

VESTAGON® EP-BF 1350*

Crosslinking agent for polyurethane powder coatings

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General description

VESTAGON EP-BF 1350 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 fine granules.

Specification

Property	Value	Unit	Test method
NCO content (latent)	12.5 - 14.0	% wt	according to DIN EN ISO 11 909
NCO content (free)	< 0.3	% wt	DIN EN ISO 11 909
Glass transition temperature	≥ 55	°C	DSC
Colour index	≤ 600	–	DIN ISO 6271

Typical properties

NCO-equivalent	~ 325	g/Eq	–
Density	1.09	g/cm ³	DIN 53 479
Bulk density	~ 560	kg/m ³	DIN 53 466
Melting range	80 - 115	°C	DIN 53 736
Flashpoint	238	°C	ISO 2592
Ignition temperature	400	°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.

In combination with suitable polyols this crosslinker produces a significant better smoothness of the coatings, especially in systems containing a high binder part. The typical storage stability of these powder coatings may be partly restricted.

*EP = Experimental Product

Formulations

Crosslinker and polyester are used in equivalent amounts. Empirically determined "under indexing" should be used only if the physical and chemical coating properties meet the required performance profile.

Examples of formulation for binder combinations

Crosslinking ratio (NCO:OH)	1 : 1		
VESTAGON EP-BF 1350	22	34	parts
Polyol (OH number 50)	78	-	parts
Polyol (OH number 90)	-	66	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 EP-BF 1350 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, 20 minutes up to 210 °C, 5 minutes total oven time, according to the following standard procedures.

- Premixing: MTI-Mixer 2' - 500 rpm
- Application: Manual spray gun 80 kV; steel panels 0.8 mm
- Curing: Air-circulated Heraeus oven; coating thickness 55-75 µm

Extrusion Conditions

We recommend the extrusion conditions as follows:

Buss PLK 46

Barrel temperatures: Zone 1 + 2 - 120 °C

Screw temperature: cooled

Screw speed: 16 r.p.m.

Werner & Pfleiderer

Barrel temperatures: Zone 1+2 - 90 °C

Screw speed: 250 r.p.m.

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.

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