Material Safety Data for: Isopentane

1. PRODUCT IDENTIFICATION

Name: Isopentane
Synonyms: 2-methylbutane, butane, 2-methyl-
CAS#: 78-78-4
Product Uses: solvent, blowing agent for foams, gasoline ingredient, chlorinated hydrocarbon synthesis

2. INGREDIENTS

<table>
<thead>
<tr>
<th>n-Pentane</th>
<th>100%</th>
<th>TWAEV / TLV ppm / mg/m³</th>
<th>LD₅₀ ORAL (mg/kg)</th>
<th>LC₅₀ ppm INHALATION</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>600</td>
<td>1750</td>
<td>10,000</td>
<td>51,000</td>
</tr>
</tbody>
</table>

3. (a) HAZARDS SUMMARY

Hazards, Quick Guide: extremely flammable liquid, heavy vapour travels, distant ignition and flashback are possible; central nervous depressant & anaesthetic

Canada – WHMIS
Key: B 2
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

U.S.A. – HMIS
Key: Health – 1, Fire – 4, Reactivity – 0
0=minimal, 1=slight, 2=moderate, 3=serious, 4=severe

3. (b) HAZARDS – TOXICITY

Effects, Acute Exposure
Skin Contact: little to no effect – rapid evaporation reduces likelihood of irritation
Skin Absorption: no toxic effects likely by this route – rapid evaporation reduces likelihood of absorption
Eye Contact: slightly irritating – rapid evaporation reduces likelihood of irritation
Inhalation: may irritate above 5000ppm; headache, dizziness, drowsiness, intoxication, anaesthesia
symptoms may be partly due to hypoxia as isopentane vapour displaces oxygen in the air
Ingestion: probably impossible to ingest as isopentane boils at 28°C – well below body temperature

Effects, Chronic Exposure
General: no known effects
Sensitising: not a sensitiser 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: thought to sensitize heart to effects of adrenalin (epinephrine in U.S.A.)
LD₅₀ (oral): 10,000mg/kg (rat);
LD₅₀ (skin): not known
LC₅₀ (inhalation): 95,000ppm (rat), 51,000ppm (mouse)

Please ensure that this MSDS is given to, and explained to people using this product.
4. FIRST AID

SKIN: Allow to evaporate. Remove contaminated clothing and do not reuse until dry – assuming isopentane is the only substance present! If other substances may be present, wash thoroughly with soap and water and launder clothing before wearing again.

EYES: Allow to evaporate – assuming isopentane is the only substance present! If other substances may be present, wash eyes with plenty of water, holding eyelids open. Seek medical assistance promptly if there is 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 vomited 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. PHYSICAL PROPERTIES

Odour & Appearance: clear, colourless liquid with pleasant gasoline-like odour
Odour Threshold: not known
Vapour Pressure: 595mmHg / 79kPa (21°C / 70°F)
Evaporation Rate (Butyl Acetate = 1): 14 – extremely volatile
Vapour Density (air = 1): 2.5
Boiling Range: 28°C / 82°F
Freezing Point: -160°C / -256°F
Specific Gravity: 0.62 (20/20°C)
Water Solubility: insoluble
Also soluble in: most organic solvents
Viscosity: not known – very mobile liquid
pH: none – (does not liberate hydrogen ions when dissolved)
Conversion Factor: 1ppm = 2.95g/m³
Molecular Weight: 72grams per mole

6. FLAMMABILITY & FIRE FIGHTING

Flash Point: -51°C / -60°F (closed cup)
Autoignition Temperature: 260°C / 500°F
Flammable Limits: 1.5% – 7.8%
Combustion Products: carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments
Fire Fighting Precautions: foam, dry chemical; water is ineffective; CO₂ discharge may produce static which could re-ignite fire; cool intact containers with water spray; fire fighters must wear SCBA
Static Charge Accumulation: readily accumulates a static charge on agitation or pumping which can cause ignition

7. STABILITY / REACTIVITY

Dangerously Reactive With: strong oxidising agents; chlorine and fluorine
Also Reactive With: halogen compounds
Stability: stable; will not polymerize
Decomposes in Presence of: not known
Decomposition Products: none apart from Hazardous Combustion Products
Sensitive to Mechanical Impact: no
8. PROTECTIVE EQUIPMENT / EXPOSURE CONTROL

TWAEV / TLV: 600ppm / 1750mg/m³
STEL (OSHA): 750ppm / 2200mg/m³ (not currently enforceable); PEL – TWA (OSHA) 1000ppm / 2950mg/m³

Ventilation: mechanical ventilation required to maintain airborne titre below TWAEV; depending on handling procedures.

**NOTE:** Due to extreme volatility, product should only be used in sealed equipment.

Respirators with organic vapour cartridges must be available in the workplace for “escape” purposes in case of a release. These respirators should be kept in air-tight containers (e.g. Tupperware) to preserve “freshness.”

Hands: not required; “Viton” gloves recommended – other types may also protect; consult supplier

Eyes: safety glasses with side shields – always protect the eyes

Clothing: no special protective clothing required

9. HANDLING & STORAGE

Store *a minimum quantity* in a cool (below 30°C / 86°F), 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.* *Always* ground or electrically bond both the source container and the receiving container, and transfer pump before transferring contents. Avoid splashing by ensuring that the product nozzle is below the surface in the receiving container.

Bulk storage should be outdoors under a roof to prevent exposure to the sun. Tanks must be vented, and the vents equipped with spark arrestors. Drums must be kept away from oxidisers and corrosives. Drums should have pressure/vacuum relief venting. Drums should be bonded or grounded – contact with an appropriately conductive concrete floor may be adequate.

Drum storage area must be well ventilated – *with floor level venting!* Storage area should have raised sills to contain spills.

Storage area must be kept clean and free of rags, mops, and similar equipment.

*Never use a cloth dampened with this product for wiping or cleaning surfaces!*

Avoid breathing product vapour. Use with adequate ventilation. If dealing with a spill, and ventilation is impossible or impractical, wear a suitable respirator (see Part 8).

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

10. SPILL PROCEDURES

**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 Prevention: dyke 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

11. 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 – *a spill may well “clean itself” by rapid evaporation*

Containers:
- Drums should be re-used. Recondition and pressure test by a licensed reconditioner prior to re-use.
- Pails: must be vented and thoroughly dried prior to crushing and recycling.
- IBCs (intermediate bulk containers): polyethylene bottle must be pressure tested & recertified at 30 months. Replace at 60 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*

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12. ENVIRONMENTAL INFORMATION

Bioaccumulation: this product is rapidly eliminated by metabolism and lungs and cannot bioaccumulate.

Biodegradation: this product appears to degrade readily in the presence of oxygen, however, volatilisation is likely to be the major means for a spill of this product to disappear from either soil or water.

Abiotic Degradation: this product reacts with atmospheric hydroxyl radicals; its estimated half-life in air is 4.2 days.

Mobility in soil, water: this product is water insoluble and cannot move readily in soil and water; evaporation is rapid, reducing the likelihood of soil or water contamination.

13. TRANSPORT REGULATIONS

| Canada TDG | PIN | UN-1265       |
| Shipping Name | pentanes, liquid |
| Class | 3 |
| Packing Group | I |

| U.S.A. 49 CFR | PIN | UN-1265       |
| Shipping Name | pentanes |
| Class | 3 |
| Packing Group | I |

Marine Pollutant: not a marine pollutant

14. EMERGENCY INFORMATION

<table>
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<tr>
<th>Country</th>
<th>Contact Information</th>
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<tr>
<td>Canada</td>
<td>Call CANUTEC (collect) (613) 996-6666</td>
</tr>
<tr>
<td>U.S.A.</td>
<td>Call CHEMTREC (800) 424-9300</td>
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<tr>
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<td>TSCA on inventory</td>
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<tr>
<td>Europe</td>
<td>EINECS on inventory</td>
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Atmospheric Standards: This action promulgates standards of performance for equipment leaks of Volatile Organic Compounds (VOC) in the Synthetic Organic Chemical Manufacturing Industry (SOCMI). The intended effect of these standards is to require all newly constructed, modified, and reconstructed SOCMI process units to use the best demonstrated system of continuous emission reduction for equipment leaks of VOC, considering costs, non air quality health and environmental impact and energy requirements. Isopentane is produced, as an intermediate or final product, by process units covered under this subpart.

16. PREPARATION INFORMATION

Prepared for Megaloid Laboratories by Peter Bursztyn, (705) 734-1577
Data from RTECS, Haz. Substance Data Base, Cheminfo, manufacturer data, and other source, as available
Preparation Date: November 2003 Revision Date: August 2006

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