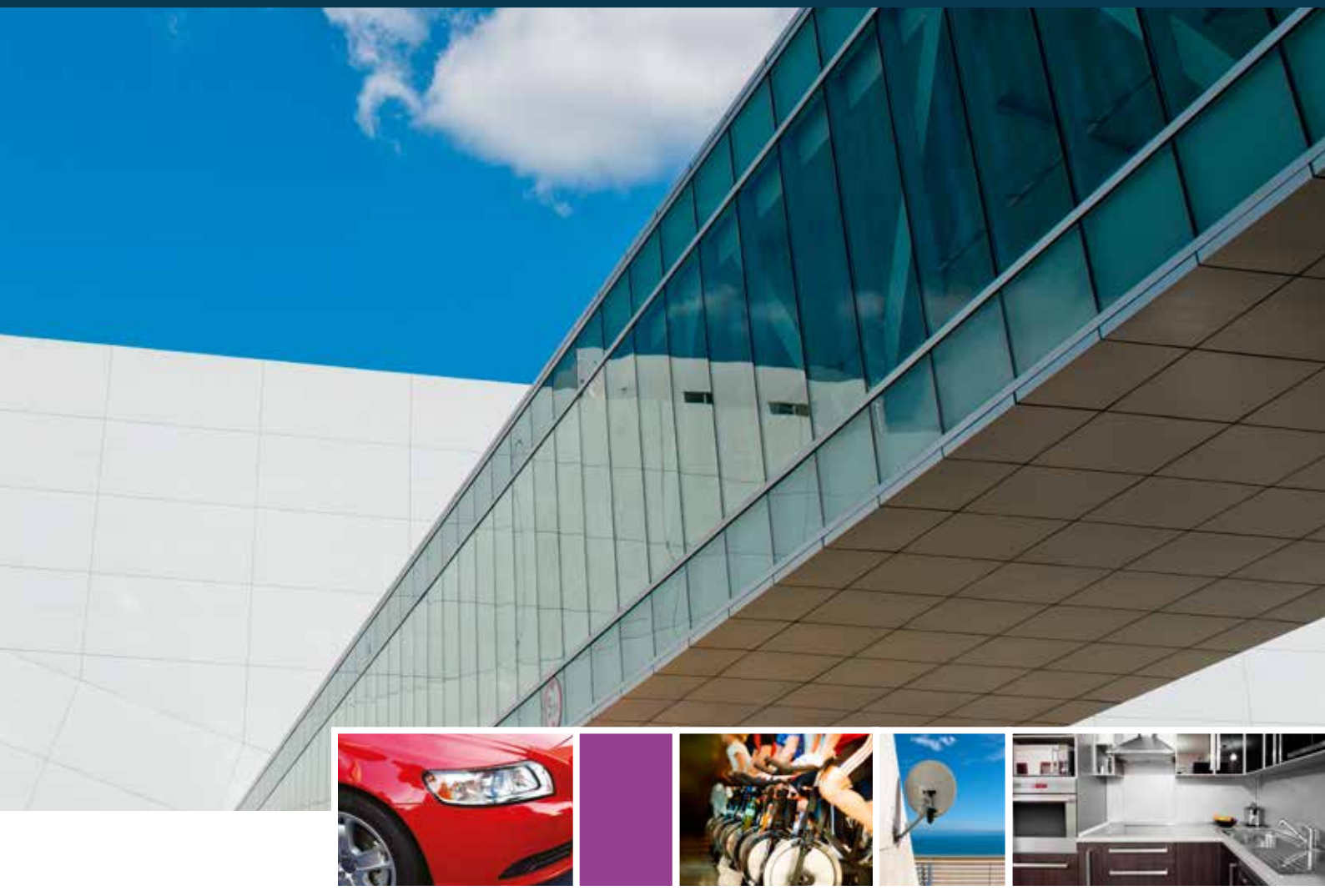
POWDER COATING RESINS

PRODUCT GUIDE • **Binder Resins, Hardeners and Additives** • Europe, Middle East and Africa



Allnex

All About Resins

www.allnex.com

FACTS & FIGURES

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.

About us

- Global company with nearly $1.5 billion in sales
- Resin portfolio comprised of more than 80% solvent-free and water-based products
- Broad Technology portfolio: liquid coating resins, energy curable resins, powder coating resins, crosslinkers and additives.
- Approximately 2000 employees
- More than 2500 customers
- 16 manufacturing facilities
- 13 research and technology centers
- 2 joint ventures
- A myriad of solutions for key coating segments: automotive, industrial, packaging coating and inks, protective, industrial plastics and specialty architectural

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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 resins for powder coating finishes, including 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 epoxies for hybrid, TGIC, glycidylester, hydroxy alkyl amide, isocyanates for 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 the SYNTHACRYL® matting agent and specialty hardeners. Our flow additives can be supplied on silica 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 Overview

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, glycidylester and ß-HAA powder coatings
UVECOAT®	Unsaturated resins for UV curable powder coatings
Curing Hardeners (Powder Crosslinkers)	
ADDITOL®	Polyanhydride resin for epoxy functional (glycidyl) acrylics and urethane hardeners for hydroxyl functional binder resins (where available)
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.
SYNTHACRYL®	GMA-acrylic matting agent

Product Nomenclature

Thermoset powder coatings are typically cured in a temperature range of 160 - 200 °C (object temperature) for 10 minutes. Low temperature cure for heat sensitive substrates or for thick metallic objects is achieved through a combination of catalysis and/or longer oven dwell times. General cure guidelines for products listed in this bulletin are summarized below.

Cure Temperature and Time Definitions	
Slow	190 °C or higher for 10 min
Medium	170 - 180 °C for 10 min
Fast	160 °C for 10 min
Low Bake	150 °C or lower for 10 - 30 min

Products are presented in this guide using two approaches. The charts and tables in the first section organize products by a powder coating system, and summarize typical resin characteristics.

The second section 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.

Resin Selection Guide	
	CRYLCOAT®* polyester resins
	CRYLCOAT new generation hybrid polyester resins
	CRYLCOAT polyester resins systems for matte finishes
	CRYLCOAT polyester resins for low temperature curing
	ADDITOL®* and MODAFLOW®* as additives, SYNTHACRYL®* as hardener for matting and BECKOPOX* hardeners
	UVECOAT®* unsaturated resins for UV-curable powder coatings

From the wide range of resins available, users can match the desired properties with the required coating performance.

As an alternative, UV powders can be applied. The powder is made to flow with a brief IR heating followed by exposure to ultraviolet light.

* ADDITOL additives
* BECKOPOX hardener
* CRYLCOAT polyester resins
* MODAFLOW powder flow modifiers
* SYNTHACRYL acrylic resin
* UVECOAT UV-curable resins

Product Nomenclature (continued)

CRYLCOAT® System - 5 Digit System

Digit 1	Digit 2	Digit 3 & 4	Digit 5
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 = Clear coat – 5 = Special – 6 = Low Bake (<160˚C)
2 = Standard Outdoor	4 = TGIC		
4 = Superdurable Outdoor	5 = PT-910[1]		
8 = Crystalline	6 = Primid[2]		
9 = Other	8 = Urethane		

Example: **CRYLCOAT 1572-6**
Digit 1 = 1 : Hybrid Resin
Digit 2 = 5 : 50/50 Hybrid
Digit 3-4 = 72 : Former name CRYLCOAT E04272
Digit 5 = 6 : Low bake resin

ADDITOL® System

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

UVECOAT® System

Type	Number
Resins for Metal Substrates	2000 - 2999
Resins for Wood and Plastic	3000 - 3999
Special (i.e., crystalline)	9000 - 9999

SYNTHACRYL® System

Type	Number
Acrylic – All	700 - 799

[1] Trademark of Huntsmann International LLC
[2] Trademark of EMS-Chemie

Polyester Resins for Hybrid Powder Coatings

	50/50 AV ~ 70	60/40 AV ~ 50 - 60		70/30 AV ~ 34	80/20 AV ~ 24
210 °C	CRYLCOAT® 1544-0				
200 °C		CRYLCOAT 1622-0	CRYLCOAT 1660-0	CRYLCOAT 1783-0	
		CRYLCOAT 1622-1		CRYLCOAT 1783-1	
180 °C	CRYLCOAT 1514-2		CRYLCOAT 1626-0	CRYLCOAT 1770-0	CRYLCOAT 1843-0
	CRYLCOAT 1573-0		CRYLCOAT 1627-0	CRYLCOAT 1771-0	
				CRYLCOAT 1771-3	
			CRYLCOAT E04286	CRYLCOAT 1716-0	
				CRYLCOAT 1781-0	
				CRYLCOAT E04342	
170 °C	CRYLCOAT 1557-5	CRYLCOAT 1620-0			
160 °C	CRYLCOAT 1593-0			CRYLCOAT 1750-1	
150 °C					
140 °C	CRYLCOAT 1506-6				
	CRYLCOAT 1551-6				
130 °C	CRYLCOAT 1501-6				
	CRYLCOAT 1572-6				

Typical Properties of Hybrid Resins

CRYLCOAT®	Ratio	AV	Viscosity	Tg (C°)	Cure T (C°)	Description
1501-6	50/50	70	5500 / 175 °C	52	130	Low bake 50/50 hybrid for MDF application.
1506-6	50 / 50	69	9000 / 175 °C	62	140	Fast cure for metal application or for low bake textured formulation for MDF.
1514-2	50 / 50	71	9300 / 175 °C	55	180	Excellent flow and overbake resistance.
1544-0	50 / 50	70	2500 / 200 °C	54	210	Low reactivity, possible to blend with other carboxyl functional polyester resins.
1551-6	50 / 50	71	6000 / 175 °C	51	140	High reactive with good flow on metal and heat-sensitive substrates such as MDF.
1557-5	50 / 50	71	2000 / 200 °C	50	170	Medium reactivity, excellent scratch resistance.
1572-6	50 / 50	70	4500 / 175 °C	50	130	Low bake 50/50 hybrid for metal application.
1573-0	50 / 50	70	3500 / 200 °C	56	180	Medium reactivity new generation hybrid, excellent flow and good gloss.
1593-0	50 / 50	70	3500 / 200 °C	54	160	High reactive 50/50 hybrid with good flow and gloss
1620-0	60 / 40	60	2700 / 200 °C	54	170	Medium reactivity, can be also used as 50 / 50.
1622-0	60 / 40	60	2500 / 200 °C	54	200	Low reactivity, can be also used as 50/50.
1622-1	60 / 40	60	2600 / 200 °C	54	200	Tribo version of CRYLCOAT 1622-0.
1626-0	60 / 40	48	3000 / 200 °C	52	180	Medium reactivity new generation hybrid, excellent flow and very good gloss.
1627-0	60 / 40	44	4000 / 200 °C	62	180	Medium reactivity new generation hybrid, high Tg, excellent flow and very good gloss.
1660-0	60 / 40	48	9400 / 175 °C	50	200	Low reactivity, good flexibility and excellent flow with high filler load.
1716-0	70 / 30	30	6500 / 200 °C	60	180	Medium reactivity, good flow, can be used for mattes.
1750-1	70 / 30	35	4500 / 200 °C	52	160	High reactive, tribo, non-blooming.
1770-0	70 / 30	34	5400 / 200 °C	58	180	Medium reactivity with good balance of properties, can be used for mattes.
1771-0	70 / 30	33	4700 / 200 °C	56	180	Medium reactivity new generation hybrid, good balance of properties.
1771-3	70 / 30	33	4700 / 200 °C	56	180	Tribo and overbake version of CRYLCOAT 1771-0.
1781-0	70 / 30	33	5000 / 200 °C	60	180	Medium reactivity new generation hybrid, high Tg for better storage stability.
1783-0	70 / 30	34	5000 / 200 °C	58	200	Excellent flow, high gloss and elasticity. Good for clears.
1783-1	70 / 30	34	5000 / 200 °C	56	200	Tribo version of CRYLCOAT 1783-0.
1843-0	80/20	21	11000 / 200 °C	57	180	80/20 hybrid resin for gloss- and matte coatings
E04286	60 / 40	50	3500 / 200 °C	57	180	Primavera 60/40 hybrid. Affordable technical performance.
E04342	70 / 30	35	6000 / 200 °C	60	180	70/30 hybrid resin based on renewable and recycled raw materials.

Polyester Resins for β-HAA Powder Coatings

					Superdurable	
	96.5 / 3.5 Acid # ~ 25	95 / 5 Acid # ~ 33	94 / 6 - 93 / 7 Acid # 40 - 50	90 / 10 Acid # ≥ 70	Acid # 20 - 35	Acid # > 40
Matte Dry Blend One Shot Matte 200 – 190 °C	CRYLCOAT® 2670-3		CRYLCOAT 2671-3	CRYLCOAT 2650-3	CRYLCOAT 4641-0	CRYLCOAT 4420-0
	CRYLCOAT 2691-2			CRYLCOAT 2621-2		CRYLCOAT 4679-0
				CRYLCOAT 2642-0		
	CRYLCOAT 2611-0			CRYLCOAT 2687-2		
		CRYLCOAT 2638-2		CRYLCOAT 2635-2		
200 - 190 °C	CRYLCOAT 2675-0	CRYLCOAT 2698-3			CRYLCOAT E04327	
180 °C	CRYLCOAT 2619-3	CRYLCOAT 2617-3			CRYLCOAT 4659-0	CRYLCOAT 4626-0
	CRYLCOAT 2640-3	CRYLCOAT 2618-3			CRYLCOAT 4688-2	
	CRYLCOAT 2607-1	CRYLCOAT 2651-3				
	CRYLCOAT 2695-0	CRYLCOAT 2686-3				
		CRYLCOAT E04339				
		CRYLCOAT E04453				
160 °C	CRYLCOAT E04247	CRYLCOAT E04279			CRYLCOAT 4655-2	CRYLCOAT 4643-3
		CRYLCOAT E04262				CRYLCOAT 4648-0
150 °C			CRYLCOAT 2655-6			

Typical Properties of β-HAA Resins

CRYLCOAT®	Ratio	AV	Viscosity	Tg (C°)	Cure T (C°)	Description
2607-1	96 / 4	24	5500 / 200 °C	57	180	General purpose tribo resin for low demand Primid® formulations.
2611-0	-	25	5500 / 200 °C	58	200	Slow reacting component in dull Matte One Shot formulations.
2617-3	95 / 5	33	3500 / 200 °C	61	180	Tribo resin with excellent flow. Overbake and gas oven resistance.
2618-3	95 / 5	33	3100 / 200 °C	61	180	Tribo resin with excellent weathering and very good flow. Overbake and gas oven resistance.
2619-3	96.5 / 3,5	23	6500 / 200 °C	62	180	Tribo resin for low demand Primid with excellent flow. Overbake and gas oven resistance.
2621-2	88 / 12	72	9000 / 200 °C	62	190	For matte dry blend systems in combination with CRYLCOAT 2691-2. Industrial application.
2635-2	-	85	3000 / 200 °C	57	200	Fast reacting component in medium gloss One Shot Matte formulations.
2638-2	-	33	5500 / 200 °C	62	200	Slow reacting component in medium gloss One Shot Matte formulations.
2640-3	96,5 / 3,5	23	7000 / 200 °C	60	180	Enhanced architectural low demand Primid resin.
2642-0	90 / 10	72	2500 / 200 °C	52	180	For matte dry blend systems in combination with CRYLCOAT 2691-2. Industrial application.
2650-3	90 /10	70	6200 / 175 °C	51	190	For matte dry blend systems in combination with CRYLCOAT 2670-3. Optimised weathering resistance.
2651-3	95 / 5	32	3000 / 200 °C	55	180	Enhanced architectural Primid resin with outstanding flow and degassing properties up to 160 microns. Overbake and gas oven resistance.
2655-6	93 / 7	48	6000 / 200 °C	58	150	Low bake Primid resin. Possible to blend with CRYLCOAT 4655-2 to balance weathering and reactivity.
2670-3	97 / 3	21	8000 / 200 °C	61	190	For matte dry blend systems in combination with high demand Primid resins. Optimised weathering resistance.
2671-3	93 / 7	48	5800 / 200 °C	58	190	For matte dry blend systems in combination with CRYLCOAT 2670-3. Optimised weathering resistance.
2675-0	96 / 4	24	8500 / 200 °C	68	200	Resin for low demand Primid with improved water spot resistance.

Typical Properties of β-HAA Resins (continued)

CRYLCOAT®	Ratio	AV	Viscosity	Tg (C°)	Cure T (C°)	Description
2686-3	95 / 5	31	3300 / 200 °C	55	180	Enhanced architectural Primid® resin.
2687-2	-	90	3000 / 200 °C	58	200	Fast reacting component in dull Matte One Shot formulations.
2691-2	97 / 3	21	7600 / 200 °C	62	180	For matte dry blend systems in combination with high demand Primid resins.
2695-0	96 / 4	25	5500 / 200 °C	59	180	General purpose resin for low demand Primid formulations.
2698-3	95 / 5	33	3500 / 200 °C	56	180	Tribo active resin with outstanding flow and degassing properties up to 160 µ. Overbake and gas oven resistance.
4420-0	92 / 8	51	5500 / 200 °C	64	200	Resin for matte dry blend superdurable systems in combination with CRYLCOAT 4641-0.
4626-0	92 / 8	50	4300 / 175 °C	64	180	Superdurable resin suitable for high Tg powder coatings.
4641-0	97 / 3	20	4300 / 200 °C	60	200	Resin for matte dry blend superdurable systems in combination with high demand Primid resins.
4643-3	92 / 8	50	1800 / 200 °C	62	160	Superdurable resin with high functionality and good flow.
4648-0	94 / 6	38	6000 / 175 °C	52	160	Superdurable resin for low bake formulations.
4655-2	95 / 5	31	8000 / 200 °C	66	160	High functional superdurable resin.
4659-0	95 / 5	33	3700 / 200 °C	59	190	Superdurable resin with some flexibility. Can be used in Primid and TGIC formulations.
4679-0	90 / 10	70	7000 / 175 °C	63	200	Resin for matte dry-blend Primid superdurable in combination with CRYLCOAT 4641-0.

Typical Properties of β-HAA Resins (continued)

CRYLCOAT®	Ratio	AV	Viscosity	Tg (C°)	Cure T (C°)	Description
4688-2	95 / 5	30	5500 / 175 °C	54	180	Superdurable resin with good flexibility and excellent flow. Suitable for ACE applications.
E04247	96 / 4	25	5000 / 200 °C	54	160	Low bake Primid resin for industrial application.
E04262	95 / 5	31	4000 / 200 °C	55	160	Low bake Primid resin for industrial application.
E04279	95 / 5	32	7000 / 200 °C	54	160	Low bake Primid resin for architectural application.
E04327	95 / 5	33	1500 / 200°C	58	200	Superdurable polyester-HAA with outstanding out-door durability and improved corrosion resistance.
E04339	95 / 5	31	4200 / 200 °C	65	180	Polyester-HAA for Industrial application with improved corrosion resistance.
E04453	95 / 5	33	3500 / 200 °C	64	180	Polyester-HAA for Architectual application with improved corrosion resistance.

Polyester Resins for TGIC Powder Coatings

	93/7 AV ~ 33	96/4 AV ~ 20	90/10 AV ~ 50	Superdurable
200 °C	CRYLCOAT® 2401-2	CRYLCOAT 2432-0		CRYLCOAT 4420-0
	CRYLCOAT 2441-2	CRYLCOAT 2496-2		CRYLCOAT 4430-0
	CRYLCOAT 2441-3			CRYLCOAT 4488-0
	CRYLCOAT 2440-2			CRYLCOAT E04484
	CRYLCOAT 2471-4			
	CRYLCOAT E04417			
190 °C	CRYLCOAT 2425-0			
180 °C	CRYLCOAT 2450-2		CRYLCOAT 2490-2	
160 °C	CRYLCOAT 2433-2			

Typical Properties of TGIC Resins

CRYLCOAT®	Ratio	AV	Viscosity	Tg (C°)	Cure T (C°)	Description
2401-2	93 / 7	33	3500 / 200 °C	60	200	Low reactive resin with outstanding flow, high flexibility and excellent outdoor resistance.
2425-0	93 / 7	34	6200 / 200 °C	70	190	Medium reactivity, high Tg.
2432-0	96 / 4	20	7900 / 200 °C	53	200	For matte dry blend systems in combination with CRYLCOAT 2490-2.
2433-2	93 / 7	33	3500 / 200 °C	60	160	High reactivity, good flow and flexibility.
2440-2	93 / 7	33	5100 / 200 °C	67	200	Low reactive resin, good flow and flexibility, stabilized.
2441-2	93 / 7	33	5000 / 200 °C	67	200	Low reactive resin, excellent flow, stabilized.
2441-3	93 / 7	33	4600 / 200 °C	67	200	Tribo version of CRYLCOAT 2441-2.
2450-2	93 / 7	33	5000 / 200 °C	67	180	Accelerated version of CRYLCOAT 2441-2.
2471-4	93 / 7	33	3500 / 200 °C	58	200	Low reactive resin for clear coat formulations, excellent smoothness and clarity.
2490-2	90 / 10	47	4800 / 200 °C	69	180	For matte dry blend systems in combination with CRYCLOAT 2432-0.
2496-2	95 / 5	23	7200 / 200 °C	62	200	General purpose resin for low demand TGIC, high Tg.
E04417	93 / 7	32	4000 / 200 °C	62	200	Resin for TGIC with improved corrosion resistance.
4420-0	90 / 10	51	5500 / 200 °C	64	200	Superdurable resin. May be used alone or as part of matte dry blend system in combination with CRYLCOAT 4430-0.
4430-0	93 / 7	35	2000 / 200 °C	62	200	Superdurable resin with outstanding flow. May be used alone or as part of matte dry blend system in combination with CRYLCOAT 4420-0.
4488-0	93 / 7	33	5400 / 200 °C	64	200	Superdurable resin for TGIC with outstanding weathering resistance.
E04484	93 / 7	32	5500 / 200 °C	66	200	Superdurable resin for TGIC with outstanding outdoor durability and improved corrosion resistance.

Polyester Resins for Araldite® PT 910 Powder Coatings

	93/7 AV ~ 26	92/8 AV ~ 33	91/9 - 90/10 AV ~ 40	Superdurable
200 °C	CRYLCOAT®* 2593-0		CRYLCOAT 2501-2	CRYLCOAT 4540-0
	CRYLCOAT 2592-1			
180 °C	CRYLCOAT 2503-2	CRYLCOAT 2505-4	CRYLCOAT 2506-1	
			CRYLCOAT 2536-0	
170 °C		CRYLCOAT 2578-0		

Typical Properties of Araldite® PT 910 Resins

CRYLCOAT®	Ratio	AV	Viscosity	Tg (C°)	Cure T (C°)	Description
2501-2	91 / 9	33	9400 / 200 °C	73	200	Excellent flow, flexibility and chemical resistance.
2503-2	93 / 7	24	8500 / 200 °C	68	180	Very high heat resistance.
2505-4	92 / 8	33	4500 / 200 °C	65	180	Resin for clear formulations with excellent flow and transparency.
2506-1	91 / 9	33	5000 / 200 °C	67	180 (15 ')	General purpose tribo resin.
2536-0	90 / 10	40	7000 / 200 °C	68	180	For matte dry blend systems in combination with CRYLCOAT 2593-0.
2578-0	92 / 8	33	9000 / 200 °C	71	170	Resin suitable for low temperature curing.
2592-1	93 / 7	26	9500 / 200 °C	69	200	General purpose tribo resin.
2593-0	93 / 7	26	10500 / 200 °C	70	200 (15 ')	Outstanding flow, recommended for use in clear. For matte dry blend systems in combination with CRYLCOAT 2536-0.
4540-0	93 / 7	25	9000 / 200 °C	67	200	Superdurable resin with excellent properties.

Hydroxyl Polyester Resins for Urethane Powder Coatings

	OHV 30	OHV 50	OHV 80 –100	OHV 300	Superdurable
200 °C		CRYLCOAT ® 2883-0		CRYLCOAT 2814-0	CRYLCOAT 4890-0
		CRYLCOAT 2839-0			
		CRYLCOAT 2860-0			
190 °C			CRYLCOAT 2818-0		

Special Hydroxyl Polyester Resins and Hardeners

Wrinkle System	Anhydride Hardener	NCO Hardeners	Utility Resins
CRYLCOAT 2920-0	BECKOPOX® EH 694	ADDITOL P932	CRYLCOAT 9292-0
ADDITOL ® P920		ADDITOL P965	CRYLCOAT 9240-0

Typical Properties of Hydroxyl Polyester Resins for Urethane Powder Coatings

CRYLCOAT®	OHV	Viscosity	Tg (C°)	Cure T (C°)	Description
2814-0	300	3200 / 200 °C	52	200	Outstanding hardness, chemical and stain resistance. Useful for low gloss formulations.
2818-0	100	3000 / 200 °C	58	190	Improved chemical and stain resistance. Can be used to produce thermally stable coatings.
2839-0	50	5500 / 200 °C	57	200	Good flow and resistance properties. Good for clears.
2860-0	50	3500 / 200 °C	52	200	Resin for one shot matte systems in combination with CRYLCOAT 2814-0.
2883-0	47	4000 / 200 °C	61	200	Excellent flow, high hardness and good outdoor durability. High Tg.
2920-0	33	12700 / 200 °C	67	200	Produces durable wrinkle finishes in combination with ADDITOL® P 920.
4890-0	30	5000 / 200 °C	58	200	Superdurable resin with excellent properties.

ADDITOL®	OHV	Viscosity	Tg (C°)	Cure T	Description
P 920	42	8500 / 200 °C	N /A	N /A	Catalyst masterbatch for CRYLCOAT 2920-0 to obtain durable wrinkle finish. 5% active substance.

ADDITOL	NCO %	Viscosity	Tg (C°)	Cure T	Description
P 932	9 –10	N /A	47	N /A	Aliphatic urethane pre-polymer crosslinker. For outdoor applications.
P 965	16 –17	N /A	51	N /A	Aromatic urethane adduct crosslinker. For indoor applications.

BECKOPOX®	PAV		MT (°C)	Cure T	Description
EH 694	275		50 – 60	N /A	Anhydride hardener for OH polyester or acrylic or epoxy resins. Outstanding chemical and overbake resistance.

CRYLCOAT	OHV	Viscosity	Tg (C°)	Cure T	Description
9240-0	37	24000 / 200 °C	58	N /A	OH polyester with very high viscosity. Outstanding chemical and overbake resistance with very high viscosity.
9292-0	37	4000 / 200 °C	58	200 °C	For use as organic filler or for indoor coatings with aromatic urethane hardeners.

Resins and Additives for UV-curable Powder Coatings

Resins for UV-curable Powder Coatings

Metal	MDF / Wood	Plastics
UVECOAT® 2100	UVECOAT 3002	UVECOAT 3003
UVECOAT 2200	UVECOAT 3005	
UVECOAT 9539		

Additives and Specialty Resins for UV-curable Powder Coatings

Co-Reactant	Semi-crystalline
UVECOAT 9146	UVECOAT 9010

Typical Properties of UV-curable Resins

UVECOAT®	AV	Viscosity	Tg (C°)	Description
2100	≤ 3	5500 / 200 °C	57	For metal applications. Exterior durable. Can be pigmented or used as clear.
2200	< 2	4500 / 175 °C	54	Outstanding weathering for metal applications. Can be pigmented or used as clear.
3002	≤ 3	4000 / 175 °C	49	High performance wood-based substrate coating. Good for textured and clear coats. Good yellowing resistance.
3003	≤ 3	3200 / 175 °C	49	For PVC flooring applications. Improved chemical and abrasion resistance with good flexibility. Not for exterior applications.
3005	≤ 10	4000 / 200 °C	48	For wood and wood substrate applications. Can be pigmented or used as a clear. Excellent scratch resistance.
9010	≤ 3	350 / 100 °C	MT = 85	Semi-crystalline co-resin for UV-curable formulations giving improved mechanical performance, flexibility, and smoothness.
9146	≤ 15	55000 / 140 °C	55	Unsaturated urethane acrylate for use as a “crosslinker” in UV powder coatings. Enhances reactivity, surface hardness and chemical resistance.
9539	≤ 13	4000 / 200 °C	44	For metal applications. To provide excellent adhesion of UV curable powder to a wide variety of metal substrates.

Masterbatches and Additives for Powder Coatings

Catalysts	Flow Promoters	Flow Aids	Tribo Additives
ADDITOL® P964	ADDITOL P896	MODAFLOW ® POWDER III	ADDITOL P950
ADDITOL P966	ADDITOL P824	MODAFLOW POWDER 6000	
	ADDITOL P891		
	ADDITOL P890		

Acrylic Resins and Additives for Powder Coatings

Polyanhydride Hardener	Matting Hardener
ADDITOL P791	SYNTHACRYL® 700

Typical Properties of Masterbatches and Additives

Products	#	Viscosity	Tg (C°)	Description
ADDITOL® P824	OHV 45	1400 / 200 °C	49	Flow-aid masterbatch for pigmented durable coatings. 15 % active substance in an outdoor resistant hydroxylated polyester matrix.
ADDITOL P891	AV 35	2300 / 200 °C	56	Flow-aid masterbatch for clear powder coatings. 5 % active substance in an outdoor resistant carboxylated polyester matrix.
ADDITOL P896	OHV 45	1700 / 200 °C	57	Flow-aid masterbatch for pigmented powder coatings. 15 % active substance in an outdoor resistant hydroxylated polyester matrix.
ADDITOL P890	OHV 45	1500 / 200 °C	52	Flow-aid masterbatch for clear powder coatings. 10 % active substance in an outdoor resistant hydroxylated polyester matrix.
ADDITOL P950	OHV 28	7500 / 200 °C	N / A	Tribo masterbatch for indoor and outdoor coatings. 5 % active substance.
ADDITOL P964	AV 33	3200 / 200 °C	N / A	Catalyst masterbatch for hybrids, TGIC or PT 910 systems. 5 % active substance.
ADDITOL P966	AV 35	1800 / 200 °C	N / A	Catalyst masterbatch in a superdurable matrix for TGIC or PT 910 systems. 5 % active substance.

Products	Active %	Volatile Loss %	Density g/cm³	Description
MODAFLOW® POWDER III	Min 65	Max 4	0.58 – 0.64	Addition at 0.6 – 1.5 % of the total formulation. Based on FDA listed monomers.
MODAFLOW POWDER 6000	Min 65	Max 4	0.58 – 0.64	Addition at 0.75 – 1.0 % of the total formulation. Excellent flow and gloss. Lessens cross-contamination issues.

Product	EEW	Viscosity	Tg (°C)	Description
SYNTHACRYL® 700	774	39800 200 °C	80	Glycidyl poly-acrylic resin designed as a matting hardener in combination with carboxylated polyesters.

Product	PAV	Viscosity	MT (°C)	Description
ADDITOL P791	317	N /A	85	Aliphatic polyanhydride hardener for use with solid acrylic resins containing glycidyl groups.

TGIC	Primid®	Araldite® PT 910	Isocyanate
CRYLCOAT® 4430-0	CRYLCOAT 4688-2	CRYLCOAT 4540-0	CRYLCOAT 4890-0
CRYLCOAT 4420-0	CRYLCOAT 4659-0		
CRYLCOAT 4488-0	CRYLCOAT 4626-0		
CRYLCOAT 04484	CRYLCOAT 4641-0		
	CRYLCOAT 4420-0		
	CRYLCOAT 4655-2		
	CRYLCOAT 4679-0		
	CRYLCOAT 4648-0		
	CRYLCOAT 4643-3		
	CRYLCOAT 04327		

Dry-Blend Systems

	Primid Standard	Primid Superdurable	TGIC Standard	TGIC Superdurable
Min 30 %	CRYLCOAT® 2670-3 AV 21	CRYLCOAT 4641-0 AV 20	CRYLCOAT 2432-0 AV 20	CRYLCOAT 4420-0 AV 51
	CRYLCOAT 2671-3 AV 48	CRYLCOAT 4420-0 AV 51	CRYLCOAT 2490-2 AV 47	CRYLCOAT 4430-0 AV 35
	CRYLCOAT 2691-2 AV 21			
	CRYLCOAT 2642-0 AV 72			
Min 20 %	CRYLCOAT 2670-3 AV 21	CRYLCOAT 4641-0 AV 20		
	CRYLCOAT 2650-3 AV 70	CRYLCOAT 4679-0 AV 70		
	CRYLCOAT 2691-2 AV 21			
	CRYLCOAT 2621-2 AV 72			

One Shot Matte Systems

	Urethane	Acrylic	Glycoluril	Primid
Min 20 %	CRYLCOAT 2860-0 OHV 50			CRYLCOAT 2635-2
	CRYLCOAT 2814-0 OHV 300			CRYLCOAT 2638-2
< 12 %	CRYLCOAT 2860-0 OHV 50	SYNTHACRYL® 700	CRYLCOAT 2920-0	CRYLCOAT 2687-2
	CRYLCOAT 2814-0 OHV 300	CRYLCOAT 2441-2	ADDITOL® P920	CRYLCOAT 2611-0

Glossary of Terms

Key Word	Description
Acid Value (AV)	The amount of KOH, reported in mg, necessary to neutralize the acid content of one 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.
Epoxy Equivalent Weight (EEW)	The weight of resin, in grams, which contains one gram-equivalent of epoxy.
Florida Exposure	Standard outdoor exposure test to approximate the natural weathering performance of a coating under severe conditions. The test panels are exposed in Florida under defined angle direction South.
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 (OHV)	The amount of KOH, reported in mg, equivalent to the hydroxyl content of one gram of polyester.
Matte	A coating appearance that reflects a minimal amount of light.
Melting Temperature (MT)	The characteristic temperature in °C at which a solid material becomes a liquid.
Partial Acid Value (PAV)	After partial reactions of the anhydride group with a monofunctional alcohol, the amount of KOH, reported in mg, necessary to neutralize the acid content of one gram polymer.
Polyester/Hardener Ratio	Weight ratio between the polyester resin and the hardener recommended for optimal properties.
Storage Stability	Ability of powder coatings to maintain free flow powder properties after being subjected to a specified storage condition.
Superdurable	A polyester resin that exhibits extended outdoor weathering characteristics, typically maintaining > 50 % gloss retention after 3 years (EU) and min. 30% gloss retention after 5 years (US) exposed in Florida at defined angle direction South.
Viscosity	The melt viscosity of the polymer, measured with a Brookfield[1] viscometer in mPa.s at a specified temperature.
Wrinkle	A unique, special effect finish characterized by closely associated ridge-like structures.

[1] Trademark of Brookfield Engineering Laboratories

Toxicity

CRYLCOAT® polyester products are solid 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

BECKOPOX, 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 4 °C (40 °F) and 38 °C (100 °F). Keep away from sparks and flame.

Shelf Stability

BECKOPOX, CRYLCOAT, UVECOAT, SYNTHACRYL, and ADDITOL resins have a minimum shelf life of one year after shipment 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 kg or 1000 kg are available upon request. MODAFLOW powder products are typically provided in 68 kg (150 lbs) fiber drums. Upon special request, 454 kg (1000 lbs) polypropylene bulk bags are available.

BECKOPOX is typically provided in 25 kg paper bags with polyethylene in-liner.

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