1. PRODUCT IDENTIFICATION

Name: Heptane
Synonyms: None; but several heptane isomers have specific names – eg: 2-methylhexane, 2,3-dimethylpentane
CAS#: 142-82-5
Europe EC#: 205-563-8
Product Uses: Solvent in glue, ink.

EMERGENCY INFORMATION
Canada: Call CANUTEC (collect) (613) 996-6666
U.S.A.: Call CHEMTREC (800) 424-9300

2. HAZARDS

<table>
<thead>
<tr>
<th>GHS Class</th>
<th>flammable</th>
<th>aspiration haz.</th>
<th>skin irritant</th>
<th>STOT</th>
<th>aquatic acute</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Category)</td>
<td>(2)</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(1)</td>
</tr>
<tr>
<td>Signal Words</td>
<td>DANGER</td>
<td>DANGER</td>
<td>WARNING</td>
<td>WARNING</td>
<td>WARNING</td>
</tr>
</tbody>
</table>

Hazard Statements:
- Highly flammable (H225)
- May cause fatal harm or involve a widespread health hazard (H121)
- Causes skin irritation (H315)
- May cause drowsiness (H316)
- Life-threatening or irreversibly damaging to aquatic life (H400)

GHS Precautionary Statements for Labelling:
- P210: Keep away from heat, sparks, open flames and hot surfaces. No smoking.
- P240, P241: Ground or bond container and receiving equipment. Use explosion-proof electrical, ventilating & lighting equipment.
- P242, P243: Use only non-sparking tools. Take precautionary measures against static discharge.
- P260, P262, P264: Do not breathe vapours. Do not get in eyes, on skin or on clothing. Wash thoroughly after handling.
- P280: Wear eye protection, protective gloves and clothing of “Viton”.
- P273, P391: Avoid release to the environment. Collect spillage.
- P313 & P333: If skin irritation or rash occurs, get medical advice/attention.
- P304 & P340: If inhaled, remove person to fresh air and keep comfortable for breathing.

Canada – WHMIS Key:
- B 2 – Flash Point <38°C, B 3 – Flash Point >38°C & <93°C
- D 1 – Immediately Toxic, D 2 – Chronic Toxicity
- C – Oxidising Substance, E – Corrosive, F – Reactive Substance

3. COMPOSITION

<table>
<thead>
<tr>
<th>Component</th>
<th>%</th>
<th>TWAEV / TLV</th>
<th>LD₅₀ (mg/kg)</th>
<th>LD₉₀ (mg/kg)</th>
<th>LC₅₀ ppm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heptane</td>
<td>100</td>
<td>400 / 1640</td>
<td>&gt;5,000</td>
<td>&gt;3,000</td>
<td>25,200</td>
</tr>
</tbody>
</table>

Please ensure that this SDS is given to, and explained to people using this product.

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4. **FIRST AID**

**SKIN:** Wash with soap & plenty of water. Remove contaminated clothing and do not reuse until thoroughly laundered.

**EYES:** Wash eyes with plenty of water, holding eyelids open. Seek medical assistance if there is any irritation.

**INHALATION:** Remove from contaminated area promptly. **CAUTION:** Rescuer must not endanger himself! If breathing stops, administer artificial respiration and seek medical aid promptly.

**INGESTION:** Give plenty of water to dilute product. Do not induce vomiting (NOTE below). Keep victim quiet. If vomiting occurs, lower victim’s head below hips to prevent inhalation of vomited material. Seek medical help promptly.

Inadvertent inhalation of contaminated material may seriously damage the lungs. The danger of this is greater than the risk of poisoning through absorption of this relatively low-toxicity substance. The stomach should only be emptied under medical supervision, and after the installation of an airway to protect the lungs.

5. **FIRE FIGHTING & FLAMMABILITY**

- **Flash Point** -4°C / 25°F (closed cup)
- **Autoignition Temperature** 204°C / 399°F
- **Flammable Limits** 1.05% – 6.7%
- **Combustion Products** carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments
- **Firefighting Precautions** foam, dry chemical, water fog, water spray only to cool & dilute, product floats on water – water jet spreads flames; firefighters must wear SCBA
- **Static Charge Accumulation** readily accumulates a static charge on agitation or pumping

6. **ACCIDENTAL RELEASE MEASURES**

*Serious Fire Potential: blanket spill with foam as a precaution against accidental ignition. Take extreme care to avoid sparks – do not operate (turn on OR off) electrical appliances near spill, unless explosion proof.*

- **Leak Precaution** dye to control spillage and prevent environmental contamination
- **Handling Spill** ventilate contaminated area; recover free liquid with suitable pumps; absorb residue on an inert sorbent, sweep & pick up using plastic or aluminium shovel, & store in closed containers for recycling or disposal

7. **HANDLING & STORAGE**

Store in a cool, dry environment, away from sources of ignition, heat and oxidising agents. **Always use non-sparking bronze or aluminium hand tools. All electrical and mechanical equipment (including lighting, switchgear and forklift trucks) used with or around this product must be explosion-proof.**

Heptane accumulates a static charge on agitation or transfer from one container to another & heptane vapour can be ignited by static discharge. Always ground or electrically bond the source container, receiving container & transfer pump before transferring contents. Avoid splash by ensuring that the product nozzle is below the surface in the receiving container. **If high pressure gas must be used to transfer heptane, use compressed nitrogen; never transfer with compressed air!**

*Do not use as a solvent for manual wiping of surfaces. The accumulation of static charge may cause a fire!*

Empty containers may contain a flammable or explosive vapour. Always ensure that containers, whether empty or full, are tightly sealed unless in use.

Avoid breathing product vapour. Use with adequate ventilation. If dealing with a spill, and ventilation is impossible or impractical, wear a suitable respirator with organic vapour cartridge.

Never cut, drill, weld or grind on or near this container. Avoid prolonged contact with skin and wash work clothes frequently. An eye bath and safety shower must be available near the workplace.

**WHEN FILLING STORAGE TANKS WITH THIS PRODUCT, IN ADDITION TO NORMAL GROUNDING PROCEDURES, READ THE FOLLOWING:**
This product may form an explosive mixture inside a bulk storage tank. Prior to filling a bulk storage tank with this product, consider ventilating the headspace with nitrogen. In addition consider asking the supplier to put an anti-static additive in the product when you order. If the bulk tank has a floating product level indicator, this should be inspected regularly. The float MUST HAVE a firmly fixed ground wire connecting it to its support cable. This connection must be free of corrosion.

For details, consult NFPA 77, 2007. “Recommended Practice on Static Electricity”

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[Logo: Responsible Care, Member: Canadian Association of Chemical Distributors]
8. EXPOSURE CONTROL & PERSONAL PROTECTION

Ontario TWAEL 400ppm / 1635mg/m³
ACGIH TEL 400ppm / 1640mg/m³
OSHA PEL 400ppm / 1640mg/m³

Ventilation: Mechanical ventilation may be needed to control airborne levels to regulated limits. Make respirators with organic vapour cartridge available to all workers in area should ventilation fail; store respirators in airtight containers (eg: “Tupperware”, “Zip Lock”) to maintain freshness.

Hands: Nitrile or “Viton” gloves recommended – other types also protect; confirm suitability with supplier.

Eyes: Safety glasses with side shields – always protect the eyes.

Clothing: Special protective clothing is not generally necessary.

9. PHYSICAL PROPERTIES

NOTE: for Flash Point, Autoignition Temp, & Flammable Limits see Part 5.

Odour & Appearance: Clear, colourless liquid with pleasant gasoline-like odour.

Odour Threshold: >230ppm – too close to the TLV for reliable warning.

Vapour Pressure: 40mmHg / 5.3kPa* (22°C / 72°F)

Evaporation Rate (Butyl Acetate = 1): 5.5

Vapour Density: (Air = 1) 3.5

Boiling Range: 90-100°C / 194-212°F*

Freezing Point: below -90°C / -130°F*

Decomposition Temperature: Not known

Specific Gravity: 0.68 (20/20°C)

Water Solubility: 3 milligrams per litre (20°C / 68°F)

Also soluble in most organic solvents

Log Pow (Octanol/H2O partition): 4.66

Viscosity: 0.49 centipoise (25°C / 77°F)

pH: None – (does not liberate hydrogen ions when dissolved)

Conversion Factor: 1ppm = 4.09mg/m³

Molecular Weight: 100 grams per mole

10. REACTIVITY

Dangerously Reactive With: Strong oxidising agents

Also Reactive With: None known

Stability: Stable; will not polymerize

Decomposes in Presence of: Not known

Decomposition Products: None apart from Hazardous Combustion Products

Sensitive to Mechanical Impact: No

11. TOXICITY

Effects, Acute Exposure:

Skin Contact: Drying, irritating if not removed – rapid evaporation; prolonged accidental contact unlikely.

Skin Absorption: Slight; no toxic effects likely by this route.

Eye Contact: Irritating if not removed, will not damage eyes; vapour apparently not irritating at 5000ppm.

Inhalation: At 5000ppm*, dizziness, drowsiness, intoxication within 4 min – persisting for 15-20 minutes (some giddiness is seen at 1000ppm [in 6 min] & at 2000ppm [in 4 min]).

Ingestion: Very low toxicity – dizziness, drowsiness, intoxication may occur, possible diarrhoea.

LD₅₀ (oral): 17,000mg/kg mg/kg (rat); 5000mg/kg (mouse); >5000mg/kg (rat) – no mortality.

LD₅₀ (skin): 3000 & 3400mg/kg (rabbit), >2000mg/kg (rabbit) – no mortality.

LC₅₀ (inhalation): 25,200ppm (rat), 7160ppm (rat) – no mortality.

* NOTE: Heptane is sufficiently volatile that 5000ppm is readily achieved at ambient temperature.

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11. **TOXICITY, cont’d**

**Effects, Chronic Exposure**

General: prolonged exposure (over one hour) may cause redness, swelling & pain; repeated application may cause dermatitis due to aggressive solvency; highly volatile; prolonged contact is not accidental

**NOTE:** Prolonged inhalation of heptane causes peripheral neuropathy; a similar effect following heptane inhalation cannot be ruled out.

Sensitising: not a sensitizer in humans or animals

Carcinogen/Tumorigen: not considered a tumorigen or a carcinogen in humans or animals

Reproductive Effect: no known effect in humans or animals

Mutagen: no known effect on humans or animals

Synergistic With: not known

12. **ECOLOGICAL INFORMATION**

Bioaccumulation: volatile & readily metabolised by microorganisms; nevertheless, potential bioaccumulator

Biodegradation: biodegrades readily in the presence of oxygen; 23-100% in 5 days depending on bacterial inoculum & test conditions; also 70% in 10 days¹, 100% in 25 days¹, 100% in 4 days¹, 23% in 3 days¹

Abiotic Degradation: destroyed by direct photolysis; estimated ½-life in air of 1.1 days & 4.5 days¹

Mobility in soil, water: water insoluble; moves slowly in soil & water; rapid evaporation from soil, limiting movement

Aquatic Toxicity:

- LC₅₀ (Fish, 96hr): 375mg/litre (Tilapia mossambica), 220-270mg/litre (Lueciscus idus), >100mg/litre (Onocorhynchus kisutch) – no mortality
- TL₅₀ (Fish, 48hr): 4924mg/litre (Gambusia affinis)
- EC₅₀ (Crustacea, 24hr): 1.5mg/litre (Daphnia magna)¹, 0.1mg/litre (Mysidopsis bahia)¹, 0.2mg/litre (Chaetogammarus marinus)¹
- EC₅₀ (Algae): 4.34mg/litre (Pseudokirchneriella subcapitata)¹
- EC₅₀ (Bacteria): 22.6mg/litre (Tetrahymena pyriformis, growth inhibition)¹

**NOTE:** Extremely low water solubility & high volatility makes aquatic toxicity testing very difficult. Despite classification as “toxic to aquatic organisms,” toxicity in the aquatic environment must be limited due to: (a) low water solubility & low specific gravity cause heptane to float; (b) high volatility rapidly removes floating heptane from the water surface & (c) rapid biodegradability also removes the heptane from the environment.

13. **DISPOSAL**

Waste Disposal: do not flush to sewer; recycle solvent if possible, if local regulations permit, may be put in sanitary landfill, may be incinerated in approved facility

Containers: Drums should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use.

Pails must be vented and thoroughly dried prior to crushing and recycling.

IBC’s (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 6 months (5yrs). Steel containers must be inspected, pressure tested & recertified every 5 years.

Never cut, drill, weld or grind on or near this container, even if empty.

14. **TRANSPORT CLASSIFICATION**

- **Canada TDG AND U.S.A. 49 CFR**
  - Marine Pollutant: not a marine pollutant
  - ERAP Required: NO
  - PIN: UN - 1206
  - Class & Packing Group: 3 (II)
  - Shipping Name: heptanes

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15. **REGULATIONS**

**Canada DSL**
on inventory

**U.S.A. TSCA**
on inventory

**Europe EINECS**
on inventory

**U.S.A. Regulations:**

Immediately Dangerous to Life or Health: 750 ppm

OSHA Standards: Permissible Exposure Limit: Table Z-1 8-hr Time-Weighted Avg: 500 ppm (2000 mg/cu m). Vacuums 1998 OSHA PEL: TWA 400 ppm (1400 mg/cu m); STEL 500 ppm (2000 mg/cu m) is still enforced in some states.

NIOSH Recommendations: Recommended Exposure Limit: 10 Hour Time-Weighted Average: 85 ppm (350 mg/cu m) Recommended Exposure Limit: 15 Minute Ceiling Value: 440 ppm (1800 mg/cu m)

Threshold Limit Values: 8 hr Time-Weighted Avg (TWA): 440 ppm; 15 min Short Term Exposure Limit (STEL): 500 ppm.

**TSCA Requirements:** Section 8(a) of TSCA requires manufacturers of this chemical substance to report preliminary assessment information concerning with production, exposure, and use to EPA as cited in the preamble to 51 FR 41329. Effective date: 1/26/94, Reporting date: 3/28/94. Pursuant to section 8(a) of TSCA, EPA promulgated a model Health and Safety Data Reporting Rule: The section 8(a) model rule requires manufacturers, importers, and processors of listed chemical substances and mixtures to submit to EPA copies and lists of unpublished health and safety studies. Heptane is included on this list. Effective date: 1/26/94, Sunset date: 6/30/98.

16. **OTHER INFORMATION**

Prepared for Megaloid Laboratories by Peter Bursztyn, (705) 734-1577

Data from RTECS, HSDB (Haz. Substance Data Bank), Cheminfo (CCOHS), IUCLID Datasheets (ESIS – European Chem. Substance Info. System), & others.

Preparation Date: November 2002  Revision Date: December 2003, November 2008, November 2011, January 2013, April 2015


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