

TYPE

Hydroxy functional acrylic resin designed for crosslinking with polyisocyanates

FORM OF DELIVERY (f.o.d.)

65 % in butyl acetate/xylene (65BACX)

SPECIAL PROPERTIES AND USE

At ambient temperature drying or forced drying two pack systems with high gloss, excellent mechanical properties, superior outdoor durability and chemical resistance, in particular for automotive repair topcoats or clearcoats.

Average hydroxyl content (solid resin)

approx. 4.5 %

OH equivalent weight (f.o.d)

approx. 595

PRODUCT DATA

Determined per batch:

Dynamic Viscosity DIN EN ISO 3219

dynamic viscosity [mPa.s] 3500 - 7000
(25 1/s; 23 °C)

Colour Scale (Hazen) DIN EN ISO 6271-1

Hazen colour value <= 80

Acid Value DIN EN ISO 2114

acid value [mg KOH/g] < 12
(non volatile matter)

Hydroxyl Value (cat.) DIN EN ISO 4629

hydroxyl value [mg KOH/g] 140 - 160
(solid matter content)

Non-Volatile Matter DIN EN ISO 3251

non-volatile matter [%] 63 - 67
(1 h; 125 °C; 2 g; ethyl acetate)

Not continually determined:

Density (Liquids) DIN EN ISO 2811-2

density [g/cm³] 1,03
approx.
(20 °C)

Flash Point DIN EN ISO 1523

flash point [°C] 25
approx.

DILUTABILITY

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

● = unlimited dilutability

○ = substantial dilutability

○ = limited dilutability

○ = very limited or no dilutability

COMPATIBILITY

% Macrynal SM 510N	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, Macrynal SM 500, SM 540 ○ ○ ○ ○ ○

Viacryl SC 370 ● ● ● ● ●

Macrynal SM 510, SM 513, SM 515, SM 516 ● ● ● ● ●

Macrynal SM 548 ● ● ○ ○ ○

Polyisocyanates

Desmodur L, N ● ● ● ● ●

Beckocoat PU 428, PU 432 ● ● ● ● ●

Other binders

Beckopox EP 140 ● ● ● ● ○

Beckopox EP 301, Alresat KE 300 ● ● ● ● ●

Hostaflex CM 158 ● ● ● ● ●

Hostaflex CM 620 ○ ○ ○ ○ ○

Nitrocellulose 24 E, Vinyl VAGH ● ● ● ● ●

CAB-551-0.2 ● ○ ○ ○ ●

CAB-381-0.1 ○ ○ ○ ○ ●

● = definite compatibility

○ = very limited or no compatibility

SUGGESTED USES

In combination with aliphatic polyisocyanates Macrynal SM 510N/65BACX is recommended for at ambient temperature drying or forced drying two pack systems. The principal application field is automotive refinishing (topcoats and clearcoats).

PROCESSING

As a two pack system Macrynal SM 510N must be combined with polyisocyanates. Dried at room temperature, the coatings reach their optimum properties after 10 to 12 days. If forced dried, 30 min at 80 °C is sufficient for complete curing. The addition of cellulose acetobutyrate speeds up physical drying.

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 510N (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. For stoichiometric crosslinking, 100 parts by weight Macrynal SM 510N/65BACX (form of delivery) require the following amount of polyisocyanate:

Desmodur N/75% 43.8 parts by weight

Over - or under - crosslinking is possible within certain limits.

For stoichiometric (equivalent) crosslinking (NCO : OH = 1 : 1), calculated from the equivalent weights, approx. 595 parts by weight Macrynal SM 510N/65BACX (form of delivery) require approx. 225 parts by weight Desmodur N75.

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. Pigments containing soluble metal compounds can catalyze the crosslinking reaction and shorten potlife. 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, xylene, aromatic hydrocarbons, 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 513 Macrynal SM 510N/65BACX has a higher hydroxyl content. This results in higher crosslinking density and better outdoor durability.

Producers:

CAB-551-0.2, CAB-381-0.1 (Eastman)

Vinyl VAGH (Union Carbide)

Desmodur (Covestro)