

# Material Safety Data Sheet

Printing date 12/16/2011

Version 4

Reviewed on 12/16/2011

## 1 Identification of substance

· **Product details**

· **Trade name:** Pentane

· **Article number:** 031-01-0016

· **Creation date:** 08/09/2006

· **Manufacturer/Supplier:**

Linde Canada Limited

5860 Chedworth Way

Mississauga, Ontario L5R 0A2

Telephone (905) 501-1700

24-HOUR EMERGENCY TELEPHONE NUMBER:

(905) 501-0802

Linde

575 Mountain Avenue

Murray Hill, NJ 07974

Telephone (908) 464-8100

24-HOUR EMERGENCY TELEPHONE NUMBER :

CHEMTREC (800) 424-9300 OR

Linde National Operations Center (800) 232-4726

Pse ensure that this MSDS is received by the appropriate person.

· **Information department:** Customer Service Centre: 1-866-385-5349

## 2 Composition/Data on components

· **Chemical characterization:**

· **CAS No. Description**

109-66-0 Pentane

· **Identification number(s)**

· **EINECS Number:** 203-692-4

· **Index number:** 601-006-00-1

## 3 Hazards identification

· **Hazard description:**

D2B - Toxic material causing other toxic effects



Harmful

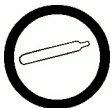
Extremely flammable

Dangerous for the environment

· **WHMIS-symbols:**

A - Compressed gas

B1 - Flammable gas



· **HMIS-ratings (scale 0 - 4)**

HEALTH 2

Health = 2

FIRE 4

Fire = 4

REACTIVITY 0

Reactivity = 0

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**· NFPA ratings (scale 0 - 4)**


Health = 2  
Fire = 4  
Reactivity = 0

**· Information pertaining to particular dangers for man and environment:**

At long or repeated contact with skin it may cause dermatitis due to the degreasing effect of the solvent.

Has a narcotizing effect.

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.

Vapours may cause drowsiness and dizziness.

**· Classification system:**

The classification is in line with internationally approved calculation standards. It is expanded, however, by information from technical literature and by information furnished by supplier companies.

**· GHS label elements**

**Danger**

2.2/1 - Extremely flammable gas.


**Danger**

3.10/1 - May be fatal if swallowed and enters airways.


**Warning**

3.8/3 - May cause drowsiness or dizziness.



4.1/2 - Toxic to aquatic life with long lasting effects.

4.1/2 - Toxic to aquatic life.

**· Prevention:**

Keep away from heat/sparks/open flames/hot surfaces. - No smoking.

Avoid breathing dust/fume/gas/mist/vapours/spray.

**· Response:**

IF SWALLOWED: Immediately call a POISON CENTER or doctor/physician.

IF INHALED: Remove victim to fresh air and keep at rest in a position comfortable for breathing.

**· Storage:**

Store locked up.

**· Disposal:**

Dispose of contents/container in accordance with local/regional/national/international regulations.

## 4 First aid measures

· **After inhalation:** Supply fresh air; consult doctor in case of complaints.

· **After skin contact:** Generally the product does not irritate the skin.

· **After eye contact:** Rinse opened eye for at least 15 minutes under running water. Then consult a doctor.

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· **After swallowing:** Not applicable

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## 5 Fire fighting measures

- **Suitable extinguishing agents:**  
CO<sub>2</sub>, powder or water spray. Fight larger fires with water spray or alcohol resistant foam.
- **Protective equipment:** Wear self-contained respiratory protective device.

## \* 6 Accidental release measures

- **Person-related safety precautions:**  
Wear protective equipment. Keep unprotected persons away.  
Ensure adequate ventilation.  
Eliminate ignition sources  
Stop leak - ONLY if possible to do so without risk.
- **Measures for environmental protection:**  
Do not allow product to reach sewage system or any water course.  
Prevent seepage into sewage system, workpits and/or cellars.  
In case of gas release or seepage into the ground and/or into water course or sewage system inform responsible authorities.
- **Measures for cleaning/collecting:**  
Dispose contaminated material as waste according to item 13.  
Ensure adequate ventilation.

## \* 7 Handling and storage

- **Handling:** Do not mix with air or oxygen above atmospheric pressure.
- **Information for safe handling:**  
Open and handle cylinder with care.  
Handle with care. Avoid jolting, friction, and impact.  
Use only in well ventilated areas.  
Store container in a secured area. Limit access to authorized personnel only. Report any incidents involving thefts, misuse, or inventory shortages to law enforcement and the supplier. Security shall be provided in accordance with all local, state (provincial) and federal regulations.
- **Information about protection against explosions and fires:**  
Keep ignition sources away - Do not smoke.  
Protect against electrostatic charges.  
Pressurized container: protect from sunlight and do not expose to temperatures exceeding 50°C. Do not pierce or burn, even after use.
- **Storage:**
- **Requirements to be met by storerooms and receptacles:**  
Store in a cool location.  
Do not expose cylinder to temperatures higher than 50°C (122 °F)  
Protect cylinders from physical damage. Store in cool, dry, well-ventilated area away from heavily trafficked areas and emergency exits. Do not allow the temperature where cylinders are stored to exceed 125°F (52°C). Cylinders should be stored upright and firmly secured to prevent falling or being knocked over. Full and empty cylinders should be segregated. Use a "first in-first out" inventory system to prevent full cylinders being stored for excessive periods of time.
- **Information about storage in one common storage facility:**  
Store away from oxidizing agents.  
Store separately from cylinders containing oxygen or oxidants by a minimum distance of 20' or by a barrier of non-combustible material at least 5' high having a fire resistant rating of at least 30minutes.

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Sources of ignition should be removed from storage area.

- **Further information about storage conditions:**

Keep cylinder valve tightly closed.

Store in cool, dry conditions in well sealed receptacles.

Protect from heat and direct sunlight.

Store in accordance with local fire code and/or building code or any pertaining regulations.

## 8 Exposure controls and personal protection

- **Additional information about design of technical systems:**

Adequate local ventilation.

Safety showers and eyewash stations should be nearby.

- **Components with limit values that require monitoring at the workplace:**

**109-66-0 Pentane (23 - 100%)**

EL 600 ppm

EV Short-term value: 2.210 mg/m<sup>3</sup>, 750 ppm

Long-term value: 1.770 mg/m<sup>3</sup>, 600 ppm

- **Additional information:** The lists that were valid during the creation were used as basis.

- **Personal protective equipment:**

- **General protective and hygienic measures:**

Keep away from foodstuffs, beverages and feed.

Wash hands before breaks and at the end of work.

Protective clothing and PPE should be kept free of oil and grease, generally in clean condition

PPE should be inspected and maintained regularly to retain effectiveness.

- **Breathing equipment:**

Use atmosphere-supplying respirators (e.g. supplied-air: demand, pressure-demand, or continuous-flow or self-contained breathing apparatus: demand or pressure-demand or combination supplied-air with auxiliary self-contained air supply atmosphere-supplying respirator) in case of insufficient ventilation.

- **Protection of hands:**



Protective gloves.

- **Material of gloves**

The selection of the suitable gloves does not only depend on the material, but also on further marks of quality and varies from manufacturer to manufacturer.

- **Eye protection:** Safety glasses

## 9 Physical and chemical properties

- **General Information**

<b>Form:</b>	Liquid
<b>Color:</b>	Colorless
<b>Odor:</b>	Nearly odorless

- **Change in condition**

**Melting point/Melting range:** -129.7°C

**Boiling point/Boiling range:** 36°C

- **Flash point:** < 0°C

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- |   |  |
|---|--|
| · <b>Ignition temperature:</b>            | 285°C  |
| · <b>Danger of explosion:</b>             | In use, may form flammable/explosive vapour-air mixture. |
| · <b>Explosion limits:</b>                |  |
| <b>Lower:</b>                             | 1.4 Vol %  |
| <b>Upper:</b>                             | 7.8 Vol %  |
| · <b>Solubility in / Miscibility with</b> |  |
| <b>Water at 20°C:</b>                     | 0.01 g/l   |

\* **10 Stability and reactivity**

- **Thermal decomposition / conditions to be avoided:** No decomposition if used according to specifications.
- **Materials to be avoided:**
- **Dangerous reactions**  
May form explosive gas mixture with air.  
May react with oxidizing agents.
- **Dangerous products of decomposition:** No dangerous decomposition products known.

**11 Toxicological information**

- **Acute toxicity:**
- **LD/LC50 values that are relevant for classification:** LC50 - None available
- **Primary irritant effect:**
- **on the skin:** No irritating effect.
- **on the eye:** No irritating effect.
- **Sensitization:** No sensitizing effects known.

\* **12 Ecological information**

- **Ecotoxicological effects:**
- **Remark:** Toxic for fish
- **Additional ecological information:**
- **General notes:**  
Generally not hazardous for water  
Do not allow product to reach ground water, water course or sewage system.  
Danger to drinking water if even small quantities leak into the ground.  
Also poisonous for fish and plankton in water bodies.  
Toxic for aquatic organisms

\* **13 Disposal considerations**

- **Product:**
- **Recommendation:** Unused product should be returned to vendor.
- **Uncleaned packagings:**
- **Recommendation:**  
Cylinder and unused product should be returned to vendor. Disposable cylinder must be disposed of in accordance with local regulations.

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· Recommended cleansing agent: None applicable.

## \* 14 Transport information

· TDG and DOT regulations:



· Hazard class: 3  
 · Identification number: UN1265  
 · Packing group: II  
 · Proper shipping name (technical name): PENTANES, LIQUID  
 · Label: 3  
 · Packaging group: I  
 · Special marking: Symbol (fish and tree)

· Maritime transport IMDG:



· IMDG Class: 3  
 · UN Number: 1265  
 · Label: 3  
 · Packaging group: II  
 · EMS Number: F-E,S-D  
 · Marine pollutant: No  
 · Proper shipping name: PENTANES, LIQUID

· Air transport ICAO-TI and IATA-DGR:



· ICAO/IATA Class: 3  
 · UN/ID Number: 1265  
 · Label: 3  
 · Packaging group: II  
 · Proper shipping name: PENTANES, LIQUID

· UN "Model Regulation": UN1265, PENTANES, LIQUID, 3, I

## \* 15 Regulations

· Sara

· Section 355 (extremely hazardous substances):

Substance is not listed.

· Section 313 (Specific toxic chemical listings):

Substance is not listed.

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· **TSCA (Toxic Substances Control Act):**

Substance is listed.

· **Proposition 65**· **Chemicals known to cause cancer:**

Substance is not listed.

· **Chemicals known to cause reproductive toxicity for females:**

Substance is not listed.

· **Chemicals known to cause reproductive toxicity for males:**

Substance is not listed.

· **Chemicals known to cause developmental toxicity:**

Substance is not listed.

· **Carcinogenicity categories**· **EPA (Environmental Protection Agency)**

Substance is not listed.

· **NTP (National Toxicology Program)**

Substance is not listed.

· **TLV (Threshold Limit Value established by ACGIH)**

Substance is not listed.

· **NIOSH-Ca (National Institute for Occupational Safety and Health)**

Substance is not listed.

· **OSHA-Ca (Occupational Safety & Health Administration)**

Substance is not listed.

· **Canadian substance listings:**· **Canadian Domestic Substances List (DSL)**

Substance is listed.

· **Canadian Ingredient Disclosure list (limit 0.1%)**

Substance is not listed.

· **Canadian Ingredient Disclosure list (limit 1%)**

Substance is listed.

· **Product related hazard informations:**

The product was classified in accordance with the hazard criteria of the Canadian Controlled Products Regulations (CPR) and the MSDS contains all the information required by the CPR.

· **Hazard symbols:**

Harmful

Extremely flammable

Dangerous for the environment

· **Risk phrases:**

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.

Vapours may cause drowsiness and dizziness.

· **Safety phrases:**

After contact with skin, was immediately with plenty of water

Keep out of the reach of children.

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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.

## 16 Other information

This information is based on our present knowledge. However, this shall not constitute a guarantee for any specific product features and shall not establish a legally valid contractual relationship.

Please refer to the section 3 for NFPA and HMIS Hazard Codes.

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### GENERAL DISCLAIMER

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· **Department issuing MSDS:** Customer Service Centre: 1-866-385-5349

· **Abbreviations and Acronyms:**

ACGIH: American Conference of Governmental Industrial Hygienists  
 CAS: Chemical Abstract Service (Division of the American Chemical Society)  
 DOT: US Department of Transportation  
 EINECS: European Inventory of Existing Commercial Chemical Substances  
 GHS: Globally Harmonized System of Classification and Labelling of Chemicals  
 HMIS: Hazardous Material Identification System  
 IATA: International Air Transportation Association  
 IATA-DGR: Dangerous Goods Regulations by the "International Air Transportation Association"  
 ICAO: International Civil Aviation Association  
 ICAO-TI: Technical Instructions by the "International Civil Aviation Organization (ICAO)"  
 IMDG: International Marine Code for Dangerous Goods  
 WHIMS: Workplace Hazardous Material Information System  
 LC50: Lethal Concentration, 50 Percent  
 LD50: Lethal Dose, 50 Percent  
 N/A: Not Applicable

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