

Luwipal® 018

General

Luwipal® 018 is a partially butylated formaldehyde melamine resin based crosslinker for 1K stoving top coats

Key features & benefits

Temperature reactive
 High chemical resistance
 High hardness
 Good balance of reactivity and elasticity
 High weather resistance
 Good light fastness

Chemical nature

Medium butylated formaldehyde melamine resin (Methylol-type), solved in n-butanol

Properties

Appearance

Colorless clear viscous liquid

Typical characteristics

(should not be interpreted as specifications)

Non-volatile fraction 2h at 125 °C	DIN EN ISO 3251	71-75 %
Viscosity at 23 °C, shear rate D=21 s ⁻¹	DIN EN ISO 3219 B	4000-7000 mPa·s
Platin Cobalt Color number	DIN EN ISO 6271	≤ 50 Hazen
Acid value	DIN EN ISO 2114	≤ 1 mg KOH/g
Free formaldehyde content	DIN EN ISO 11402	≤ 0.6%

Application

Luwipal® 018 is a standard crosslinker for high performing, solvent-based 1K stoving clear coats for Automotive OEM.

Luwipal® 018 is generally recommended to be used for any solvent-based 1K stoving clear and opaque top coats and primers.

Formulation Guidelines

Diluent tolerance

methanol	limited thinnability
ethanol	thinnable
butanol	thinnable
ethyl acetate	thinnable
butyl acetate	thinnable
Solvenon® PM ¹	thinnable

Solvenon® DPM ²	thinnable
methyl ethyl ketone	thinnable
white spirit	limited thinnability
toluene	thinnable
xylene	thinnable
butyl glycol	thinnable
water	not thinnable

Binder compatibility ratio 1:1, solids on solids

alkyd resins with drying fatty acids	compatible
alkyd resins with non-drying fatty acids	compatible
alkyd resins with synthetic fatty acids	compatible
acrylic resins	compatible
acrylic dispersions/aqueous polyester resins	incompatible
HF resins (Plastopal®) plasticized	compatible
HF resins (Plastopal®) unplasticized	compatible
cellulose nitrate	compatible
Epicote® ³ 828	compatible
Epicote® ³ 1001	compatible
Epicote® ³ 1004	compatible
Epicote® ³ 1007	compatible
MF resins (Luwipal®)	compatible

1 methoxy-1,2-propanol

2 methoxypropoxy propanol (mixture of isomers)

3 registered trademark of Hexion Specialty Chemicals, USA

The information above can only serve as a guide.

The compatibility should be tested for each individual combination.

Luwipal® 018 - combined with heat- and weather resistant alkyd, acrylic (Joncryl® Polyols) and Polyesters (Basonol® HPE) - is primarily intended to be used for the formulation of solvent-based high gloss, hard baking finishes, which are resistant to weathering.

Luwipal® 018 could also crosslink with epoxy and carboxyl-based binders to form hard and resistant coatings.

Luwipal® 018 gives particularly good results in Automotive finishes in form of appearance, resistance to fluids used in Automotive industry and forms a good balance of hardness and elasticity.

The molecular structure mix of Luwipal® 018 tends to a good ratio of self and co-crosslinking, which leads to high hardness and superior chemical and solvent resistance. The good chemical performances are achieved in superior balance to elasticity and interlayer adhesion.

Luwipal® 018 is one of the market standard crosslinkers for Automotive OEM clear coats.

The free Formaldehyde content of 0.6% could lead to additional labelling of the ready-made paint. Therefore, the preferred version to use for CMR label free coatings is Luwipal® 018 RF, with the same performance profile at 0.4% free Formaldehyde content.

Best performance in mechanical and chemical properties could be achieved at a ratio of 70/30 of binder/crosslinker. The mechanical properties change, if more amino resin is added to the formulation to increase hardness and solvent resistance. Flexibility and adhesion of the film could be reduced.

Luwipal® 018 is less reactive at higher temperatures and provides preferred properties at overbake conditions. Less loss in flexibility and adhesion could be expected compared to high imino, low butylated melamine resins.

Coatings based on Luwipal® 018 are very resistant to household chemicals like water, alcohol, coffee, tea, juices or industrial chemicals like petrol, braking fluids, oils and acids, depending on binders used. They offer distinct advantages over formulations based on urea formaldehyde resins.

Melamine resins are highly stable at high temperatures and UV radiation. Long time temperature stress beyond the typical curing conditions could shift the coatings properties to reduced mechanical performances like reduced elasticity, reduced gloss, reduced interlayer adhesion. But melamine based crosslinkers will not discolor, unless a critical temperature (> 350 °C) or strong UV radiation degrades the molecule structure.

The additional use of blocked organic acids is not necessary but could boost the reactivity slightly.

Recommended stoving conditions for coatings based on Luwipal® 018 are 20 - 45 min at 130 - 150 °C.

Storage

According to our experience, Luwipal® 018 has sufficient storage stability at temperatures between 4 °C and 30 °C if kept in tightly sealed containers.

For further detailed application information please contact our Technical Support Department.

Safety

When handling this product, 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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