

Luwax[®] EVA 3

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BASF Aktiengesellschaft

Ethylene-vinyl acetate copolymer

Luwax EVA 3

Chemical nature

Ethylene vinyl-acetate copolymer

Properties

Luwax EVA 3 is supplied in the form of white, transparent powder or granules.

		Test method		
		DIN	ASTM	
Melting point	(DSC)	51007		93 – 98 °C
Recrystallisation point	(DSC)	51007		92 – 97 °C
Dropping point	Ubbelohde	51801	D-566	98 – 104 °C
Penetrometer value	(23 °C)	51579	D-1321	1 – 2 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 %

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

The shelf life of Luwax EVA 3 is virtually unlimited, provided it is stored properly in its original packaging.

Solubility

Luwax EVA 3 is insoluble or only very sparingly soluble in all conventional organic solvents at room temperature. It is soluble in aliphatic, aromatic and chlorinated hydrocarbons at elevated temperatures.

Applications

Luwax EVA 3 is very versatile. It can be considered as being essentially a polyethylene wax with a molar mass typical for this group of substances, but because it contains vinyl acetate, it is more polar, more elastic and more finely crystalline than ethylene homopolymers. Luwax EVA 3 cannot be considered as being a true EVA polymer, as these are resins rather than waxes: they have a much higher molar mass and a higher vinyl acetate content.

Miscibility

Homogenous blends can be prepared with many types of resins, polymers and other waxes simply by melting the various components and stirring or kneading them together.

Paraffin wax is a typical example. It has a higher setting point, a higher dropping point and greater hardness when blended with Luwax EVA 3, but its melt viscosity is hardly affected. Blends of this type are more polar, more finely crystalline, more elastic and thus less brittle. Their ability to adhere to solid surfaces also increases.

Masterbatches

By using the relatively polar Luwax EVA 3 instead of the non-polar homopolymer PE waxes, it is possible to produce masterbatches with very polar pigments like carbon black. The good wetting and excellent dispersing effect of Luwax EVA 3, which has a relatively low melt viscosity, leads to homogenous dispersion of the pigments with high colour strength.

Luwax EVA 3 is especially effective in dispersing carbon black. It has a very high affinity for this type of pigment and its high wetting power enables very highly concentrated dispersions to be produced. Masterbatches for PE, PP, PVC, polystyrene, nylon, polycarbonate, polyurethane and many other plastics can be prepared. The following example is a formulation of a pigment masterbatch for polyethylene and polypropylene:

15 % Luwax EVA 3
30 % Carbon black (e.g. Degussa Printex 60)
30 % LDPE moulding compound in powder form (e.g. Lupolen® 1800 SP 15)
25 % LDPE moulding compound in granular form (e.g. Lupolen 1800)

The first step is to mix the carbon black and powder-grade LDPE, and then to add the granular components. The masterbatch is then extruded as usual.

Other highly polar pigments are easy to disperse with Luwax EVA 3.

Luwax EVA 3 is compatible with most thermoplastics. Universal masterbatches consisting of pigments and waxes can be used to colour different plastics.

Hot melts

Luwax EVA 3 provides the following effects in hot-melt coatings and adhesives:

- Controlled melt viscosity
- Improved flexibility
- Less permeability to fats and aromatic substances
- Greater adhesion
- Higher gloss

The most important area of application for Luwax EVA 3 is in hot-melt coatings for paper and card, especially for food packaging.

Thermal stability

Luwax EVA 3's high thermal stability is very important in hot-melts, pigment masterbatches and other products that are subjected to high temperatures. Its thermal stability is at least as good as that of LDPE homopolymer waxes with a comparable molar mass, such as Luwax A, even though Luwax EVA 3 contains polar ester groups. This can be seen from the results of the thermogravimetric analysis (TGA).

Food-contact applications

The composition of Luwax EVA 3 fulfils the requirements of the following FDA regulations:

FDA-Regulations 21 CFR

- 175.105 Components of food packaging adhesives
- 175.300 Resinous and polymeric coatings
- 176.170 Components of paper and paperboard in contact with aqueous and fatty foods
- 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-vinyl acetate copolymers

Safety

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

According to the experience that we have gained over many years and other information at our disposal, Luwax EVA 3 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 Sheet are observed.

Note

The information submitted in this publication is based on our current knowledge and experience. In view of the many factors that may affect processing and application, these data do not relieve processors of the responsibility of carrying out their own tests and experiments; neither do they imply any legally binding assurance of certain properties or of suitability for a specific purpose. It is the responsibility of those to whom we supply our products to ensure that any proprietary rights and existing laws and legislation are observed.

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