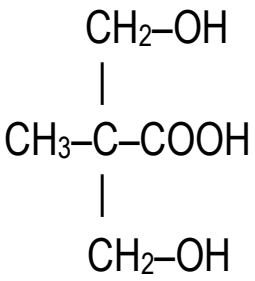
DIMETHYLOLPROPIONIC ACID

Product data



CAS No.:	4767-03-7
CAS Name:	Propanoic acid, 3-hydroxy-2-(hydroxymethyl)-2-methyl-
EC No.:	225-306-3
EINECS Name:	2,2-Bis(hydroxymethyl)propionic acid
Molecular Formula:	$C_5H_{10}O_4$
Molecular Weight:	134,13
IUPAC Name:	3-Hydroxy-2-(hydroxymethyl)-2-methylpropanoic acid
Synonyms:	2,2-Bis(hydroxymethyl)propanoic acid
	α, α-(Hydroxymethyl) propionic acid

APPLICATIONS:	**Polyurethane dispersions**
	Water soluble alkyds and polyesters
	Coatings
	Photochemicals
	Printing inks
	Chemical intermediates

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INTRODUCTION

Dimethylolpropionic acid is trifunctional compound having two primary hydroxyl groups and one tertiary carboxylic group. The carboxylic acid group is less reactive and dimethylolpropionic acid often react as a diol.

The free acid group actively promotes:

- ✓ resin water solubility or water dispersibility after neutralization with a base;
- ✓ easily introduces a polar group to improve coating adhesion and synthetic fibre dye receptivity;
- ✓ increases the alkali solubility of deposited films.

PRODUCT DESCRIPTION

Forrm: white crystalline powder
Particle size: 7 % less than 0,10 mm; 80 % less than 0,25 mm
Melting point: 170 - 180 °C
Flash point: > 150 °C
Water solubility: 120,7 g/l at 20 °C

Specification	Product	
	standard	low sodium
Purity	min. 98,5 % wt	min. 98,5 % wt
Volatile component	max. 1,0 % wt	max. 1,0 % wt
Acid value	min. 412 mg KOH/g	min. 412 mg KOH/g
Hydroxyl value	min. 824 mg KOH/g	min. 824 mg KOH/g
Water content	max. 0,3 % wt	max. 0,3 % wt
Ash content	max. 0,03 % wt	max. 0,03 % wt
Insoluble part - Carbon	max. 20 ppm	max. 20 ppm
Iron content	max. 4 ppm	max. 4 ppm
Sodium content	-	max. 20 ppm

APPLICATIONS

⇨ Polyurethane dispersions are an important class of polymer dispersion that can be used in many applications such as coatings for wood finishing, glass fiber sizing, adhesives, automotive topcoats, and other applications. Dimethylolpropionic acid is often used to provide carboxylate functional group and provide good hydrophilic character for the polyurethane polymer. It is more advantageous to use ***dimethylolpropionic acid with low sodium content***, which provides better quality of dispersions.

⇨ Water-soluble alkyd and polyester resins – dimethylolpropionic acid improved hydrolytic stability, minimal coupling solvent and improved early water spot resistance in air dried resins.

⇨ Powder coating – dimethylolpropionic acid is used as a modifier for improved gloss, impact resistance and flow properties in epoxy-polyester systems and so improves coating flexibility.

⇨ Epoxy ester coating – dimethylolpropionic acid improves cure response or langer strengths and makes resins water soluble.

⇨ Electrodeposition coatings – dimethylolpropionic acid is used as a neutralizing acid for cathodic electrodeposition and as a source of free acid groups in formulating anodic electrodeposition resins.

⇨ Chemical intermediates – as intermediate in the synthesis of pharmaceuticals, perfumes and dyes.

TOXICITY

Dimethylolpropionic acid is essentially nontoxic, value oral, LD_{50} > 2000 mg/kg (rat).
Dimethylolpropionic acid is not irritating to skin. Its dust is irritating to eyes and respiratory system.
Due to coefficient n-octanol/water an accumulation in organismsm is not expected.

SHIPPING, HANDLING AND STORAGE

- Dimethylolpropionic acid is packed in 25 kg paper bags.
- Dimethylolpropionic acid is not regulated as a hazardous material for land, maritime and air transport.
- Dimethylolpropionic acid is hygroscopic at high relative humidities and must be stored and handled to prevent moisture.