

TYPE

Oxidatively drying alkyd-acrylic copolymer emulsion

Neutralization agent

0.4 % ammonia, as salt

Lowest storage temperature: - 5 °C

FORM OF DELIVERY (f.o.d.)

40 % in water (40WA)
(containing also 6.4 % butyl glycol)

CONTENT OF FATTY ACIDS

approx. 24 % special vegetable fatty acids (as triglycerides)

PRODUCT DATA

Determined per batch:

Dynamic Viscosity DIN EN ISO 3219

dynamic viscosity (10 1/s; 23 °C)	[mPa.s]	1000 - 6000
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pH-Value DIN ISO 976

pH-value (10 %)		8,0 - 9,5
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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:

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]	1,02
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Flash Point (Pensky-Martens) DIN EN ISO 2719

flash point	[°C]	> 100
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SPECIAL PROPERTIES

Extremely rapid initial drying. Excellent through-hardening, high film hardness. Very good water resistance.
Good compatibility with other Resydrol types. Free from organic amines.

SUGGESTED USES

Resydrol AY 241w/40WA can be used as sole binder for the formulation of primers and primer-surfacers which are characterized by very rapid drying and therefore can be used for recoating after a short time of drying. Primers and primer-surfacers on the basis of Resydrol AY 241w are also suited for forced drying. After such drying they show perfect flow, which can also be clearly seen after recoating with a topcoat.

When formulating enamels it is recommendable to combine Resydrol AY 241w with other Resydrol types, e.g. Resydrol AY 466w, in order to increase gloss. In this way it is possible to formulate quickdrying finishes of high gloss and good weather resistance.

By simultaneous use of Resydrol AY 241w in aqueous exterior wood stains the speed of drying can be increased to such an extent that industrial processing becomes possible.

In knifing putties on the basis of Resydrol AS 894w, addition of Resydrol AY 241w will shorten drying time and considerably improve sanding capacity.

DILUTABILITY

In its form of delivery, resydrol AY 241w can be diluted with deionized water as much as desired without addition of organic solvents.

COMPATIBILITY

Due to its outstanding drying properties and wide range of compatibility Resydrol AY 241w can be considered to be an ideal combination partner for other air-drying Resydrol types. In water-dilutable alkyd resin paints on the basis of Resydrol AY 466w, the simultaneous use of Resydrol AY 241w can speed up initial and through drying and improve film hardness.

PROCESSING

Neutralization agent

During milling a certain amount of neutralization agent may evaporate. It is therefore indispensable to check the pH value after milling, which should be done using a 10 % aqueous resin concentration. If necessary, subsequent neutralization with ammonia to a pH range of 9.0 should be performed in order to ensure good stability of the paint.

Pigmentation

On principle, the use of strong basic pigments should be avoided, as they tend to cause gel formation. Proven anticorrosive pigments are, e.g., Sicor SPO (BASF), Shieldex AC 3 (Grace), or Delaphos zinc phosphate (ISC Alloys Ltd.). When using other anticorrosive pigments, the compatibility has to be tested in advance; also when rutile type grades of titanium dioxide are to be employed one should make sure to use only material without zinc oxide coating.

For grinding, microelement mixer mills are recommended. In order to minimize loss of ammonia, care should be taken that temperature of the mill base does not exceed 50 °C.

Auxiliary additives

Settling of pigments in storage containers can be prevented by addition of suitable wetting and anti-settling agents, e.g. Additol XL 270, which should already be added to the mill base.

Skinning can be avoided by addition of Additol XL 297. Alkyd resin emulsions show a general tendency to foam formation. Addition of appropriate defoaming agents, e.g. Additol XW 376, is therefore indispensable.

Addition of driers

Alkyd resin emulsions require addition of water-emulsifiable driers such as Additol VXW 4940. In order to ensure good incorporation, these special driers should be diluted with deionized water at a ratio of 1 : 1 before being added to the paint. Optimum homogeneous distribution is obtained when driers are added to the material before dispersion.

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 180 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 alkyd resin emulsions Resydrol AY 241w/40WA has the fastest initial and through-drying values and the best compatibility properties.