



The Chemical Company

Polymers for Concrete Coatings



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Target Market - Clear and pigmented coatings for concrete substrates where chemical resistance, stain resistance, blush resistance, and hot-tire resistance are required. End-use examples are sidewalks, garage floors, pool decks, utility rooms, and driveways.

Target Products - JONCRYL® 1982, JONCRYL 1984, JONCRYL 1987, and JONCRYL 1992. All products are self-crosslinking with the exception of JONCRYL 1992, which is a conventional emulsion.

Test Methods - Depending on the application in question, the coating may be tested for water resistance, adhesion, chemical resistance, hot-tire pick-up, and wear resistance. All tests are done by applying two coats of paint at 300 ft²/gallon with 4-hours cure time between the two coats.

Product Selection - Special attention must be given to the end-use application and ultimate cost versus performance balance. BASF concrete coatings specialists can assist with product selection, problem solving, and starting point formulations.

Table 1. Key products

Product	Solids (wt. %)	Tg (°C)	MFFT (°C)	pH	Density (#/gal)	VOC Range (g/L)
JONCRYL 1982	41	78	>70	8.5	8.6	200 - 250
JONCRYL 1984	41	78	>70	8.4	8.6	200 - 250
JONCRYL 1987	42	14	12	8.5	8.6	75 -125
JONCRYL 1992	43	78	> 60	8.5	8.6	125 - 250

Table 2. Product positioning

Product	Description and Applications
JONCRYL 1982	<ul style="list-style-type: none"> Outstanding chemical and stain resistance
	<ul style="list-style-type: none"> Very hard material leading to high performance, clear and pigmented topcoats
	<ul style="list-style-type: none"> Excellent hot-tire pick-up
	<ul style="list-style-type: none"> Most price competitive of the self-crosslinking polymers
JONCRYL 1984	<ul style="list-style-type: none"> Outstanding chemical and stain resistance
	<ul style="list-style-type: none"> Very hard material leading to high performance, clear and pigmented topcoats
	<ul style="list-style-type: none"> Excellent hot-tire pick-up
	<ul style="list-style-type: none"> Better UV resistance than JONCRYL 1982
JONCRYL 1987	<ul style="list-style-type: none"> Can be formulated for low VOC
	<ul style="list-style-type: none"> Best UV and chemical resistance of the low VOC products
	<ul style="list-style-type: none"> Very good blush resistance
JONCRYL 1992	<ul style="list-style-type: none"> Most cost-effective polymer for applications where slightly reduced chemical resistance is acceptable
	<ul style="list-style-type: none"> Very hard product providing excellent hot-tire pick-up
	<ul style="list-style-type: none"> Not a self-crosslinking polymer

Test Methods



Table 3. Chemical testing - Chemical testing is performed over acid-etched concrete. Two coats of clear concrete coating is applied allowing 4 hours of dry time between applications and 7-days cure after second application. Filter discs are placed on the surface of the coating, saturated with the chemical, and covered with a watch glass. After 1 hour, the chemicals are wiped off the coating surface. The film is evaluated after a 24-hour recovery period. A 0-4 rating is used, with 0 being best (no effect) and 4 being worst.

Product	Brake Fluid	Gas	10% NaOH	Clorox® Bleach	70% IPA	50% Ethanol	Formula 409®	Original Windex®	Water
JONCRYL 1982	0	2	0	0	0	0	0	0	0
JONCRYL 1984	1	1	0	0	1	0	0	0	0
JONCRYL 1987	1	2	0	0	2	1	0	0	0
JONCRYL 1992	0	2	1	2	3	0	0	0	0

Table 4. Hot-tire pick-up - Hot-tire pick-up testing is performed over acid-etched concrete. Both pigmented and clear systems were tested. Two coats of concrete coating are applied allowing 4 hours of dry time between applications and 3-days cure after second application. A one inch square piece of tire is placed on the surface of the coating and 25 lbs. of pressure is applied using a preheated Kohler block tester, which is then placed in a 60°C oven for 90 minutes. The tire is removed and the coating is rated by the force required to release the tire from the coated concrete. This test is done to mimic a hot tire on coated concrete.

Product	Hot-tire Resistance Over Clear Coating	Hot-tire Resistance Over Pigmented Coating	Staining
JONCRYL 1982	Excellent	Excellent	Some
JONCRYL 1984	Excellent	Excellent	Some
JONCRYL 1987	Good	Excellent	Some
JONCRYL 1992	Excellent	Excellent	Some

Table 5. Water immersion and blush resistance - Testing is performed over acid-etched concrete. Two coats of clear concrete coating are applied, allowing 4 hours of cure between applications and 4-hours cure after final application. The coated concrete panels are then immersed in water. After overnight immersion, the panels are removed and evaluated for blushing. The panels are then returned to the water for 7 days and re-evaluated for blushing and adhesion.

Product	1 Day Immersion	7 Day Immersion	Adhesion After 7 Day Immersion
JONCRYL 1982	No damage	Slight blush	Good
JONCRYL 1984	No damage	Slight blush	Fair
JONCRYL 1987	No damage	No damage	Good
JONCRYL 1992	No damage	No damage	Fair



Table 6. Adhesion testing - Wet and dry adhesion testing is performed on acid-etched concrete. Two coats are applied, allowing 4 hours of cure time between applications. Ratings are done based on side-by-side comparisons of each coating.

Product	Dry Adhesion		Wet Adhesion	
	1-Day Cure	7-Day Cure	1-Day Cure	7-Day Cure
JONCRYL 1982	Good	Excellent	Good	Good
JONCRYL 1984	Good	Very good	Good	Good
JONCRYL 1987	Very good	Very good	Very good	Very good
JONCRYL 1992	Good	Very good	Good	Good

Table 7. Pendulum hardness - Testing is done with coatings drawn down over aluminum at 1.25 mils thickness. Number of osc/swings is the unit of measurement.

Product	1 Day	3 Day	7 Day
JONCRYL 1982	60	94	110
JONCRYL 1984	69	91	101
JONCRYL 1987	31	44	57
JONCRYL 1992	36	79	96

Starting Point Formulations



Starting point formulations for all JONCRYL emulsions are available upon request. All formulations listed here are examples of the coatings that were used for all testing contained in this selection guide. Please feel free to consult our concrete specialists for guidance regarding any of our products.

Table 8. Starting point for pigmented formulations

JONCRYL 1982			JONCRYL 1987		
Material	Pounds	Gallons	Material	Pounds	Gallons
Water	125.69	15.1	Water	119.34	14.32
BYK® 024	3.49	0.42	BYK 024	3.49	0.42
Surfynol® CT 324	6.97	0.79	Surfynol CT 324	6.97	0.79
Ti-Pure® R706	94.66	2.84	Ti-Pure R706	94.66	2.84
Minex® 7	146.48	6.75	Minex 7	146.48	6.75
Attagel® 50	3.98	0.2	Attagel 50	3.98	0.2
DSX® 1550	1.25	0.14	DSX 1550	1.25	0.14
Grind for 20 minutes @ 3000 RPM			Grind for 20 minutes @ 3000 RPM		
Water	50.28	6.04	Water	108.29	13
Dowanol® DPnB	71.26	9.42	Dowanol DPnB	30.78	4.07
Joncryl 1982	481.53	56.12	Joncryl 1987	478.29	55.62
BYK 024	3.49	0.42	BYK 024	3.49	0.42
Joncryl 120	8.97	1.11	Joncryl 120	8.97	1.11
DSX 1550	5.78	0.65	DSX 1550	2.83	0.32
Total weight	1003.83	100	Total weight	1008.82	100
Physical Properties			Physical Properties		
Viscosity (KU)	80		Viscosity (KU)	80	
VOC	200		VOC	100	
Density	10.04		Density	10.09	
Specific gravity	1.21		Specific gravity	1.21	
Vol % solids	34		Vol % solids	34	
Wt % solids	46		Wt % solids	46	
P/B ratio	1.13		P/B ratio	1.12	
PVC	28.89		PVC	28.72	

Table 9. Starting point for clear formulations

JONCRYL 1982			JONCRYL 1987		
Material	Pounds	Gallons	Material	Pounds	Gallons
Joncryl 1982	627.75	73.16	Joncryl 1987	620.46	72.15
Dynol® 604	3.37	0.42	Dynol 604	3.33	0.41
Tego® Foamex	4.04	0.49	Tego Foamex	4.04	0.49
Water	135.91	16.32	Water	196.84	23.63
Dowanol DPnB	72	9.52	Dowanol DPnB	24.48	3.23
DSX-1550	0.78	0.09	DSX-1550	0.78	0.09
Total weight	843.85	100	Total weight	849.93	100
Physical Properties			Physical Properties		
Viscosity (Zahn #2)	23 sec.		Viscosity (Zahn #2)	23 sec.	
VOC	231		VOC	100	
Density	8.44		Density	8.5	
Specific gravity	1.01		Specific gravity	1.02	
Vol % solids	29		Vol % solids	29	
Wt % solids	31		Wt % solids	31	

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