

POWDER COATINGS RESINS

Product Guide - Americas



About allnex



Facts & Figures

- Global company with \$2.2 bn in sales
- Broad Technology portfolio: liquid coating resins, energy curable resins, powder coating resins, crosslinkers and additives, composites and construction materials
- Approximately 4000 employees
- Customers in more than 100 countries
- 33 manufacturing facilities
- 23 research and technology centers
- 5 joint ventures
- Extensive range of solutions for key coating segments: automotive, industrial, packaging coating and inks, protective, industrial plastics and specialty architectural

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With manufacturing, R&D and technical facilities located throughout Europe, North America, Asia Pacific and Latin America, allnex offers global and reliable supply of resins and additives combined with local, responsive customer support.

Introduction

One Source Global Supplier

allnex is a single-source, worldwide supplier of high-quality powder coating resins, hardeners, and additives. We offer one of the broadest lines of top-name polyester resins, coupled with global product availability, and expert technical support.

Leading-edge Technologies

allnex continues to pioneer the development of innovative technologies for a wide range of surfaces:

- Superdurable resins for exterior powder applications
- Resins for clearcoat and matte finishes
- Resins for low bake powder systems
- UV curing powder systems

Our newest resin technologies are designed for cutting-edge applications where powder paints are not widely used, including industrial and automotive finishes:

- High-performance exterior durable systems
- Natural and manufactured wood products
- Plastic and other heat-sensitive substrates

Wide Selection of Top Products

As a leading global supplier of powder coating resins, hardeners and additives, allnex offers one of the broadest choices of resins for powder coating finishes.

Proven worldwide, our extensive selection of CRYLCOAT® polyester resins include carboxyl and hydroxyl functional resins for hybrid, TGIC, glycidylester, hydroxy alkyl amide, urethane, and glycoluril powder coating systems.

For new technologies like UV curable powder coatings, we have one of the widest product ranges available, including UVECOAT® unsaturated resins.

allnex's powder coating resin technologies also include SYNTHACRYL® matting agents, specialty hardeners, and additives which can be supplied on a silica or resin carrier.

For improving flow and leveling characteristics in all types of coatings, the versatile MODAFLOW® powder

product family is the benchmark name among flow modifiers and powder resins in the coatings industry.

Bringing value to the formulation of powder coatings are ADDITOL® masterbatch flow modifiers, catalysts and related products. Additionally, BECKOPOX™ and ADDITOL specialty hardeners solve problems related to flow, and provide special textures or performance to finished coatings.



Product index

Product	Description
Vehicle Binder Resins	
CRYLCOAT®	Polyester powder coating resins – Hydroxyl (-OH) resins for polyurethane and glycoluril powder coatings – Carboxyl (-COOH) resins for hybrid, TGIC ¹ , glycidylester ² and β-HAA powder coatings ³
UVECOAT®	Unsaturated resins for UV curable powder coatings.
Curing Hardeners (Powder Crosslinkers)	
ADDITOL®	Polyanhydride resin for epoxy functional (glycidyl) acrylics and urethane hardeners ⁴ for hydroxy functional binder resins.
BECKOPOX™	Anhydride-like resin for epoxy or hydroxy functional binder resins.
Powder Additives and Modifiers	
MODAFLOW®	Powder coating flow modifiers on silica carrier.
ADDITOL	Flow additives, catalysts and tribo masterbatches provided on resin carriers and photoinitiators to accelerate the cure of UV powder coatings.
SYNTHACRYL®	GMA-acrylic matting agent.

¹ Supplier: Huntsman

² PT-910: Trademark of Huntsman

³ Supplier: EMS-chemie, Evonik, and other suppliers

⁴ Supplier: Dow, Huntsman and other suppliers

Product Nomenclature

Thermoset powder coatings are typically cured in a temperature range of 160-200°C (object temperature) for 10 minutes. General cure guidelines for products listed in this bulletin are summarized below.

Cure Temperature and Time Definitions	
Slow	374°F (190°C) or greater for 10 min
Medium	~338 - 356°F (170 - 180°C) for 10 min
Fast	~ 320°F (160°C) for 10 min
Low Temp	302°F (150°C) for 10 - 30 min

Low temperature cure is used for heat sensitive substrates or thick metallic objects. allnex has products that can achieve the desired results through thermoset or UV cure.

The resin selection guide allows formulators to select resins for a given coating effect. The color background used for each product in the charts helps to delineate special product features, as summarized in the table below. From the wide range of resins available, users can match the desired properties with the required coating performance.

Resin Selection Guide
● CRYLCOAT® polyester resins
● CRYLCOAT new generation hybrid polyester resins
● CRYLCOAT polyester resin pair for one-shot matte finishes
● CRYLCOAT polyester resin pair for matte dry blend finishes
● CRYLCOAT polyester resins for clearcoats
● UVECOAT® unsaturated resins
● ADDITOL® masterbatch and additives MODAFLOW® powder flow modifiers SYNTHACRYL® acrylic resins

The nomenclature of the allnex product line for powder coatings is provided in the table below.

Some of allnex's newer products are referenced with an "E" designation. These resins have been recently developed and have only been commercially available for a short time, and do not follow the product nomenclature system.

Digit 1	Digit 2	Digit 3 & 4	Digit 5
CRYLCOAT® System - 5 Digit System			
1 = Hybrid	5 = 50/50 6 = 60/40 7 = 70/30 8 = 80/20	Whenever possible equivalent to last two digits of former product name	- 0 = Standard (no additives) - 1 = Tribo - 2 = Overbake - 3 = Tribo & Overbake - 4 = Clearcoat - 5 = Special - 6 = Low bake (< 160°C)
2 = Standard Outdoor 4 = Superdurable Outdoor 8 = Crystalline 9 = Other	4 = TGIC 5 = PT-910 6 = Hydroxyalkyl Amide 8 = Urethane 9 = Wrinkle Finish		

Masterbatch Type	Number
ADDITOL® System	
Flow Aid	P 800 - P 899
Tribo, Catalysts, Crosslinkers	P 900 - P 999

Type	Number
UVECOAT® System	
General Purpose Resins	1000 - 1999
Resins for Metal Substrates	2000 - 2999
Resins for Wood and Plastic Substrates	3000 - 3999
Special (i.e., crystalline)	9000 - 9999

Type	Number
SYNTHACRYL® System	
Acrylic - All	p 700 - p 799

Polyester Resins for Hybrid Powder Coatings

	50/50 Acid # ~70	55/45 to 60/40 Acid # ~50-60	70/30 to 80/20 Acid # ~20-35
200°C 392°F	● CRYLCOAT® 1544-4	● CRYLCOAT 1660-0	● CRYLCOAT 1702-0
		● CRYLCOAT 1622-0	● CRYLCOAT 1783-0
180°C 356°F	● CRYLCOAT 1510-0	● CRYLCOAT 1650-2	● CRYLCOAT E04143
	● CRYLCOAT 1514-2	● CRYLCOAT 1671-0	● CRYLCOAT 1770-0
	● CRYLCOAT 1557-5	● CRYLCOAT 1658-5	● CRYLCOAT 1771-0
	● CRYLCOAT 1573-0	● CRYLCOAT 1620-0	● CRYLCOAT 1725-0
		● CRYLCOAT 1626-0	● CRYLCOAT 1781-0
		● CRYLCOAT 1627-0	● CRYLCOAT 1721-0
170°C 338°F			
160°C 320°F	● CRYLCOAT 1540-0		● CRYLCOAT 1750-0
	● CRYLCOAT 1593-0		● CRYLCOAT 1701-0
	● CRYLCOAT 1506-0		
150°C 302°F		● CRYLCOAT 1680-6	
≤140°C ≤284°F	● CRYLCOAT 1574-6		

- CRYLCOAT polyester resins
- CRYLCOAT new generation hybrid polyester resins

Typical Properties for Hybrid Resins

CRYLCOAT®	Ratio	Acid #	Visc.a	Tg(C°)	Cure	Benefit	Flow	Chemical	Overbake	Economics
● 1506-0	50/50	71	8000	62	160°C	Good overbake	o	++	+	-
● 1510-0	50/50	71	8500 ^b	58	180°C	High loading possible	o	+	-	o
● 1514-2	50/50	71	9250 ^b	55	180°C	Excellent overbake	+	o	++	--
● 1540-0	50/50	71	8700 ^b	58	160°C	Good pigment wetting	o	+	--	o
● 1544-4	50/50	70	2500	54	200°C	Blend resin	+	+	o	+
● 1557-5	50/50	71	2000	50	170°C	Scratch resistance	-	+	o	-
● 1573-0	50/50	70	3500	56	180°C	Economical formulation	o	o	-	++
● 1593-0	50/50	70	3500	54	160°C	Economical formulation	-	+	-	++
● 1620-0	55/45	60	2650	54	170°C		-	o	o	+
● 1622-0	55/45	60	2500	54	200°C		+	o	o	+
● 1626-0	60/40	48	3000	52	180°C	Workhorse resin	++	o	--	++
● 1627-0	60/40	44	4000	62	180°C	High Tg	+	o	--	++
● 1650-2	60/40	50	4200	57	200°C		+	-	o	-
● 1658-5	60/40	53	2500	57	170°C	Scratch resistance	-	+	o	-
● 1660-0	60/40	48	9400 ^b	50	200°C	High loading possible	++	o	o	-
● 1671-0	60/40	48	11200 ^b	50	180°C	Outstanding gloss	++	o	--	-
● 1680-6	60/40	48	10500 ^b	50	150°C		--	o	-	--
● 1701-0	70/30	36	6300	62	170°C	Overbake resistance	o	-	+	o
● 1702-0	70/30	36	5300	62	200°C		+	-	+	o
● 1721-0	70/30	40	5000	55	180°C		-	-	o	+
● 1725-0	70/30	30	6400	55	180°C	TMA free	o	o	o	-
● 1750-0	70/30	34	4750	54	160°C	Non-blooming	-	-	--	+
● 1770-0	70/30	34	5400	58	180°C	Economical formulation	o	-	-	++
● 1771-0	70/30	33	4700	56	180°C		o	-	-	++
● 1781-0	70/30	33	5000	60	180°C	High Tg	-	-	o	++
● 1783-0	70/30	34	5000	58	200°C		o	-	o	+
● E04143	80/20	22	10000 ^b	57	200°C	Good balance of properties	o	--	--	++
● 1574-6	50/50	71	5000	50	140°C	Low cure for MDF	--	+	o	o

++ Outstanding + Excellent o Good - Fair -- Poor

^a Viscosity at 200°C unless otherwise specified

^b Viscosity at 175°C

** For a detailed description of FDA Status, please refer to page 20

- CRYLCOAT polyester resins
- CRYLCOAT new generation hybrid polyester resins

Polyester Resins for TGIC Powder Coatings

	93/7 Acid # ~33	95/5 Acid # ~25	90/10 Acid # ~50	Superdurable
200°C 392°F	● CRYLCOAT® 2437-0	● CRYLCOAT 2695-0	● CRYLCOAT 2414-0	● CRYLCOAT 4430-0
	● CRYLCOAT 2401-2	● CRYLCOAT 2432-0		● CRYLCOAT 4432-4
	● CRYLCOAT 2471-4			● CRYLCOAT 4659-0
	● CRYLCOAT 2689-0			● CRYLCOAT 4488-0
	● CRYLCOAT 2441-2			● CRYLCOAT 4420-0
	● CRYLCOAT 2488-2			
	● CRYLCOAT 2425-0			
	● CRYLCOAT 2430-0			
	● CRYLCOAT 2440-2			
180°C 356°F	● CRYLCOAT 2408-0			
	● CRYLCOAT 2421-5			
	● CRYLCOAT 2450-2			
160°C 320°F	● CRYLCOAT 2409-0			
	● CRYLCOAT 2494-6			
	● CRYLCOAT 2473-4			
	● CRYLCOAT 2433-2			

- CRYLCOAT polyester resins
- CRYLCOAT polyester resin pair for matte dry blend finishes
- CRYLCOAT polyester resins for clearcoats

Typical Properties for TGIC Resins

CRYLCOAT®	Ratio	Acid #	Visc.a	Tg(C°)	Cure	Benefit	Flow	Weathering	Overbake	Economics
● 2401-2	93/7	33	3500	60	200°C	Flexibility	++	o	+	o
● 2408-0	93/7	33	4500	55	180°C		o	o	++	o
● 2409-0	93/7	33	3900	58	160°C	TMA-free	o	-	o	-
● 2414-0	90/10	47	4700	57	200°C	Dry blend semi-matte finish w/ 2432-0. Gloss from 25-35	-	-	-	-
● 2421-5	93/7	33	4500	63	180°C	For PCM Applications	o	o	++	--
● 2425-0	93/7	34	6200	70	200°C		+	-	+	++
● 2430-0	93/7	30	9800	69	200°C		-	o	+	o
● 2432-0	96/4	20	7900	53	200°C	Dry blend semi-matte finish w/ 2414-0. Gloss from 25-35	--	o	+	-
● 2433-2	93/7	33	3000	60	160°C		o	o	+	-
● 2437-0	93/7	33	3200	62	200°C	Non-blooming	++	o	+	--
● 2440-2	93/7	33	5100	67	200°C	Workhorse	o	o	+	o
● 2441-2	93/7	33	5000	67	200°C	Workhorse	+	o	+	o
● 2450-2	93/7	33	5000	67	180°C		o	-	++	o
● 2471-4	93/7	33	3500	58	200°C	Smoothness	++	o	+	o
● 2473-4	93/7	33	3200	63	160°C	Clarity	-	o	+	o
● 2488-2	93/7	34	6000	64	200°C	Suitable for matting	o	o	+	++
● 2494-6	93/7	33	2800	58	160°C	Non-blooming	-	-	o	o
● 2689-0	93/7	34	4000	62	200°C	Also used with HAA	o	--	o	+
● 2695-0	95/5	25	5500	59	200°C	Also used with HAA	+	--	o	+
● 4420-0	90/10	51	5500	64	200°C	Dry blend semi-matte finish w/ 4430-0. Gloss from 25 -35	-	++	o	--
● 4430-0	93/7	35	2000	62	200°C	Superdurable	++	++	o	-
● 4432-4	93/7	35	2300	62	200°C	Superdurable	++	++	o	--
● 4488-0	93/7	30	5400	64	200°C	Best Florida data	-	++	++	-
● 4659-0	93/7	33	3600	59	200°C	Flexibility	++	+	o	+

++ Outstanding + Excellent o Good - Fair -- Poor

** For a detailed description of FDA Status, please refer to page 20

- CRYLCOAT polyester resins
- CRYLCOAT polyester resin pair for matte dry blend finishes
- CRYLCOAT polyester resins for clearcoats

Polyester Resins for Hydroxyalkyl Amide Powder Coatings

96.5/3.5 Acid # ~25	95/5 Acid # ~33	92/8 Acid # ~50	90/10 Acid # ~70	Superdurable
● CRYLCOAT® 2695-0	● CRYLCOAT 2618-3	● CRYLCOAT 2671-3	● CRYLCOAT 2621-2	● CRYLCOAT 4688-2
● CRYLCOAT 2691-2	● CRYLCOAT 2617-3	● CRYLCOAT 2620-2	● CRYLCOAT 2650-3	● CRYLCOAT 4642-3
	● CRYLCOAT 2689-0	● CRYLCOAT 2655-6	● CRYLCOAT 2626-2	● CRYLCOAT 4659-0
	● CRYLCOAT 2682-1			● CRYLCOAT 4626-0
	● CRYLCOAT 2670-3			● CRYLCOAT 4641-0
	● CRYLCOAT 2698-3			● CRYLCOAT 4420-0

180°C
↕
200°F

allnex also offers one shot matte powder coatings for hydroxyalkyl amide crosslinkers.

	HAA Standard		HAA Superdurables
Dry Blend Gloss Control Systems			
Semi-Gloss	● CRYLCOAT 2622-2 Acid #21		
	● CRYLCOAT 2620-2 Acid #50		
	● Gloss 30 - 40		
Semi-Matte	● CRYLCOAT 2670-3 Acid #20	● CRYLCOAT 2650-3 Acid #70	● CRYLCOAT 4641-0 Acid #20
	● CRYLCOAT 2671-3 Acid #47	● CRYLCOAT 2670-3 Acid #20	● CRYLCOAT 4420-0 Acid #51
	● Gloss 32 - 36	● Gloss 25 - 35	● Gloss 25 - 35
Matte	● CRYLCOAT 2691-2 Acid #21		
	● CRYLCOAT 2621-2 Acid #72		
	● Gloss 20 - 30		

- CRYLCOAT polyester resins
- CRYLCOAT polyester resin pair for matte dry blend finishes

Typical Properties for Hydroxyalkyl Amide Resins

CRYLCOAT®	Ratio	Acid #	Visc. ^a	Tg(C°)	Cure	Benefit	Flow	Weathering	Overbake	Economics
● 2617-3	95/5	33	3500	61	180°C	TMA free	+	o	+	o
● 2618-3	95/5	35	3100	61	180°C	Gas oven stabilized	++	+	+	o
● 2620-2	92/8	50	4200	58	180°C	Semi-gloss dry blend	o	o	o	-
● 2621-2	90/10	72	4000	62	200°C	Matte dry blend	o	o	o	--
● 2622-2	96/4	21	5300	61	200°C	Semi-gloss dry blend	+	o	o	-
● 2626-2	90/10	71	9600	55	200°C		--	o	-	--
● 2650-3	90/10	70	6200	51	200°C	For very low gloss	o	o	-	--
● 2655-6	93/7	47	5800	58	160°C	Low cure options	o	o	o	--
● 2670-3	97/3	20	6000	64	200°C	Semi-matte dry blend	+	+	o	o
● 2671-3	93/7	47	4000	62	180°C	Semi-matte dry blend	o	+	-	-
● 2682-1	95/5	34	6000	64	200°C		o	-	o	o
● 2689-0	95/5	34	4000	62	180°C	Workhorse	+	-	o	+
● 2691-2	97/3	21	7600	62	200°C	Matte dry blend	+	-	+	++
● 2695-0	96.5/3.5	25	5500	59	180°C	Workhorse	o	--	o	++
● 2698-3	95/5	33	3500	56	180°C	High flow	++	o	+	-
● 4420-0	92/8	51	5500	64	200°C	Matte dry blend superdurable	o	++	--	--
● 4626-0	92/8	50	4300 ^b	64	180°C	Storage stability	+	++	--	--
● 4641-0	97/3	20	4200	60	200°C	Matte dry blend superdurable	+	++	o	o
● 4642-3	95/5	35	1900	62	180°C		++	++	-	-
● 4659-0	95/5	33	3600	59	190°C		+	++	-	+
● 4688-2	95/5	30	5500	54	180°C	Flexible superdurable	++	++	-	--

++ Outstanding + Excellent o Good - Fair -- Poor

^a Viscosity at 200°C unless otherwise specified

^b Viscosity at 175°C

** For a detailed description of FDA Status, please refer to page 20

CRYLCOAT	Acid #	OH #	Visc. ^a	Tg(C°)	Description
One-Shot Gloss Control System					
● 2611-0	25	3	5500	58	Polyester-HAA durable system that achieves a gloss range from 8-12%.
● 2687-2	90	5	3500	58	
● 2635-2	85	5	3000	57	
● 2638-2	33	1	5500	62	Polyester-HAA durable system that achieves a gloss range from 25-40%.
● 4693-2	90	5	3500	58	
● 4651-0	21	1	4000	59	
● 4629-0	30	2	3500	57	Polyester-HAA superdurable system that achieves a gloss range from 8-12%.
● 4645-2	90	5	2000	55	
Polyester-HAA superdurable system that achieves a gloss range from 25-40%.					

- CRYLCOAT polyester resins
- CRYLCOAT polyester resin pair for matte dry blend finishes

Hydroxyl Polyester Resins for Urethane Powder Coatings

OH # 30-40	OH # ~50	OH # 80-100	OH # >200	Superdurable
● CRYLCOAT® 2890-0	● CRYLCOAT 2883-0	● CRYLCOAT 2818-0	● CRYLCOAT E04176	● CRYLCOAT 4890-0
● CRYLCOAT 2845-0	● CRYLCOAT 2839-0			● CRYLCOAT 4874-0
● CRYLCOAT 2872-0	● CRYLCOAT 2860			● CRYLCOAT E04290

Urethane Standard	Urethane Superdurable
One Shot Gloss Control Systems	
● CRYLCOAT E04176 OH #290	● CRYLCOAT 4874-0 OH #290
● CRYLCOAT 2860-0 OH #50	● CRYLCOAT E04290 OH #30
● Gloss from 8 - 30	● Gloss from 8 - 30

Wrinkle System	NCO Hardeners
Specialty Hydroxyl Polyester Resins and Hardeners	
● CRYLCOAT 2920-0	● ADDITOL P 932
● ADDITOL® P 920	● ADDITOL P 965
	● BECKOPOX™ EH 694 ANHYDRIDE HARDENER

- CRYLCOAT polyester resins
- CRYLCOAT polyester resin pair for one-shot matte finishes
- ADDITOL masterbatch and additives
 - MODAFLOW® powder flow modifiers
 - SYNTHACRYL® acrylic resins

Typical Properties for Hydroxyl Resins and Hardeners

CRYLCOAT®	OH #	Visc.a	Tg(C°)	Cure	Benefit	Flow	Weathering	Overbake	Economics
● 2818-0	100	3200	58	200°C	Chemical resistance	--	o	+	--
● 2839-0	50	5500	57	200°C	Workhorse	-	-	-	+
● 2845-0	35	7100	57	200°C	Workhorse	-	-	-	++
● 2872-0	40	3700	55	200°C	Chemical resistance	o	o	o	+
● 2883-0	47	4000	61	200°C	Excellent hardness	+	o	+	-
● 2890-0	30	6700	60	200°C	Workhorse	+	o	+	o
● 2920-0	33	12700	67	200°C	Wrinkle	--	o	o	-
● 4890-0	30	5000	58	200°C		++	++	+	++
● 2860-0	50	3500	52	200°C	One shot matte	o	o	o	-
● E04176	290	4500	58	200°C	One shot matte	--	o	o	--
● E04290	30	5500	56	200°C	One shot matte w/ 4874-0	++	++	o	--
● 4874-0	290	3000	52	200°C	Anti-graffiti	--	++	--	--

ADDITOL®	OH #	NCO %	Tg(C°)	Benefit	Flow	Weathering	Overbake	Economics
● P 920	42	N/A	58	Wrinkle	--	o	o	o
● P 932	N/A	9-10	62	Canada only	+	o	o	-
● P 965	N/A	16-17	62	Aromatic urethane	-	--	+	-

BECKOPOX™	Acid #	MP(C°)	Cure	Benefit	Flow	Weathering	Overbake	Economics
● EH 694	31	50-60	N/A	Chemical resistance	o	o	-	o

- ++ Outstanding + Excellent o Good - Fair -- Poor
^a Viscosity at 200°C
 ** For a detailed description of FDA Status, please refer to page 20.

- CRYLCOAT polyester resins
- CRYLCOAT polyester resin pair for one-shot matte finishes
- ADDITOL masterbatch and additives
 - MODAFLOW® powder flow modifiers
 - SYNTHACRYL® acrylic resins

Resins for Low Temperature Cure Powder Coatings

allnex is dedicated to finding new applications for powder coating resins. Since many materials are sensitive to heat, standard thermoset powder coatings cannot be used. allnex has products that can be used in low temperature thermoset coatings as well as UV powder coatings. These technologies offer the following advantages compared to standard thermoset coatings:

- Cost savings during application by using less energy
- The most environmentally friendly coatings on the market
- Expanding the reach of powder into temperature sensitive substrates such as wood, plastic, and paper

This portfolio represents low temperature cure offerings across three product lines: CRYLCOAT® polyester resins for thermoset powder coatings, UVECOAT® resins for UV powder coatings, and ADDITOL® catalyst masterbatches that can lower the cure time and temperature of thermoset powder coatings.

Metal Applications	MDF/Wood Applications	PVC Applications	Toner Applications	Additives
● CRYLCOAT 1680-6	● CRYLCOAT 1574-6	● UVECOAT 3003	● UVECOAT T37621	● ADDITOL P 964
● CRYLCOAT 2409-0	● UVECOAT 3002			● ADDITOL P 963
● CRYLCOAT 2494-6	● UVECOAT 3005			● ADDITOL P 966
● CRYLCOAT 2473-4				● UVECOAT 9010
● CRYLCOAT 2433-2				● UVECOAT 9539
● UVECOAT 2100				
● UVECOAT 2200				

- CRYLCOAT polyester resins
- CRYLCOAT polyester resins for clearcoats
- UVECOAT unsaturated resins
- ADDITOL masterbatch and additives
- MODAFLOW® powder flow modifiers
- SYNTHACRYL® acrylic resins

Typical Properties for Low Temperature Cure Powder Coating Resins

Product	Viscosity (temp.)	Tg(C°)	Product use
Thermal Cure			
● ADDITOL® P963	3400 (200°C)	N/A	Catalyst for use in pigmented hybrid and TGIC coatings.
● ADDITOL P964	3200 (200°C)	N/A	Catalyst for use in pigmented hybrid and TGIC coatings.
● ADDITOL P966	1900 (200°C)	N/A	Catalyst for use in superdurable pigmented TGIC coatings.
● CRYLCOAT® 1680-6	10500 (175°C)	50	60/40 hybrid resin that can cure down to 150°C.
● CRYLCOAT 2409-0	3900 (200°C)	N/A	Smoothest TGIC resin for cure at 160°C and lower.
● CRYLCOAT 2494-6	2800 (200°C)	60	Non-blooming TGIC resin for cure at 160°C and lower.
● CRYLCOAT 2473-4	3200 (200°C)	49	160°C TGIC resin for use in clear powder coatings.
● CRYLCOAT 2433-2	3000 (200°C)	57	Workhorse resin that can cure at 160°C.
● CRYLCOAT 1574-6	5000 (200°C)	50	50/50 hybrid that can cure as low as 120°C.
UV Cure			
● UVECOAT® 2100	5500 (200°C)	57	Exterior durable UV powder resin for use in clear and pigmented coatings.
● UVECOAT 2200	4500 (200°C)	54	Superdurable UV powder resin that can achieve 1000+ hours corrosion resistance.
● UVECOAT 3002	4500 (175°C)	49	For MDF and wood substrates. Can be used for clear and pigmented systems. Excellent chemical resistance and improved UV resistance.
● UVECOAT 3003	3200 (175°C)	49	Improved chemical and abrasion resistance with good flexibility for indoor PVC applications.
● UVECOAT 3005	4000 (200°C)	48	General purpose grade for MDF and wood applications. Good chemical resistance.
● UVECOAT 9010	350 (100°C)	85	Semi-crystalline unsaturated additive to improve smoothness and flexibility.
● UVECOAT 9539	4000 (200°C)	44	For use with Uvecoat 2100 to provide excellent adhesion to various metal substrates.
● UVECOAT T37621	5200 (200°C)	51	Unsaturated resin that combines high reactivity and high Tg for toners.

- CRYLCOAT polyester resins
- CRYLCOAT polyester resins for clearcoats
- UVECOAT unsaturated resins
- ADDITOL masterbatch and additives
- MODAFLOW® powder flow modifiers
- SYNTHACRYL® acrylic resins

Masterbatches and Additives for Powder Coatings

Catalysts	Flow Promoters	Flow Aids	Tribo
● ADDITOL® P 964	● ADDITOL P 896	● MODAFLOW® POWDER III	● ADDITOL P 950
● ADDITOL P 963	● ADDITOL P 824	● MODAFLOW POWDER 6000	
● ADDITOL P 966	● ADDITOL P 820		
	● ADDITOL P 891		
	● ADDITOL P 810		
	Acrylic Hardener		
	● ADDITOL P 791		
	● BECKOPOX™ EH 694 ANHYDRIDE HARDENER		
	● SYNTHACRYL® 700 MATTING AGENT		

- ADDITOL masterbatch and additives
- MODAFLOW powder flow modifiers
- SYNTHACRYL acrylic resins

Typical Properties for Masterbatches and Additives

ADDITOL®	Acid/OH #	Visc. ^a	Tg (C°)	% Active	Used for	Flow	Catalyst	Tribo	Acrylic
● P 791	Acid #317	N/A	N/A	N/A	Coatings with Synthacryl 716				●
● P 810	OH #30	4500	N/A	5	Clear coatings	●			
● P 820	Acid #34	3000	60	10	Pigmented coatings	●			
● P 824	OH #45	1400	49	15	Pigmented coatings	●			
● P 891	Acid #35	2300	56	5	Clear coatings	●			
● P 896	OH #35	1700	57	15	Durable coatings	●			
● P 950	OH #28	8000	N/A	5	All coatings			●	
● P 963	Acid #33	3400	N/A	5	Hybrid and TGIC systems		●		
● P 964	Acid #33	3200	N/A	5	Hybrid and TGIC systems		●		
● P 966	Acid #35	1900	N/A	5	Superdurable coatings		●		

MODAFLOW®	Activity %	Volatile loss %	Density (g/cm ³)	Description
● Powder III	Min. 65	Max. 4	0.58 - 0.64	Addition of 0.6-1.5% of the total formulation. FDA listed monomers.
● Powder 6000	Min. 65	Max. 4	0.58 - 0.64	Addition of 0.6-1.5% of the total formulation. Excellent flow and gloss. Lessens cross-contamination issues.

SYNTHACRYL®	Epoxy EEW	Visc. ^a	Tg (C°)	Description
● 700	714	40000	80	Glycidyl poly acrylic for use as a matting hardener. Only available in Latin America.

BECKOPOX™	Acid #	MP(C°)	Cure	Benefit	Flow	Weathering	Overbake	Economics
● EH 694	31	50-60	N/A	Chemical resistance	o	o	-	o

++ Outstanding + Excellent o Good - Fair -- Poor
^a Viscosity at 200°C

- ADDITOL masterbatch and additives
- MODAFLOW powder flow modifiers
- SYNTHACRYL acrylic resins

FDA Status

Regarding the use of allnex polyester resins and additives in FDA applications:

The allnex Product Stewardship and Regulatory Affairs department can provide a certification letter verifying which CRYLCOAT® resins may be used in contact with food. The certificate for CRYLCOAT resins is limited for applications to articles used in repeated-use applications such as: kitchen appliances, refrigerator shelving, commercial food processing equipment, potable water tanks and food-preparation surfaces.

This provision holds true if the coatings are not used in contact with alcoholic foods and beverages and these coatings meet applicable end tests identified in 21 Code of Federal Regulations (CFR) § 175.300 (c). Other provisions may apply. For full compliance statement, please contact us at PSRA-Customer-requests@allnex.com. The following table lists CRYLCOAT resins that may be used in the type of repeated-use applications described here in full compliance with the Federal Food, Drug, and Cosmetic Act and all applicable regulations regarding food contact coatings, including 21 CFR § 175.300 (“Resinous and polymeric coatings”).

50/50 Hybrids	60/40 Hybrids	70/30 Hybrids	TGIC Resins	HAA Resins	OH Resins
CRYLCOAT Polyester Resins that Qualify under 21 CFR 175.300					
● 1510-0	● 1620-0	● 1701-0	● 2414-0	● 2620-2	● 2818-0
● 1514-2	● 1622-0	● 1702-0	● 2425-0	● 2621-2	● 2839-0
● 1540-0	● 1626-0	● 1721-0	● 2432-0	● 2689-0	● 2883-0
● 1544-4	● 1627-0	● 1750-0	● 2437-0	● 2691-2	● 2890-0
● 1573-0	● 1660-0	● 1770-0	● 2440-2	● 2689-0	● 2920-0
	● 1671-0	● 1771-0	● 2441-2	● 2695-0	● 4890-0
		● 1783-0	● 2450-2	● 4659-0	
			● 2471-4		
			● 2494-6		
			● 4430-0		
			● 4488-0		

allnex Powder Coating Additives that Qualify For CFR Title 21

MODAFLOW® and ADDITOL® powder products may be used in certain indirect food applications. These applications are regulated by the U.S. Food and Drug Administration (FDA), under Title 21 of the Code of Regulations, CFR sections listed here:

Product	175.105	175.300	177.1010
● MODAFLOW Powder III	Yes	Yes	Yes
● MODAFLOW Powder 6000	Yes	Yes	Yes
● ADDITOL P 896	Not determined	Yes	Not determined

Health, Safety and Product Handling

Toxicity

CRYLCOAT® polyester products are solid, non-flammable resins with minimal toxicity. MODAFLOW® products have been subjected to acute toxicity and mutagenicity studies. Details on specific coverage of individual studies are available upon request.

Resin containers may contain polymer dust that could be irritating. Prevent dusty conditions and avoid breathing dust. Also, avoid contact with eyes and prolonged or repeated contact with skin. Use only with adequate ventilation. Equipment should be ground to prevent electrical sparking. For more information on each product, please consult the current material safety data sheet (MSDS) which will be provided by allnex. Take into account the potential risk resulting in formulation with other materials such as catalysts, hardeners, pigments, and fillers.

Storage

CRYLCOAT, UVECOAT®, SYNTHACRYL®, and ADDITOL® resins should be stored in a dry location at room temperature. Keep away from heat sources and direct sunlight. Do not stack more than two pallets high. MODAFLOW powder products should not be stored in environments of high heat or humidity. The ideal storage temperature is between 40°F (4°C) and 100°F (38°C). Keep away from sparks and flame.

Shelf Stability

CRYLCOAT, UVECOAT, SYNTHACRYL, and ADDITOL resins have a minimum shelf life of one year when stored in a dry location at room temperature. The shelf life of MODAFLOW powder products is typically at least four years, when stored in the recommended environment.

Packaging Information

CRYLCOAT, UVECOAT, SYNTHACRYL, and ADDITOL resins are typically provided in 25 kg (55.1 lb) polyethylene bags. Supersack containers of 500 or 1,000 kg are available upon request. MODAFLOW powder products are typically provided in 150 lb (68 kg) fiber drums. Upon special request, 1,000 lb (454 kg) polypropylene bulk bags are available.



Glossary of Terms

Key Word	Description
Acid Value	The amount of KOH, reported in mg, necessary to neutralize the acid functional groups in 1 gram of polyester.
Blooming	A hazy appearance on the surface of the coating brought on by migration of low molecular weight material during low temperature cure or extended exposure to heat.
Curing Temperature	The metal or object temperature required to fully cure the powder coating system in 10 minutes.
Florida Exposure	Standard outdoor exposure test to approximate the natural weathering performance of a coating under severe conditions. The test panels are exposed in south Florida.
Glass Transition Temperature (Tg)	The characteristic temperature in °C of an amorphous polymer corresponding to the change from a solid to liquid state as measured by DSC.
Gloss	Degree to which a surface reflects light.
Hydroxyl Value	The amount of KOH, reported in mg, equivalent to the hydroxyl content of 1 gram of polyester.
Hardener	Powder coating raw material that reacts with polyester resin to create cured coating.
Matte	A coating surface that inconsistently reflects light to the eye. This causes coating to have non-glossy appearance.
Overbake Resistance	Ability of powder coating to withstand high or extended heating with minimal change.
Polyester: Hardener Ratio	Weight ratio between the polyester resin and the hardener recommended for optimal properties.
Semi Crystalline	Amorphous resins with crystalline functionality to allow for coatings with better flow.
Storage Stability	The ability of powder coatings to maintain uniform powder flow properties after being subjected to a specified storage condition.
Superdurable	A polyester resin that exhibits extended outdoor weathering characteristics, typically maintaining >50% gloss after 5 years.
Viscosity	The melt viscosity of the polymer, measured with a Brookfield5 viscometer in mPa.s at a specified temperature.
Wetting	The ability of a raw material to incorporate into the finished powder coating during processing. Can also refer to the ability of the coating to flow out the substrate.
Wrinkle	A unique, special effect finish characterized by closely associated ridge-like structures.

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