

# Material Safety Data for: Diisobutyl Ketone

## 1. PRODUCT IDENTIFICATION

**Name** 2,6-dimethyl-4-heptanone  
**Synonyms** diisobutyl ketone; 4-hetanone, 2,6-dimethyl; DIBK  
**CAS#** 108-83-8  
**Europe EC#** 203-620-1  
**Product Uses** solvent, inks, organic synthesis

## 2. INGREDIENTS

	%	TWAEV / TLV mg/m <sup>3</sup>	LD <sub>50</sub> ORAL	(mg/kg) SKIN	LC <sub>50</sub> ppm INHALATION
2,6-dimethyl-4-heptanone	108-83-8	25 / 145	1415	16,100	over 2300

## 3. (a) HAZARDS SUMMARY

**Hazards, Quick Guide:** flammable liquid, heavy vapour may travel, distant ignition and flashback are possible, mildly irritating to skin and eyes

### Canada – WHMIS

Key:

### B 3

**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 – 0/1, Fire – 2, Reactivity – 0

0=minimal, 1=slight, 2=moderate, 3=serious, 4=severe

## 3. (b) HAZARDS – TOXICITY

### Effects, Acute Exposure

Skin Contact mildly irritating  
 Skin Absorption slight; no toxic effects likely by this route  
 Eye Contact mildly irritating; vapour begins to irritate above 25ppm (*DIBK has low vapour pressure*)  
 Inhalation 50-100ppm slightly irritating; headache, dizziness, may be experienced  
 Ingestion likely to irritate mouth & throat; large amounts may cause dizziness, drowsiness, intoxication  
*ingestion is not an expected route of industrial exposure*

### Effects, Chronic Exposure

General prolonged exposure may cause dermatitis through washing away skin oils  
 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 not known  
 LD<sub>50</sub> (oral) 5750mg/kg (rat), 1415 & 2820mg/kg (mouse)  
 LD<sub>50</sub> (skin) 16,100mg/kg (rabbit)  
 LC<sub>50</sub> (inhalation) over 2300ppm (rat)

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

**(Diisobutyl Ketone, cont'd)**

**4. FIRST AID**

- SKIN: Wash with soap & plenty of water. Remove contaminated clothing & do not reuse until thoroughly laundered.  
 EYES: 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 a mild peppermint odour
Odour Threshold	0.1 – 0.3ppm
Vapour Pressure	1.7mmHg / 0.23kPa (20°C / 68°F)
Evaporation Rate ( <i>Butyl Acetate = 1</i> )	0.2
Vapour Density (air = 1)	4.9
Boiling Range	165°C / 329°F
Freezing Point	-46°C / -51°F
Specific Gravity	0.806 (20/20°C)
Water Solubility	0.5 grams per litre (20°C / 68°F)
Also soluble in	most organic solvents, limited solubility in glycols and methanol
Viscosity	1.02centipoise (25°C / 77°F)
pH	none – ( <i>does not liberate hydrogen ions when dissolved</i> )
Conversion Factor	1ppm = 5.8mg/m <sup>3</sup>
Molecular Weight	142grams per mole

**6. FLAMMABILITY & FIRE FIGHTING**

Flash Point	49°C / 120°F (closed cup)
Autoignition Temperature	396°C / 745°F
Flammable Limits	0.8% – 7.1% (@ 93°C)
Combustion Products	carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments
Fire Fighting 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	cannot accumulate a static charge on agitation or pumping

**7. STABILITY / REACTIVITY**

Dangerously Reactive With	strong oxidising agents; nitric acid <b>and</b> sulphuric acid
Also Reactive With	mixture of strong alkalis and chloroform <b>or</b> bromoform may explode
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

ACGIH TLV	25ppm / 145mg/m <sup>3</sup>
OSHA PEL	50ppm / 290mg/m <sup>3</sup>
STEL	not listed
Ventilation	mechanical ventilation may be required to control airborne titre; depending on handling procedures; if product is handled at elevated temperatures in sealed equipment, "escape" respirators with an organic vapour cartridge must be available for all workers in the area; <i>store respirators in sealed containers ("Tupperware" or "Zip-Lock") to maintain cartridge "freshness"</i>
Hands	"Barrier" gloves recommended – <i>other types may also protect; consult supplier to confirm suitability</i>
Eyes	safety glasses with side shields – <i>always protect the eyes</i>
Clothing	wear impermeable (above) apron, boots, & long sleeves if there is any danger of splashing

## 9. HANDLING & STORAGE

Store in a cool, dry environment, away from sources of ignition, heat and oxidising agents. Empty containers may contain a flammable / explosive vapour. Always ensure that containers, whether empty or full, or part 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 respirator with an organic vapour cartridge.

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

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, may be incinerated in approved facility
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. <i>Never cut, drill, weld or grind on or near this container, even if empty</i>

## 12. ENVIRONMENTAL INFORMATION

Bioaccumulation	this product is readily metabolised and excreted and cannot bioaccumulate
Biodegradation	this product degrades readily and rapidly in the presence of oxygen; 88% biodegradation in 20 days
Abiotic Degradation	this product reacts with atmospheric hydroxyl radicals; its estimated half-life in air is 22 hours
Mobility in soil, water	this product is slightly water soluble and is expected to move readily in soil and water
<b>Aquatic Toxicity</b>	
LC <sub>50</sub> (Fish, 96hr)	140mg/litre (Oncorhynchus mykiss)
EC <sub>50</sub> (Crustacea, 48hr)	250mg/litre (Daphnia magna), 65mg/lite (Artemia salina)
EC <sub>50</sub> (Algae)	100mg/litre (Selenastrum capricornutum)
EC <sub>50</sub> (Bacteria)	not available

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### 13. TRANSPORT REGULATIONS

<b>Canada TDG</b>	<b>PIN</b>	<b>UN-1157</b>
<b>AND</b>	<b>Shipping Name</b>	<b>diisobutyl ketone</b>
<b>U.S.A. 49 CFR</b>	<b>Class</b>	<b>3</b>
	<b>Packing Group</b>	<b>III</b>
<b>Marine Pollutant</b>		<b>not a marine pollutant</b>

### 14. EMERGENCY INFORMATION

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

### 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>

**Immediately Dangerous to Life or Health:** 500 ppm

**OSHA Standards:** Permissible Exposure Limit: Table Z-1 8-hr Time Weighted Avg: 50 ppm (290 mg/cu m). Vacated 1989 OSHA PEL TWA 25 ppm (150 mg/cu m) is still enforced in some states.

**NIOSH Recommendations:** Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 25 ppm (150 mg/cu m).

**Threshold Limit Values:** 8 hr Time Weighted Avg (TWA): 25 ppm. Excursion Limit Recommendation: Excursions in worker exposure levels may exceed three times the TLV-TWA for no more than a total of 30 min during a work day, and under no circumstances should they exceed five times the TLV-TWA, provided that the TLV-TWA is not exceeded.

**FDA Requirements:** Diisobutyl ketone is an indirect food additive for use only as a component of adhesives.

### 16. PREPARATION INFORMATION

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

*With data from RTECS, Haz. Substance Data Base, Cheminfo (CCOHS), IUCILID Datasheets (European Chem. Substance Info. System), & others, as available*

*Preparation Date: **December 2003** Revision Date: **December 2006, October 2007, September 2010***

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