT Classification:** CLASS 3: Flammable liquid.

**Identification:** : Pentane UNNA: 1265 PG: II

**Special Provisions for Transport:** Not available.

## Section 15: Other Regulatory Information

**Federal and State Regulations:**

Connecticut hazardous material survey.: Pentane Illinois toxic substances disclosure to employee act: Pentane Rhode Island RTK hazardous substances: Pentane Pennsylvania RTK: Pentane Minnesota: Pentane Massachusetts RTK: Pentane Massachusetts spill list: Pentane New Jersey: Pentane New Jersey toxic catastrophe prevention act: Pentane California Director's list of Hazardous Substances: Pentane TSCA 8(b) inventory: Pentane TSCA 4(a) proposed test rules: Pentane TSCA 8(a) PAIR: Pentane TSCA 8(d) H and S data reporting: Pentane: Effective date: 1/26/94; Sunset Date: 6/30/98

**Other Regulations:**

OSHA: Hazardous by definition of Hazard Communication Standard (29 CFR 1910.1200). EINECS: This product is on the European Inventory of Existing Commercial Chemical Substances.

**Other Classifications:**

**WHMIS (Canada):**

CLASS B-2: Flammable liquid with a flash point lower than 37.8°C (100°F). CLASS D-2B: Material causing other toxic effects (TOXIC).

**DSCL (EEC):**

**HMIS (U.S.A.):**

**Health Hazard:** 2

**Fire Hazard:** 4

**Reactivity:** 0

**Personal Protection:** h

**National Fire Protection Association (U.S.A.):**

**Health:** 1

**Flammability:** 4

**Reactivity:** 0

**Specific hazard:**

**Protective Equipment:**

Gloves. Lab coat. Vapor respirator. Be sure to use an approved/certified respirator or equivalent. Wear appropriate respirator when ventilation is inadequate. Splash goggles.

## Section 16: Other Information

**References:** Not available.

**Other Special Considerations:** Not available.

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