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## Technical Information

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® = Registered trademark of  
BASF Aktiengesellschaft

Coating Raw Materials File, Part 1, Section 14

## Coating Raw Materials

# Lutonal® M 40 grades

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

# Lutonal M 40 grades

## Chemical nature

Solutions of a polyvinyl methyl ether

## Properties

### Lutonal M 40 approx. 50% in water

Physical form	Resin solution		
Product specification	Non-volatile components (EN ISO 3251)	%	50 ± 2
	Apparent viscosity at 23 °C	Pa·s	25 – 200
	(EN ISO 2555, Brookfield RV, Sp. 7, 20 rpm)		
	Iodine colour (DIN 6162)		≤ 15
Further properties	Density at 20 °C (ISO 2811)	g/cm <sup>3</sup>	approx. 1.03
	Glass transition temperature T <sub>g</sub> (DSC) of the solvent-free polymer	°C	approx. – 49
	Sensitivity to frost	°C	< 0

### Lutonal M 40 approx. 70% in ethanol

Physical form	Resin solution		
Product specification	Non-volatile components (EN ISO 3251)	%	70 ± 2
	Apparent viscosity at 23 °C	Pa·s	50 – 250
	(EN ISO 2555, Brookfield RV, Sp. 7, 10 rpm)		
	Iodine colour (DIN 6162)		≤ 15
Further properties	Density at 20 °C (ISO 2811)	g/cm <sup>3</sup>	approx. 0.95
	Glass transition temperature T <sub>g</sub> (DSC) of the solvent-free polymer	°C	approx. – 49
	Flash point (ISO 1523)	°C	< approx. 11

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

**Solubility** Lutonal M 40 is soluble in water, alcohols, glycols, esters, glycol esters, aromatic and chlorinated hydrocarbons. It is not soluble in aliphatic hydrocarbons.

**Compatibility** The Lutonal M 40 grades are homogeneously miscible with hard resins (modified and unmodified natural resins, Laropal® K 80 and Laropal A 81), cellulose nitrate, Acronal® 4 F, Acronal 4 L, Acronal 700 L, plasticisers (the Palatinol® grades).

## Resistance towards

Acids	Diluted mineral acids and organic acids do not attack Lutonal M 40.  More concentrated mineral acids cause crosslinking or degradation. As with acidic resins, these can give rise to a red-brown discoloration.
Alkalis	Lutonal M 40 is not attacked by alkalis.
Light	Prolonged exposure to light can reduce the viscosity of solutions of Lutonal M 40.
Heat	Prolonged exposure to temperatures exceeding 80 °C can adversely affect Lutonal M 40, unless a stabiliser has been added.

## Application

Lutonal M 40 is the product of choice for plasticizing and improving the adhesion of cellulose nitrate. Although it dissolves in water, cellulose nitrate films with up to 30 % Lutonal M 40 are not abnormally sensitive to water.

Lutonal M 40 in the form of the aqueous solution can also be used in the production of heat-sensitive mixtures based on polymer dispersions and natural rubber latex.

### Processing

The viscosity of solutions of Lutonal M 40 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.

If Lutonal M 40 approx. 50 % in water has separated into phases as a result of improper storage (exposure to frost or temperatures exceeding 28 °C), it can only be redissolved in a pug mill or a low-speed stirrer. Here, it is essential to keep the temperature of the mixture below 25 °C by cooling it, and to stir it for an adequate length of time (approx. 4 hours).

Manufacturers must carry out their own careful trials in formulating coatings based on Lutonal M 40 as the compatibility of their components, their adhesion to different substrates, their stability in storage etc. are affected by a host of factors in manufacture and use that we cannot cover exhaustively in our trials.

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## 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 M grades provide all the data relevant to safety according to current knowledge.

### Explosion prevention

Lutonal M 40 approx. 70 % in ethanol contains volatile constituents that can form explosive mixtures with air. Please see the respective Safety Data Sheet for further information.

### Airborne concentration

When Lutonal M 40 approx. 70 % in ethanol is being used, the limits and other precautions for the solvent in the latest MAK list must be adhered to.

### Physiological effects

According to our many years of experience and the information available to us, the Lutonal M 40 grades are not harmful to health if they are properly handled and used for the purpose intended.

The vapours from Lutonal M 40 approx. 70 % in ethanol may be harmful if inhaled. Avoid prolonged inhalation of an enriched vapour/air mixture.

### Food legislation

The composition of the Lutonal M 40 grades meets the German recommendations\*.

*\* BGVV – Empfehlung XVI "Polyvinylether"*

### Labelling

According to the data at our disposal, Lutonal M 40 approx. 50 % in water 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 M 40 approx. 70 % 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.

*\* Gefahrstoffverordnung*

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

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## Storage

The Lutonal M 40 grades can be stored for 1 year in tightly closed containers at 10 – 25 °C.

Lutonal M 40 approx. 50% in water must be protected from frost and temperatures above 25 °C.

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## 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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