

VESTAGON® BF 1540

Crosslinking agent for polyurethane powder coatings

43.13.067e / 12.13

General description

VESTAGON BF 1540 is a polyisocyanate adduct used in combination with hydroxy functional resins. Because of an internal blocking mechanism, the product retains its processing stability up to the splitting temperature of approximately 160 °C. The crosslinker is delivered in the form of shaped flakes.

Specification

Property	Value	Unit	Test method
NCO content (total)	15.2 – 17.0	% wt	according to DIN EN ISO 11 909
NCO content (free)	< 1	% wt	DIN EN ISO 11 909
Glass transition temperature	78 - 90	°C	DSC
Colour index	< 600	Hazen	DIN EN ISO 6271

Typical properties

NCO-equivalent	~ 275	g/Eq	-
Density	1.07	g/cm ³	DIN EN ISO 1183
Bulk density	~ 570	kg/m ³	DIN EN ISO 60
Melting range	93 - 112	°C	DIN EN ISO 3146
Flashpoint	> 150	°C	DIN EN ISO 2592
Ignition temperature	450	°C	DIN 51 794

Application

Numerous OH-terminated polyester and acrylics can be used to achieve weather-resistant decorative powder coatings with excellent physical properties. These polyols have a determining influence on the performance of the coating.

Formulation

Crosslinker and polyester are used in equivalent amounts. Empirically determined “under indexing” (up to NCO:OH = 0.8 : 1) yields economical coatings which exhibit excellent physical properties meeting the required performance profile.

Examples of formulation for binder combinations

Crosslinking ratio (NCO:OH)	1 : 1		0.8 : 1		
VESTAGON BF 1540	13	20	11	17	parts
Polyol (OH number 30)	87	-	89	-	parts
Polyol (OH number 50)	-	80	-	83	parts

Up to 1 % by weight degasser is often used in pigmented powder coatings to minimize surface imperfections.

The use of a catalyst to accelerate the formation of urethane bonds is recommended. Dibutyltindilaurate (DBTL) has been proven to be a useful accelerator. The maximum suggested use level is 0.15 % by weight based on the total formulation.

Curing

The curing temperature for PUR powder coatings based on VESTAGON BF 1540 lies above the splitting temperature of about 160 °C. A prerequisite for good physical properties of a coating is sufficient curing in the range of 170 °C, 25 minutes up to 210 °C, 8 minutes total oven time, according to the following standard procedures.

- Premixing: MTI-Mixer 2' - 500 rpm
- Extrusion: W&P ZSK 30 90 °C - 250 rpm
- Application: Manual spray gun 80 kV; steel panels 0.8 mm
- Curing: Air-circulated Heraeus oven; coating thickness 55-75 µm

Special Notice

The extrusion temperature must be selected to ensure that a mass temperature of minimum 130 °C is maintained. Otherwise, inadequate dispersion may result in reduced gloss and mechanical properties of the coatings.

Applications for Polyurethane Powder Coatings

PUR powder coatings have been successfully used for many years in both exterior and interior applications such as:

- motor vehicle parts
- fittings
- bicycle frames
- fork lift trucks
- exterior furniture and lawn equipment
- agricultural machinery
- appliances
- telephone booths

Storage and Packaging

The product is delivered in flat bags, net weight 20 kg. If kept cool (0 - 40 °C) and dry in closed bags the product can be stored for at least 1 year in accordance to the specification. All opened bags should be carefully resealed immediately after use.

Safety and Handling

Please refer to our Safety Data Sheet.

Evonik Resource Efficiency GmbH	Evonik Corporation	Evonik Speciality Chemicals Co., Ltd.
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
www.evonik.com/crosslinkers	www.evonik.com/crosslinkers	www.evonik.cn/crosslinkers
www.evonik.com/coatings	www.evonik.com/coatings	www.evonik.com/coatings
E-MAIL vesta@evonik.com	E-MAIL vesta@evonik.com	E-MAIL vesta@evonik.com

Replaces leaflet 43.13.067e / 10.00 and all former issues
Marl, December 10, 2013

VESTAGON® 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