



Safety Data Sheet

1. PRODUCT IDENTIFICATION

Name	Methyl Amyl Alcohol
Synonyms	methyl amyl alcohol, methyl isobutyl carbinol, 4-methy-2-amyl alcohol, 1,3-dimethylbutanol
CAS#	108-11-2
EC#	203-551-7
Product Uses	solvent for dyestuffs, oils, gums, resins, waxes, nitrocellulose & ethylcellulose; also organic synthesis – particularly lube oil additives, froth flotation of ores

2. HAZARDS

Quick Guide: irritating to eyes; flammable liquid

Canada – WHMIS
Key:

B 2, D 2B
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

U.S.A. – HMIS
Key:

Health – 1, Fire – 2, Reactivity – 0
0=minimal, 1=slight, 2=moderate, 3=serious, 4=severe

3. COMPOSITION

	%	TWAEV / TLV mg/m ³	LD ₅₀ (mg/kg) ORAL	LD ₅₀ (mg/kg) SKIN	LC ₅₀ ppm INHALATION
4-methyl-2-pentyl alcohol	100%	25 / 100 (skin)	~1000	2875	>2000

4. FIRST AID

SKIN:	Wash with 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 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. FIRE FIGHTING & FLAMMABILITY

Flash Point	41-42°C / 106-108°F (closed cup)
Autoignition Temperature	305°C / 581°F (Shell data); also 360°C / 680°F (Celanese data)
Flammable Limits	1.0% – 5.5%
Combustion Products	carbon monoxide, nitrogen oxides, smoke, part oxidised hydrocarbon fragments
Fire Fighting Precautions	foam, dry chemical, water fog or spray, spreads flames; fire fighters must wear SCBA
Static Charge Accumulation	may accumulate a static charge on agitation or pumping

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

6. ACCIDENTAL RELEASE MEASURES

Summer Fire Risk: in summer, blanket spill with foam as a precaution against accidental ignition, 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

7. HANDLING & STORAGE

Store in a cool, dry environment, away from sources of ignition, heat and oxidising agents. 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 should be explosion-proof.

Ground or electrically bond the source container, the receiving container and pump before transferring contents. Avoid splashing by ensuring that the product nozzle is below the surface in the receiving container. 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 suitable respirator with 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.

8. EXPOSURE CONTROL & PERSONAL PROTECTION

Ontario TWAEV not listed
 ACGIH TLV 25ppm / 104mg/m³ (skin)
 OSHA PEL 25ppm / 100mg/m³ (skin)
 STEL 40ppm / 160mg/m³
 Ventilation mechanical ventilation may be required to keep airborne titre below regulated limits
 Hands nitrile or “Viton” gloves recommended – *other types may also protect; consult supplier to confirm suitability*
 Eyes safety glasses with side shields – *always protect the eyes*
 Clothing no special protective clothing required

9. PHYSICAL PROPERTIES

Odour & Appearance clear, colourless, mobile liquid with mild, sweet, unpleasant odour
 Odour Threshold 0.3ppm
 Vapour Pressure 3.5mmHg / 0.47kPa (20°C / 68°F)
 Evaporation Rate (*Butyl Acetate = 1*) 0.27
 Vapour Density (air = 1) 3.5
 Boiling Range 131°C / 269°F
 Freezing Point -90°C / -130°F
 Specific Gravity 0.808 (20/20°C)
 Water Solubility 16grams/litre (25°C / 77°F)
 Also soluble in most organic solvents
 Viscosity 4.1centipoise (25°C / 77°F)
 pH none – (*does not liberate hydrogen ions when dissolved*)
 Conversion Factor 1ppm = 4.17mg/m³
 Molecular Weight 102grams per mole

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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	may be slightly irritating
Skin Absorption	slight; toxic effects may occur by this route
Eye Contact	liquid very irritating in rabbits; transient injury seen, also corrosive injury seen in rabbits; in human volunteers, vapour is irritating at 50ppm (<i>not at 25ppm</i>)
Inhalation	may irritate above 50ppm, but low vapour pressure makes this effect unlikely
Ingestion	not known – <i>not a route of industrial exposure</i>

Effects, Chronic Exposure

General	prolonged exposure may cause dermatitis by removing skin oils and drying; inhalation at 900ppm for 6 hours, 5days/week produced histological changes in internal organs of rodents
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 ₅₀ (oral)	2590 & 2970mg/kg (rat), 810-1210mg/kg (mouse),
LD ₅₀ (skin)	2875 & 2900mg/kg (rabbit)
LC ₅₀ (inhalation)	2000, 3840 & 4560ppm (rat), >4800ppm (mouse)

12. ECOLOGICAL INFORMATION

Bioaccumulation	not a bioaccumulator
Biodegradation	biodegrades rapidly in the presence of oxygen; 43-84% in 5 days; 94% in 20 days
Abiotic Degradation	reacts with atmospheric hydroxyl radicals; estimated ½-life in air is 2.2 days
Mobility in soil, water	water soluble; moves readily in soil and water
Aquatic Toxicity	
LC ₅₀ (Fish, 24hr)	360mg/litre (Carassius auratus)
EC ₅₀ (Crustacea, 24hr)	370mg/litre (Artemia salina)
EC ₅₀ (Algæ)	<i>no data</i>
EC ₅₀ (Bacteria)	<i>no data</i>

13. DISPOSAL

Waste Disposal	do not flush to sewer , recycle solvent if possible, 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. 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. <i>Never cut, drill, weld or grind on or near this container, even if empty</i>

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14. TRANSPORT CLASSIFICATION

Canada TDG	PIN	UN-2053
AND	Shipping Name	methyl isobutyl carbinol
U.S.A. 49 CFR	Class	3
	Packing Group	III
Marine Pollutant		not a marine pollutant
ERAP Required		NO

EMERGENCY INFORMATION

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

15. REGULATIONS

Canada DSL	on inventory
U.S.A. TSCA	on inventory
Europe EINECS	on inventory

Europe Classification Harmful

Europe Risk Phrases **R: 10, 36/37** – *Flammable, Irritating to the eyes and respiratory system.*
Europe Safety Phrases **S: 23, 24/25** – *Do not breathe vapour. Avoid contact with skin and eyes.*

Immediately Dangerous to Life or Health: 400 ppm [REF-15, p.212]

OSHA Standards: Permissible Exposure Limit: Table Z-1 8-hr Time-Weighted Avg: 25 ppm (100 mg/cu m). Skin Designation. Vacated 1989 OSHA PEL TWA 25 ppm (100 mg/cu m); STEL 40 ppm (165 mg/cu m), skin designation, is still enforced in some states.

NIOSH Recommendations: Recommended Exposure Limit: 10 Hr Time-Weighted Avg: 25 ppm (100 mg/cu m). Recommended Exposure Limit: 15 Min Short-Term Exposure Limit: 40 ppm (165 mg/cu m), skin.

Threshold Limit Values: 8 hr Time Weighted Avg (TWA): 25 ppm; 15 min Short Term Exposure Limit (STEL): 40 ppm, skin. /Methyl isobutyl carbinol/

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. Methyl isobutyl carbinol is produced, as an intermediate or final product, by process units covered under this subpart.

16. OTHER INFORMATION

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

Preparation Date: **September 2006** Revision Date: **September 2009, September 2012**

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