

Products & Applications

VESTAMIN® IPD

VESTAMIN® TMD

VESTAMIN® PACM



vestamin



VESTAMIN® IPD/VESTAMIN® TMD/VESTAMIN® PACM Curing agents for epoxy resin systems

The products VESTAMIN® IPD, VESTAMIN® TMD and VESTAMIN® PACM are aliphatic and cycloaliphatic diamines from isophorone chemistry.

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.

Application Areas

Construction

Industrial floors in chemical plants, power plants, aircraft hangars, parking garages, dairies, breweries, and other segments of the food processing industry

Industrial floors

Mortar consisting of two-component epoxy resin system and colored resin loading

- covering for high-tech requirements
- layers between 4 to 10 mm thick
- highly resistant to mechanical and chemical attack
- moisture proof

Primer for ordinary and less absorbent concrete and floor surfaces

Two-component epoxy resin systems with Low-viscosity, e.g., to improve wetting

- permanent high adhesive strength
- long pot life
- excellent wetting
- can be applied to slightly damp substrates
- pore-sealing
- very good penetrating and hardening effect
- cures quickly
- processes above + 5 °C

Artificial resin floors with layers over 6 mm thick and repair mortar

Low-viscosity, two-component epoxy resin systems for mixing with silica sands

- very high firmness
- high filler content
- shock-resistant
- layers over 6 mm thick

Concrete coatings

Two-component epoxy resin system with special fillers

- high resistant concrete coating
- ideal for wet operations (such as quartz sand strewing operation)
- smooth surface/easy to clean
- resistant to abrasion and chemicals

Protection and repair of concrete (repair systems)

Sewage plants, collection basins, sealing cracks, grouting cracks, anticorrosive repair

Injection resin systems

Two-component epoxy resin systems

- frictional bond
- resistant to alkaline materials
- good mechanical properties
- low viscosity

Adhesives, anchoring compounds, Aircraft construction, construction industry, e.g., in segment construction and anchorings

Two-component frictional epoxy-based bonding coat (old concrete and new concrete)

- frictional bond
- resistant to alkaline media
- good mechanical properties

Composites

Rotor blades for wind mills, pipes, high-performance boats, leaf springs, pump cases, semi-finished products, sport articles, formula 1 motor racing, printed circuit boards

Two-component epoxy resin systems

- high mechanical strength
- improved mechanical properties
- good temperature performance
- resistant to impact stress
- hot-water resistant
- resistant to chemicals
- good corrosion resistance



Coatings

Systems for heavy corrosion protection, Chemical plants, shipbuilding, bridges, scaffolding, steel pipes, tanks, „off-shore“ sector, water works such as locks

Anticorrosive primer and intermediate coat

Two-component epoxy resin primer that can be used in combination, e.g., with PUR top coats

- excellent chemical resistance
- high density
- salt-waterproof
- ideal for wastewater management and steel waterworks

Heavy corrosion protection in thick layers

Two-component epoxy system that can be used in combination, e.g., with PUR top coats

- excellent chemical resistance
- high solid density
- salt-waterproof
- ideal for wastewater management and steel water works

Doming

Two-component epoxy resin systems for print finishing

- good mechanical properties
- excellent chemical resistance
- resistant to abrasion

Electrical&Electronics

Filling compounds for the electrical industry
Encapsulation of electronic circuits and ignition coils, casings, switches

Two-component epoxy resin systems

- high temperature resistance
- high impact strength
- high electrical resistance

Special Applications

Polyamides

high-voltage switch casings, filter cups for water treatment, metering devices, inspection glasses, flowmeters, liquid-level indicators

Amorphous, transparent high performance plastics

- crystal-clear, optical transparency
- high mechanical stability
- high thermostability
- high viscosity
- good chemical resistance compared to other plastics
- good electrical properties
- low molding shrinkage

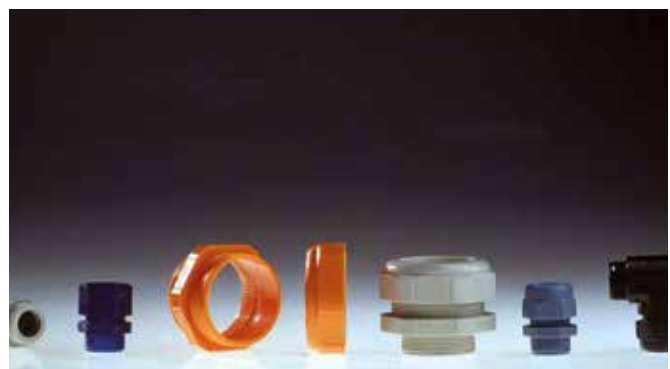
Chain extender for PUR systems

wood paints, plastic paints, industrial paints, printing inks, coating for leather and artificial leather

PUR dispersions for coating of wood and plastics.

Solvent-free and solvent-borne thermoplastic PUR

- UV resistant
- good compatible with isocyanate prepolymers
- good resistance against hydrolysis
- flexibility adjustable in a wide 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 resins 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 (20°C)	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 ₄ ²⁰	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 CO₂. 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.

Evonik Corporation

Business Line Crosslinkers
299, Jefferson Road
Parsippany, NJ 07054
USA

PHONE +1 973 929-8000

FAX +1 973 929-8460

vesta@evonik.com

www.evonik.com/crosslinkers

Evonik Speciality Chemicals Co., Ltd.

Business Line Crosslinkers
55, Chundong Road
Xinzhuang Industry Park
Shanghai, 201108
PR China

PHONE +86 21 6119-1000

FAX +86 21 6119-1168

vesta@evonik.com

www.evonik.cn/crosslinkers

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EVONIK
INDUSTRIES

Evonik Resource Efficiency GmbH

Business Line Crosslinkers
Paul-Baumann-Straße 1
45764 Marl
Germany

PHONE +49 2365 49-9011

FAX +49 2365 49-5030

vesta@evonik.com

www.evonik.com/crosslinkers

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