

TYPE

Hydroxy functional acrylic resin crosslinkable with polyisocyanates

FORM OF DELIVERY (f.o.d.)

70 % in butyl acetate (70 BAC)

SPECIAL PROPERTIES AND USE

Air-drying and forced drying two pack medium high solids systems with high gloss, excellent mechanical properties, excellent chemical resistance and good outdoor stability for automotive refinishes.

Average hydroxyl content (solid resin)

approx. 4.5 %

SPECIFICATION

Determined per batch:

Dynamic Viscosity DIN EN ISO 3219

dynamic viscosity (25 1/s; 23 °C)	[mPa.s]	7000 - 11000
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Colour Scale (Hazen) DIN EN ISO 6271-1

Hazen colour value		<= 70
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Hydroxyl Value (cat.) DIN EN ISO 4629

hydroxyl value (solid matter content; potentiometric)	[mg KOH/g]	140 - 160
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Non-Volatile Matter DIN EN ISO 3251

non-volatile matter (1 h; 125 °C; 2 g; EAC)	[%]	68 - 72
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Not continually determined:

Density (Liquids) DIN EN ISO 2811-2

density approx. (20 °C)	[g/cm³]	1,05
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Flash Point DIN EN ISO 1523

flash point approx.	[°C]	25
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DILUTABILITY

white spirit	○	methyl ethyl ketone	●
toluene	●	methyl isobutyl ketone	●
xylene	○	methoxypropyl acetate	●
solvent naphtha 150/180	○	ethyl acetate	●
acetone	●	butyl acetate	●

● = unlimited dilutability ○ = limited dilutability
○ = substantial dilutability ○ = very limited or no dilutability

COMPATIBILITY

% Macrynal SM 516	90	75	50	25	10
% other binder	10	25	50	75	90
Alkyd resins					
Vialkyd AC 290, AC 451n, AN 950	●	●	●	●	●
Vialkyd AF 342	○	○	○	○	●
Acrylic resins					
Viacryl SC 121	○	○	○	○	○
Viacryl SC 370	●	●	●	●	●
Macrynal SM 510, SM 510n, SM 513, SM 515	●	●	●	●	●
Macrynal SM 500, SM 540	●	○	○	○	●
Macrynal SM 548	●	●	●	○	○
Polyisocyanates					
Desmodur L, N	●	●	●	●	●
Beckocoat PU 428, PU 342	●	●	●	●	●
Other binders					
Beckopox EP 140, EP 301	●	●	●	●	●
Alresat KE 300, Hostaflex CM 158	●	●	●	●	●
Hostaflex CM 620	○	○	○	○	○
Vinyl VAGH	●	●	●	●	●
CAB-551-0.2	●	○	○	○	●
CAB-381-0.1	○	○	○	●	●
nitrocellulose 24 E	●	●	●	●	●

● = definite compatibility ○ = very limited or no compatibility

SUGGESTED USES

In combination with aliphatic polyisocyanates Macrynal SM 516/70BAC is suggested for air-drying and forced drying two pack high-solids systems. The principal application area is high quality automotive refinishes.

PROCESSING

As a two pack system Macrynal SM 516 must be combined with polyisocyanates. Crosslinked at room temperature the coatings reach their optimum properties after 10 to 12 days. If forced drying is employed, a time of 30 min at 80 °C is sufficient for complete curing.

Curing with polyisocyanates

Based on 100 % conversion of reactive groups the following equation can be used to calculate the quantity of polyisocyanate needed for crosslinking 100 parts Macrynal SM 516 (on solids):

$$\text{polyisocyanate (f.o.d.)} = \frac{42 \times 100 \times \text{OH\% (solid resin)}}{17 \times \text{NCO\% (f.o.d.)}}$$

42 = molecular weight of the NCO group

17 = molecular weight of the OH group

To ensure that optimal properties are obtained it is necessary to have complete crosslinking. Over - or under - crosslinking is possible within certain limits.

For stoichiometric (equivalent) crosslinking (NCO : OH = 1 : 1) 100 parts per weight Macrynal SM 516 (f.o.d.) require 47,2 parts per weight Desmodur N/75 %.

Catalysis

Drying can be accelerated by the addition of suitable catalysts, like dibutyl tin dilaurate (0.2- 0.5 % of a 1 % solution, based on solid resin), in combination with amines like diethyl amino ethanol (approx. 0.2 %, based on solid resin). Potlife is thereby reduced, however.

Pigmentation

Inert pigments and extenders are suitable for pigmentation. Care should be taken that the material selected is free of water. Suitability should be established by preliminary testing.

Dilution

Suitable diluents are butyl acetate, methyl isobutyl ketone, 2-methoxypropyl acetate, aromatic hydrocarbons like xylene, and mixtures of these solvents. Anhydrous solvents as well as solvents free of hydroxy functional groups should be used in the presence of isocyanates.

STORAGE

At temperatures up to 25 °C storage stability packed in original containers amounts to at least 730 days.

DISTINGUISHING FEATURES

Compared to Macrynal SM 510n varnishes based on Macrynal SM 516 show higher solids content.

Producers:

CAB-551-0.2, CAB-381-0.1 (Eastman)
Vinyl VAGH (Union Carbide)
Desmodur (Covestro)