

Powder Coatings

JONCRYL®
Selection
Guide

 **BASF**

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Powder Coatings



Acrylic Advantages

- Superior Chemical Resistance
- Enhanced Hardness
- Excellent Scratch/Mar Resistance
- Improved Exterior Durability
- Color and Gloss Stability in Low Gloss Formulations

Formulating & Processing Acrylic Powder Coatings

Acrylic polymers used in powder coatings offer a unique backbone, which provides improved exterior durability, hardness and chemical resistance.

The uniqueness of the polymer requires different formulating and processing techniques compared to other chemistry offerings. An important part of formulating with acrylic epoxy hybrids is the choice of epoxy resin. Not all epoxies develop equal performance when reacted with carboxy functional acrylics. Gloss and flexibility are the main properties affected by choice of epoxy. Additional information and recommended epoxy choice can be found in the Product Review, "Acrylic Epoxy Hybrids Choice of Epoxy."

Another important part of formulating with acrylic epoxy hybrid powder coatings is the choice and necessity of using a catalyst. Imidazole-based catalysts are recommended for optimal properties. ACTIRON® NXJ 60 P (2-propyl imidazole) made by Synthron, Inc., has demonstrated the optimal properties in acrylic epoxy hybrid systems. For the best impact resistance, levels of 0.2-0.25% on total formulation of ACTIRON NXJ 60 P are recommended. Several of our resins incorporate 2-propyl imidazole into the polymer, namely JONCRYL 820 and JONCRYL 822.

To consistently achieve full gloss and mechanical properties, acrylic epoxy hybrids need to be adequately premixed, where the acrylic must be reduced in particle size. Due to the nature of the polymer, acrylics tend to have much higher molecular weights and viscosities compared to polyesters and epoxies. It is important to note this difference when processing acrylic powder coatings. Theoretically, the epoxy resin melts very quickly in the extruder while the acrylic resin melts more slowly. Reducing the particle size reduces this disparity. The most important factor is the differential temperatures between heating zones. A large differential is recommended for optimal processing. The following zone temperatures are recommended.

- Zone 1 Temperature 60°C (140°F)
- Zone 2 Temperature 105°C (221°F)

Technology Corner

BASF offers a low temperature cure technology to meet the current market needs for reduced cure temperature, resulting in lower energy cost. Acrylic hybrid technology offers the ability to make consistent low gloss formulations cured at temperatures of 140°C (285°F). In addition, acrylic hybrids offer improved hardness, scratch resistance and chemical resistance. JONCRYL 845 in combination with JONCRYL 821 offers an economical low gloss acrylic hybrid formulation with excellent adhesion and chemical resistance.

Physical Properties										Key Benefits					Applications							
	Functionality	Acid/Hydroxyl Number	Eq. Wt.	Mw	Softening Point °C	Tg °C	FDA Status 175.300	Chemistry	Chemical Resistance	Corrosion Resistance	Flexibility	Flow	Hardness	Appliance	Auto Trim/Wheels	Under-body	General Industrial Low Gloss	Metal Furniture	General Industrial High Gloss	Description		
Hydroxyl Acrylics																						
JONCRYL® 587	Hydroxyl	92	610	18,000	110	60	No	Urethane	■			■	■		■					Acrylic polyol designed for UV-resistant powder coatings.		
JONCRYL 804	Carboxyl/Hydroxyl	15/45	1,300	12,500	105	60	No	Urethane				■	■		■					Acrylic polyol designed for UV-resistant powder coatings.		
Carboxyl Acrylics																						
JONCRYL 682	Carboxyl	238	236	1,700	105	56	No	Hybrid	■	■		■				■	■*2			Acrylic resin for semi-gloss acrylic hybrid powder coatings.		
JONCRYL 815	Carboxyl	38	1,476	10,000	105	55	Yes	Hybrid						■		■			■	Acrylic resin for 70/30 acrylic hybrid powder coatings; excellent compatibilizer. (FDA 175.300)		
JONCRYL 817	Carboxyl	55	1020	14,000	120	68	No	Hybrid	■				■	■		■			Interior	■	Acrylic resin for 60/40 acrylic hybrid powder coatings.	
JONCRYL 819/820	Carboxyl	75	748	15,000	115	57	No	Hybrid	■		■		■	■		■			Interior	■	Acrylic resin for 50/50 acrylic hybrid powder coatings.	
JONCRYL 821/822	Carboxyl	70	800	10,500	112	62	No	Hybrid	■		■	■	■	■		■			Interior	■	Acrylic resin for 50/50 acrylic hybrid powder coatings.	
JONCRYL 843	Carboxyl	204	275	6,100	140	86	Yes*1	Hybrid	■	■						■			■*2		Acrylic resin for ultra low gloss acrylic hybrid powder coatings.	
JONCRYL 845	Carboxyl	240	233	2,400	N/A	78	No	Hybrid	■			■								Interior	■	Acrylic resin for gloss control in acrylic hybrid powder coatings; excellent pigment dispersion, suitable for low temperature cure (140°C).
JONCRYL 848	Carboxyl	215	261	4,500	127	67	Yes*1	Hybrid		■	■					■				Interior	■	Acrylic resin for gloss control in acrylic hybrid powder coatings; also used as sole acrylic for ultra low gloss. (FDA 175.300)
GMA Acrylics																						
JONCRYL 1850	Glycidyl	N/A	550	21,000	N/A	55	No	--				■			■					Exterior	■	Acrylic resin for exterior durable low gloss powder coatings. Excellent durability.

*1 For use only in contact with food types IV-A, V, VII (Table 1) under use conditions E through G (Table 2); section 175.300 paragraph (D). It may be used with food type VII without use restrictions.

*2 Recommended for dark colors only.