

BIS (PARA-AMINOCYCLOHEXYL) METHANE**GENERAL DESCRIPTION**

VESTAMIN PACM is a cycloaliphatic diamine which is manufactured by hydrogenation of methylene dianiline. It is a mixture of different isomers, and contains approximately 20 % of the trans, trans-PACM. It is a colorless low viscosity liquid with a faint amine odor.

SPECIFICATION

| Property | Value | Unit | Test method* |
|-----------------------|-------------------------------|----------|--------------------|
| Purity | ≥ 99.0 (sum 2-ring amines) | % by wt. | gas chromatography |
| Trans-trans-4,4'-PACM | 18 - 24 | % by wt | gas chromatography |
| Appearance | clear liquid | - | visual |
| Color | max. 30 (APHA) | - | DIN EN ISO 6271 |
| Water content | max. 0.1 | % by wt | Karl-Fischer |

PROPERTIES

VESTAMIN PACM can be used for all typical amine reactions, such as reaction with carboxylic acids, phosgene, aldehydes, ketones and epoxies.

VESTAMIN PACM combines the advantages of cycloaliphatic polyamines in epoxy systems: low mix viscosity, moderate reactivity and lower exothermic behaviour as well as the outstanding mechanical properties and excellent chemical resistance. In comparison to other amines, the sensitivity against carbamate formation is reduced, which is an advantage especially for epoxy hardeners.

APPLICATION

VESTAMIN PACM is used to produce hardeners for room temperature curing epoxies and as hardener in heat cured epoxies. Typical applications include epoxy curatives for composites and industrial floorings, and the production of specialty polyamides.

GENERAL CHEMICAL AND PHYSICAL COEFFICIENTS

| Property | Value | Unit | Test method |
|-----------------------------------|--------------------------------|--------------------|----------------------|
| Viscosity | 29.6 (at 40°C) ² | mm ² /s | DIN 51 562, OECD 114 |
| Molecular weight | 201.3 | g/mol | - |
| Amine value | 535 | mg KOH/g | DIN 16 945 |
| H-active equivalent | 52.6 | g/val | |
| Solidification | (15) ³ | °C | OECD 102 |
| Boiling pt (1013 hPa) | 320 ² | °C | OECD 103 |
| Vapor pressure (20 °C) | ≤ 0.01 | hPa | OECD 104 |
| Flash point | 160 | °C | DIN 51758 |
| Relative density, d ²⁰ | 0.96 | g/cm ³ | OECD 109 |

TRANSPORT AND PACKAGING

VESTAMIN PACM is supplied in 180 kg non-returnable drums in Europe, Middle East and Africa as well as in Asia,
in 192 kg non-returnable drums in North-, Middle- and South America, and also in all regions in bulk.

*1 Mohr's balance

*2 Internal method

*3 The freezing point varies with isomer content, ranging from -17,7 to +65,4°C

STORAGE

VESTAMIN PACM is slightly hygroscopic and tends to form carbamates by reaction with atmospheric CO². It should be stored free from moisture and carbon dioxide in glass, stainless steel and carbon steel containers.

VESTAMIN PACM is stable for at least one year when stored in original containers at temperatures below 25°C.

VESTAMIN PACM crystallizes below 15°C. It is necessary to completely liquify the entire contents of the container by warming to a maximum of 60°C and mix thoroughly before use.

SAFETY AND HANDLING

Please refer to our Safety Data Sheet.

Marl, March 4, 2019; This data sheet replaces all former issues.

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