

Luwipal[®] resins

partially etherified with methanol



medium to highly reactive melamine formaldehyde resins

Range

		for baking finishes	for acid-curable coatings
Luwipal [®] 063	dissolved in water	●	
Luwipal [®] 069	dissolved in methanol/ ethanol/water	●	●
Luwipal [®] 070	dissolved in n-butanol	●	●
Luwipal [®] 072	dissolved in isobutanol	●	
Luwipal [®] 073	dissolved in water	●	

Properties

physical form

colorless liquids

shelf life

According to our experience, Luwipal[®] 063, Luwipal[®] 072 and Luwipal[®] 073 can be stored for 6 months, Luwipal[®] 069 and Luwipal[®] 070 for 12 months from the date of delivery provided they are kept in tightly sealed containers and at temperatures between 4 °C (39 °F) and 30 °C (86 °F). Partially etherified amino resins are reactive systems whose viscosity increases with age.

typical properties (no supply specification)

Luwipal[®] 063

non-volatile matter	68–72 %
viscosity at 23 °C shear rate D	0,5–0,8 Pa·s 165,1 s ⁻¹
Hazen color value	≤ 50
acid value	≤ 1 mg KOH/g
density	~ 1,2 g/cm ³
free formaldehyde	≤ 0,6 %

Luwipal® 069

non-volatile matter	79–83 %
viscosity at 23 °C shear rate D	2.5–3.5 Pa·s 41.3 s ⁻¹
Hazen color value	≤ 50
acid value	≤ 1 mg KOH/g
density	~ 1.2 g/cm ³
free formaldehyde	≤ 1.5 %
organic solvent	
ethanol	≤ 3 %
methanol	≤ 3 %

Luwipal® 070

non-volatile matter	79–83 %
viscosity at 23 °C shear rate D	6.0–10.0 Pa·s 41.3 s ⁻¹
Hazen color value	≤ 50
acid value	≤ 1 mg KOH/g
density	~ 1.2 g/cm ³
free formaldehyde	≤ 1.0 %
organic solvent	
n-butanol	≤ 15 %

Luwipal® 072

non-volatile matter	73–77 %
viscosity at 23 °C shear rate D	4.0–7.0 Pa·s 20.6 s ⁻¹
Hazen color value	≤ 50
acid value	≤ 1 mg KOH/g
density	~ 1.2 g/cm ³
free formaldehyde	≤ 1.0 %
organic solvent	
isobutanol	≤ 20 %

Luwipal® 073

non-volatile matter	78–82 %
viscosity at 23 °C shear rate D	3.0–5.0 Pa·s 41.3 s ⁻¹
Hazen color value	≤ 50
acid value	≤ 1 mg KOH/g
density	~ 1.2 g/cm ³
free formaldehyde	≤ 0.6 %

diluent tolerance

	methanol	ethanol	butanol	ethyl acetate	butyl acetate	Solvenon® PM ¹	Solvenon® DPM ²	solvent blend ³	methylethyl ketone	white spirit	toluene	xylene	turpentine oil	water	Solvesso® ⁴ 100
Luwipal® 063	●	●	●	○	○	●	●	●	●	○	●	○	○	●	●
Luwipal® 069	●	●	●	●	●	●	●	●	●	○	○	○	○	●	○
Luwipal® 070	●	●	●	●	●	●	●	●	●	○	●	●	○	●	●
Luwipal® 072	●	●	●	●	●	●	●	●	○	○	●	●	○	●	○
Luwipal® 073	●	●	●	○	○	○	●	●	○	○	○	○	○	●	○

●	thinnable
●	limited thinnability
○	unthinnable

compatibility
ratio 1:1, solids on solids

	alkyd resins with drying fatty acids	alkyd resins with non-drying fatty acids	alkyd resins with synthetic fatty acids	acrylic dispersions	saturated polyester resins	aqueous saturated polyester resins	HF resins (Plastopal®)	Nitrocellulose	cellulose nitrate	Epikote® ⁵ Resin 828	Epikote® ⁵ Resin 872	Epikote® ⁵ Resin 1001	Epikote® ⁵ Resin 1004	Epikote® ⁵ Resin 1007
Luwipal® 012	●	●	○	●	○	●	★	○	●	●	●	○	○	●
Luwipal® 014	●	●	●	●	○	●	●	●	●	●	●	●	●	●
Luwipal® 015	●	●	●	●	○	●	●	●	●	●	●	●	●	●
Luwipal® 016	●	●	●	●	○	●	●	●	●	●	●	●	●	●
Luwipal® 018	○	●	○	●	○	●	●	●	○	○	○	○	○	○

●	compatible
●	limited compatibility
★	compatible with Plastopal® EBS 400
○	not compatible

Given the number of resins available, the information above can only serve as a guide. The compatibility should be tested for each individual combination.

¹ 1-methoxy-2-propanol² (2-methoxymethylethoxy)propanol³ 85 % isobutyl formate + 15 % isobutanol⁴ registered trademark of Exxon Mobil Corporation⁵ registered trademark of Hexion Specialty Chemicals

Application

Luwipal® 063

Luwipal® 063 is used in combination with water-thinnable alkyd or acrylic resins for the formulation of highly reactive baking finishes. Combined with solvent-containing resins, it can also be used to formulate conventional baking finishes.

The mixing ratio is from 2:8 to 4:6 in terms of solids on solids.

The resin is also crosslinks aqueous polymer dispersions.

Baking conditions: 30 minutes at 110–120 °C (230–248 °F); depending on the reactivity of the combination resin, somewhat higher temperatures may be required. For instance, aqueous acrylic dispersions frequently require baking for 30 minutes at 140 °C (284 °F).

By adding acids, e.g., p-toluenesulfonic acid or maleic acid, the reactivity can be slightly increased while the baking temperature can be decreased by about 10 °C (18 °F).

As an aqueous resin solution, Luwipal® 063 carries no solvents into the formulation of water-thinnable coatings, the solvent fraction of these may remain very small. In brittle polymer dispersions, Luwipal® 063 also serves as a film forming agent.

Luwipal® 069

Luwipal® 069 is a medium-reactive melamine formaldehyde resin with a chemical constitution similar to that of Luwipal® 068, which can be acid-cured as well. The content of free formaldehyde is significantly lower in Luwipal® 069.

The reactivity in acid-curable coatings is lower than that of Luwipal® 068, Luwipal® 066 or Luwipal® 066 LF but the baking reactivity is distinctly higher.

Luwipal® 069 can be used as a crosslinker for both water-borne coatings based on alkyd resins or acrylic dispersions and, e.g., in combination with saturated polyesters, for solvent-based coatings for coil coating.

Luwipal® 070

The crosslinking capabilities of Luwipal® 070 compare with those of Luwipal® 069. Luwipal® 070 is dissolved in n-butanol.

Luwipal® 070 is soluble in a wide range of diluents used in the coatings industry. It can be used in both water- and solvent-based formulations.

Compared with Luwipal® 072, the storage stability has been improved. Adding free or blocked acid catalysts enhances the baking reactivity from a medium to a high level. Blends with other amino resins help to further adjust the crosslinking properties.

Luwipal® 072

Due to being thinned with isobutanol, this highly reactive melamine resin is particularly compatible with acrylic resins and can be diluted with both water and xylene.

The combination with very reactive alkyd resin often leads to a sudden increase in viscosity. This can be avoided by adding proportionate amounts of glycol ether or glycol ether acetate to the solvent. Sufficient quantities of polar solvents are often present in water-based finishes to act as a stabilizer.

The mixing ratio is from 2:8 to 4:6 in terms of solids on solids. Luwipal® 072 is preferably used in automotive coatings (solid-shade top coats in combination with polyesters or fillers and water-based coatings in combination with polyesters or polyurethane dispersions). The reactivity of coil-coating finishes can be modified to increase belt speed. Replacing more than 20 % HMMM resin can promote embrittlement and should therefore be limited to 20 %.

Baking is usually done for 30 minutes at 110–120 °C (230–248 °F). Adding 5 % in terms of total binder of a 20 % solution of maleic acid allows the baking temperature to be reduced to 80–100 °C (176–212 °F).

The properties of this methanol-etherified, partially alkylated resin compare to those of Luwipal® 072. The only difference is that Luwipal® 073 is an aqueous solution.

It is particularly suited as a crosslinker for water-thinnable finishes based on alkyd, acrylic or saturated polyester resins or polymer dispersions.

Luwipal® 073 is highly reactive in baking. It already crosslinks after 20–30 minutes at 110–120 °C (230–248 °F) and can be mixed with Luwipal® 063 and Luwipal® 069 to achieve different degrees of reactivity.

Safety

When handling these products, please comply with the advice and information given in the safety data sheet and observe protective and workplace hygiene measures adequate for handling chemicals.

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. The agreed contractual quality of the product results exclusively from the statements made in the product specification. It is the responsibility of the recipient of our product to ensure that any proprietary rights and existing laws and legislation are observed.

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