

TYPE

Oxidatively drying, acrylic modified alkyd resin as aqueous emulsion

FORM OF DELIVERY (f.o.d.)

40 % in water (40WA)
(containing also 6.5 % butyl glycol)

Neutralization agents

1.0 % triethylamine, as salt
0.2 % N,N-dimethylethanolamine, as salt

Lowest storage temperature: - 5 °C

CONTENT OF FATTY ACIDS

approx. 33 % special unsaturated fatty acids (as triglycerides)

PRODUCT DATA

Determined per batch:

Dynamic Viscosity DIN EN ISO 3219

dynamic viscosity (10 1/s; 23 °C)	[mPa.s]	3000 - 21000
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pH-Value DIN ISO 976

pH-value (10 %)		8,5 - 10
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Non-Volatile Matter DIN 55671

non-volatile matter (120 °C; 5 min)	[%]	38,5 - 41,5
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Not continually determined:

Colour / Appearance VLN 250

colour	white
appearance	opaque

Non-Volatile Matter DIN EN ISO 3251

non-volatile matter (1 h; 125 °C; 1 g)	[%]	38,5 - 41,5
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Density (Liquids) DIN EN ISO 2811-2

density approx. (20 °C)	[g/cm³]	1,04
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Flash Point (Pensky-Martens) DIN EN ISO 2719

flash point	[°C]	> 100
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SPECIAL PROPERTIES

Rapid drying and good drying stability.
High gloss.
Excellent water and weather resistance.
Good resistance to yellowing.

Sole binder for waterborne industrial topcoat finishes.

SUGGESTED USES

Resydrol AY 334w is used for the formulation of paints to be employed for agricultural and construction machinery. These paints, which are mainly applied by spraying, are characterized by rapid drying. Films made from them are already water resistant after 24 hours of air-drying.

Resydrol AY 334w yields topcoats of high gloss; when exposed to natural weathering, gloss retention is excellent. The good weathering results obtained with this binder in the Florida Test deserve particular mention. Resydrol AY 334w shows hardly any yellowing so that it is also suited for formulating light hues.

Paints made on the basis of Resydrol AY 334w can also be used for forced drying. At temperatures above 100 °C, simultaneous use of a reactive water-soluble melamine resin is recommended in order to obtain higher film hardness with shorter stoving time.

DILUTABILITY

Resydrol AY 334w can be diluted with deionized water as much as desired. Dilution of paints with deionized water to spraying viscosity is possible without addition of organic solvents.

COMPATIBILITY

The pattern of properties of Resydrol AY 334w can be modified by combination with other air-drying Resydrol types. Additions of e. g. Resydrol AY 241w or Resydrol AZ 436w will speed up initial and through-drying. Combinations with acrylic resin dispersions, e. g. Mowilith LDM 7760, offer further interesting possibilities.

PROCESSING

Neutralization

During dispersing a certain amount of neutralization agent may evaporate. It is therefore indispensable to check the pH value before adjustment of viscosity on delivery. If necessary, triethylamine can be used for post-neutralization. Good stability of the paint can be expected when the pH value has been adjusted between 9.0 and 9.5.

Pigmentation

Resydrol AY 334 w has a very good pigment-wetting capacity. However, only pigments and extender not containing watersoluble, or only very little of them, should be used. Strong basic pigments which cause viscosity pickup should also be excluded. Current rutile type grades of titanium dioxide without zinc oxide coating, e. g. Kronos 2160 or 2059, yield formulations of good storage stability.

For grinding of alkyd resin emulsions, microelement mixer mills have proved very successful. In order to minimize loss of amine care should be taken that temperature of the mill base does not exceed 50 °C.

Auxiliary additives

Simultaneous use of defoaming agents is recommended; for this purpose, substances like Additol XW 376 have proved highly successful. Skinning can be avoided by addition of Additol XL 297. Good results have also been obtained by using Additol XL 203 as wetting and dispersion agent.

Addition of driers

Alkyd resin emulsion require employment of water-emulsifiable driers. Good drying results have been achieved with Additol VXW 4940, a combination drier consisting of Co, Ba und Zr.

RHEOLOGICAL BEHAVIOUR OF ALKYD RESIN EMULSIONS

Aqueous alkyd resin emulsions differ fundamentally from synthetic resins dissolved and diluted inorganic solvents:

1) Viscosity of aqueous alkyd resin emulsions is independent of the mean molar mass of the resins so that it is not possible to infer from their viscosity to the molecular weight of the resins.

2) Aqueous alkyd resin emulsions are characterized by structural viscosity, which means that with increasing shear stress viscosity will decrease. The values measured are strongly dependent on measuring conditions and viscosity data without indication of shear rates are not very useful.

3) Viscosity of aqueous alkyd resin emulsions will be influenced by their respective pH value in the following way:

With increasing pH value viscosity will also increase. As during storage of alkyd resin emulsions their pH value will slowly decrease, a decrease of viscosity has also to be expected. By subsequent neutralization viscosity can again be raised to the original value.

4) The dilution curve of aqueous alkyd resin emulsions displays a very steep descent. Any reduction of solid matter content therefore results in a much stronger reduction of viscosity than with synthetic resins dissolved in organic solvents.

STORAGE

At temperatures up to 25 °C storage stability packed in original containers amounts to at least 365 days.

Synthetic resins containing water may freeze or get inhomogeneous at temperatures below 0 °C. By this the product will not suffer any damage, but the necessary regeneration requires extended heat treatment at 40 - 50 °C with continuous stirring. It is therefore recommended to ensure frostproof storage of such products.

DISTINGUISHING FEATURES

In comparison with all other Resydrol types, Resydrol AY 334 w shows the highest degree colour stability. On account of its good UV stability it should preferably be used for weather resistant industrial paints.