



NeoResins

NeoCryl XK-90

NeoCryl XK-90 is a 100 percent acrylic emulsion polymer designed for interior/exterior gloss enamel paints. It provides an outstanding balance of high gloss, early block resistance and excellent color development.

NeoCryl XK-90 was developed in Europe where high gloss decorative paints are most popular. Its unique small particle morphology gives hard durable paints with cosolvent demands as low as 3.5% on resin solids.

Adhesion promoting technology provides outstanding wet adhesion to aged and chalked alkyds. Another function of NeoCryl XK-90 is as a vehicle for industrially applied wood coatings and joinery.

Key Benefits

- High Gloss Development
- Low Cosolvent Demand
- Excellent Block Resistance
- Wet Adhesion Chemistry
- Resistance to Chalking
- Resistance to Dirt Pick-up

Typical Properties (not considered specifications)

Appearance	Milky white liquid
Total solids, by weight, %	45.0
Total solids, by volume, %	42.3
pH	8.7
Viscosity, Brookfield, 25°C, cps	75
Density, 25EC as supplied, lbs/US gal	
Wet	8.75
Dry	9.25
Bulking value, US gal/lb	
Wet	0.114
Dry	0.108
Minimum film formation temperature	< 0°C
Freeze/thaw stability	Keep from freezing
Heat stability (28 days/140°F)	

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January 2004



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3 Year Exterior Exposure Florida 45° Diagonal South

Substrate **Southern Yellow Pine**

Test Method: **AC-04-35**

Exposure **Florida 45° South**

System: **NeoCryl XK90 High Gloss System**

	XK90	XK90	Competitor	Competitor	Competitor	Competitor
	Untinted	Tinted	A	A	B	B
Gloss @ 60/20 Initial (*B.E.)	67/14	65/10	75/20	70/12	74/18	72/12
Gloss @ 60/20 Unwashed	7/1	7/1	7/1	7/1	3/1	3/1
Gen Appearance	7	7	7	7	6	7
Dirt Pickup	6	6	7	7	6	6
Mildew	8	8	8	8	7	8
Blistering	10	10	10	10	10	10
Grain Cracking	9	9	9	9	3	9
Flaking	10	10	10	10	10	10
Yellowing	10	10	10	10	2	10
Chalking	5	5	5	5	3	5
Total	65	65	66	66	47	65

*B.E.: Before Exposure

Note: All competitor samples were formulated utilizing suggested competitor starting point formulas. All tinted systems contained 2 oz/gal of Huls 888-7214 Phthalo Blue. All tested samples were formulated at PVC of 17- 18%.

FORMULATING GUIDELINES

NeoCryl XK-90 can be used as the sole resin or as a modifier for other acrylic copolymer emulsions to improve the wet adhesion and block resistance of the paint without sacrificing gloss or exterior durability.

As a modifier NeoCryl XK-90 can be used at levels as low as 20% on solids replacement of the main resin. Increasing this level to 40% of the resin blend will provide the optimum effect. An added benefit from incorporating NeoCryl XK-90 into an existing formula will be to reduce the cosolvent demand of higher MFT polymers without sacrificing block resistance.

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Cosolvent Selection

NeoCryl XK-90 was designed to minimize the cosolvent demand required to achieve proper 40°F film formation. A number of cosolvents can be used alone or in combination to meet the desired dry time and VOC requirements. Cosolvent levels from 3.5 to 8.0% on solid resin weight are recommended depending on solvent choice.

Texanol	7-10 lbs./100 gal.
Dowanol DPM	20-30 lbs./100 gal.
Dowanol DE	20-30 lbs./100 gal.

Stronger solvents such as Diethylene Glycol Monobutyl Ether should be avoided as they may tend to de-stabilize the paint during elevated temperature storage.

Pigmentation

High gloss white enamels produced from NeoCryl XK-90 with a PVC between 18 to 22% have demonstrated good gloss and hiding power. Proper balance of gloss and hiding is left up to the individual.

The choice of TiO₂ can greatly affect the final film properties of paint formulations based on NeoCryl XK-90. Ultimate gloss values and exterior durability are the main characteristics impacted by the type of TiO₂ selected.

<u>Maximum Gloss</u>	<u>Balance of Gloss and Exterior Durability</u>
Ti-Pure R-700	Tiona RCL-535
Tioxide TR-80	Tronox CR-828
	Tioxide TR-92
	Kronos 2310

ZnO should be minimized or avoided if possible from the formula to achieve optimum properties.



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Rheology

NeoCryl XK-90 was designed with a smaller average particle size than traditional trade sales paint vehicles to provide optimum film formation properties. As such the selection of rheology modifiers is critical to optimize brushing properties. Rheology modifier types and levels will depend on a number of formula variables including paint solids, PVC, surfactant, solvent type and content as well as economics.

To achieve the best overall balance of high shear and low shear viscosity; urethane associative thickeners are recommended.

Low Shear

RM825	1.5 to 3.0 lbs./100 gal.
RM8W	1.5 to 3.0 lbs./100 gal.
RM12W	2.0 to 5.0 lbs./100 gal.
Rheolate 300	6.0 to 9.0 lbs./100 gal.

High Shear

RM2020	15 to 25 lbs./100 gal.
Rheolate 350	10 to 15 lbs./100 gal.

Please note that the best results have been achieved using solvent free thickeners, as they tend to provide better in-can viscosity stability.

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Raw Material Suppliers

Material

Supplier

Rheolate 350
Rheolate 300

Rheox, Inc.
(800) 866-6800

Laponite RDS

Southern Clay Products, Inc.
(800) 324-2891

Henkel DSX-2000
Dehydran 1620

Henkel Products
(215) 628-1000

Propylene Glycol
Dowanol DPM

Dow Chemical Company, Inc.
(800) 447-4369

Texanol

Eastman Chemical Company
(800) EASTMAN

Surfynol 104E

Air Products and Chemicals, Inc.
(800) 345-3148

Ti-Pure R-700
Ti-Pure R-900

DuPont
(800) 441-9485

Tronox XR-828

Kerr McGee
(800) 654-3911

Tiona RCL-535

SCM Chemical
(800) 638-3234

Tioxide TR-80
Tioxide TR-92

Tioxide America, Inc.
(708) 663-4900

Kronos 2310

Kronos, Inc.
(800) 866-5600

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