Product information

VESTAMIN® TMD

2,2,4-TRIMETHYL HEXAMETHYLENE DIAMINE
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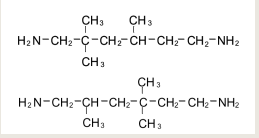

GENERAL DESCRIPTION

VESTAMIN TMD is a branched aliphatic diamine. It is a colorless liquid with approximately equal parts of the 2,2,4- and 2,4,4-trimethyl hexamethylene diamine isomers.

SPECIFICATION

Property	Value	Unit	Test method*
Purity	≥ 99.4	% by wt.	gas chromatography
Appearance	clear liquid	-	visual
Color	max. 15 (APHA)	-	DIN EN ISO 6271
Water content	max. 0.2	% by wt.	Karl-Fischer
Aminonitrile	< 0.15	% by wt.	gas chromatography
Secondary and tertiary amino compounds	< 0.15	% by wt.	gas chromatography
Saturated Primary cyclic diamines	max. 0.3	% by wt.	gas chromatography

PROPERTIES

VESTAMIN TMD is a low viscosity liquid miscible in water in all proportions at ambient temperatures. It is strongly alkaline with a pH value of 11.6 for a 0.1 N solution. VESTAMIN TMD is soluble in a wide range of polar organic solvents including esters and alcohols. VESTAMIN TMD undergoes chemical reactions typical of aliphatic amines, i.e., with phosgene, aldehydes, epoxy resins, organic acids, ketones, etc. The reactivity of the individual isomers does not vary significantly.

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DIN, ISO or ASTM methods describe our analytical procedures in general. The actual methods used internally are more precise and can be obtained upon request.
Modified by using a solution of 30% salicylic acid in methanol under cooling.

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APPLICATION

VESTAMIN TMD shows behavior similar to hexamethylene diamine, but it has unique properties which enable it to be used in many special applications. Typical applications include the production of hardeners for epoxy resin systems and the synthesis of polyamides and polyurethanes. It is also the starting point for synthesis in the field of anti-corrosives, emulsifiers, vulcanization accelerators, pesticides, textile auxiliaries, flotation media, lubrication oil additives, etc.

EPOXY HARDENER

Compared to other short chain aliphatic diamines, VESTAMIN TMD has a longer pot life, without slowing the final cure. Products cured with VESTAMIN TMD are clear and non-yellowing with good flexibility and chemical resistance. It can be used for all types of epoxy resin applications, such as casting resins for electrical use, solvent free and solvent containing lacquers and coatings.

GENERAL CHEMICAL AND PHYSICAL COEFFICIENTS

Property	Value	Unit	Test method
Viscosity	7	mm^2/s	DIN 51 562, OECD 114
Molecular weight	158.3	g/mol	-
Amine value	710	mg KOH/g	DIN 16 945
H-active equivalent	39.6	g/val	
Solidification	- 80*2	°C	OECD 102
Boiling pt (1013 hPa)	236	°C	OECD 103
Vapor pressure (20 °C)	0.04	hPa	OECD 104
Flash point	107	°C	DIN 51758
Relative density, d^{20}	0.87	g/cm^3	OECD 109

TRANSPORT AND PACKAGING

VESTAMIN TMD is supplied in 20 kg non-returnable cans and 180 kg non-returnable drums respectively and in bulk. As a result of the existing exceptional approval to the appendix C/GGVE and GGVS we can also deliver this product to European users in rail tank wagons and road tankers provided, however, that such transport is covered by special bilateral agreement concerning appendix I/RID (CIM) or ADR.

For NAFTA: VESTAMIN TMD is supplied in 44 pound non-returnable cans and 397 pound non-returnable drums.

*1 Mohr´s balance
*2 Internal method
*3 The freezing point varies with isomer content, ranging from -17,7 to +65,4°C

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STORAGE

VESTAMIN TMD is slightly hygroscopic and tends to form carbamates by reaction with atmospheric CO_2. It should be stored free from moisture and carbon dioxide in glass, stainless steel and similar containers. Carbon steel is adequate under normal circumstances but the use of aluminum should be avoided. VESTAMIN TMD is stable for at least one year when stored in original containers at temperatures below 25 °C.

SAFETY AND HANDLING

For information on toxicity and handling, consult our Material Safety Data Sheet for this product.

SPECIAL NOTE

Further information about handling VESTAMIN TMD can be taken from our brochure "VESTAMIN IPD / TMD and V214 - Properties and Handling“ (brochure no. 43.01.065ew).

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