

**n-Pentane**

Version 1.4

Revision Date 2014-05-28

SECTION 1: Identification of the substance/mixture and of the company/undertaking**Product information**

Trade name : n-Pentane
Material : 1113455, 1113456, 1026844, 1026843, 1112936, 1112935,
1111706, 1111587, 1024852, 1016688, 1025132, 1021830,
1026845, 1016689

Use : Solvent

Company : Chevron Phillips Chemical Company LP
Specialty Chemicals
10001 Six Pines Drive
The Woodlands, TX 77380

Emergency telephone:**Health:**

866.442.9628 (North America)

1.832.813.4984 (International)

Transport:

North America: CHEMTREC 800.424.9300 or 703.527.3887

Asia: +800 CHEMCALL (+800 2436 2255)

EUROPE: BIG +32.14.584545 (phone) or +32.14583516 (telefax)

South America SOS-Cotec Inside Brazil: 0800.111.767 Outside Brazil: +55.19.3467.1600

Responsible Department : Product Safety and Toxicology Group
E-mail address : MSDS@CPChem.com
Website : www.CPChem.com

SECTION 2: Hazards identification**Classification of the substance or mixture**

This product has been classified in accordance with the hazard communication standard 29 CFR 1910.1200; the SDS and labels contain all the information as required by the standard.

Emergency Overview**Danger**

Form: Liquid **Physical state:** Liquid **Color:** Colorless **Odor:** Strong gasoline

OSHA Hazards : Flammable Liquid, Aspiration hazard, Specific target organ systemic toxicity - single exposure

Classification

: Flammable liquids, Category 2
Specific target organ systemic toxicity - single exposure,
Category 3, Central nervous system

n-Pentane

Version 1.4

Revision Date 2014-05-28

Aspiration hazard, Category 1

Labeling

Symbol(s)



Signal Word

: Danger

Hazard Statements

: H225: Highly flammable liquid and vapor.
 H304: May be fatal if swallowed and enters airways.
 H336: May cause drowsiness or dizziness.

Precautionary Statements

: **Prevention:**
 P210: Keep away from heat/sparks/open flames/hot surfaces.
 - No smoking.
 P233: Keep container tightly closed.
 P240: Ground/bond container and receiving equipment.
 P241: Use explosion-proof electrical/ ventilating/ lighting/ equipment.
 P242: Use only non-sparking tools.
 P243: Take precautionary measures against static discharge.
 P261: Avoid breathing dust/fume/gas/mist/vapors/spray.
 P271: Use only outdoors or in a well-ventilated area.
 P280: Wear protective gloves/ eye protection/ face protection.
Response:
 P301 + P310: IF SWALLOWED: Immediately call a POISON CENTER or doctor/ physician.
 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 victim to fresh air and keep at rest in a position comfortable for breathing.
 P312: Call a POISON CENTER or doctor/ physician if you feel unwell.
 P331: Do NOT induce vomiting.
 P370 + P378: In case of fire: Use dry sand, dry chemical or alcohol-resistant foam for extinction.
Storage:
 P403 + P233: Store in a well-ventilated place. Keep container tightly closed.
 P403 + P235: Store in a well-ventilated place. Keep cool.
 P405: Store locked up.
Disposal:
 P501: Dispose of contents/ container to an approved waste disposal plant.

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.

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.

n-Pentane

Version 1.4

Revision Date 2014-05-28

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.

SECTION 3: Composition/information on ingredients

Synonyms : n-Pentane (Commercial Grade)
n-Pentane (greater than 95%)
n-Pentane (Pure Grade)
Pentane, normal, 95%
Pentane
Amyl hydride

Molecular formula : C₅H₁₂

Component	CAS-No.	Weight %
n-Pentane	109-66-0	95 - 100

SECTION 4: First aid measures

General advice : Move out of dangerous area. Show this material safety data sheet to the doctor in attendance. Symptoms of poisoning may appear several hours later. Do not leave the victim unattended.

If inhaled : Move to fresh air. If unconscious place in recovery position and seek medical advice. If symptoms persist, call a physician.

In case of skin contact : If skin irritation persists, call a physician. If on skin, rinse well with water. If on clothes, remove clothes.

In case of eye contact : Immediately flush eye(s) with plenty of water. Remove contact lenses. Protect unharmed eye. Keep eye wide open while rinsing. If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear. Do NOT induce vomiting. Do not give milk or alcoholic beverages. Never give anything by mouth to an unconscious person. Take victim immediately to hospital.

SECTION 5: Firefighting measures

Flash point : < -40 °C (< -40 °F)
Method: Tag closed cup

Autoignition temperature : 242.8 °C (469.0 °F)
estimated

Suitable extinguishing media : Dry chemical. Carbon dioxide (CO₂). Alcohol-resistant foam.

Unsuitable extinguishing : High volume water jet.

n-Pentane

Version 1.4

Revision Date 2014-05-28

media

Specific hazards during fire fighting : Do not allow run-off from fire fighting to enter drains or water courses.

Special protective equipment for fire-fighters : Wear self contained breathing apparatus for fire fighting if necessary.

Further information : Collect contaminated fire extinguishing water separately. This must not be discharged into drains. Fire residues and contaminated fire extinguishing water must be disposed of in accordance with local regulations. For safety reasons in case of fire, cans should be stored separately in closed containments. Use a water spray to cool fully closed containers.

Fire and explosion protection : Do not spray on an open flame or any other incandescent material. Use only explosion-proof equipment. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.

Hazardous decomposition products : Carbon oxides.

SECTION 6: Accidental release measures

Personal precautions : Use personal protective equipment. Ensure adequate ventilation. Remove all sources of ignition. Evacuate personnel to safe areas. Beware of vapors accumulating to form explosive concentrations. Vapors can accumulate in low areas.

Environmental precautions : Prevent product from entering drains. Prevent further leakage or spillage if safe to do so. If the product contaminates rivers and lakes or drains inform respective authorities.

Methods for cleaning up : Contain spillage, and then collect with non-combustible absorbent material, (e.g. sand, earth, diatomaceous earth, vermiculite) and place in container for disposal according to local / national regulations (see section 13).

SECTION 7: Handling and storage**Handling**

Advice on safe handling : Avoid formation of aerosol. Do not breathe vapors/dust. Avoid exposure - obtain special instructions before use. Avoid contact with skin and eyes. For personal protection see section 8. Smoking, eating and drinking should be prohibited in the application area. Take precautionary measures against static discharges. Provide sufficient air exchange and/or exhaust in work rooms. Container may be opened only under exhaust ventilation hood. Open drum carefully as content may be under pressure. Dispose of rinse water in accordance with local and national regulations.

Advice on protection : Do not spray on an open flame or any other incandescent

n-Pentane

Version 1.4

Revision Date 2014-05-28

against fire and explosion

material. Use only explosion-proof equipment. Take necessary action to avoid static electricity discharge (which might cause ignition of organic vapors). Keep away from open flames, hot surfaces and sources of ignition.

Storage

Requirements for storage areas and containers

: No smoking. Keep container tightly closed in a dry and well-ventilated place. Containers which are opened must be carefully resealed and kept upright to prevent leakage. Observe label precautions. Electrical installations / working materials must comply with the technological safety standards.

SECTION 8: Exposure controls/personal protection**Ingredients with workplace control parameters****US**

Ingredients	Basis	Value	Control parameters	Note
n-Pentane	OSHA Z-1	TWA	1,000 ppm, 2,950 mg/m ³	(b),
	OSHA Z-1-A	TWA	600 ppm, 1,800 mg/m ³	
	OSHA Z-1-A	STEL	750 ppm, 2,250 mg/m ³	
	ACGIH	TWA	600 ppm,	

(b) The value in mg/m³ is approximate.

Engineering measures

Adequate ventilation to control airborne concentrations below the exposure guidelines/limits. Consider the potential hazards of this material (see Section 2), applicable exposure limits, job activities, and other substances in the work place when designing engineering controls and selecting personal protective equipment. If engineering controls or work practices are not adequate to prevent exposure to harmful levels of this material, the personal protective equipment listed below is recommended. The user should read and understand all instructions and limitations supplied with the equipment since protection is usually provided for a limited time or under certain circumstances.

Personal protective equipment

Respiratory protection

: Wear a supplied-air NIOSH approved respirator unless ventilation or other engineering controls are adequate to maintain minimal oxygen content of 19.5% by volume under normal atmospheric pressure. Wear a NIOSH approved respirator that provides protection when working with this material if exposure to harmful levels of airborne material may occur, such as: Air-Purifying Respirator for Organic Vapors. Use a positive pressure, air-supplying respirator if there is potential for uncontrolled release, exposure levels are not known, or other circumstances where air-purifying respirators may not provide adequate protection.

Hand protection

: The suitability for a specific workplace should be discussed with the producers of the protective gloves. Please observe the instructions regarding permeability and breakthrough time which are provided by the supplier of the gloves. Also take into consideration the specific local conditions under which the product is used, such as the danger of cuts, abrasion, and the contact time. Gloves should be discarded and replaced if there is any indication of degradation or chemical breakthrough.

Eye protection

: Eye wash bottle with pure water. Tightly fitting safety goggles.

n-Pentane

Version 1.4

Revision Date 2014-05-28

- Skin and body protection : Choose body protection in relation to its type, to the concentration and amount of dangerous substances, and to the specific work-place. Wear as appropriate:. Flame retardant antistatic protective clothing. Workers should wear antistatic footwear.
- Hygiene measures : When using do not eat or drink. When using do not smoke. Wash hands before breaks and at the end of workday.

SECTION 9: Physical and chemical properties**Information on basic physical and chemical properties****Appearance**

- Form : Liquid
- Physical state : Liquid
- Color : Colorless
- Odor : Strong gasoline

Safety data

- Flash point : < -40 °C (< -40 °F)
Method: Tag closed cup
- Lower explosion limit : 1.42 %(V)
- Upper explosion limit : 7.8 %(V)

- Oxidizing properties : no
- Autoignition temperature : 242.8 °C (469.0 °F)
estimated
- Molecular formula : C₅H₁₂
- Molecular weight : 72.17 g/mol
- pH : Not applicable
- pour point : No data available
- Boiling point/boiling range : 36 °C (97 °F)
estimated
- Vapor pressure : 513.00 MMHG
at 25 °C (77 °F)
- Relative density : 0.63, 15.6 °C(60.1 °F)
- Density : 0.63 G/ML
- Water solubility : Negligible
- Partition coefficient: n-octanol/water : No data available
- Viscosity, dynamic : 0.223 cP
- Relative vapor density : 2.48
(Air = 1.0)

n-Pentane

Version 1.4

Revision Date 2014-05-28

Evaporation rate : 1

SECTION 10: Stability and reactivity

Chemical stability : This material is considered stable under normal ambient and anticipated storage and handling conditions of temperature and pressure.

Possibility of hazardous reactions

Conditions to avoid : Heat, sparks, fire, and oxidizing agents.

Materials to avoid : May react with oxygen and strong oxidizing agents, such as chlorates, nitrates, peroxides, etc.

Other data : No decomposition if stored and applied as directed.

SECTION 11: Toxicological information**Acute oral toxicity**

n-Pentane : LD50: > 2,000 mg/kg
Species: rat

Acute inhalation toxicity

n-Pentane : LC50: > 18 mg/l
Exposure time: 4 h
Species: rat
Test atmosphere: dust/mist

Acute dermal toxicity

n-Pentane : LD50: unknown

**n-Pentane
Skin irritation**

: Non persistent irritation.

**n-Pentane
Eye irritation**

: Non persistent irritation.

Sensitization

n-Pentane : Did not cause sensitization on laboratory animals.

Repeated dose toxicity

n-Pentane : Species: rat
Application Route: Inhalation
Dose: 0, 3000 ppm
Exposure time: 16 wk
Number of exposures: 12 h/d, 7 d/wk

n-Pentane

Version 1.4

Revision Date 2014-05-28

NOEL: 3,000 ppm

Species: rat
 Application Route: Inhalation
 Dose: 0, 1000, 3000, 10000 ppm
 Exposure time: 2 wk
 Number of exposures: 6 h/d, 5 d/wk
 NOEL: 1,000 ppm

Reproductive toxicity

n-Pentane : Species: rat
 Sex: male
 Application Route: Inhalation
 Dose: 0, 5, 10, 20 mg/l
 Exposure time: 13 wk
 Test period: 6hrs/day, 5 days/wk
 NOAEL Parent: 20 mg/l
 no abnormalities observed

Species: rat
 Sex: female
 Application Route: Inhalation
 Dose: 0, 5, 10, 20 mg/l
 Exposure time: 13 wk
 Test period: 6hrs/day, 5days/wk
 NOAEL Parent: 20 mg/l
 no abnormalities observed

Developmental Toxicity

n-Pentane : Species: rat
 Application Route: Inhalation
 Dose: 0, 1000, 3000, 10000 ppm
 Number of exposures: 6 h/d
 Test period: GD 6-15
 NOAEL Teratogenicity: 10,000 ppm

**n-Pentane
Aspiration toxicity**

: May be fatal if swallowed and enters airways.
 Substances known to cause human aspiration toxicity hazards
 or to be regarded as if they cause human aspiration toxicity
 hazard.

**n-Pentane
Further information**

: Concentrations substantially above the TLV value may cause
 narcotic effects. Symptoms of overexposure may be
 headache, dizziness, tiredness, nausea and vomiting.
 Solvents may decrease the skin.

SECTION 12: Ecological information**Toxicity to fish**

n-Pentane : LC50: 4.3 mg/l
 Exposure time: 96 h
 Species: Oncorhynchus mykiss (rainbow trout)

n-Pentane

Version 1.4

Revision Date 2014-05-28

Toxicity to daphnia and other aquatic invertebrates

n-Pentane : EC50: 2.7 mg/l
Exposure time: 48 h
Species: Daphnia magna (Water flea)

Toxicity to algae

n-Pentane : EbC50: 10.7 mg/l
Exposure time: 72 h
Species: Pseudokirchneriella subcapitata (green algae)

Bioaccumulation

n-Pentane : Accumulation in aquatic organisms is unlikely.

Biodegradability

n-Pentane : This material is expected to be readily biodegradable.

Ecotoxicology Assessment

Acute aquatic toxicity
n-Pentane : Toxic to aquatic life.

Chronic aquatic toxicity
n-Pentane : Toxic to aquatic life with long lasting effects.

Toxicity Data on Soil
n-Pentane : No data available

Other organisms relevant to the environment
n-Pentane : No data available

Impact on Sewage Treatment
n-Pentane : No data available

Additional ecological information : An environmental hazard cannot be excluded in the event of unprofessional handling or disposal., Toxic to aquatic life with long lasting effects.

SECTION 13: Disposal considerations

The information in this MSDS pertains only to the product as shipped.

n-Pentane

Version 1.4

Revision Date 2014-05-28

Use material for its intended purpose or recycle if possible. 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.

Product : 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.

Contaminated packaging : Empty remaining contents. Dispose of as unused product. Do not re-use empty containers. Do not burn, or use a cutting torch on, the empty drum.

SECTION 14: Transport information

The shipping descriptions shown here are for bulk shipments only, and may not apply to shipments in non-bulk packages (see regulatory definition).

Consult the appropriate domestic or international mode-specific and quantity-specific Dangerous Goods Regulations for additional shipping description requirements (e.g., technical name or names, etc.) Therefore, the information shown here, may not always agree with the bill of lading shipping description for the material. Flashpoints for the material may vary slightly between the MSDS and the bill of lading.

US DOT (UNITED STATES DEPARTMENT OF TRANSPORTATION)

UN1265, PENTANES, 3, II

IMO / IMDG (INTERNATIONAL MARITIME DANGEROUS GOODS)

UN1265, PENTANES, 3, II, (< -40 °C), MARINE POLLUTANT, (N-PENTANE)

IATA (INTERNATIONAL AIR TRANSPORT ASSOCIATION)

UN1265, PENTANES, 3, II

ADR (AGREEMENT ON DANGEROUS GOODS BY ROAD (EUROPE))

UN1265, PENTANES, 3, II, (D/E), ENVIRONMENTALLY HAZARDOUS, (N-PENTANE)

RID (REGULATIONS CONCERNING THE INTERNATIONAL TRANSPORT OF DANGEROUS GOODS (EUROPE))

UN1265, PENTANES, 3, II, ENVIRONMENTALLY HAZARDOUS, (N-PENTANE)

ADN (EUROPEAN AGREEMENT CONCERNING THE INTERNATIONAL CARRIAGE OF DANGEROUS GOODS BY INLAND WATERWAYS)

UN1265, PENTANES, 3, II, ENVIRONMENTALLY HAZARDOUS, (N-PENTANE)

Transport in bulk according to Annex II of MARPOL 73/78 and the IBC Code

n-Pentane

Version 1.4

Revision Date 2014-05-28

SECTION 15: Regulatory information**National legislation**

SARA 311/312 Hazards : Fire Hazard
Acute Health Hazard

SARA 302 Threshold Planning Quantity : SARA 302: No chemicals in this material are subject to the reporting requirements of SARA Title III, Section 302.

SARA 313 Ingredients : 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.

Clean Air Act

Ozone-Depletion Potential : This product neither contains, nor was manufactured with a Class I or Class II ODS as defined by the U.S. Clean Air Act Section 602 (40 CFR 82, Subpt. A, App.A + B).

This product does not contain any hazardous air pollutants (HAP), as defined by the U.S. Clean Air Act Section 12 (40 CFR 61).

US State Regulations

Pennsylvania Right To Know : n-Pentane - 109-66-0

New Jersey Right To Know : n-Pentane - 109-66-0

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

Notification status

Europe REACH : Not in compliance with the inventory
United States of America TSCA : On the inventory, or in compliance with the inventory

n-Pentane

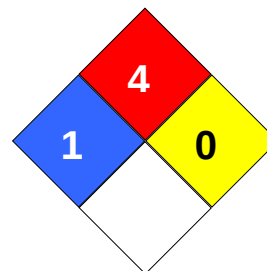
Version 1.4

Revision Date 2014-05-28

Canada DSL	:	On the inventory, or in compliance with the inventory
Australia AICS	:	On the inventory, or in compliance with the inventory
New Zealand NZIoC	:	On the inventory, or in compliance with the inventory
Japan ENCS	:	On the inventory, or in compliance with the inventory
Korea KECI	:	On the inventory, or in compliance with the inventory
Philippines PICCS	:	On the inventory, or in compliance with the inventory
China IECSC	:	On the inventory, or in compliance with the inventory

SECTION 16: Other information

NFPA Classification : Health Hazard: 1
Fire Hazard: 4
Reactivity Hazard: 0

**Further information**

Legacy MSDS Number : E039

Significant changes since the last version are highlighted in the margin. This version replaces all previous versions.

The information in this MSDS pertains only to the product as shipped.

The information provided in this Material 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 a guidance for 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.

Key or legend to abbreviations and acronyms used in the safety data sheet

ACGIH	American Conference of Government Industrial Hygienists	LD50	Lethal Dose 50%
AICS	Australia, Inventory of Chemical Substances	LOAEL	Lowest Observed Adverse Effect Level
DSL	Canada, Domestic Substances List	NFPA	National Fire Protection Agency
NDSL	Canada, Non-Domestic Substances List	NIOSH	National Institute for Occupational Safety & Health
CNS	Central Nervous System	NTP	National Toxicology Program
CAS	Chemical Abstract Service	NZIoC	New Zealand Inventory of Chemicals
EC50	Effective Concentration	NOAEL	No Observable Adverse Effect Level
EC50	Effective Concentration 50%	NOEC	No Observed Effect Concentration
EGEST	EOSCA Generic Exposure Scenario Tool	OSHA	Occupational Safety & Health Administration
EOSCA	European Oilfield Specialty Chemicals Association	PEL	Permissible Exposure Limit
EINECS	European Inventory of Existing Chemical Substances	PICCS	Philippines Inventory of Commercial Chemical Substances
MAK	Germany Maximum Concentration	PRNT	Presumed Not Toxic

n-Pentane

Version 1.4

Revision Date 2014-05-28

	Values		
GHS	Globally Harmonized System	RCRA	Resource Conservation Recovery Act
>=	Greater Than or Equal To	STEL	Short-term Exposure Limit
IC50	Inhibition Concentration 50%	SARA	Superfund Amendments and Reauthorization Act.
IARC	International Agency for Research on Cancer	TLV	Threshold Limit Value
IECSC	Inventory of Existing Chemical Substances in China	TWA	Time Weighted Average
ENCS	Japan, Inventory of Existing and New Chemical Substances	TSCA	Toxic Substance Control Act
KECI	Korea, Existing Chemical Inventory	UVCB	Unknown or Variable Composition, Complex Reaction Products, and Biological Materials
<=	Less Than or Equal To	WHMIS	Workplace Hazardous Materials Information System
LC50	Lethal Concentration 50%		