

### TYPE

Hydroxy functional acrylic resin crosslinkable with polyisocyanates

### FORM OF DELIVERY (f.o.d.)

70 % in butyl acetate (70BAC)

### SPECIAL PROPERTIES AND USE

**Air-drying and forced drying two pack systems with high gloss, excellent mechanical properties and excellent chemical resistance for automotive refinishes.**

### Average hydroxyl content (solid resin)

approx. 4.5 %

### PRODUCT DATA

#### Determined per batch:

#### Dynamic Viscosity DIN EN ISO 3219

dynamic viscosity [mPa.s] 3600 - 6000  
(25 1/s; 23 °C)

#### Colour Scale (Hazen) DIN EN ISO 6271-1

Hazen colour value <= 80

#### 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 [%] 68 - 72  
(1 h; 125 °C; 3 g; ethyl acetate)

#### Not continually determined:

#### Density (Liquids) DIN EN ISO 2811-2

density [g/cm³] 1,05  
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

% other binder	10	25	50	75	90
% Macrynal SM 515	90	75	50	25	10

#### Alkyd resins

Vialkyd AC 451n, AC 290, AN 950	●	●	●	●	●
Vialkyd AF 342	○	○	○	○	○

#### Acrylic resins

Viacryl SC 121	●	○	○	●	●
Viacryl SC 370	●	●	●	●	●
Macrynal SM 510, SM 510n, SM 513, SM 516	●	●	●	●	●
Macrynal SM 540, SM 500	○	○	○	○	○
Macrynal SM 548	●	●	●	○	○

#### Polyisocyanates

Desmodur N, L	●	●	●	●	●
Beckocoat PU 428, PU 432	●	●	●	●	●

#### Other binders

Beckopox EP 140, EP 301	●	●	●	●	●
Alresat KE 300	●	●	●	●	●
Hostaflex CM 158	○	○	○	○	●
Hostaflex CM 620	○	○	○	○	○
Ucar solution vinyl resin 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 515 is suggested for air-drying and forced drying two pack high-solids systems. The principal application area is automotive refinishes in particular topcoats.

### PROCESSING

As a two pack system Macrynal SM 515 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.

Macrynal SM 515 can also be used in combination with urea resins for the formulation of stoving enamels. The most suitable combination ratios are 60 to 70 parts acrylic resin and 40 to 30 parts urea resin, calculated on solids. 5 - 8 % p-toluene sulphonic acid (calculated on solid urea resin) has proved successful as curing catalyst.

#### 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 515 (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.

Desmodur N/75%                                  47,2 parts by weight

### 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, 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 515 show higher solids content.

### Producers:

Desmodur (Covestro)

Ucar solution vinyl resin VAGH (Union Carbide)

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