

Laromer[®] LR 9013

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Laromer LR 9013 is a universal dispersing resin for radiation curable printing inks as well as pigment concentrates. In radiation curable coatings for paper, wood and wood-based materials, penetration into the substrate can be reduced. The low shrinkage has an positive influence on adhesion.

Laromer LR 9013

Nature Acrylic resin, unsaturated, modified

Properties

Physical form	High viscous liquid		
Product specification	Viscosity at 23 °C (DIN EN ISO 3219 shear gradient $D = 50 \text{ s}^{-1}$)	Pa s	35 – 60
	Acid value (DIN 53402)	mg KOH/g	max. 5
	Iodine colour (DIN 6162)		max. 5
Other properties	Flash point (ISO 2719, DIN 51758)	°C	> 100
	Mass density at 20 °C (ISO 2811, DIN 53217)	g/cm ³	ca. 1.1
Solubility/Diluent tolerance	Laromer LR 9013 is soluble in all common paint solvents with the exception of aliphatic hydrocarbons. In the production of low-viscous radiation-curable lacquers and printing inks, it can be diluted with monomers such as tripropyleneglycol diacrylate, with low viscous oligomers like Laromer PO 33 F, Laromer PO 43 F, Laromer PO 94 F, Laromer LR 8889, or with esters, ketones and aromatic hydrocarbons. For production of higher viscous printing inks, Laromer LR 9013 can be mixed with epoxy- or polyesteracrylates, like Laromer LR 8986, Laromer PE 56 F or Laromer LR 9004.		
Compatibility	Laromer LR 9013 is compatible with most reactive acrylic resins, e. g. with other Laromer resins.		

Application

Laromer LR 9013 is a modified unsaturated acrylate especially for pigment dispersion in the production of UV- and EB curing inks, for offset-, Toray-, flexo- and screen printing. In radiation curing lacquers and inks for paper, wood and wood-based materials, penetration to the substrate can be reduced.

Printing inks based on Laromer LR 9013 show a very low yield value, even at high pigmentation, high gloss, low odour, and excellent printability, both in offset and flexo printing. UV-offset inks, which are prepared with Laromer LR 9013 show a high water tolerance (ink-water-balance). Coatings and inks based on Laromer LR 9013 can be used for application on paper, plastic films, metal, wood and wood based materials. The outstanding wetting ability as well as the low shrinkage promote the adhesion to the substrate.

Processing

Laromer LR 9013 can be further diluted for application. Low volatility monomers are suitable for that purpose, e. g. monofunctional, difunctional or trifunctional acrylates. Since the monomers are incorporated in the coating, they affect its properties. Monofunctional acrylates are used to reach a increased flexibility, difunctional ones show less influence on hardness and flexibility. Trifunctional acrylates increase the hardness of the cured coating. If sufficient room is available for flash-off, Laromer LR 9013 can also be diluted with inert solvents, but they must be completely removed from the coating before it is exposed to radiation.

Before Laromer LR 9013 is cured by ultra-violet radiation, a photoinitiator has to be added. Suitable initiators are Lucirin® TPO, Lucirin® TPO-L, Darocur 1173, Irgacure 184, Quantacure ITX, (Irgacure, Darocur and Quantacure are reg. trademarks of Ciba-Geigy), Esacure KIP100F, Esacure TZT (Esacure is a reg. trademark of Lamberti, Italy) and benzophenone.

The proportion depends on the reactivity required and varies between 2 and 10%.

To increase reactivity especially in thin films, a tertiary amine, like methyl-diethanolamine, or a amine synergist, like Laromer LR 8956, can be added to the formulation.

Great care must be taken to check that the amine in this mixture does not enter into an interaction with the substrate or with the pigment.

Manufacturers must carry out their own trials for developing lacquers based on Laromer LR 9013, as its compatibility with other components, its storage stability, its adhesion to and reactivity on different substrates etc. are affected by a large number of factors, which we cannot cover exhaustively in our own trials.

Safety

General

The normal precautions relating to handling chemicals must be observed. If significant amounts are processed, the place of work must be well ventilated, skin care measures must be adopted, and safety goggles must be worn. Local legislation on industrial hygiene must be observed.

Safety Data Sheet

All relevant questions are dealt with in the Safety Data Sheet that has been compiled for Laromer LR 9013.

Industrial hygiene

Laromer LR 9013 is not a skin irritant, but is frequently formulated together with monomers that irritate the skin. For this reason, the safety precautions relating to handling acrylic monomers must be observed in processing. In particular, gloves and safety goggles must be worn to avoid contact with the skin and mucous membranes. Contaminated clothing must be changed immediately.

Any resin or lacquer that comes in contact with the skin must be washed off immediately with plenty of soap and water. Any splashes in the eyes or on the mucous membranes must be washed off immediately, and flushing must be continued for fifteen minutes. Afterwards, medical advice should be sought.

Labelling

Labelling information can be found in the Safety Data Sheet.

Storage

Laromer LR 9013 must be stored in a cool, dark place at temperatures below 30 °C. Under these conditions, its shelf life in closed container is six months.

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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