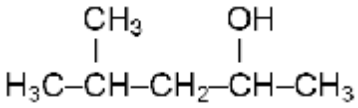
Celanese
Acetyl Intermediates

Methyl Isobutyl Carbinol (MIBC)

4-Methyl-2-pentanol
Methyl amyl alcohol
CAS no. 108-11-2
EC no. 203-551-7



Product description

Methyl Isobutyl Carbinol (MIBC) is a colorless liquid with a pungent alcohol odor. It has limited solubility in water, but is miscible with most organic solvents.

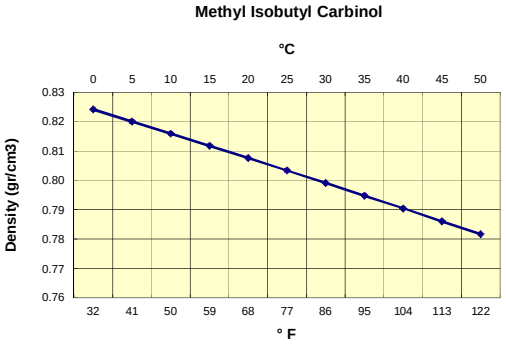
Possible applications

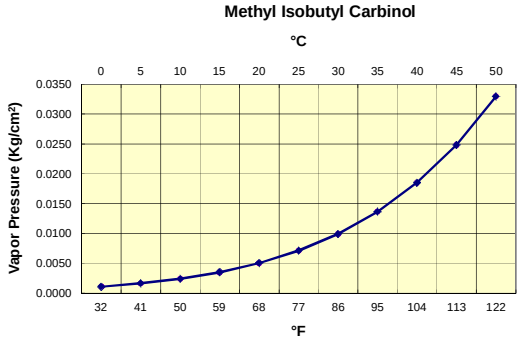
MIBC is one of the most useful among the acetone derivative solvents. MIBC is widely used as an ore floating agent and as lubricant oil additive. Other end uses for MIBC include: latent solvent in the production of nitrocellulose lacquers and frothers; solvent for pharmaceuticals, talc processing and surfactants; solvent for ethyl cellulose, urea formaldehyde and alkyd resins; as a raw material in the manufacturing of methyl amyl sebacate and methyl amyl phthalate, which are used as plasticizers.

Characteristic data

Typical Properties	***Unit***	
Boiling point at 1 Atm. (1013 hPa)	°C	132
Critical Pressure	atm	34.2
Critical Temperature	°C	301
Evaporation rate (n-Butyl Acetate = 1)		0.26
Heat of Vaporization		
at 20 °C	BTU/lb	211
at 30 °C	BTU/lb	208
at 50 °C	BTU/lb	202
Liquid Density at 20 °C	g/cm^3	0.81
Liquid Heat Capacity		
at 20 °C	BTU/lb/°F	0.637
at 30 °C	BTU/lb/°F	0.640
at 50 °C	BTU/lb/°F	0.648
Liquid Thermal Conductivity		
at 20 °C	BTU/ft/sec/°F	2.14×10^{-5}
at 30 °C	BTU/ft/sec/°F	2.10×10^{-5}
at 50 °C	BTU/ft/sec/°F	2.02×10^{-5}

Melting temperature	°C	– 90
Molar mass	g/mol	102.18
Refractive index n_D at 20 °C (DIN 51 423)		1.4112
Solubility in water at 20 °C	g/l	16
Surface Tension		
at 20°C	dynes/cm	23.0
at 30 °C	dynes/cm	22.2
at 50 °C	dynes/cm	20.6
Viscosity at 20 °C	mPa · s	5.1
at 30 °C	mPa · s	3.3
at 50 °C	mPa · s	1.6
Vapor density (Air =1)		3.52
Vapour pressure at 20 °C	hPa	5.0





° F	° C	Liquid Density (g/cm³)
32	0	0.8242
41	5	0.8201
50	10	0.8160
59	15	0.8118
68	20	0.8076
77	25	0.8034
86	30	0.7991
95	35	0.7948
104	40	0.7905
113	45	0.7861
122	50	0.7817

° F	° C	Vapor Pressure (Kg/cm²)	hPa
32	0	0.001	1.1
41	5	0.002	1.6
50	10	0.002	2.4
59	15	0.004	3.5
68	20	0.005	5.0
77	25	0.007	7.0
86	30	0.010	9.8
95	35	0.014	13.4
104	40	0.019	18.2
113	45	0.025	24.4
122	50	0.033	32.3

The above characteristic data are intended for the purpose of product description and are not the subject of continuous monitoring.Further physical properties and characteristic data as well as information on safety and handling are listed in the material safety data sheet and the sales specifications. Please consult www.celanese.com

Shelf life

The shelf life of Methyl Isobutyl Carbinol (MIBC) is one year. The shelf life dates from the day of packaging for small containers; for bulk product, it is the day of loading. This period is in general applicable to material stored under recommended conditions (see Storage and Handling sections). When product exceeds its shelf life or storage deviates from the recommended conditions, periodic monitoring may be required to verify quality status of the product.

Storage

Recommended Blanketing	Air[1,2] or Dry Nitrogen[1,2,3]
Recommended Temperature	Ambient
Recommended pressure	Atmospheric
Bulk Quantities	Outside, detached tanks
Small Containers	Cool, dry, well ventilated area

1. Refer to NFPA #77 “Static Electricity” for proper electrical grounding procedures.
2. See the National Fire Protection Agency (NFPA) #30 “Flammable and Combustible Liquids Code” and consult with qualified fire protection specialists to determine specific storage tank design requirements.
3. Blanketing may be used to retain quality in long-term storage conditions.

Handling

- Thoroughly review Material Safety Data Sheet before handling product.
- Keep containers closed when not in use.
- Open containers slowly to allow any excess pressure to vent.
- Keep away from heat, sparks, flame or other sources of ignition.
- Protect small containers from physical damage.
- Use proper electrical grounding and bonding procedures when loading, unloading and transferring. Refer to NFPA #77 “Static Electricity” for proper electrical grounding procedures.
- Refer to the Material Safety Data Sheet for more information on materials to avoid.
- Use spark-resistant tools.
- Electrical equipment and circuits in all storage and handling areas must conform to requirements of national electrical code (Articles 500 and 501) for hazardous location.
- Methyl Isobutyl Carbinol floats on water and may create a special hazard.

Packaging

Recommended containers:

- DOT 111A100W1 Tank Cars
- DOT MC 307 or DOT 407 Tank Trucks
- UN 1A1/X1.2/300 55-Gallon Carbon Steel Drums
- Ship Tank and Barge

Methyl Isobutyl Carbinol (MIBC) is available from Celanese Chemicals as bulk material.

Materials of Construction for Storage and Transportation

Unit / element	Acceptable Material	Alternate Material
Tank	Stainless Steel[1]	Aluminum[2,3] Lined Carbon Steel[4] Carbon Steel[5]
Piping	Carbon Steel	Stainless Steel[1]
Valves	Carbon Steel, Cast Iron	Stainless Steel[1]
Pumps	Carbon Steel	Stainless Steel[1]
Relief Valves	Carbon Steel	Stainless Steel[1]
Gaskets	Glass filled PTFE[6]	PTFE[6]
Pump Seals	Single Mechanical Seal: Stainless Steel / Hastelloy C-276 metallic components, Kalrez O-rings	–
Valve Packing	PTFE[6]	Braided PTFE[6]
Pipe End Connections	Welded and flanged system	Threaded with PTFE[6] tape thread lubricant
Heat Exchanger	Product side: Carbon Steel	Product Side: Stainless Steel[1]
Hoses	Stainless Steel[1]	Butyl Rubber, Aluminum[2,3]
Tank Truck	Stainless Steel[1]	Aluminum[2,3]
Tank Car	Stainless Steel[1]	Aluminum[2,3] Lined Carbon Steel[4] Carbon Steel[5]
Ship Tank	Stainless Steel[1]	Lined Carbon Steel[4] Zn Lined Carbon Steel[7]

1. Type 304 or 316 Stainless Steel
2. Use 3000, 5000, 6000 series Aluminum when temperature does not exceed 120 °F (49 °C).
3. Aluminum will corrode in dry alcohols; we prefer water content greater than 500 ppm.
4. Lining refers to high baked phenolic resin.
5. Rust Free
6. Polytetrafluoroethylene
7. Zn Lining refers to Zinc Silicate, Inorganic Zinc or Zinc Rich Inorganic

For further information on safety and handling, please use the following link: http://www.celanese.com/msds/

Guidelines

- ***Chemical Inventory Status***

The substance is listed in the following chemical inventories:

Chemical Inventory Status		*Listed*	*Comment*
AICS	(Australia)	X	
DSL	(Canada)	X	
NDSL	(Canada)		
IECSC	(China)	X	
EINECS	(Europe)	X	EC-No.: 203-551-7
ELINCS	(Europe)		
ENCS	(Japan)	X	Japanese ENCS Number (2)-217
ISHL	(Japan)	X	Japanese ISHL Number (2)-217
KECI	(Korea)	X	Korean ID Number: KE-24720
NZIoC	(New Zeeland)	X	
PICCS	(Philippines)	X	
TSCA	(USA)	X	

- ***REACh***

Celanese is aware of the obligations imposed by the European Union legislation REACh ("Registration, Evaluation, Authorization and Restriction of Chemicals") on EU manufacturers and importers as well as on downstream users. We are obliged to comply with the requirements of the REACh legislation relating to our European manufacturing facilities, our own imports as well as our obligations as a downstream user in the European chemical industry. Should you require additional information, please contact Celanese at REACH@celanese.com

- ***Residual Solvents***

Based on our knowledge of process technology and product characteristics, Celanese Methyl Isobutyl Carbinol is not expected to contain Residual Solvents above the concentration limits specified by the "Tripartite Guideline" (CPMP/ICH/283/95 and CPMP/ICH/1940/00) and by USP-467 (2007).

- ***BSE/TSE Statement***

Methyl Isobutyl Carbinol is produced via a totally synthetic process, and no materials of animal origin are used in its manufacture. Therefore, Celanese does not expect this product to pose any risk for the transmission of Bovine Spongiform Encephalopathy (BSE) and Transmissible Spongiform Encephalopathies (TSE).

- ***Genetically Modified Organisms (GMO)***

  Celanese does not use any ingredients of animal or plant origin in the manufacture of Methyl Isobutyl Carbinol. Therefore, we can certify that the supplied Methyl Isobutyl Carbinol contains no genetically modified organisms (GMOs) and no GMOs were used in its production.

- ***Allergens Guide***

  Based on the knowledge of our raw materials and manufacturing process, Celanese Acetyl Intermediates does not expect any of the following allergens and/or intolerance factors to be present in Methyl Isobutyl Carbinol: egg and egg products, milk and milk products, peanuts or peanut derivatives, tree nuts, fish and fish products, shellfish (crustaceans), molluscs, crabs, sesame seeds and products thereof, celery and products thereof, mustard and products thereof, wheat and wheat derivatives, soya and soy products, cereals containing gluten (i.e. wheat, rye, barley, oats, spelt, kamut or their hybridised strains) and products thereof, buckwheat, lupin, sulphur dioxide and sulphites (at > 10 mg/kg or 10 mg/liter, as SO2). No nutritional data is available for Methyl Isobutyl Carbinol.

- ***Others***

  Celanese Methyl Isobutyl Carbinol contains no melamine, cyanuric acid, or irradiated products, and neither of these materials is included in or produced in the manufacturing process.

- ***TSCA***

  Methyl Isobutyl Carbinol (CAS# 108-11-2) manufactured by Celanese complies with all applicable rules or orders under the Toxic Substances Control Act (TSCA).

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