

# Material Safety Data for: Isopentane

## 1. PRODUCT IDENTIFICATION

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

## 2. INGREDIENTS

	%	TWAEV / TLV ppm / mg/m <sup>3</sup>	LD <sub>50</sub> ORAL	(mg/kg) SKIN	LC <sub>50</sub> ppm INHALATION
n-Pentane	100%	600 / 1750	10,000	not known	51,000

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

### 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 sensitise heart to effects of adrenalin (epinephrine in U.S.A.)
LD <sub>50</sub> (oral)	10,000mg/kg (rat);
LD <sub>50</sub> (skin)	not known
LC <sub>50</sub> (inhalation)	95,000ppm (rat), 51,000ppm (mouse)

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

**(Isopentane, cont'd)**

**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 ( <i>Butyl Acetate = 1</i> )	14 – <i>extremely volatile</i>
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 – <i>very mobile liquid</i>
pH	none – ( <i>does not liberate hydrogen ions when dissolved</i> )
Conversion Factor	1ppm = 2.95g/m <sup>3</sup>
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; CO <sub>2</sub> discharge may produce static which could re-ignite fire; cool intact containers with water spray; fire fighters must wear SCBA
Static Charge Accumulation	<b><i>readily accumulates a static charge on agitation or pumping which can cause ignition</i></b>

**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

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## 8. PROTECTIVE EQUIPMENT / EXPOSURE CONTROL

TWAEV / TLV	600ppm / 1750mg/m <sup>3</sup>
STEL (OSHA)	750ppm / 2200mg/m <sup>3</sup> ( <i>not currently enforceable</i> ); PEL – TWA (OSHA) 1000ppm / 2950mg/m <sup>3</sup>
Ventilation	mechanical ventilation required to maintain airborne titre below TWAEV; depending on handling procedures <i>NOTE: Due to extreme volatility, product should only be used in sealed equipment. Respirators with organic vapour cartridges must be available in the work place for “escape” purposes in case of a release. These respirators should be kept in air-tight containers (eg: Tupperware) to preserve “freshness.</i>
Hands	not required; “Viton” gloves recommended – <i>other types may also protect; consult supplier</i>
Eyes	safety glasses with side shields – <i>always protect the eyes</i>
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 Precaution	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	<b>do not flush to sewer</b> , recycle solvent if possible, if local regulations permit, may be put in sanitary landfill, may be incinerated in approved facility – <i>a spill may well “clean itself” by rapid evaporation</i>
Containers	<b>Drums</b> should be reused. Recondition and pressure test by a licensed reconditioner prior to re-use. <b>Pails</b> must be vented and thoroughly dried prior to crushing and recycling. <b>IBCs</b> (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. <b><i>Never cut, drill, weld or grind on or near this container, even if empty</i></b>

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(Isopentane, cont'd)

page 4

## 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

<i>Canada TDG</i>	<b>PIN</b>	<b>UN-1265</b>
	<b>Shipping Name</b>	<b>pentanes, liquid</b>
	<b>Class</b>	<b>3</b>
	<b>Packing Group</b>	<b>I</b>
<i>U.S.A. 49 CFR</i>	<b>PIN</b>	<b>UN-1265</b>
	<b>Shipping Name</b>	<b>pentanes</b>
	<b>Class</b>	<b>3</b>
	<b>Packing Group</b>	<b>I</b>
<b>Marine Pollutant</b>	<b>not a marine pollutant</b>	

## 14. EMERGENCY INFORMATION

<i>Canada</i>	Call CANUTEC (collect)	(613) 996-6666
<i>U.S.A.</i>	Call CHEMTREC	(800) 424-9300

## 15. REGULATIONS

<b>Canada DSL</b>	<b>on inventory</b>
<b>U.S.A. TSCA</b>	<b>on inventory</b>
<b>Europe EINECS</b>	<b>on inventory</b>

**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

File Name: isopentane

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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