

Technical Information

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® = Registered trademark of
BASF Aktiengesellschaft

Luwax[®] EVA 3 Powder/ Luwax[®] EVA 3 Granules

Copolymeric polyethylene wax based on ethylene/vinylacetate

For pigment concentrates, masterbatch and hotmelts

Chemical nature

Polyethylene wax based on a polar ethylene/vinylacetate copolymer

Properties

Luwax[®] EVA 3 Powder/Granules exists in the form of a white, transparent powder or granules.

	Test methods		
	DIN	ASTM	
Melting point (DSC)	51007	D-3418	93–98 °C
Recrystallization point (DSC)	51007		80–88 °C
Dropping point (Ubbelohde)	51801	D-3954	98–104 °C
Penetrometer number (23 °C)	51579	D-1321	2–3.5 dmm
Melt viscosity (120 °C)	51562	D-2162	1200–1500 mm ² /s
Density (23 °C)	53479	D-792	0.935–0.955 g/cm ³
VAc content	(IR spectrum)		13–15 wt %

The above information is correct at the time of going to press. It does not necessarily form part of the product specification.

A detailed product specification is available from your local BASF representative.

Storage

Luwax[®] EVA 3 Powder/Granules has an unlimited shelf life in its original packaging, provided it is stored correctly in a dry place. The packaging needs to be inspected occasionally to ensure that it is still intact.

Solubility

Luwax[®] EVA 3 Powder/Granules is insoluble or only very sparingly soluble in all conventional organic solvents at room temperature. It is soluble at elevated temperatures in aliphatic, aromatic and chlorinated hydrocarbons and most other solvents that are not too polar.

Miscibility

Luwax[®] EVA 3 Powder/Granules can be blended with many other types of waxes, resins and polymers simply by melting them and then stirring or kneading them together.

Paraffin wax blended with Luwax[®] EVA 3 Powder/Granules is a typical example; the solidification point, dropping point and hardness increase, but there is only a slight change in the melt viscosity. At the same time, the wax blends become increasingly more polar, more finely crystallized and less brittle, i. e. more elastic. Their surface adhesion also increases.

Applications

Luwax[®] EVA 3 Powder/Granules is distinguished by a number of properties which enable it to be used for a variety of applications. Two of these applications are described in greater detail below.

A distinction needs to be made between Luwax[®] EVA 3 Powder/Granules and ethylene-vinylacetate polymers. These polymers are resins rather than waxes, because they have a higher molar mass and they contain a higher proportion of vinylacetate. The vinylacetate contained in Luwax[®] EVA 3 Powder/Granules means that the polarity, flexibility and crystallization behaviour of the wax are different to those of ethylene homopolymer waxes.

Masterbatch

Luwax® EVA 3 Powder is fairly polar unlike ethylene homopolymer waxes, which are completely non-polar. Masterbatches with a much higher pigment content can be obtained by dispersing the pigments with Luwax® EVA 1 Granules instead of ethylene homopolymer waxes. Luwax® EVA 3 Powder has a low melt viscosity and this, combined with the pronounced wetting and dispersing action of the wax, ensures that the pigments can be dispersed homogeneously in high concentrations in masterbatches and in the finished mouldings.

Luwax® EVA 3 Powder is especially effective for dispersing carbon black. The wax has a very high affinity for this type of pigment, and very highly concentrated pigment dispersions can be produced. Carbon-black masterbatches can be produced for a wide variety of plastics, including polyethylene, polypropylene, PVC, polystyrene, polyamide, polycarbonate and polyurethane.

The following is a typical formulation for a carbon-black masterbatch for use in polyethylene and polypropylene.

15 % Luwax® EVA 3 Powder
30 % carbon black (e. g. Degussa Printex 60)
55 % injection-moulding LDPE in powder form
(e. g. Lupolen® 1800 S)

The first step is to mix the carbon black and the powder-grade LDPE before adding the granular components. The masterbatch can then be extruded as usual.

Other coloured pigments can be formulated in a similar way.

Luwax® EVA 3 Powder is compatible with most thermoplastics. For this reason concentrates consisting only of pigment (especially carbon black) and wax are suitable as universal colouring agents for numerous melt processable polymers.

Hotmelts

Luwax® EVA 3 Powder/Granules is also suitable as a component in hotmelts:

- to control melt viscosity
- to improve flexibility
- to improve resistance to fats and aromatic substances
- to improve adhesion
- to improve gloss

The most important applications for Luwax® EVA 3 Powder/Granules are in hot-melt coatings for paper and board, especially food packaging.

Thermal stability

The high thermal stability of Luwax® EVA 3 Powder/Granules is a very important feature in hot-melt coatings, pigment masterbatches and other products that are subjected to high temperatures. The thermal stability of Luwax® EVA 3 Powder/Granules is at least as good as that of the LDPE homopolymer waxes with a similar molar mass, such as Luwax® A Granules or Luwax® A Powder, in spite of the presence of polar ester groups.

Food law requirements

Luwax® EVA 3 Powder/Granules meets the requirements of the following FDA regulations in terms of its composition:

FDA regulations 21 CFR

- 175.105 Components of food packaging adhesives
- 175.300 Resinous and polymeric coatings
- 176.180 Components of paper and paperboard in contact with dry foods
- 177.1200 Cellophane
- 177.1210 Closures with sealing gaskets for food containers
- 177.1350 Ethylene-Vinylacetate copolymers

Safety

We know of no ill effects that could have resulted from using Luwax EVA 3 Powder/Granules for the purpose for which it is intended and from processing it in accordance with current practice.

According to the experience we have gained over many years and other information at our disposal, Luwax EVA 3 Powder/Granules does not exert any harmful effects on health, provided that it is used properly, due attention is given to the precautions necessary for handling chemicals, and the information and advice given in our safety data sheets are observed.

Note

The data contained in this publication are based on our current knowledge and experience. In view of the many factors that may affect processing and application of our product, these data do not relieve processors from carrying out their own investigations and tests; neither do these data imply any guarantee of certain properties, nor the suitability of the product for a specific purpose. Any descriptions, drawings, photographs, data, proportions, weights etc. given herein may change without prior information and do not constitute the agreed contractual quality of the product. It is the responsibility of the recipient of our products to ensure that any proprietary rights and existing laws and legislation are observed.

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