

TYPE

Oxidatively drying epoxy resin ester in aqueous emulsion form

Neutralization agent

0.3 % ammonia, as salt

FORM OF DELIVERY (f.o.d.)

35 % in water (35WA)
(containing also 3,9 % butyl glycol)

CONTENT OF FATTY ACIDS

approx. 43 % special, partly isomerized fatty acids (as triglycerides)

PRODUCT DATA

Determined per batch:

Dynamic Viscosity DIN EN ISO 3219

dynamic viscosity (10 1/s; 23 °C)	[mPa.s]	4000 - 10000
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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)	[%]	34 - 36
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Not continually determined:

Colour / Appearance VLN 250

colour		whitish
appearance		opaque

Non-Volatile Matter DIN EN ISO 3251

non-volatile matter (1 h; 125 °C; 1 g)	[%]	34 - 36
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Density (Liquids) DIN EN ISO 2811-2

density approx. (20 °C)	[g/cm ³]	1,02
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Flash Point (Pensky-Martens) DIN EN ISO 2719

flash point	[°C]	> 100
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SPECIAL PROPERTIES

- Quick oxidative drying
- Excellent corrosion resistance
- High water stability
- Good re-coatability

Sole binder for air and forced drying anticorrosive primers and industrial coatings.

DILUTABILITY

Duroxyn VEF 4380w in supplied form may indefinitely be diluted with water. Therefore, no organic solvent is necessary for the paint production.

COMPATIBILITY

Duroxyn VEF 4380w is well compatible with many air-drying Resydrol binders. Thus for example with Resydrol AY 241w or Resydrol AZ 436w you may vary the paint properties.

SUGGESTED USES

Duroxyn VEF 4380w has the for epoxy resin ester typical high corrosion resistance. Main application field are therefore air-drying anticorrosive primers. Due to the high pigment absorption the formulation of good-gloss topcoats is also recommendable.

Good adhesion on metal and high film elasticity result in oxidatively drying as well as in baking paints.

PROCESSING

Duroxyn VEF 4380w is delivered with ammonia neutralized. For good water dilutability and paint stability it is necessary to adjust the pH-value to 8,5 - 8,9 after grinding. The pH-measuring is carried out at a resin concentration of about 10 %. For after-neutralisation you may use ammonia or triethylamine.

Pigmentation

In order to increase the corrosion resistance it is recommendable to apply suitable anticorrosive pigments, like modified phosphate hydrate pigments, for example Heucophos ZP 10 (from Fa. Heubach), or calcium-barium-phosphoric silicates, for example Halox BW 191 (from Lawreco Industries).

The application of other anticorrosive pigments must be tested in pre-trials. An addition of thickeners, like for example Borchigel L 75 (Fa. Borchers) or Rheolate 278 (Fa. Rheox Inc./Highstown/USA) has in all cases a positive effect on the storage stability. If titanium dioxide-rutile types are used you must avoid zinc oxide coated types.

Attritors have proved best for dispersion of alkyd resin emulsions. A mill base temperature of 50 °C should not be exceeded, in order to keep the ammonia loss low.

Additives

The joint grinding of a suitable wetting and antisetling agent, like Additol XL 270, may prevent the sedimentation and a combination of Additol XW 372 with Additol VXW 4909 may prevent the foam formation. An addition of Additol XL 297 is recommended against skin formation in the container.

Driers

An addition of water emulsifiable siccatives is recommendable. 2 - 3 % Additol VXW 4940 (Co-, Ba-, Zr-combination drier), calculated on solid binder, are diluted with water 1 : 1 and thus jointly dispersed.

RHEOLOGICAL PERFORMANCE OF ALKYD RESIN EMULSIONS

Aqueous alkyd resin emulsions distinguish themselves basically from synthetic resins, which are dissolved and diluted in organic solvents.

- 1) The viscosity of the aqueous alkyd resin emulsion is independent from the average mole mass of the resins, which means that you cannot conclude from the viscosity to the mole weight of the resins.
- 2) Aqueous alkyd resin emulsions are structurally viscous which means that with increasing shea-ring force the viscosity decreases. The measured values depend very much on the measuring conditions and viscosity data without mentioning of the rate of shear are purposeless.
- 3) The pH-value influences to a high degree the viscosity of the aqueous alkyd resin emulsions as follows:
In case of increase of the pH-value also the viscosity increases. As during storage of the alkyd resin emulsions the pH-value decreases slowly, you must also count on a lowering of the viscosity. Through after-neutralisation the viscosity may be raised again to its original value.
- 4) The dilution curve of the aqueous alkyd resin emulsions declines very steeply. Therefore, a lowering of the solid content causes a very intense viscosity decrease, which does not occur in synthetic resins which are dissolved and diluted 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.

Lowest storage temperature: - 5 °C

DISTINGUISHING FEATURES

Duroxyn VEF 4380w is epoxy modified and has in comparison to other oxidatively drying alkyd resin emulsions, e.g. Resydrol AZ 436w, best corrosion protection.