

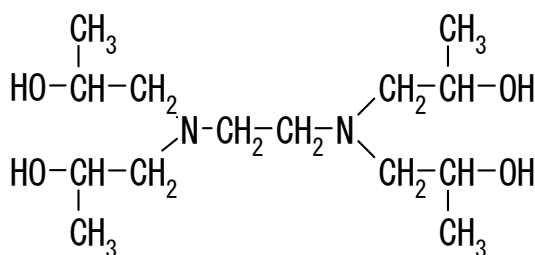
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Date prepared: May/10/2007

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ADEKA CARPOL MD-100

ADEKA CARPOL MD-100 is alkanolamine which is water soluble.



C₁₄H₃₂N₂O₄ : 292.43

Feature

It is clear and viscous liquid with little odor.

It is soluble in water and ethanol. The aqueous solution is mildly alkaline.

It is used to neutralize acid substance. (For example, fatty acid, inorganic acid and organic acid)

Low toxicity.

Application

Cosmetics / Toiletry

Neutralizing carbomer, and anionic surfactant such as fatty acid soap. pH adjuster.

INCI name : TETRAHYDROXYPROPYL ETHYLENDIAMINE

Water-borne lubricant

Rust-proofing, lubricating, emulsifying agent for water-borne oil solution.

Fatty acid salt and phosphate ester salt: Rust-proofing, lubricating, emulsifying and cleaning agent

Rust-proofing agent for coolant and brine.

Adding directly, or used as organic acid salt, boric acid salt or phosphoric acid salt.

1. Properties

Appearance 25°C	Clear liquid
Purity(%)	>99
Density (25/25)	1.033
Kinematic viscosity 25°C	44000 mm ² /sec
Refractive index N ₂₅ /D	1.478
Flash point(°C)	210
Explosion point(°C)	236
Boiling point(°C;10mmHg)	240

Solubility

Solvent	Solubility 1/1(wt/wt)	Solvent	Solubility 1/1(wt/wt)
Water	Soluble	Liquid paraffin	Insoluble
Ethanol	Soluble	Benzene	Insoluble
Glycerin	Soluble	Toluene	Insoluble
Propylene glycol	Soluble	Xylene	Insoluble
Triethanolamine	Soluble	Lard	Insoluble
Oleic acid	Soluble	Mineral oil	Insoluble
Lauric acid	Soluble	Plant oil	Insoluble

Properties of aqueous solution

Concentration	pH	Surface tension (mN/m)
0.01%	9.2	70.2
0.1%	9.8	64.1
1.0%	10.4	55.4

2. Appearance and water solubility of fatty acid salts.

MD-100 can be prepared the soap which is better flowability than that of triethanolamine.
In the hard water, the soap keeps good solubility and formability.

1) Appearance and water solubility of the soap (25°C)

Neutralization ratio : amine/Fattyacid (Nmol/COOHmol)

Fatty acid	Neutralization ratio	Appearance	10%aq		0.5%aq	
			pH	Water solubility	pH	Water solubility
Lauric acid	1.0	○	7.2	△	6.8	△
	1.2	○	7.3	△	6.9	△
	1.4	○	7.4	○	7.0	△
	1.6	○	7.7	○	7.4	△
	1.8	○	7.9	○	7.5	△
TEA	1.0	×	7.6	○	7.6	△
	1.2	×	7.7	○	7.6	△
	1.4	×	7.9	○	7.8	△
	1.6	×	8.1	○	8.0	△
	1.8	×	8.1	○	8.0	○
Miristic acid	Neutralization ratio	Appearance	10%aq		0.5%aq	
			pH	Water solubility	pH	Water solubility
MD-100	1.0	○	7.2	△	7.4	△
	1.2	○	7.2	△	7.5	△
	1.4	○	7.4	△	7.7	△
	1.6	○	7.9	○	7.9	△
	1.8	○	7.9	○	8.1	△
TEA	1.0	×	7.7	△	7.8	△
	1.2	×	7.9	○	7.9	△
	1.4	×	8.0	○	8.0	△
	1.6	×	8.0	○	8.0	△
	1.8	×	8.0	○	8.0	△
Oleic acid	Neutralization ratio	Appearance	10%aq		0.5%aq	
			pH	Water solubility	pH	Water solubility
MD-100	1.0	○	8.1	△	8.1	△
	1.2	○	8.1	△	8.2	△
	1.4	○	8.2	△	8.2	△
	1.6	○	8.2	○	8.2	△
	1.8	○	8.2	○	8.2	△
TEA	1.0	○	8.3	△	8.2	△
	1.2	○	8.4	△	8.3	△
	1.4	○	8.4	△	8.3	△
	1.6	○	8.5	△	8.4	△
	1.8	○	8.5	△	8.4	△

Appearance : ○ liquid, × solid Water solubility : ○ Clear, △ transluence × insoluble

2) Water solubility and foamability in the hard water (40°C)

Neutralization ratio : amine/Fatty acid = 1.6/1 (Nmol/COOHmol)

		0.5%aq		0.5%aq+CaCO ₃ 50ppm	
		Water solubility	Foam height(mm)	Water solubility	Foam height(mm)
MD-100	Lauric acid	△	200	△-×	210
	Myristic acid	○	215	△	210
	Oleic acid	○	170	△	160
TEA	Lauric acid	△	230	×	215
	Myristic acid	○	170	×	130
	Oleic acid	△	160	×	155

Water solubility: ○ Clear, △ transluence × insoluble Foam height: Ross-Miles method(foam height after 5min)