

# MMB

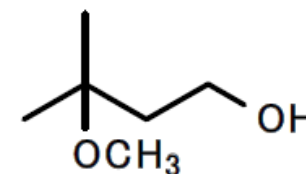
- General -

Isoprene Chemical Division  
Kuraray Co., Ltd.



# What is MMB?

Product name	: MMB
Chemical name	: 3-methoxy-3-methyl-1-butanol
Formula	: $C_6H_{14}O_2$
CAS No.	: 56539-66-3



## Specifications

Appearance	: clear and colorless liquid
Color(APHA)	: $\leq 10$
Specific Gravity(20/20°C)	: 0.925~0.930
Distillation(760mmHg)	: IBP $\geq 168$ °C, DP $\leq 178$ °C
Water (%)	: $\leq 0.2$
Acidity (as Acetic acid %)	: $\leq 0.01$

## Packages

Drum (185kg), IBC container(890kg), ISO container(20t)

- **Clear and Colorless Liquid**
- **Soluble with wide range of substances**
- **Mild in odor**
- **Unique in evaporation profile**
- **Less effect on plastics**
- **Less toxic**



# Applications of MMB

- Air freshener
- Household & Industrial Cleaner
- Paint and Coating
- Ink
- Printing chemicals  
(fountain solution, cleaner)
- Adhesive
- Insecticide and Pesticide  
etc.



# Physical Properties

➤ Flash point : 68°C (154 °F)

Flash point disappears if MMB is diluted with water at 20% or more of water.

➤ Boiling point : 174°C (345 °F)

➤ Freezing Point : < -50°C (<-58 °F)

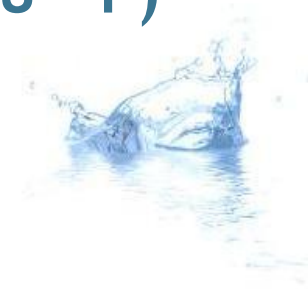
➤ Viscosity : 7.35 mPa · s @20 °C(68 °F)

➤ Solubility in water : ∞

➤ KB Value : > 400

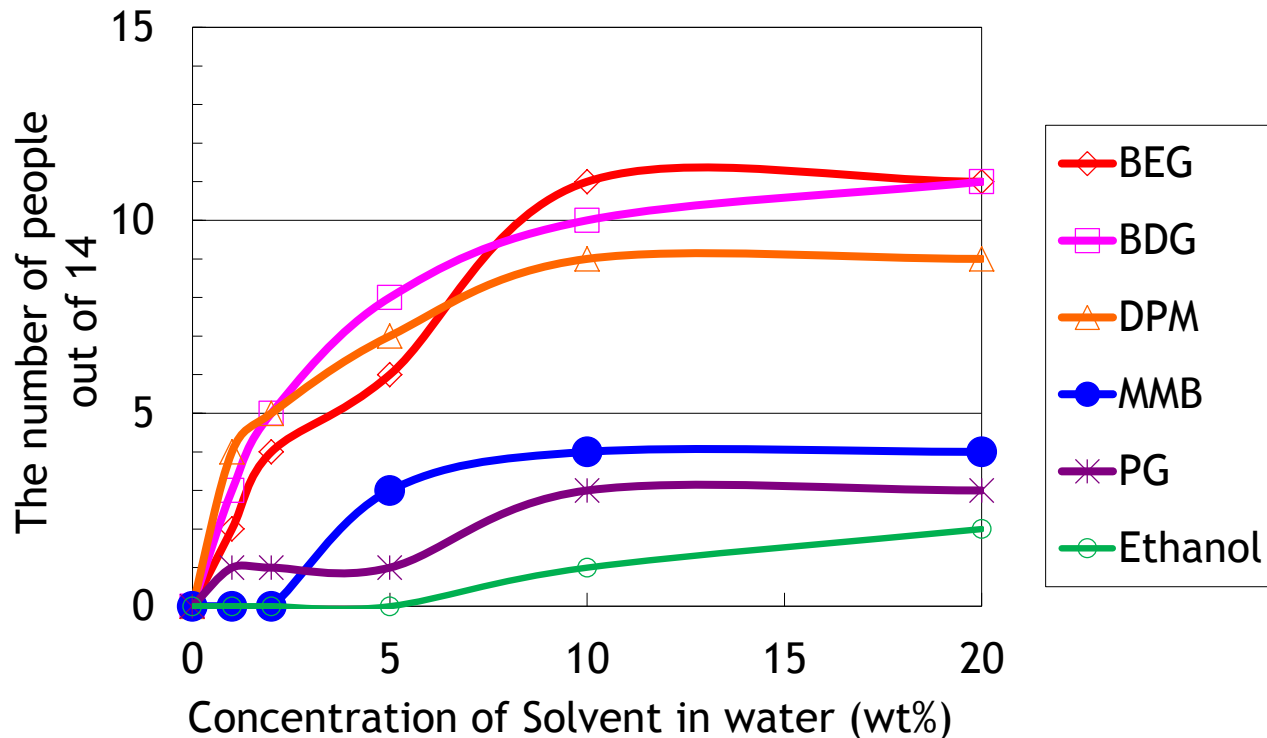
➤ HLB Value : 7.8

➤ Surface tension : 29.9 dynes/cm @20 °C(68 °F)



# Odor of solvent water solution

- Test method: 1. Each solvent was diluted with water at 1, 2, 5, 10, 20 wt% concentration.  
2. Odors of the solvent solutions were checked by 14 people.  
3. The number of people who felt disgusting was counted.

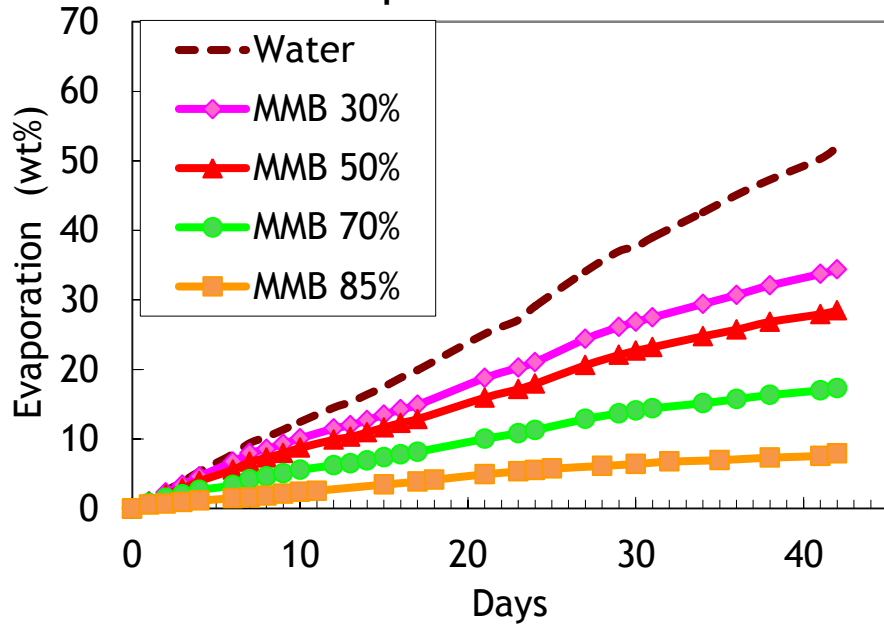


The odor of MMB is mild.

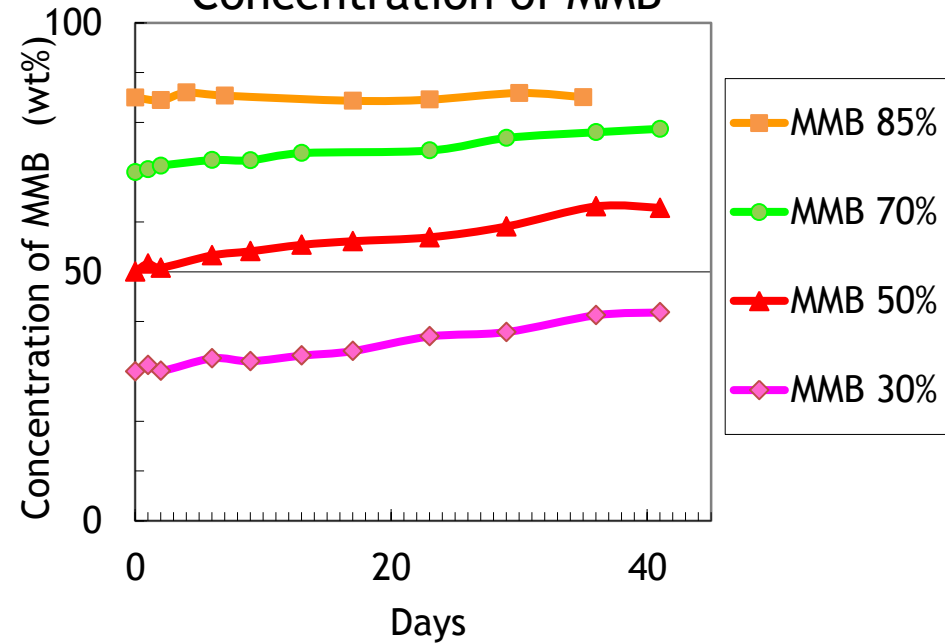
# Evaporation rate

Evaporation profile of MMB water solution was checked at 25°C.

Evaporation rate



Concentration of MMB



Evaporation speed can be controlled depending on MMB concentration and there was no large change in MMB concentration for 40 days.

# Effect on Plastics

Resins were soaked into the solvents and the degree of swelling [vol% vs.initial] at 50°C were checked.

Types	MMB	BDG	BEG	PM	DPM
PMMA	76	Partially dissolved	Partially dissolved	Partially dissolved	Partially dissolved
PC	0	Whitening	Whitening	Whitening	Whitening
PS	19	Dissolved	Partially dissolved	Partially dissolved	Dissolved
ABS	63	47	44	Partially dissolved	Partially dissolved
Rigid PVC	8	15	10	30	15
Soft PVC	9	9	-9	-11	-5
LDPE	0	0	0	0	0
HDPE	0	8	0	0	0
PP	0	0	0	0	0
Polyacetal	0	0	0	4	0
PET	0	0	0	2	0
PBT	0	0	0	0	0
PPS	0	0	0	0	0
Nylon-6	0	0	0	0	0
Nylon-6,6	0	0	0	0	0
Teflon	0	0	0	0	0
Epoxy glass	0	0	0	0	0
Phenol resin	0	0	0	0	0



# Safety data of MMB

- Acute toxicity (oral) : LD<sub>50</sub> 4400 mg/kg (rat) LD<sub>50</sub> 5830 mg/kg (mouse)
- Acute toxicity (dermal) : LD<sub>50</sub> >2000 mg/kg (rat) LD<sub>50</sub> >2000 mg/kg (mouse)
- Skin corrosion/irritation : No irritant (rabbit)
- Eye irritation : Moderate irritating (rabbit)
- Skin sensitization : No evidence of skin sensitization (Guinea-pig)
- Respiratory sensitization : No data available
- Germ cell mutagenicity : Ames test : Negative  
Chromosomal aberration test (CHO cells) : Negative
- Reproductive toxicity : No effects on fertility of male and female parents and on each of the indices for development
- Specific target organ toxicity (repeated exposure) : 28days Repeat dose toxicity (rat)  
MMB cause reversible effects mainly on the liver and kidney in the test.  
NOEL(male) 60 mg/kg/day NOEL (female) 250 mg/kg/day
- Bio degradability : Readily biodegradable
  - OECD 310 (in accordance with ISO 14593)  
by Sealed-Vessel Carbon Dioxide Evolution, 78,9 % within 28 days
  - OECD 301 F by BOD 93 % within 28 days, 77% within the 10 days window

## New Solvent Listing in CleanGredients

We are pleased to announce that CBC (America) Corp. is the latest supplier to list a solvent that has passed the DfE Screen. CBC (America)'s 3-Methoxy-3-Methyl-1-Butanol (MMB) is now included in CleanGredients. If your company is interested in listing ingredients in CleanGredients, please [contact us](#) for details.



**MMB is approved by US EPA Design for the Environment as a safer solvent.**

# Listed Registration

## Asia

Japan	ENCS (2-3079)
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China	IECSC
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Korea	ECL (KE-24367)
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Taiwan	TCSI
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Philippine	PICCS
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## Europe

EU	EINECS (260-252-4) REACH only representative
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## North America

USA	TSCA
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Canada	DSL
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## Oceania

Australia	AICS
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New Zealand	NZIoC
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**BEG... Ethylene Glycol Monobutyl Ether**

**BDG... Diethylene Glycol Monobutyl Ether**

**PM... Propylene Glycol Monomethyl Ether**

**DPM... Dipropylene Glycol Monomethyl Ether**

**PG... Propylene Glycol**

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Merci

Danke schön

Gracias

Grazie

Obrigado

ขอบคุณ ครับ

**Thank you !!**

Cam on

謝謝

고맙습니다

Terima kasih

ありがとうございました