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More information

EVONIK
POWER TO CREATE

VESTAMIN®

Curing agents for epoxy resin systems

vestamin

**VESTA – Developed in Germany.
Available globally.**

EVONIK
POWER TO CREATE

About us

For more than 50 years Evonik's Business Line Crosslinkers has been the reliable partner and solution provider in the field of isophorone chemistry. With global production sites, we are uniquely placed to satisfy our customers' demands. Our portfolio of VESTA products showcases high performance materials that enhance the quality of our customers' applications.

VESTA – Developed in Germany. Available globally.

VESTAMIN®
products ensure a suitable curing agent for epoxy resin systems, minimizing the risk of wasted time and effort.

Benefits at a glance

- Good chemical resistance
- High mechanical resistance
- Enhanced toughness
- High quality surfaces

The products VESTAMIN® IPD and TMD are aliphatic and cycloaliphatic diamines from isophorone chemistry, complemented by VESTAMIN® PACM based on a different raw material source.
A major use of these products is base amines for the manufacturing of curing agents for use in epoxy resin systems. These diamines are also used as chain extender for PUR systems and as raw material of polyamides. They are colorless liquids with low viscosity and a characteristic weak amine odor.

vestamin
stands for **min**imum risk

PRODUCT RANGE

Product

	Delivery state	Characteristics	Applications
VESTAMIN® IPD	liquid, 100%	Isophorone diamine, cycloaliphatic diamine	Main component for curing agent formulations, cold and heat curing of epoxy resin systems
VESTAMIN® TMD	liquid, 100%	Trimethyl hexamethylene diamine, aliphatic diamine	Main component for curing agent formulations, cold and heat curing of epoxy resin systems
VESTAMIN® PACM	liquid, 100%	4,4'-Diaminodicyclohexylmethane, cycloaliphatic diamine	Main component for curing agent formulations, cold and heat curing of epoxy resin systems

Specification

Property	VESTAMIN® IPD	VESTAMIN® TMD	VESTAMIN® PACM	Unit	Test Method
Purity	≥ 99.7	≥ 99.4	≥ 99.0 (sum 2-ring amines)	% by wt.	gas chromatography
Trans-trans-4,4' - PACM	-	-	17-24	% by wt.	gas chromatography
Appearance	clear liquid	clear liquid	clear liquid	-	visual
Color	max. 15 (APHA)	max. 15 (APHA)	max. 30 (APHA)	-	DIN EN ISO 6271
Water content	max. 0.2	max. 0.2	max. 0.1	% by wt.	Karl Fischer
Aminonitrile	< 0.15	< 0.15	-	% by wt.	gas chromatography
Secondary and tertiary amino compounds	< 0.15	< 0.15	-	% by wt.	gas chromatography
Saturated primary cyclic diamines	-	max.0.3	-	% by wt.	gas chromatography

General chemical and physical coefficients

Property	VESTAMIN® IPD	VESTAMIN® TMD	VESTAMIN® PACM	Unit	Test Method
Viscosity	19	7	29.6 (at 40 °C) *2	mm^2/s	DIN 51 562, OECD 114
Molecular weight	170.3	158.3	210.3	g/mol	-
Amine value	660	710	535	mg KOH/g	DIN 16 945
H-active-equivalent	42.6	39.6	52.6	g/val	-
Solidification	8	- 80 *2	(15) *3	°C	OECD 102
Boiling pt. (1013hPa)	253	236	320 *2	°C	OECD 103
Vapor pressure (20°C)	0.02	0.04	≤ 0.01	hPa	OECD 104
Flash point	117	107	160	°C	DIN 51758
Relative density, d^{20}_4	0.92 *1	0.87	0.96	g/cm^3	OECD 109

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

Packaging, storage, safety and handling

Packaging: VESTAMIN® IPD, TMD and PACM are available in non-returnable drums, non returnable IBCs, cans and road tankers. VESTAMIN® IPD and TMD are also available in rail tank waggons.

Storage: The products are stable for at least one year when stored at temperatures below 25 °C without exposure to light and humidity. They are slightly hygroscopic and tend to form carbamates by reaction with atmospheric CO_2. Therefore it should be stored free from moisture and carbon dioxide. VESTAMIN® IPD and VESTAMIN® PACM tend to crystallize at temperatures below 15 °C. As partial precipitation can cause a change in the isomer ratio of the before mentioned products in the liquid phase, it is necessary to completely liquify the entire contents by warming (max. 60°C) and stirring.

Safety and handling: Please refer to our Safety Data Sheet/Material Safety Data Sheet.

APPLICATIONS

Construction

2K epoxy systems for several application (OEM and repair applications) methods on horizontal and vertical surfaces like chemical plants, power plants, aircraft hangars, parking garages, dairies, hospitals, breweries and other segments of the food processing industry, sewage plants, secondary containment as well as construction adhesives and anchoring

Concrete Coatings

Protective and decorative thin layer application directly onto concrete

2K epoxy systems with special fillers offer
- Low viscosity and good flow
- Good wetting of the substrate
- Wet operations (sprinkling quartz sand onto wet surface) enables different optical effects and non-slip properties

VESTAMIN® provides
- Very good adhesion
- High mechanical resistance
- Very good chemical resistance
- Smooth surface and good optical aspect

Primer

Primer for ordinary and less absorbent concrete and floor surfaces

Suitable 2K epoxy systems offer
- Excellent wetting and penetration into the substrate
- Adaptable reactivity (from slow to fast)
- Processing above 5°C
- Excellent uptake of sprinkled sand (for interlayer adhesion)

VESTAMIN® provides
- Permanent high adhesion strength
- Resistance to alkaline concrete media
- Pore sealing
- Homogenous surface for good adhesion

Repair mortar/grout

Equalizing concrete structure for further flooring layers

Suitable 2K epoxy systems offer
- Low viscosity
- High filler uptake
- Good leveling

VESTAMIN® provides
- Good adhesion to primed surface
- Smooth and equalized surface
- Solid basis for next flooring layer adhesion
- Good mechanical and chemical resistance

Self leveling flooring

Seamless flooring layer for medium duty traffic in warehouses etc

Suitable 2K epoxy systems offer
- Low viscosity
- High filler uptake
- Good leveling and flow properties

VESTAMIN® provides
- Smooth surface
- Surface defect free optical aspect
- Very good chemical resistance
- High mechanical resistance

Mortar floor

Seamless flooring layer for heavy duty traffic in warehouses etc

Suitable 2K epoxy systems offer
- Low viscosity
- Very high filler uptake

VESTAMIN® provides
- Excellent mechanical resistance
- High impact strength
- Very low shrinkage
- Excellent adhesion

Sealer

On top of self leveling or mortar floor in order to provide special surface properties like anti-slip, special color effects or easy cleaning properties

Suitable 2K epoxy systems offer
- Low viscosity (partly solvenborne or waterborne)
- Application in low dry film thickness

VESTAMIN® provides
- Excellent adhesion
- High mechanical resistance
- Good chemical resistance
- Good optical aspect and low yellowing

Adhesive and anchoring systems

Durable connection between concrete and other construction materials

Suitable 2K epoxy systems offer
- Low viscosity
- Good flow and wetting of concrete structures

VESTAMIN® provides
- Good mechanical strength
- Excellent adhesion to concrete substrates
- Frictional bond
- Durability

Crack injection systems

For sealing cracks and frictional bonding of structural concrete structures and containments

Suitable 2K epoxy systems offer
- Low viscosity
- Good flow and wetting of concrete structures
- Fast cure

VESTAMIN® provides
- Good mechanical strength
- Good chemical and alkaline media resistance
- Frictional bond
- Durability

APPLICATIONS

Coatings

Two component epoxy systems for heavy duty corrosion protection on bridges, marine structures, pipes and tanks, chemical plants and water works in form of anticorrosive primers and high build intermediate layers

Suitable 2K epoxy binder formulations offer
- Low viscosity and high solid content
- Adaptable speed of cure (from slow to fast)
- Spray application

VESTAMIN® provides
- Excellent adhesion to metallic substrates
- Very good corrosion protection and durability
- Excellent chemical resistance
- High build capabilities

Composites

Two component epoxy systems for rotor blades in wind energy installations, pipes in chemical processing and marine, leaf springs, pump cases, boat hulls and other marine structures, sport articles like ski, tennis rackets and surf boards, automotive applications and printed circuit boards

Suitable 2K epoxy matrix formulations offer
- Low viscosity
- Adaptable speed of cure (from slow to fast)
- Several application methods

VESTAMIN® provides
- High mechanical strength
- Good temperature resistance performance
- Resistance to impact stress
- Excellent chemical and corrosion resistance

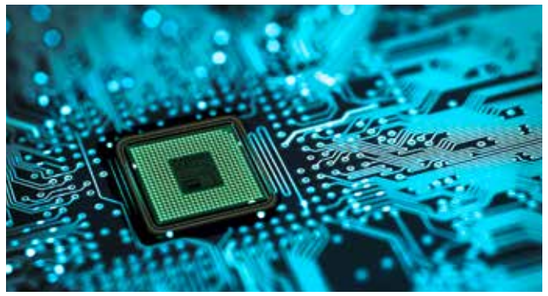
Doming

Two component epoxy systems for print finishing and crystal doming

Suitable 2K epoxy binder formulations offer
- Low viscosity
- Adaptable speed of cure (from slow to fast)
- Low color index

VESTAMIN® provides
- Very good transparency and surface aspect
- Excellent mechanical resistance
- High chemical resistance
- Abrasion resistance

Electrical & Electronics



Two component epoxy systems for encapsulation of electronic circuits and ignition coils, casings and switches

Suitable 2K epoxy binder formulations offer
- Low viscosity
- Adaptable speed of cure (from slow to fast)

VESTAMIN® provides
- High temperature resistance
- High impact strength
- High electrical resistance
- High chemical resistance

Special applications

Polyamides

Amorphous, transparent high performance polyamides for high-voltage switch castings, filter cups for water treatment, metering devices, inspection glasses, flowmeters, liquid-level indicators

Suitable polyamides provide
- Low molding shrinkage
- High viscosity

VESTAMIN® provides
- Crystal-clear optical transparency
- High mechanical stability
- High thermostability
- Good chemical resistance and electrical properties

Chain extenders for PUR systems

PUR dispersions as well as solvent-free and solvent-borne thermoplastic PUR for wood and plastic coatings, printing inks, coatings for leather as well as artificial leather

Suitable PUR dispersions and modified binders provide
- Good compatibility with isocyanate prepolymers
- Good applicability

VESTAMIN® provides
- UV resistance
- Good resistance against hydrolysis
- Flexibility adjustable in a wide range
- Good abrasion resistance