Technical Information

Coating Raw Materials

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Lutonal® A grades

Coating Raw Materials File, Part 1, Section 4

Saponification-resistant soft resins for increasing the adhesion and flexibility of printing inks and of cellulose nitrate and resin coatings

Dispersions

BASF

Chemical nature	Polyvinylethyl ethers of different molar mass

Properties

Lutonal A 25

Physical form	Soft resin		
Product specification	Non-volatile components (EN ISO 3251)	%	> 90
	Viscosity at 23 °C (EN ISO 3219, shear rate 100 s^{-1})	mPa·s	2,500 – 6,000
	Iodine colour (DIN 6162)		≤ 15
Further properties	K value (in a 5 % m/vol. solution in tetrahydrofuran, based on ISO 1628-1)		10 – 17
	Density at 20 °C (ISO 2811)	g/cm^3	approx. 0.96
	Flash point (ISO 1523)	°C	approx. 63 °C
	Glass transition temperature T_g (DSC)	°C	approx. – 43

Lutonal A 50 approx. 50 % in ethanol

Physical form	Resin solution		
Product specification	Non-volatile components (EN ISO 3251)	%	50 ± 2
	Viscosity at 23 °C (EN ISO 3219, shear rate 25 s^{-1})	mPa·s	5,000 – 20,000
	Iodine colour (DIN 6162)		≤ 4
	K value (in a 1% m/vol. solution in tetrahydrofuran, based on ISO 1628-1)		55 – 65
Further properties	Density at 20 °C (ISO 2811)	g/cm^3	approx. 0.87
	Flash point (ISO 1523)	°C	approx. 9 °C
	Glass transition temperature T_g (DSC)	°C	approx. – 30

Traces of insoluble matter may be present. These can be removed only from highly diluted solutions by filtration.

Solubility

The Lutonal A grades are soluble in alcohols, esters, ketones and in aliphatic, aromatic and chlorinated hydrocarbons.

Compatibility

The Lutonal A grades are homogeneously miscible with hard resins (modified and non-modified natural resins, Laropal® K 80 and Laropal A 81), cellulose nitrate, Acronal® 4 F, Acronal 700 L, plasticizers (the Palatinol® grades).

Resistance towards

Acids

Diluted mineral acids and organic acids do not attack the Lutonal A grades. More concentrated mineral acids cause crosslinking or degradation. As with acidic resins, these can give rise to a red-brown discoloration.

Alkalis

Lutonal A 25 and A 50 are not attacked by alkalis.

Light

Solutions should be protected from light. Prolonged exposure to light can reduce the viscosity of solutions of Lutonal A 50.

Heat

Prolonged exposure to temperatures exceeding 80 °C can adversely affect the Lutonal A grades, unless a stabiliser has been added.

Application

Lutonal A 25 and A 50 differ only in their degree of polymerisation, and thus in their viscosity. Their main use is as plasticizing soft resins for cellulose nitrate coatings. Their soft resin character also improves the adhesion of such coatings.

In the manufacture of paints that contain less Lutonal A than cellulose nitrate, it is necessary to add a genuine gelling agent for cellulose nitrate, e.g. a phthalate. Formulations that contain more Lutonal A than cellulose nitrate, on the other hand, do not require any additional plasticizer. The solvent mixture used in the paint should contain 25 – 40 % ethanol, while the proportion of low-volatility solvents should be kept as small as possible, otherwise the layers of paint dry too slowly and remain tacky.

Lutonal A is also used to manufacture so-called resin paints based on natural and synthetic resins (gum dammar, ester resins, lime resin, maleate resin, ketone resin or phenol-containing rosin).

The Lutonal A grades can be added to printing inks for packaging to improve their adhesion to aluminium foil and cellophane in flexographic and intaglio printing.

Processing

The viscosity of solutions of the Lutonal A grades depends on their solids content and on the solvent. For the same concentration, the viscosity obtained with different types of solvent increases in the following order: esters, aromatic solvents, alcohols, chlorinated hydrocarbons. Lutonal A 25, which contains no solvent, can only be dissolved in a reasonable time in a pug mill.

Manufacturers must carry out their own careful trials in formulating coatings based on the Lutonal A grades as the compatibility of their components and their adhesion to different substrates are affected by a host of factors in manufacture and use that we cannot cover exhaustively in our trials.

Safety

General

The usual precautions for handling chemicals must be observed. These include the measures set out in the local health regulations, in particular, good ventilation and fume extraction at the workplace, care of the skin and the wearing of eye protection.

Safety Data Sheet

The Safety Data Sheets for the Lutonal A grades provide all the data relevant to safety according to current knowledge.

Airborne concentration

The Lutonal A grades contain unavoidable traces of volatile organic compounds. Lutonal A 50 is dissolved in ethanol. Further details are given in the Safety Data Sheet.

Explosion prevention

The Lutonal A grades contain volatile constituents that can form explosive mixtures with air. Please see the respective Safety Data Sheet for further information.

Physiological effects

According to our many years of experience and the information available to us, the Lutonal A grades are not harmful to health if they are properly handled and used for the purpose intended.

The vapours may cause injury if inhaled. Avoid prolonged inhalation of an enriched vapour/air mixture.

Food legislation

The composition of the Lutonal A grades meets the German recommendations*.

Labelling

According to the data at our disposal, Lutonal A 25 is not a hazardous product in the sense of the German regulations** or the EC Guidelines for Classification, Packaging and Labelling of Dangerous Substances.

Lutonal A 50 approx. 50 % in ethanol is labelled in compliance with the German regulations** and the EC Guidelines for Classification, Packaging and Labelling of Dangerous Substances as follows: **F** Highly flammable.

Please see the respective Safety Data Sheets for further information on the two products.

** BGVV – Empfehlung XVI "Polyvinylether"*
*** Gefahrstoffverordnung*

Storage

The Lutonal A grades can be stored for up to 1 year in tightly closed containers at 10 – 30 °C.

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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