MACRYNAL® SM 510n/60LG

TYPE

Hydroxy functional acrylic resin designed for crosslinking with polyisocyanates

FORM OF DELIVERY (f.o.d.)

60 % in solvent mixture (60LG)

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)

ca. 4.5 %

PRODUCT DATA

Determined per batch:

Dynamic Viscosity DIN EN ISO 3219		
dynamic viscosity (25 1/s; 23 °C)	[mPa.s]	2400 - 3600
Colour Scale (Hazen) DIN EN ISO 6271-1		
Hazen colour value		<= 25
Hydroxyl Value (cat.) DIN EN ISO 4629		
hydroxyl value (solids; pot)	[mg KOH/g]	140 - 155
Non-Volatile Matter DIN EN ISO 3251		
non-volatile matter (1 h; 125 °C; 2 g; EAC)	[%]	58 - 62

Not continually determined:

Density (Liquids) DIN EN ISO 2811-2		
density approx. (20 °C)	[g/cm³]	1,01
Flash Point DIN EN ISO 1523		
flash point approx.	[°C]	27

DILUTABILITY

white spirit	ß	methyl ethyl ketone	a
toluene	a	methyl isobutyl ketone	a
xylene	a	methoxypropyl acetate	a
solvent naphtha 150/180	á	ethyl acetate	a
acetone	a	butyl acetate	a

a = unlimited dilutabiliy

â = limited dilutability

á = substantial dilutability

ß = 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	a	a	a	a	a
Vialkyd AF 342	ß	ß	ß	a	a
Acrylic resins					
Viacryl SC 121, Macrynal SM 500, SM 540	ß	ß	ß	ß	ß
Viacryl SC 370	a	a	a	a	a
Macrynal SM 510, SM 513, SM 515, SM 516	a	a	a	a	a
Macrynal SM 548	a	a	ß	ß	ß
Polyisocyanates					
Desmodur L, N	a	a	a	a	a
Beckocoat PU 428, PU 432	a	a	a	a	a
Other binders					
Beckopox EP 140	a	a	a	a	ß
Beckopox EP 301	a	a	a	a	a
Hostaflex CM 158	a	a	a	a	a
Hostaflex CM 620	ß	ß	ß	ß	ß
nitrocellulose 24 E, Ucar solution vinyl resin VAGH	a	a	a	a	a
CAB-551-0.2	a	ß	ß	ß	a
CAB-381-0.1	ß	ß	ß	ß	a

a = definite compatibility

ß = very limited or no compatibility

SUGGESTED USES

In combination with aliphatic polyisocyanates Macrynal SM 510n/60LG 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. Over - or under - crosslinking is possible within certain limits.

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 (ca. 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 513 Macrynal SM 510n has a higher hydroxyl content. This results in higher crosslinking density and better outdoor durability.

Producers:

Desmodur (Bayer)
Ucar solution vinyl resin VAGH (Union Carbide)
CAB-551-0.2, CAB-381-0.1 (Eastman)