

MMB - MethoxyMethylButanol

Specialty Solvent



kuraray

METHOXYMETHYLBUTANOL

An innovative solution for the industry.

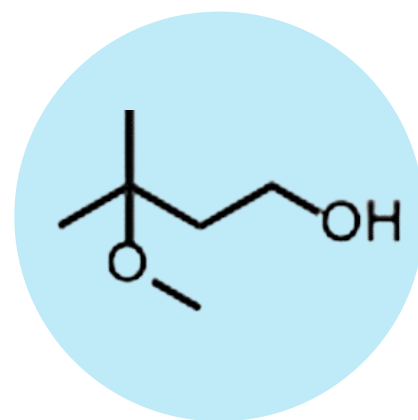
MMB is a specialty ingredient produced by Kuraray. It is a clear, colorless and completely water-soluble liquid with a mild odor. MMB is a robust, safe and environmentally friendly molecule.

Main applications

- Home care and institutional detergents
- Industrial cleaning solutions
- Printing inks and paints
- Air care
- Fragrance
- Others : Nail polish removers, pesticides, hand sanitizers...

Main benefits

- Low toxicity and biodegradable
- High flash point, low freezing point
- Stable versus autoxydation, at extreme pH (2-13)
- Mild odor, clear, colorless
- Amphiphile
- Good solvency power
- Unique evaporation rate
- Excellent hydrotrope



Registration Status: Worldwide registered

AICS (Australia) : Listed
DSL (Canada) : Listed
ENCS (Japan) : Listed 2-3079
PICCS (Philippine) : Listed
SWISS (Switzerland) : Listed G-117002
UK REACH: Listed (by UK OR)

CRC-SEPA (China) : Listed
ECL (Korea) : Listed KE-24367
NZIoC (New Zealand) : Listed
REACH (EU) : Registered
TSCA (USA) : Listed
KKDIK (Turkey): Pre-registered

Chemical properties

Chemical Name:	3-methoxy-3-methyl-1-butanol
CAS n° :	56539-66-3
Boiling point (@760mmHg, 101kPa) :	173°C
Freezing point :	<-50°C
Flash point (Tag's CC) :	71°C
Specific gravity (@20°C) :	0.927
Viscosity (@20°C) :	12.5 mPa.s
Log Pow (@25°C) :	0.18
Solubility in water :	Infinite
Hansen Solubility Parameter :	9.88
Evaporation rate (n-BuAc=100) :	7
Vapor density (Air = 1) :	4.1
Vapor pressure (@ 20°C) :	0.07 kPa = 0.5 mmHg
Surface Tension (@ 20°C) :	29.9 dyne/cm
Ignition point :	395°C

Effect on Plastics and Elastomers

Plastics	Volume % vs Initial*
Rigid PVC	8
Soft PVC	9
Polyethylene (low density)	0
Polyethylene (high density)	0
Polypropylene	0
Polystyrene	19
Polycarbonate	0
Polyacetal	0
PET	0
PBT	0
Polyphenylene Sulfide	0
6-Nylon	0
6,6-Nylon	0
Teflon®	0
Epoxy Glass	0
Acrylic Resin	Partially Dissolved
Phenol Resin	0
ABS	63

Elastomers	Volume % vs Initial*
Fluoro Rubber Viton®	82
Chloroprene Rubber	64
Butyl Rubber	0
Nitrile Rubber	115
Silicone Rubber	6
Ethylene Propylene Rubber	7
Natural Rubber	17
Urethane Rubber	129
SBR	26

*Volume increase % of tested sample (50x20x2 mm) after soaked in MMB at 50°C for 7 days.

A respectful solvent

For users:

Safety data:

- Acute Oral Toxicity : LD50 4.30g/kg (rats)
: LD50 5.83g/kg (mice)
- Dermal Irritation : 0.6 Slightly irritant (MMB 100%, rabbits, 28 days)
: 0.0 (MMB 50% (with DW), rabbits, 28 days)
- Skin sensitization : Negative
- Inhalation Toxicity : No significant change (rats/500 ppm/28 days)
- Mutagenicity : Negative (Ames test)
- Teratogenicity : Negative (Developmental NOEL 500mg/kg, rat)

Listed CTFA - INCI : Methoxymethylbutanol

NSF certification for incidental food contact

For the environnement:

Biodegradability: Readily Biodegradable

- Method: OECD Test Guideline 302C
Biodegradation: 100 % Exposure time: 28 d
- Method: OECD Test Guideline 310
Biodegradation: 78.9 % Exposure time: 28 d

European Ecolabel compliant

Listed Cleangredient



Air Care



- High Flash point.
- Unique evaporation profile.
- Good solubilizer.
- Low sensitivity to humidity.
- Enables to make alcohol free non flammable air fresheners with water.
- Compatible with a wide range of aroma chemicals.

Applications:

Reed diffuser, car freshener, aerosol, gel air freshener, spray...,

Fragrance



- Good solvency power .
- Fully water-soluble.
- Good affinity with oils (HLB : 7,8).
- Clear, colorless liquid with a mild odor.
- Helps limit or avoid recrystallization of aroma chemicals such as Vanillin.
- Helps avoid cloudy aspect of fragrances due to terpenes such as D-Limonene.
- Stable to auto-oxidation preventing creation of allergenic molecules.

Home Care & Institutional

Laundry detergent:

- Biodegradable.
- Low influence on enzyme's activity.
- Good efficiency in stain removers.
- In concentrated formulations, helps with detergent dilution even at low temperature.



Multi-purpose / surface cleaners:

- Excellent degreasing properties.
- Enables to reduce the amount of surfactant.
- Stable in acidic (pH 2) and basic (pH 13) formulations.
- Not irritant.
- Good alternative to glycol ethers (Butylglycol, Butyldiglycol, Methoxypropanol...).
- Good alternative to D-limonene.

Example of other applications:

- Window cleaners
- Car care
- Oven cleaners
- Rinse aids
- Carpet cleaners
- Anti-limescale products





Industrial Cleaning

- Water-based (Acidic to Alkali) - MMB with surfactants, water... MMB helps getting concentrated formulations with low viscosity. Enables to reduce the amount of surfactants. No flash point measurable if the amount of water is more than 20%.
- Solvent-based - MMB alone or in a blend as a co-solvent. Mix of MMB and hydrocarbon or D-Limonen, improves cleaning performance and drying speed. MMB is miscible with a wide range of solvents.

Applications of the cleaners:

- To clean metal parts
- To remove processing oils
- To remove flux, grease, lubricant oil...
- To clean printed circuit boards
- To clean industrial reactors

Paints and Inks

- Adapted evaporation.
- Helps maintain low viscosity.

Applications:

- Paint and ink removers
- Solvent for offset and inkjet inks



Agriculture

- Solvent for:
- Pesticides
- Herbicides
- Fungicides
- Insecticides



Other applications

- Nail polish removers
 - An alternative to acetone.
 - Mild odor.
 - No dry feeling nor whitening of nails and skin.
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- Hand sanitizers
 - Gentle on skin.

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