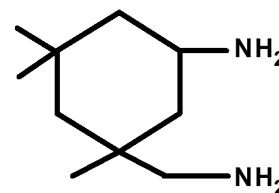


## VESTAMIN® IPD

Isophorone diamine

3-Aminomethyl-3,5,5-trimethylcyclohexylamine



43.13.007ew / 05.14

### General description

VESTAMIN IPD is a cycloaliphatic diamine, based on isophorone chemistry. It is a mixture of two stereo-isomers of 3-aminomethyl-3,5,5-trimethylcyclohexylamine, and is a colorless low viscosity liquid with a faint amine odor.

### Specification

Property	Value	Unit	Test method*
Color (APHA)	max. 15	-	DIN ISO 6271, ASTM D1209
Appearance	clear liquid	-	visual
Water content	max. 0.2	% by wt.	Karl-Fischer**
Purity	at least 99.7	% by wt.	gas chromatography
Aminonitrile	< 0.15	% by wt.	gas chromatography
Secondary and tertiary amino compounds	< 0.15	% by wt.	gas chromatography

\* 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.

### Properties

VESTAMIN IPD can be used in all typical amine reactions, such as reaction with carboxylic acid, phosgene, aldehydes, ketones and epoxies. It is miscible in all proportions at room temperature with a wide range of compounds such as water, alcohols, esters, ethers, ketones as well as many aliphatic, aromatic and halogenated hydrocarbons.

VESTAMIN IPD is a diamine with a special structure due to the multiple alkyl substituted cyclohexane ring, amino groups with different reactivity and cis-trans configuration. When compared to other commercially available amines, differences become apparent in the properties of its derivatives and polymer compounds.

## Application

VESTAMIN IPD is used to produce hardeners for solventless, room temperature curing epoxies and as a hardener in heat cured epoxies.

Hardeners based on VESTAMIN IPD have low viscosity, low tendency to form carbamates, and humidity resistance. Epoxy systems cured with VESTAMIN IPD based hardeners exhibit excellent chemical resistance, high heat distortion temperatures, and color stability. VESTAMIN IPD has large application in epoxy-based self-leveling and trowelable flooring systems, and various civil engineering applications such as paving, concrete protection and repair. Other applications include coatings for superior corrosion protection of metal, adhesives and anchoring compounds.

VESTAMIN IPD has many other uses based on amine chemistry, such as the production of non-crystalline specialty polyamides with high hardness and optical transparency. It also is used as a chain extender in polyurethanes and as an intermediate in dyes.

## General physical data

Property	Value	Unit	Test method
Molecular weight $C_{10}H_{22}N_2$	170.3	g/mol	
Equivalent weight	85.2	g/val	
H-active equivalent weight	42.6	g/val	
Density at 20 °C	0.920-0.925	g/cm <sup>3</sup>	DIN 51 757, ASTM D 2111
Boiling point at 1013 hPa	247	°C	DIN 53 171
Vapor pressure at 50 °C	< 1	hPa	
Viscosity at 23 °C	16	mm <sup>2</sup> /s	DIN 51 562
Viscosity at 20 °C	approx. 18	mPa s	DIN EN ISO 3219 (Brookfield)
Melting point	10	°C	ISO 1392
Flash point	117	°C	DIN EN 22 719

## Transport and Packaging

Europe: VESTAMIN IPD is supplied in 25 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.

NAFTA: VESTAMIN IPD is supplied in 7.7 and 35 pound non-returnable cans, 397 pound non-returnable drums, and 2000 pound returnable totes. It is also available in bulk.

Asia: VESTAMIN IPD is supplied in 180 kg non-returnable steel drums as well as in road tankers.

## Storage

VESTAMIN IPD is slightly hygroscopic and tends to form carbamates by reaction with atmospheric CO<sub>2</sub>. 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 IPD is stable for at least one year when stored in original containers at temperatures below 25 °C.

VESTAMIN IPD 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

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

## Special Note

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

---

<b>Evonik Resource Efficiency GmbH</b>	<b>Evonik Corporation</b>	<b>Evonik Speciality Chemicals Co., Ltd.</b>
Paul-Baumann-Str. 1	Reource Efficiency	55, Chundong Road
45764 Marl	299 Jefferson Road	Xinzhuang Industry Park
Germany	Parsippany, NJ 07054-0677, USA	Shanghai, 201108, PR China
PHONE +49 2365 49-02	PHONE +1 973 929-8000	PHONE +86 21 6119-1000
FAX +49 2365 49-5030	FAX +1 973 929-8460	FAX +86 21 6119-1168
<a href="http://www.evonik.com/crosslinkers">www.evonik.com/crosslinkers</a>	<a href="http://www.evonik.com/crosslinkers">www.evonik.com/crosslinkers</a>	<a href="http://www.evonik.cn/crosslinkers">www.evonik.cn/crosslinkers</a>
<a href="http://www.evonik.com/coatings">www.evonik.com/coatings</a>	<a href="http://www.evonik.com/coatings">www.evonik.com/coatings</a>	<a href="http://www.evonik.com/coatings">www.evonik.com/coatings</a>
E-MAIL <a href="mailto:vesta@evonik.com">vesta@evonik.com</a>	E-MAIL <a href="mailto:vesta@evonik.com">vesta@evonik.com</a>	E-MAIL <a href="mailto:vesta@evonik.com">vesta@evonik.com</a>

Replaces leaflet 43.13.007e / 05.07 and all former issues  
Marl, May 5, 2014

VESTAMIN® is a registered trademark of Evonik Industries AG or one of its subsidiaries

This information and all further technical advice are based on our present knowledge and experience. However, it implies no liability or other legal responsibility on our part, including with regard to existing third party intellectual property rights, especially patent rights. In particular, no warranty, whether express or implied, or guarantee of product properties in the legal sense is intended or implied. We reserve the right to make any changes according to technological progress or further developments. The customer is not released from the obligation to conduct careful inspection and testing of incoming goods. Performance of the product described herein should be verified by testing, which should be carried out only by qualified experts in the sole responsibility of a customer. Reference to trade names used by other companies is neither a recommendation, nor does it imply that similar products could not be used