

SAFETY DATA SHEET


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N-PENTANE

SDS No. M0165

1. CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Product Name: n-Pentane

Synonyms: Amyl hydride, Normal Pentane; Pentane; Pentane mixed isomers

Recommended Use: This product is recommended for laboratory and manufacturing use only. It is not recommended for drug, food or household use.

2. HAZARDS IDENTIFICATION



Classification:

Flammable Liquids: GHS Category 2

Specific Target Organ Exposure, single exposure: GHS Category 3

Aspiration Hazard: GHS Category 1

Acute Aquatic Hazard: GHS Category 2

Chronic Aquatic Toxicity: GHS Category 2

Label Elements

Signal Word: DANGER!

Hazard Statements:

- H225 – Highly Flammable liquid and vapor.
- H304 – May be fatal if swallowed and enters airways.
- H336 – May cause drowsiness and dizziness.
- H411 – Toxic to aquatic life with long lasting effects.

Precautionary Statements:

- P210 – Keep away from heat/sparks/open flames/hot surfaces. – No smoking.
- P243 – Take precautionary measures against static discharge.
- P273 – Avoid release to the environment.
- P280 – Wear protective gloves/protective clothing/eye protection/face protection.
- P303+P361+P353 – IF ON SKIN (or hair): Take off immediately all contaminated clothing. Rinse skin with water/shower.
- P304+P340+P312 – IF INHALED: Remove person to fresh air and keep comfortable for breathing. Call a POISON CENTER/doctor if you feel unwell.

P331 – Do NOT induce vomiting.

P370+P378 – In case of fire: Use dry sand, dry chemical or alcohol-resistant foam to extinguish.

P403+P233 – Store in a well-ventilated place. Keep container tightly closed.

P403+P235 – Store in a well-ventilated place. Keep cool.

P501 – Dispose of contents/ container to an approved waste disposal plant.

Emergency Overview

Breathing vapors may cause drowsiness or dizziness. Causes irritation to skin and eyes. Repeated exposure may cause dryness and cracking of skin. Aspiration hazard if swallowed. Can cause damage to lungs. Extremely flammable liquid and vapor. Vapor may cause flash fire. Target Organs: Central nervous system, respiratory system, eyes, and skin..

HMIS Rating:

Health – 1 Flammability – 4 Physical Hazard – 0 PPE – User supplied

NOTE: HMIS ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. These ratings are based on the inherent properties of this chemical under expected conditions of normal use and are not intended to be used in emergency situations. PPE is determined by the user based on their needs and conditions.

3. COMPOSITION AND INFORMATION ON INGREDIENTS

<u>Ingredient</u>	<u>CAS No</u>	<u>Percent</u>	<u>Hazardous</u>
Pentane	109-66-0	>98%	Yes

4. FIRST-AID MEASURES

Inhalation: If inhaled, remove to fresh air. If breathing is labored or with coughing, give 100% supplemental oxygen. If not breathing, begin artificial respiration. Get medical aid.

Ingestion: Aspiration hazard. Get medical aid. Do not induce vomiting unless directed by medical personnel. Never give anything by mouth to an unconscious person. If not breathing, begin artificial respiration. DO NOT give mouth-to-mouth resuscitation.

Skin Contact: Immediately flush skin with plenty of water for at least 15 minutes while removing contaminated clothing and shoes. Get medical attention if irritation develops and persists. Wash clothing before reuse.

Eye Contact: Check for and remove contact lenses. Immediately flush eyes with plenty of water for at least 15 minutes, lifting lower and upper eyelids occasionally. Get medical attention immediately.

Notes to Physician: Treat symptomatically and supportively.

5. FIRE FIGHTING MEASURES

Flammability: Extremely flammable liquid and vapor. (GHS Category 1)

Auto-ignition Temperature: 260° C (500° F)

Flash Point: -49° C (-56.2° F)

Flammable Limits: Lower Limit – 1.4 vol %, Upper Limit – 8.0 vol %

Products of Combustion: Will decompose into highly toxic and irritating gases (carbon monoxide and carbon dioxide) under fire conditions.

Specific Fire Hazards: As in any fire, always wear self-contained breathing apparatus in pressure-demand (MSA/NIOSH approved or equivalent), and full protective gear. Vapor may cause flash fire. Use water spray to keep fire exposed containers cool. Approach fire from upwind to avoid hazardous vapors and toxic decomposition products. Vapors are heavier than air and may travel to a source of ignition and flash back. Vapors can spread along the ground and collect in low or confined areas. Material floats on water and may travel to a source of ignition and spread fire. Sensitive to static discharge.

Specific Explosion Hazards: None

Fire Fighting Media: For small fires, use dry chemical, carbon dioxide, water spray or alcohol-resistant foam. For large fires, use water spray, fog, or alcohol-resistant foam. Material floats on water and may easily be spread by use of water in an area where water can't be contained. Do NOT use straight streams of water.

National Fire Protective Association: Health - 1, Flammability - 4, Reactivity - 0

NOTE: NFPA ratings use a numbering scale that ranges from 0 - 4 to indicate the degree of hazard. A value of zero means the chemical presents no hazard while a value of four indicates a high hazard. They are for use by emergency personnel to address the hazards that are presented by short term, acute exposure to this product under fire, spill, or similar emergencies. Ratings involve data and interpretations that may vary from company to company.

6. ACCIDENTAL RELEASE MEASURES

Absorb spilled liquid with sorbent pads, socks, or other inert material such as vermiculite, sand, or earth. Provide ventilation to the affected area and remove all ignition sources. Avoid run-off into storm sewers and ditches that lead to waterways. Approach the spill from upwind and pick up absorbed material and place it in a suitable container. Use only non-sparking tools and equipment. A vapor suppressing foam may be used. Always use proper personal protective equipment as described in section 8.

7. HANDLING AND STORAGE

Precautions: Always use proper personal protective equipment as described in section 8. Wash thoroughly after handling. Ground and bond containers when transferring material. Avoid contact with eyes, skin, and clothing. Remove contaminated clothing and wash before reuse. Empty containers contain product residue (liquid and vapor) and can be dangerous. Keep container tightly closed and away from heat, spark, and flame. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose empty containers to heat, sparks, or open flames. Use with adequate ventilation. Avoid breathing vapor or mist. Storage: Keep in a flammables area away from all sources of ignition and oxidizing materials. Keep in a tightly closed container. Store in a cool, dry, well-ventilated area away from incompatible substances. Keep from contact with oxidizing materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

Engineering Controls: Use explosion-proof ventilation equipment. Facilities storing or using the material should be equipped with eyewash station and a safety shower. Use adequate general or local exhaust ventilation to keep airborne concentrations below the permissible exposure limits.

Personal Protection: Wear protective chemical goggles or appropriate eye protection. Use appropriate protective gloves and protective clothing to prevent skin exposure. A respiratory protection program that meets OSHA 29 CFR 1910.134 and ANSI Z88.2 requirements or European Standard EN 149 must be followed whenever possible. Always use a NIOSH or European Standard EN 149 approved respirator when necessary.

Exposure Limits:

ACGIH – 600 ppm TWA;
NIOSH – 120 ppm TWA; 350 mg/m³ TWA; 1500 ppm IDLH
OSHA Final PELs – 1000 ppm TWA; 2950 mg/m³ TWA

9. PHYSICAL AND CHEMICAL PROPERTIES

Physical State and Appearance: Clear, colorless liquid.

Odor: Mild, pleasant, gasoline-like odor

Odor Threshold: Not available

Molecular Formula: CH₃(CH₂)₃CH₃

Molecular Weight: 72.15

Auto-ignition Temperature: 260° C (500° F)

Flash Point: -49° C (-56.2° F)

Flammable Limits: Lower Limit – 1.5 vol %, Upper Limit – 7.8 vol %

PH: Not available.

Boiling Point: 36° C @ 760 mm Hg

Freezing/Melting Point: -130° C

Decomposition Temperature: Not available

Specific Gravity: 0.62 g/cm³ @ 20° C

Vapor Density (Air=1): 2.5

Vapor Pressure: 514 mm Hg @ 25° C.

Viscosity: Not available

Solubility: Negligible (0.04% at 20° C)

10. STABILITY AND REACTIVITY

Stability: Stable under normal temperatures and pressures.

Conditions to Avoid: Ignition sources, and excess heat.

Incompatibility with Various Substances: Strong oxidizing agents.

Hazardous Decomposition Products: Carbon monoxide, carbon dioxide.

Hazardous Polymerization: Has not been reported.

11. TOXICOLOGICAL INFORMATION

Routes of Entry: Inhalation, skin absorption, skin contact

Acute Exposure Hazards:

INHALATION HAZARD: Inhalation of vapors may irritate the respiratory tract. Overexposure may cause central nervous system effects characterized by nausea, headache, dizziness, unconsciousness, and coma. Vapors may cause dizziness or suffocation.

INGESTION HAZARD: May cause central nervous system depression, characterized by excitement, followed by headache, dizziness, drowsiness, and nausea. Advanced stages may cause collapse, unconsciousness, coma, and possible death due to respiratory failure. Aspiration into lungs may cause chemical pneumonitis, which may be fatal.

SKIN CONTACT HAZARD: Causes skin irritation. Repeated or prolonged exposure may cause drying or cracking of the skin. Volunteers suffered painful burning sensations, accompanied by itching, after topical application of pentane; after 5 hours, blisters formed on treated areas.

EYE CONTACT HAZARD: Causes eye irritation.

Chronic Exposure Hazards: Repeated or prolonged skin contact may defat the skin and produce irritation and dermatitis.

Chronic exposure to vapors in very high concentrations may lead to polyneuropathy.

Animal Toxicity:

Inhalation, rat: LC50 = 364,000 mg/m³/4H;

Oral, mouse: LD50 = 5000 mg/kg;

Skin, rabbit: LD50 = 3000 mg/kg

Carcinogenicity: Not listed as a carcinogen by ACGIH, IARC, NTP, or CA Prop 65

Epidemiology: No information found.

Teratogenicity: No information found.

Reproductive Effects: No information found.

Mutagenicity: No information found.

Neurotoxicity: Material is a mild irritant and central nervous system depressant in acute exposure, but its principle effect are damage to sensory and motor peripheral nerves, particularly in chronic exposure. Because of the substantially lower toxicity, it is believed that such effects would require gross overexposures, and the 600 ppm TLV-TWA should minimize potential for development of axonopathies.

12. ECOLOGICAL INFORMATION

Ecotoxicity:

Fish: rainbow trout; LC50= 9.87 mg/L/96H, unspecified;

Fish: fathead minnow; LC50= 11.59 mg/L/96H, unspecified;

Fish: bluegill/sunfish; LC50= 9.99 mg/L/96H, unspecified;

Water flea: daphnia; LC50= 9.7 mg/L/48H, unspecified;

Environmental Fate:

Soils: Photolysis and hydrolysis are not expected to be important in soils. The biodegradation of pentane may occur in soils; however, primary volatilization and to some extent adsorption are expected to be far more important fate processes. A

calculated Koc range of 580 to 1600 indicates low mobility in soils. Based on an estimated Henry's Law Constant of 1.25 atm-cu m/mole, pentane is expected to volatilize rapidly from soils.

Atmosphere: Based on a vapor pressure of 514 mm Hg at 25° C, pentane is expected to exist entirely in the vapor phase in ambient air. Pentane does not absorb UV light in the environmentally significant range (>290 nm) and probably will not undergo direct photolysis in the atmosphere.

Water: Based upon a water solubility of 38.5 mg/L at 25° C and a low Kow of 3.39, the bioconcentration factor (log BCF) for pentane has been calculated to be 1.9 and 2.35, respectively, from recommended regression derived equations. These BCF values are not indicative of important bioconcentration in aquatic organisms.

13. DISPOSAL CONSIDERATIONS

Material that cannot be saved for recovery or recycling should be managed in an appropriate and approved waste facility. Processing, usage or contamination of this product may change the waste management options. Waste generators must decide if discarded material is a hazardous waste. State and local disposal regulations may differ from federal disposal definitions found in 40 CFR 261.3. Dispose of container and unused contents in accordance with federal, state and local requirements. This material is neither a "P" listed waste nor a "U" listed waste under 40 CFR 261.33.

14. TRANSPORT INFORMATION

US DOT

Proper Shipping Name: Pentanes
Hazard Class: 3
UN Number: UN1265
Packing Group: II

IMDG

Proper Shipping Name: Pentanes
Hazard Class: 3
UN Number: UN1265
Packing Group: II

IATA

Proper Shipping Name: Pentanes
Hazard Class: 3
UN Number: UN1265
Packing Group: II

15. REGULATORY INFORMATION

US Federal Regulations:

CERCLA Hazardous Substances: CAS# 109-66-0 does not have an RQ

SARA Section 302: Does not have a TPQ

SARA Codes: CAS# 109-66-0 – immediate, delayed, fire

Section 313: n-Pentane (CAS# 109-66-0) is not subject to SARA Title III Section 313 and 40 CFR 373 reporting requirements.

OSHA: Not considered highly hazardous by OSHA.

US State Regulations:

CAS# 109-66-0 is on the following state right-to-know lists: New Jersey, Pennsylvania, and Massachusetts

California Prop 65: This product does not contain any chemicals known to the state of California to cause cancer, birth defects, or any other reproductive harm.

16. OTHER INFORMATION

Originally Prepared: 1/1/2006

Last Revised: 07/23/2020 – Updated precautionary statements Section 2.

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