

Emergency Telephone Numbers:

(815) 424-2000 CHANNAHON PLANT
(800) 424-9300 CHEMTREC

Product Name: n-Pentane

Revision Date: 01-Jul-2019

SECTION I PRODUCT IDENTIFICATION / COMPANY INFORMATION

Cas Registry #: 109-66-0
 Chemical Family: Paraffin Series Hydrocarbon
 Chemical Name: n-Pentane
 Chemical Formula: C₅H₁₂

SECTION II COMPOSITION / DATA ON COMPONENTS

GHS Classification: Flammable Liquids, 1, H224
 Specific Target Organ Systemic Toxicity – Single Exposure, 3, H336
 Aspiration Hazard, 1, H304
 Hazardous to the Aquatic Environment-Long Term Hazard, 2, H411

**GHS Label Elements
 Symbol(s):**



Signal Words: Danger

GHS Hazard Statements:

Physical Hazards

H224: Extremely flammable liquid and vapor.
Vapors may reduce oxygen in confined spaces.

Health Hazards

H304: May be fatal if swallowed and enters airways.
 H336: May cause drowsiness or dizziness.
 EUH066: Repeated exposure may cause skin dryness and cracking.

Environmental Hazards

H411: Toxic to aquatic life with long lasting effects.

Other Hazards

Vapors are heavier than air and can cause suffocation by reducing available oxygen. May cause cardiac arrhythmia.

GHS Precautionary Statements

Prevention: P210: Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking.
 P233: Keep container tightly closed.
 P240: Ground / bond container and receiving equipment.
 P241: Use explosion-proof electrical, ventilating, and lighting equipment.
 P242: Use only non-sparking tools.
 P243: Take precautionary measures against static discharge.
 P261: Avoid breathing dust/fume/gas/mist/vapours/spray.
 P271: Use only outdoors or in well-ventilated area.
 P273: Avoid release to the environment
 P280: Wear protective gloves/protective clothing/eye protection/face protection.

Response: P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.
 P312: Call a POISON CENTER/doctor...if you feel unwell.
 P303 + P361 + P353: If on skin (or hair), Remove/Take off immediately all contaminated clothing. Rinse skin with water/shower.

P304 + P340: If INHALED: Remove person to fresh air and keep comfortable for breathing.
 P331: Do NOT induce vomiting.
 P370 + P378: In case of fire: Evacuate area. Use manufacturer/supplier or the competent authority to specify appropriate media for extinction.
 P391: Collect Spillage.

Storage: P403+P235: Store in a well-ventilated place. Keep cool.
 P403+P233: Store in well-ventilated place Keep container tightly closed.
 P405: Store locked up.

Disposal: P501: Dispose of Contents/Container to an approved waste disposal plant.

SECTION III COMPOSITION / INFORMATION ON INGREDIENTS

INGREDIENT	CAS No.	EINICS No.	TARGET (WT%)
n-Pentane	109-66-0	203-692-4	100

SECTION IV FIRST AID MEASURES

Emergency First Aid Procedures

Eye Contact: For liquid contact, irrigate with running water for minimum of 15 minutes. Seek medical attention.
Skin Contact: For liquid contact, warm areas gradually and get medical attention if there is evidence of frost bite or tissue damage. Flush area with lukewarm water. Do not rub affected area. If blistering occurs, apply a sterile dressing. Seek medical attention.
Inhalation: Remove to fresh air. Artificial respiration and/or oxygen may be necessary. Consult a physician.
Ingestion: Keep respiratory tract clear. Do Not Induce vomiting. Seek immediate medical attention.

Most important symptoms and effects

Acute: Anesthetic effects at high concentrations.
Delayed: None known or anticipated. See Section 11 for information on effects from chronic exposure, if any.

Notes to Physician: Epinephrine and other sympathomimetic drugs may initiate cardiac arrhythmias in persons exposed to high concentrations of hydrocarbons (e.g., in enclosed spaces or with deliberate abuse). The use of other drugs with less arrhythmogenic potential should be considered. If sympathomimetic drugs are administered, observe for the development of cardiac arrhythmias.

SECTION V FIRE FIGHTING MEASURES

Suitable Extinguishing Media:

Water spray, Water mist, Foam, Dry chemical or Carbon Dioxide. Carbon dioxide can displace oxygen. Use caution when applying carbon dioxide in confined spaces.

Fire Fighting Procedures:

For fires beyond the initial stage, emergency responders in the immediate hazard area should wear protective clothing. When the potential chemical hazard is unknown, in enclosed or confined spaces, a self contained breathing apparatus should be worn. In addition, wear other appropriate protective equipment as conditions warrant (see Section 8). Isolate immediate hazard area and keep unauthorized personnel out. Stop spill/release if it can be done safely. If this cannot be done, allow fire to burn. Move undamaged containers from immediate hazard area if it can be done safely. Stay away from ends of container. Water spray may be useful in minimizing or dispersing vapors and to protect personnel. Cool equipment exposed to fire with water, if it can be done safely.

Unusual Fire and Explosion Hazards:

Extremely flammable. This material can be ignited by heat, sparks, flames, or other sources of ignition. The vapor is heavier than air. Vapors may travel considerable distances to a source of ignition where they can ignite, flash back, or explode. May create vapor/air explosion hazard indoors, in confined spaces, outdoors, or in sewers. If container is not properly cooled, it can rupture in the heat of a fire. Drains can be plugged and valves made inoperable by the formation of ice if rapid evaporation of large quantities of the liquefied gas occurs. Do not allow run-off from fire fighting to enter drains or water courses – may cause explosion hazard in drains and may reignite.

Hazardous Combustion Products: Combustion may yield smoke, carbon monoxide, and other products of incomplete combustion. Oxides of nitrogen and sulfur may also be formed.

See Section 9 for Flammable Properties including Flash Point and Flammable (Explosive) Limits.

NPCA - HMIS RATINGS

HEALTH	1
FLAMMABILITY	4
REACTIVITY	0
PERSONAL PROTECTION	-

(Personal Protection Information To Be Supplied By The User)

SECTION VI ACCIDENTAL RELEASE MEASURES

Steps To Be Taken If Material Is Released or Spilled

Avoid sources of ignition - ventilate area. Use water fog to evaporate or ventilate. Protect body against contact with liquid. If confined space - use self contained breathing apparatus. Consult local fire authorities.

Personal Precautions: Extremely flammable. Spillages of liquid product will create a fire hazard and may form an explosive atmosphere. Keep all sources of ignition and hot metal surfaces away from spill/release if safe to do so. The use of explosion-proof electrical equipment is recommended. Beware of accumulation of vapors in low areas or contained areas, where explosive concentrations may occur. Prevent from entering drains or any place where accumulation may occur. Ventilate area and allow to evaporate. Stay upwind and away from spill/release. Avoid direct contact with material. For large spillages, notify persons downwind of the spill/release, isolate immediate hazard area and keep unauthorized personnel out. Wear appropriate protective equipment, including respiratory protection, as conditions warrant (see Section 8). See Sections 2 and 7 for additional information on hazards and precautionary measures.

Environmental Precautions: Stop spill/release if it can be done safely. Water spray may be useful in minimizing or dispersing vapors. Prevent product from entering drains. If product contaminates rivers and lakes or drains inform respective authorities.

Methods for Containment and Clean-Up: Contain spillage, and then collect with noncombustible absorbent material. Place in container for disposal according to local / national regulations. Notify relevant authorities in accordance with all applicable regulations.

Recommended measures are based on the most likely spillage scenarios for this material; however local conditions and regulations may influence or limit the choice of appropriate actions to be taken.

SECTION VII HANDLING AND STORAGE

Precautions for safe handling: Comply with state and local regulations. Avoid contact with skin, eyes and clothing. Avoid breathing vapors. Keep away from heat or sources of ignition. Prohibit smoking in areas of storage or use. Take precautionary measures against static discharge. Use good personal hygiene practices and wear appropriate personal protective equipment (see section 8).

Vapors can accumulate in confined spaces and limit oxygen available for breathing. Use only with adequate ventilation. The use of explosion-proof electrical equipment is recommended and may be required (see appropriate fire codes). Refer to NFPA-70 and/or API RP 2003 for specific bonding/grounding requirements. Electrostatic charge may accumulate and create a hazardous condition when handling or processing this material. To avoid fire or explosion, dissipate static electricity during transfer by grounding and bonding containers and equipment before transferring material. Do not enter confined spaces such as tanks or pits without following proper entry procedures such as ASTM D-4276 and 29CFR 1910.146.

Conditions for safe storage: Keep container(s) tightly closed and properly labeled. Use and store this material in cool, dry, well ventilated areas away from heat, direct sunlight, hot metal surfaces, and all sources of ignition. Store only in approved containers. Post area "No Smoking or Open Flame." Keep away from any incompatible material (see Section 10). Protect container(s) against physical damage. Outdoor or detached storage is preferred. Indoor storage should meet OSHA standards and appropriate fire codes.

"Empty" containers retain residue and may be dangerous. Do not pressurize, cut, weld, braze, solder, drill, grind, or expose such containers to heat, flame, sparks, or other sources of ignition. They may explode and cause injury or death.

SECTION VIII EXPOSURE CONTROLS / PERSONAL PROTECTION

Exposure Limits

Component	ACIGH TLV (TWA)	ACIGH TLV (STEL)	OSHA PEL (TWA)	OTHER PEL
n-Pentane	1000 ppm		1000 ppm	

Engineering Controls: If current ventilation practices are not adequate to maintain airborne concentrations below the established exposure limits, additional engineering controls may be required.

Personal Protection:

Eye/Face Protection: The use of eye protection (such as splash goggles) that meets or exceeds ANSI Z.87.1 is recommended when there is potential liquid contact to the eye. Depending on conditions of use, a face shield may be necessary.

Skin Protection: Impervious, insulated gloves recommended.

Respiratory Protection: A NIOSH approved, self-contained breathing apparatus (SCBA) or equivalent operated in a pressure demand or other positive pressure mode should be used in situations of oxygen deficiency (oxygen content less than 19.5 percent), unknown exposure concentrations, or situations that are immediately dangerous to life or health (IDLH).
A respiratory protection program that meets or is equivalent to OSHA 29 CFR 1910.134 and ANSI Z88.2 should be followed whenever workplace conditions warrant a respirator's use.

Suggestions provided in this section for exposure control and specific types of protective equipment are based on readily available information. Users should consult with the specific manufacturer to confirm the performance of their protective equipment. Specific situations may require consultation with industrial hygiene, safety, or engineering professionals.

SECTION IX PHYSICAL AND CHEMICAL PROPERTIES

Appearance & Odor: Clear, colorless liquid with sweet petroleum odor.
Odor Threshold: No Data
pH: Not Applicable
Melting / Freezing Point: No Data **Initial Boiling Point / Range:** 97 °F
Flash Point (Method): -40 °F (Estimated) **Evaporation Rate:** > 1 (Ethyl Ether = 1.0)

Lower Explosion Limit: 1.4% (vol.) Gas in air	Upper Explosion Limit: 7.8% (vol.) Gas in air
Vapor Pressure @ 70 °F: 8.6 PSIA	Vapor Density (air = 1.00): 2.5
Specific Gravity (H2O = 1.00) : 0.631	Solubility in Water @ 70 °F: 0%
Percent Volatile by Volume : 100%	Auto-ignition temperature: 588 °F
Decomposition Data: No Data	Viscosity: No Data

SECTION X STABILITY AND REACTIVITY

Stability:	Stable
Hazardous Polymerization:	Can not occur
Incompatibility (Materials to Avoid):	May react with strong oxidizing agents, eg. chlorates, nitrates, peroxides.
Hazardous Decomposition Products:	Carbon monoxide, volatile hydrocarbon vapors
Conditions to Avoid:	High heat, spark, and open flames

SECTION XI TOXICOLOGICAL INFORMATION

Effects Of Over Exposure

- Ingestion:** Aspiration hazard!
- Inhalation:** Inhalation of vapor may produce anesthetic effects and feeling of euphoria. Prolonged overexposure can cause rapid breathing, headache, dizziness, narcosis, unconsciousness, and death from asphyxiation, depending on concentration and time of exposure.
- Skin Contact:** May degrease the skin.
- Eye Contact:** Liquid can cause severe irritation, redness, tearing, blurred vision, and possible freeze burns.

Specific Target Organ Toxicity (Single Exposure): Not expected to cause organ effects from single exposure.
Specific Target Organ Toxicity (Repeated Exposure): Not expected to cause organ effects from repeated exposure.
Carcinogenicity: Not expected to cause cancer. This substance is not listed as a carcinogen by IARC, NTP or OSHA.
Germ Cell Mutagenicity: Not expected to cause heritable genetic effects.
Reproductive Toxicity: Not expected to cause reproductive toxicity.
Other Comments: High concentrations may reduce the amount of oxygen available for breathing, especially in confined spaces. Hypoxia (inadequate oxygen) during pregnancy may have adverse effects on the developing fetus.

Information on Toxicological Effects of Components

Isopentane

Target Organs: No systemic or neurotoxic effects were noted in rats exposed to concentrations of isopentane as high as 2,250 ppm for 12 weeks.
Reproductive Toxicity: No data.

n-Pentane

Target Organs: No systemic or neurotoxic effects were noted in rats exposed to concentrations of n-pentane as high as 3,000 ppm for 16 weeks.
Reproductive Toxicity: No adverse developmental effects were observed in rats exposed to n-pentane; no observed adverse effect level = 20 mg/l.

SECTION XII ECOLOGICAL INFORMATION

May cause long-term adverse effects in the aquatic environment.

Toxicity to fish

Isopentane	:	LC50: 3,1 mg/l Exposure time: 96 HR Species: Oncorhynchus mykiss (rainbow trout)
n-Pentane	:	LC50: 4,3 mg/l

Exposure time: 96 HR
Species: Oncorhynchus mykiss (rainbow trout)

Toxicity to daphnia and other aquatic invertebrates

Isopentane : EC50: 2,3 mg/l
Exposure time: 48 HR
Species: Daphnia magna (Water flea)
n-Pentane : EC50: 2,7 mg/l
Exposure time: 48 HR
Species: Daphnia magna (Water flea)

Persistence and Degradability: The hydrocarbons in this material are expected to be inherently biodegradable. In practice, hydrocarbon gases are not likely to remain in solution long enough for biodegradation to be a significant loss process.

Bioaccumulative Potential: Not expected as having the potential to bioaccumulate.

Other Adverse Effects: An environmental hazard cannot be excluded in the event of unprofessional disposal or handling. May be Toxic to aquatic life. May cause long lasting harmful effects to aquatic life.

SECTION XIII DISPOSAL INFORMATION

Waste Disposal

- (1) Mechanical Recovery
- (2) Flare-Off At Safe Location (Vapors)
- (3) Exhaust to Atmosphere in Safe Location (No Open Flames)

This material, if it must be discarded, may meet the criteria of a hazardous waste as defined by US EPA under RCRA (40 CFR 261) or other State and local regulations. Measurement of certain physical properties and analysis for regulated components may be necessary to make a correct determination. If this material is classified as a hazardous waste, federal law requires disposal at a licensed hazardous waste disposal facility.

The product should not be allowed to enter drains, water courses or the soil. Do not contaminate ponds, waterways or ditches with chemical or used container. Send to a licensed waste management company.

*** Comply With All State and Local Regulations ***

SECTION XIV TRANSPORT INFORMATION

Transport Information

UN1265, Pentane, 3, PG I

SECTION XV REGULATIONS

Regulatory Information

Chemical Inventories

USA TSCA: All components of this product are listed on the TSCA Inventory.

Europe Einecs: All components in this product are listed on EINECS

Canada Domestic Substances List (DSL): This product and/or all of its components are listed on the Canadian DSL.

Australia AICS: All components of this product are listed on AICS.

Korea ECL: All components in this product are listed on the Korean Existing Chemicals Inventory (KECI).

Japan Miti (ENCS): All components of this product are listed on MITI.

SARA Title III:

CERCLA/SARA (Section 302) Extremely Hazardous Substances and TPQs (in pounds):

This material does not contain any chemicals subject to the reporting requirements of SARA 302 and 40 CFR 372.

SARA (311, 312) Hazard Class:

Acute Health: No
Chronic Health: No
Fire Hazard: Yes
Pressure Hazard: No

SARA (313) Chemicals: Not listed

California Proposition 65: This material does not contain any chemicals which are known to the State of California to cause cancer, birth defects or other reproductive harm at concentrations that trigger the warning requirements of California Proposition 65.

EC Classification:



F+ Extremely flammable



Xn Harmful



N Dangerous for the environment

Risk phrases:

12 Extremely flammable.

R51/53: Toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.

R65: Harmful: may cause lung damage if swallowed.

R66: Repeated exposure may cause skin dryness or cracking.

R67: Vapors may cause drowsiness and dizziness.

Safety phrases:

9 Keep container in a well-ventilated place.

16 Keep away from sources of ignition -No smoking.

29 Do not empty into drains

33 Take precautionary measures against static discharges.

61 Avoid release to the environment. Refer to special instructions/safety data sheet

62 If swallowed, do not induce vomiting: seek medical advice immediately and show this container or label where possible

SECTION XVI OTHER INFORMATION

Watch for leaks and spills. Keep containers sealed and store in cool, well-ventilated area. Bond and ground containers during liquid transfer. Provide means to control leaks and spills. Protect from sources of ignition. Prohibit smoking in areas of storage or use. Do not mix with finely divided alkali or alkaline earth metals. Comply with all state and local regulations.

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for the safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information

relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.