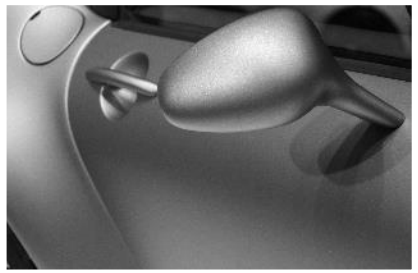
Low Gloss Industrial Coatings Symposium:
Insights Into Market Requirements, Technical Challenges & Innovative Gloss Control Technologies

Presented by allnex

Wednesday 8th & Thursday 9th December, 2021



Low Gloss Industrial Coatings Symposium

Day 1: Wednesday 8th December

Session 1: An Introduction to Low Gloss Coatings

Session 2: Next Generation Self-Matting Solventborne 2K Paint Systems

Day 2: Thursday 9th December

Session 3: Excimer Curing, a Path Towards High Performance Dead Matte Surfaces

Session 4: Controlling Gloss Levels in Powder Coatings

SESSION 4: CONTROLLING GLOSS LEVELS IN POWDER COATINGS



Robert Watson: Powders Business Unit
Uwe Kubillus: Powders Business Unit
Dietmar Fink: Powders Business Unit

OUR SPEAKERS TODAY



Robert Watson
Global Marketing Director
Powders Business Unit



Uwe Kubillus
Senior Technical Service & Development Manager EMEA
Powders Business Unit



Dietmar Fink
Senior Technical Service & Development Manager EMEA
Powders Business Unit

1 Introduction

2 Formulating for Outdoor

3 Formulating for Indoor

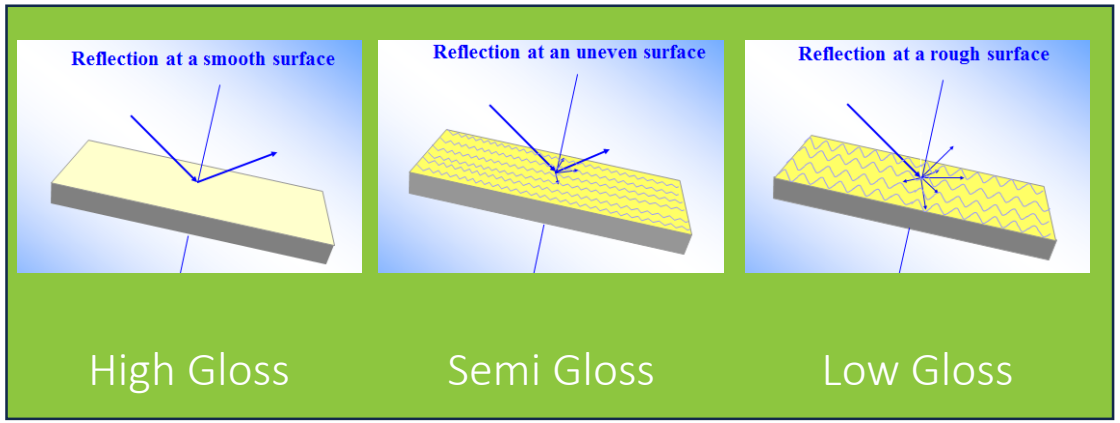
1 Introduction

2 Formulating for Outdoor

3 Formulating for Indoor

Allnex Powder Coating Resin Portfolio for EMEA & North America

- Comprehensive portfolio of gloss control technologies based on CRYLCOAT and SETAPOLL polyesters & SYNTHACRYL acrylics
- Broad product portfolio covering dead-matte to semi-matte gloss levels
- Products for use with the major crosslinkers such as Hydroxyalkyl-amides (HAA), TGIC and isocyanates
- Matte Dry Blend and One Shot Matte processing technologies
- Hybrid, standard durable and super durable polyesters plus GMA acrylics to meet all service life requirements



Gloss Description	60° Gloss %
Dead-Matte	< 10
Matte	10 – 25
Semi-Matte	25 – 45
Semi-Gloss	45 – 70

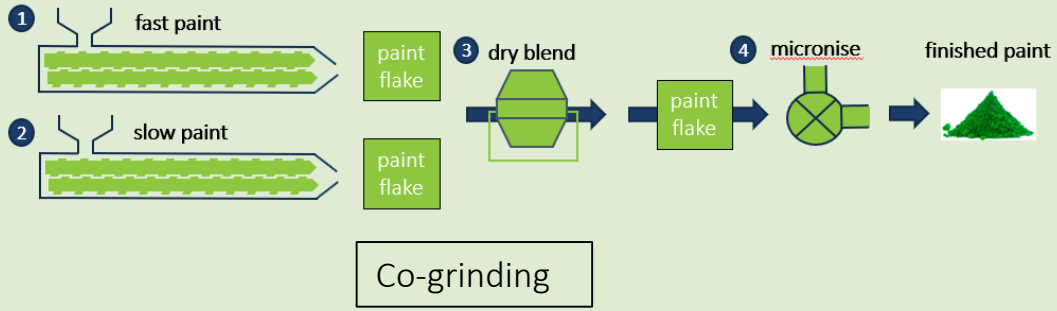
Application		Durability	Polyester Type	Crosslinker
Indoor	Industrial		Hybrid	Epoxy
Outdoor	Industrial		Standard Durable	TGIC / HAA / PUR
	Architectural		Standard Durable	TGIC / HAA / PUR
			Superdurable	TGIC / HAA / PUR

Curing Schedules		
	Low bake:	10 min @ 160 - 170°C
	Standard bake:	10 min @ 180 - 200°C

Matte Processing Technologies for Powder Coatings

Matte Dry Blend (MDB)

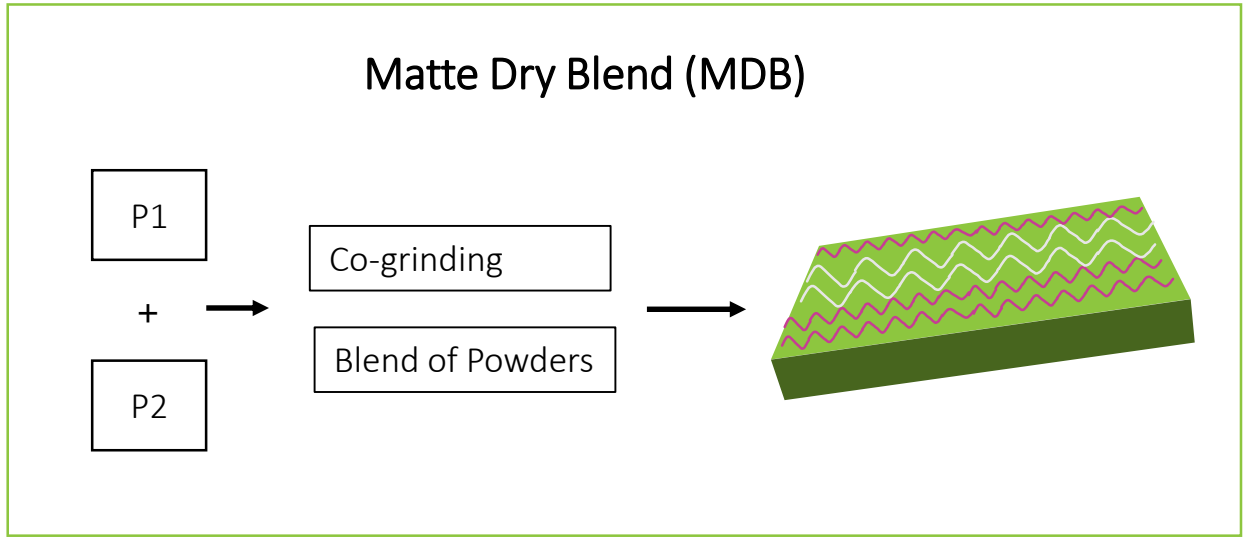
Traditional Primid matte coatings require the preparation of two individual paints which are then blended together in the correct ratio to give the finished paint



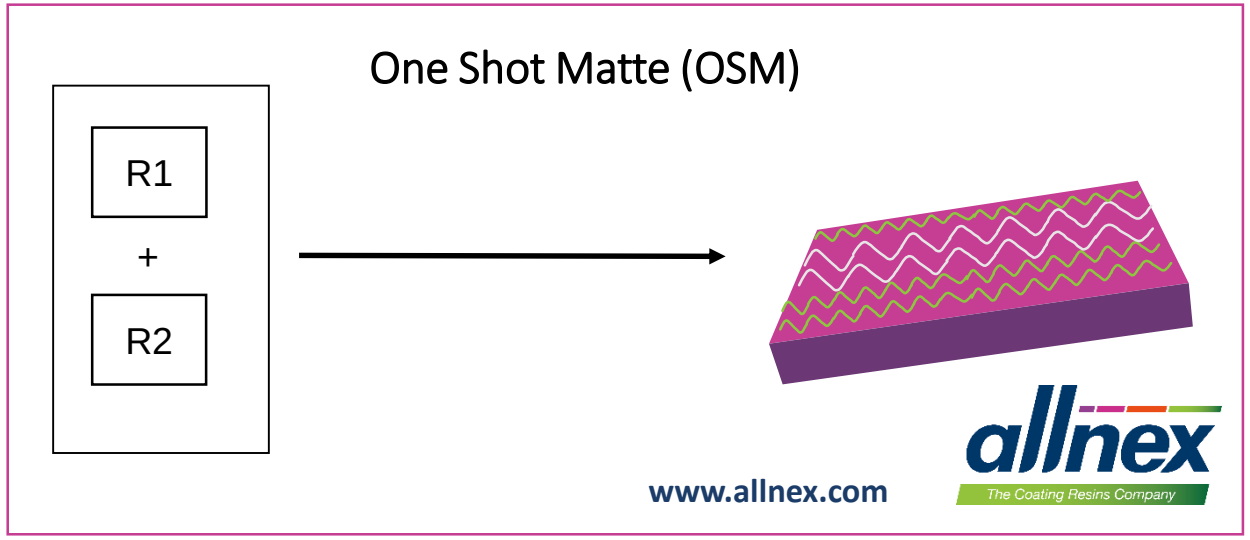
One Shot Matte (OSM)

Matte coatings can be achieved in a single, one-shot paint either by using two suitable proprietary resins, or via suitable matting agents, waxes and fillers





	P1/R1	P2/R2
Reactivity	High	Low
Viscosity	Low	High

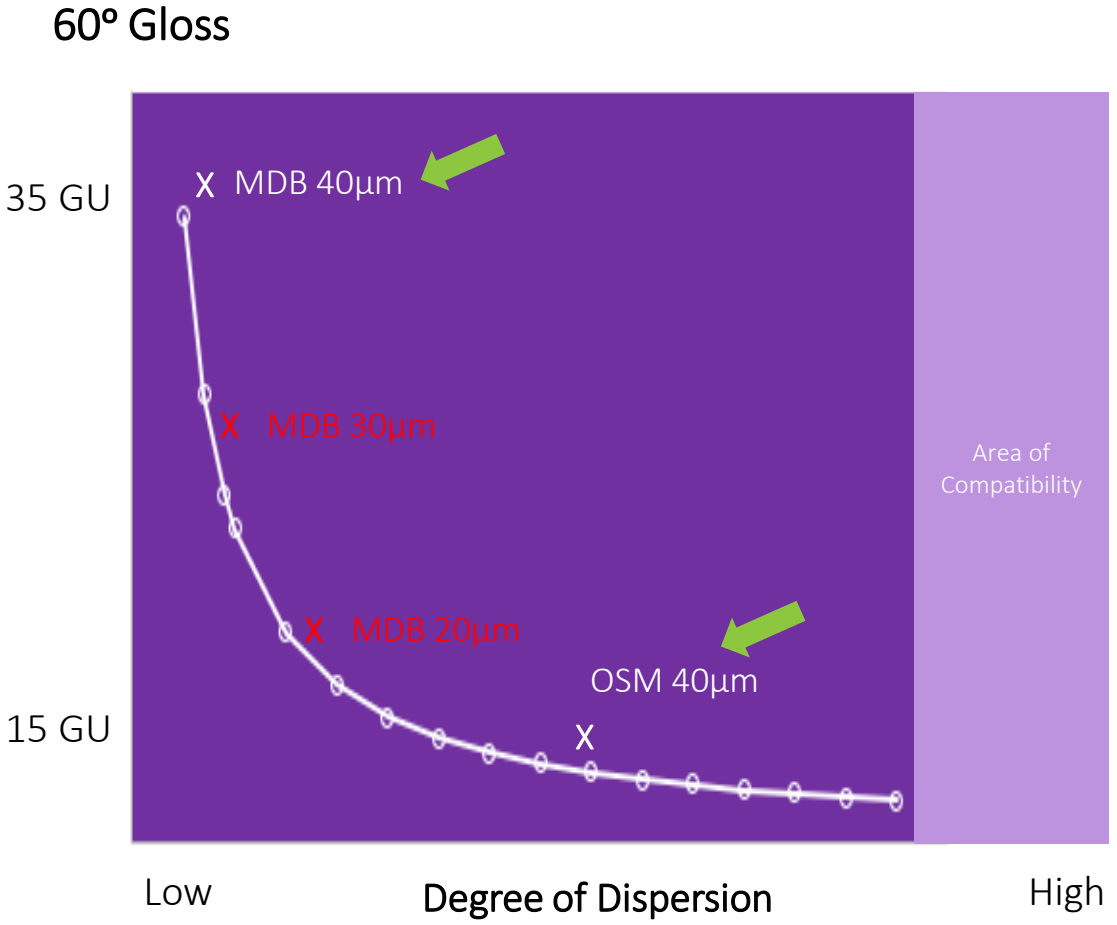


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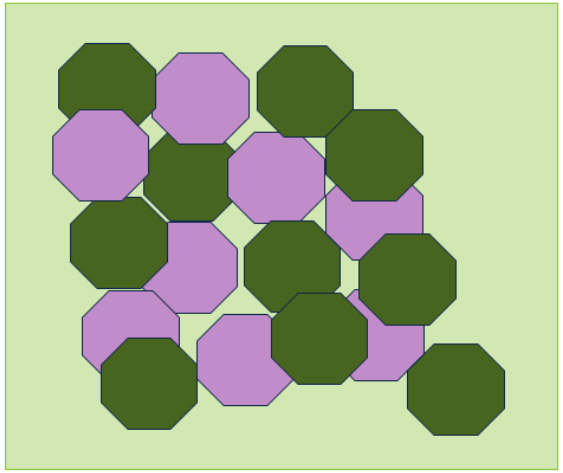
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The Coating Resins Company

Matte Processing Technologies for Powder Coatings

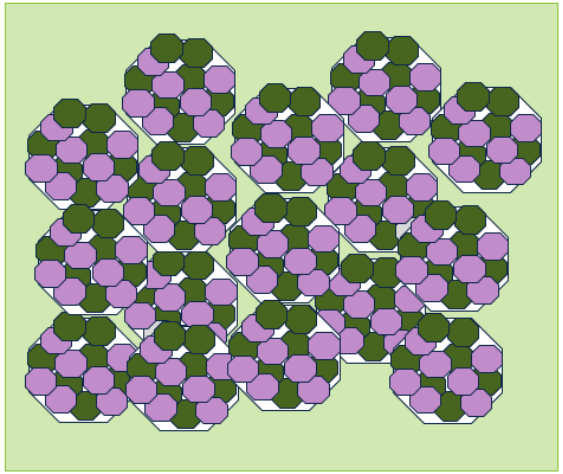
Influence of PSD on Gloss Development in MDB vs OSM



Matte Dry Blend
Powder Particle size: 40µm



One Shot Matte
Powder Particle size: 40µm



Low reactive powder particle

High reactive powder particle

Gloss Level: Chemistry Type

Gloss & Technology Title

Overview of technology being discussed

Gloss Level	
Application	Architectural, Industrial
Processing Technology	
Curative	
Characteristics	

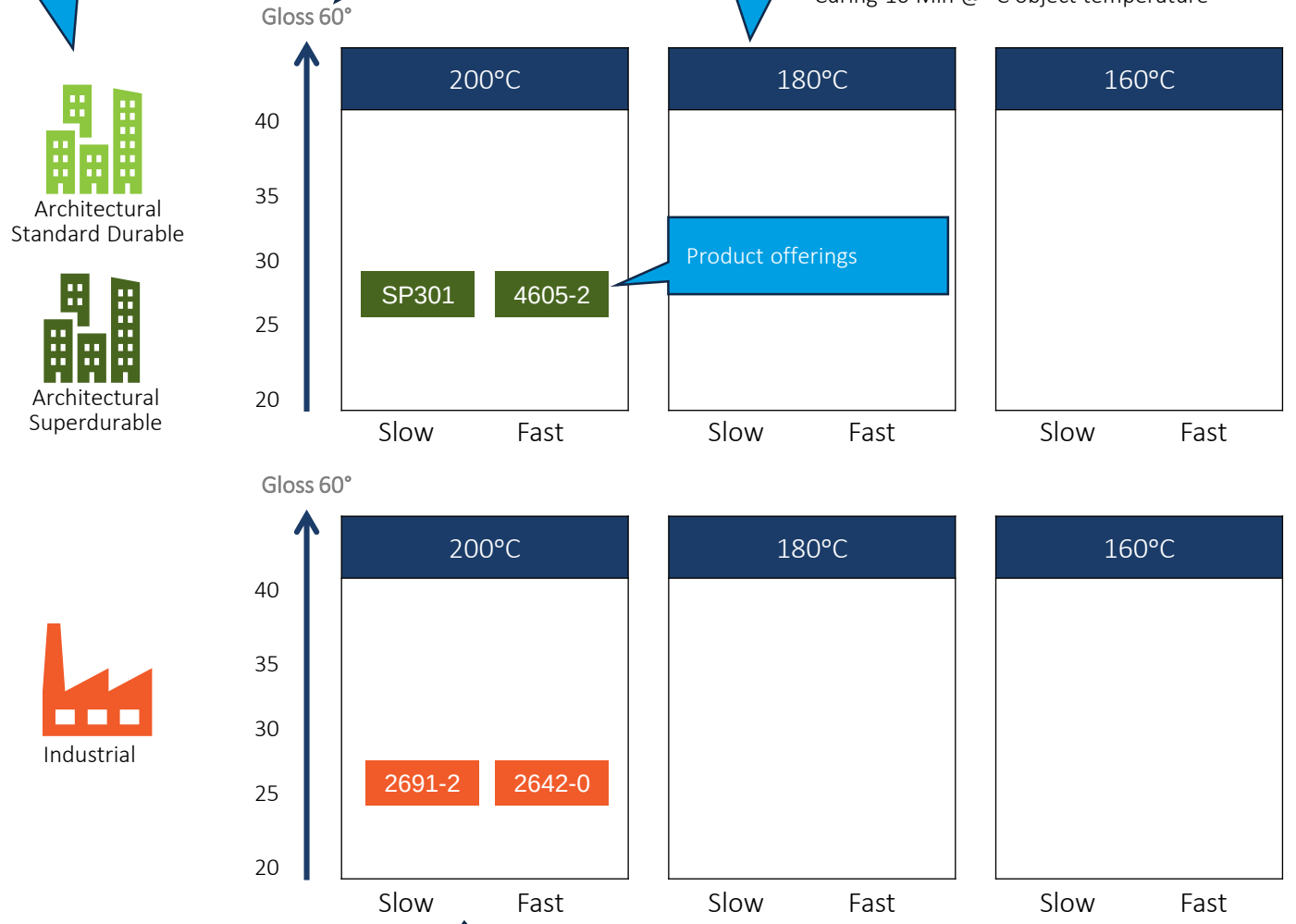
End use application & durability type

Gloss level scale at 60°

Cure temperature

Cure time @ temperature

Curing 10 Min @ °C object temperature



Slow & Fast categories of products

1 Introduction

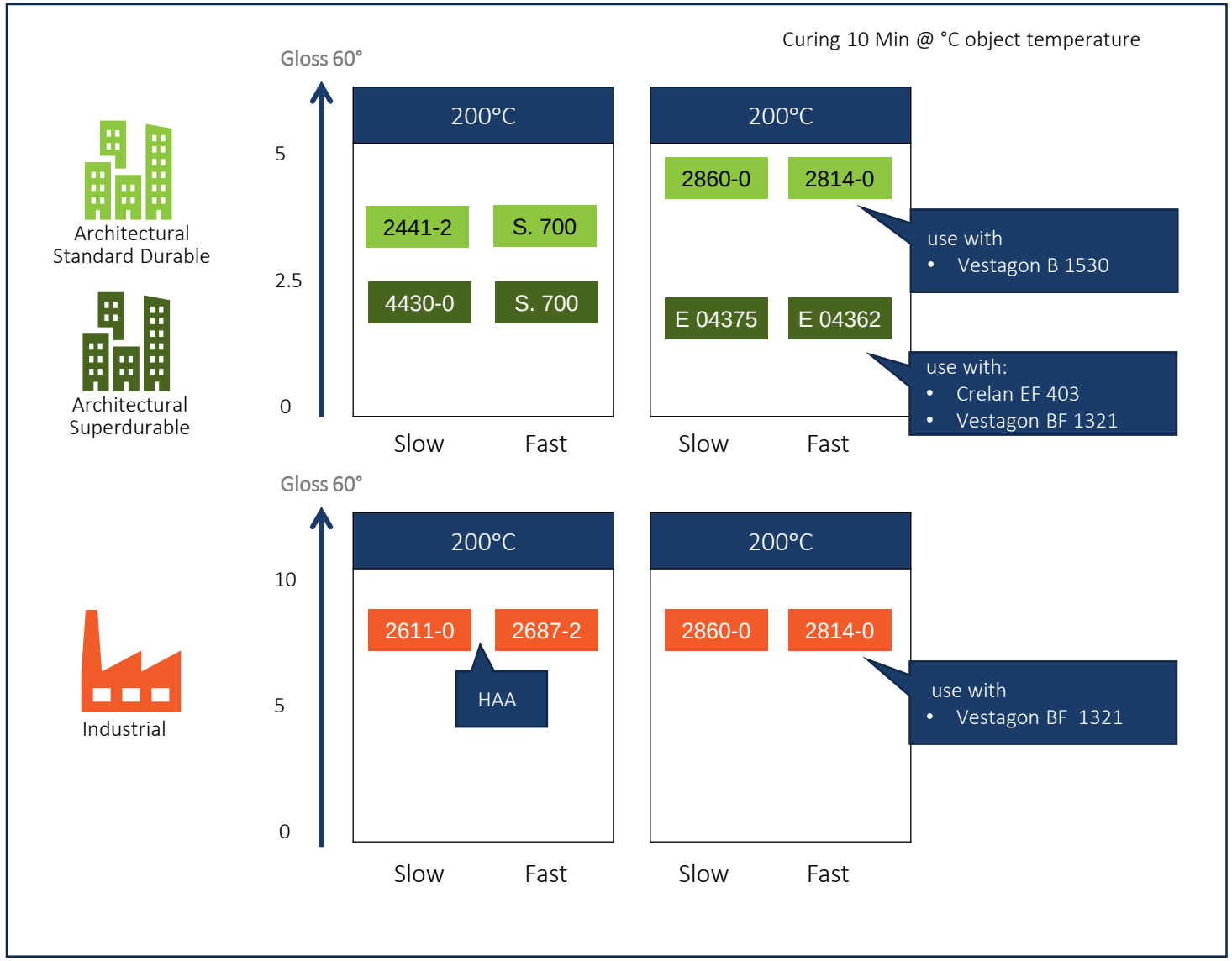
2 Formulating for Outdoor

Dead Matte

3 Formulating for Indoor

Dead-Matte: Polyesters for GMA-Acrylic, PUR, HAA

Gloss Level	➢ Dead-matte
Application	Architectural Industrial
Processing Technology	➢ One Shot Matte
Curative	➢ GMA-acrylic ➢ PUR ➢ HAA
Characteristics	➢ Easy formulation ➢ Less cleaning ➢ Heat transfer



1 Introduction

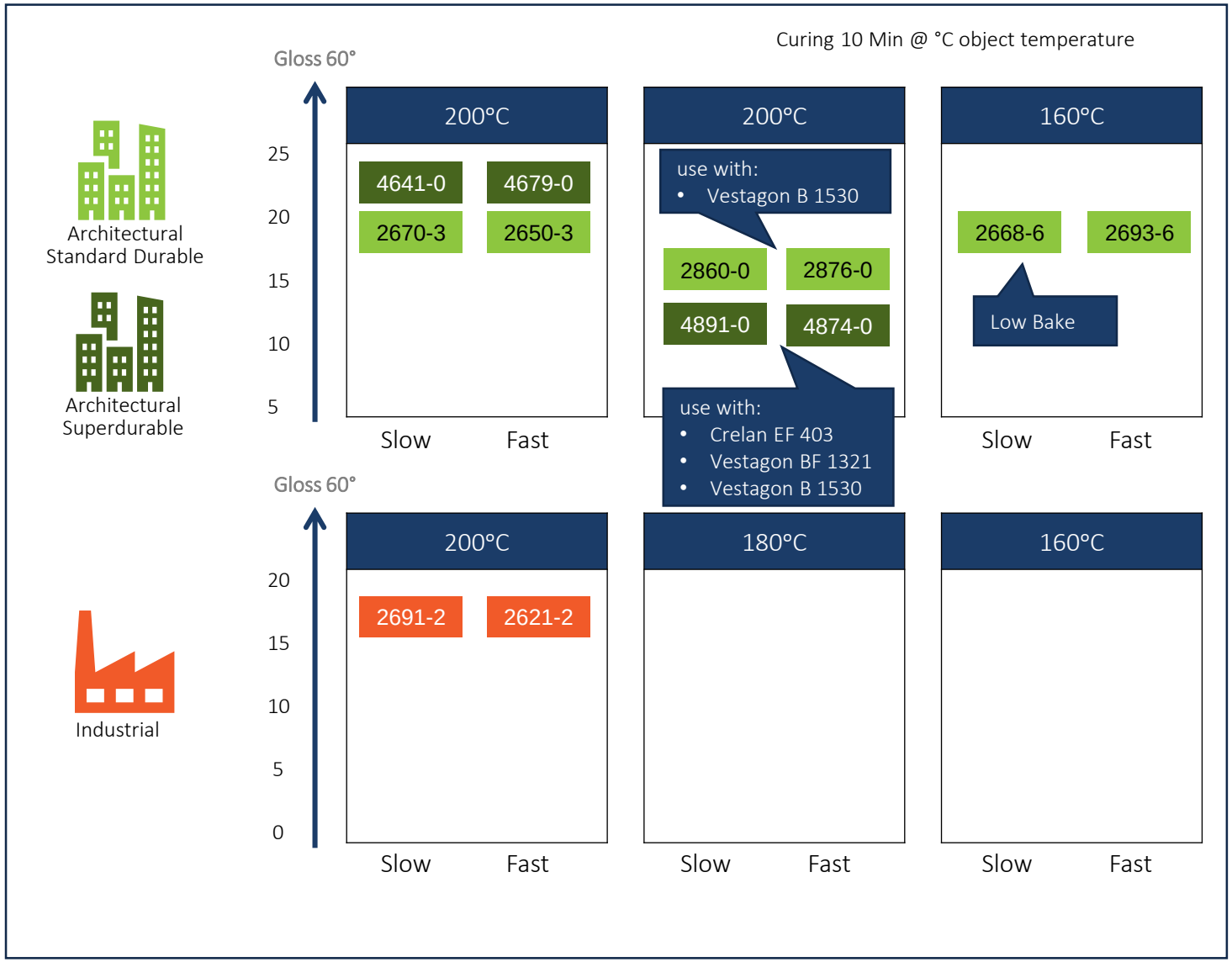
2 Formulating for Outdoor

3 Formulating for Indoor

Matte

Matte: Polyesters for HAA, PUR

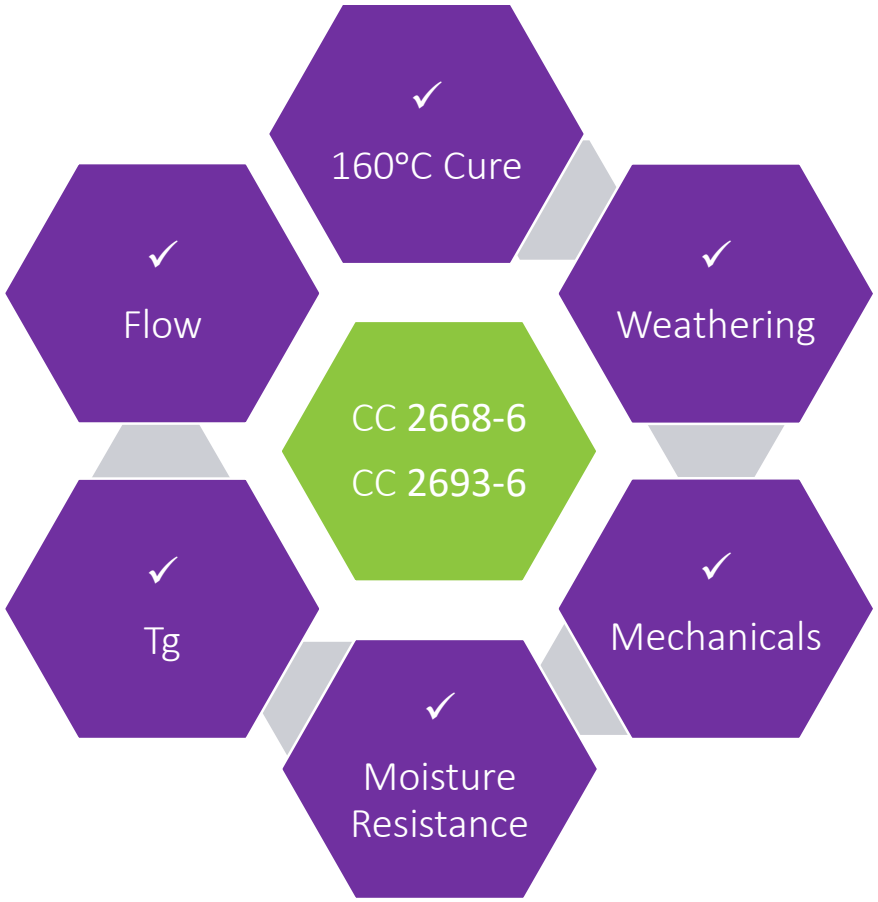
Gloss Level	➢ Matte
Application	Architectural, Industrial
Processing Technology	➢ Matte Dry Blend ➢ One Shot Matte
Curative	➢ HAA ➢ PUR
Characteristics	➢ Processing flexibility ➢ Low bake solutions



Matte: Polyesters for HAA – CRYLCOAT 2668-6 / 2693-6 Architectural Low Bake MDB

Low bake HAA Architectural system curing 160°C

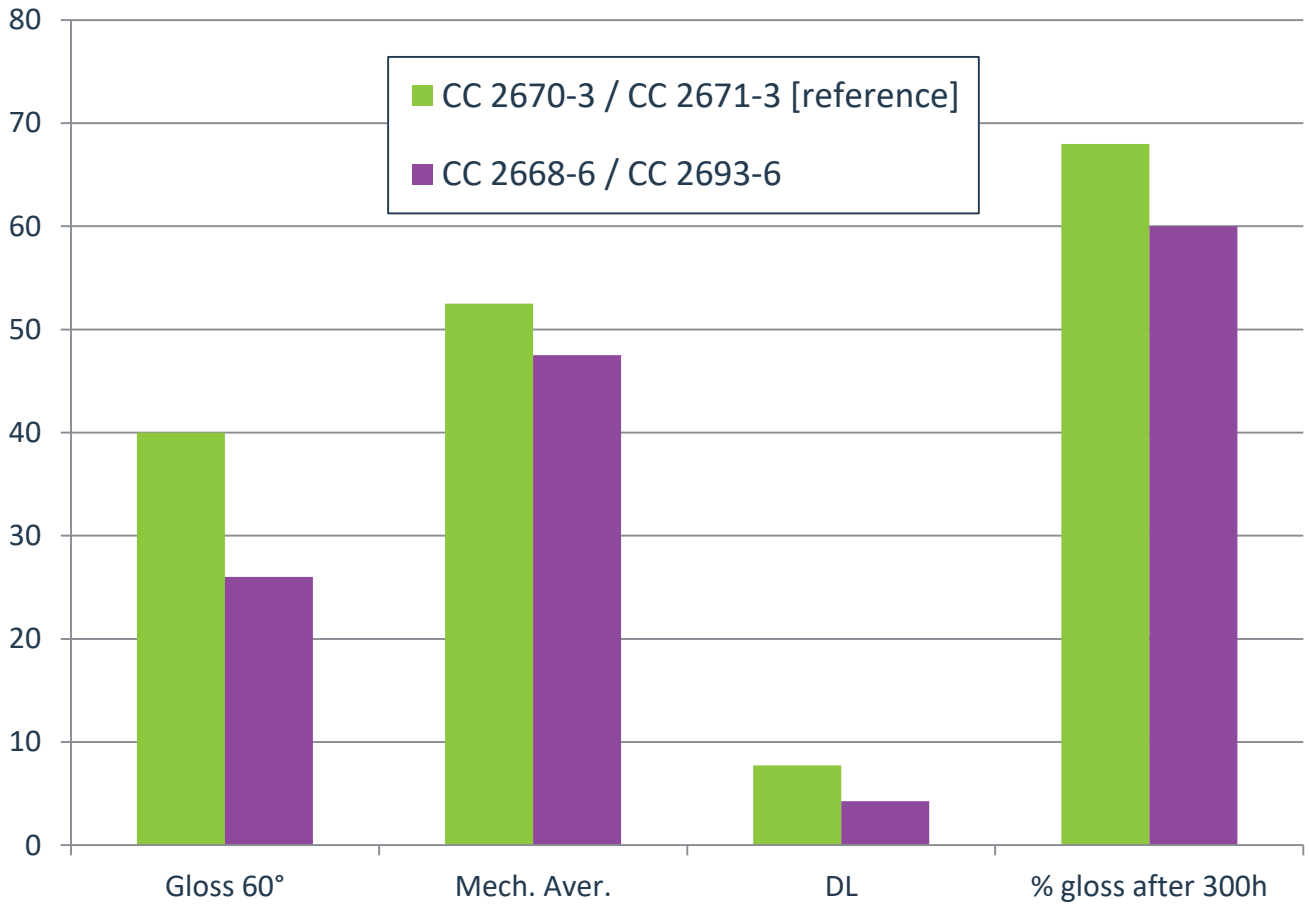




New system cures at 160 °C without compromising weathering and mechanical properties

Matte: Polyesters for HAA – CRYLCOAT 2668-6 / 2693-6 Architectural Low Bake MDB

Balance of **cure** and **weathering** with advanced **moisture resistance**



Stoichiometry	
3% HAA	7% HAA
CRYLCOAT 2668-6	CRYLCOAT 2693-6

Comparison of Performance	**CRYLCOAT 2668-6** **CRYLCOAT 2693-6**	CRYLCOAT 2670-3 CRYLCOAT 2671-3
Cure 10 mins @ °C	**160**	200
Gloss	**25**	40
Gel Time 180°C	**114**	171
Flow	**27**	36
Mechanicals	**60-70**	70-70

New system scaled up to production

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Semi Matte

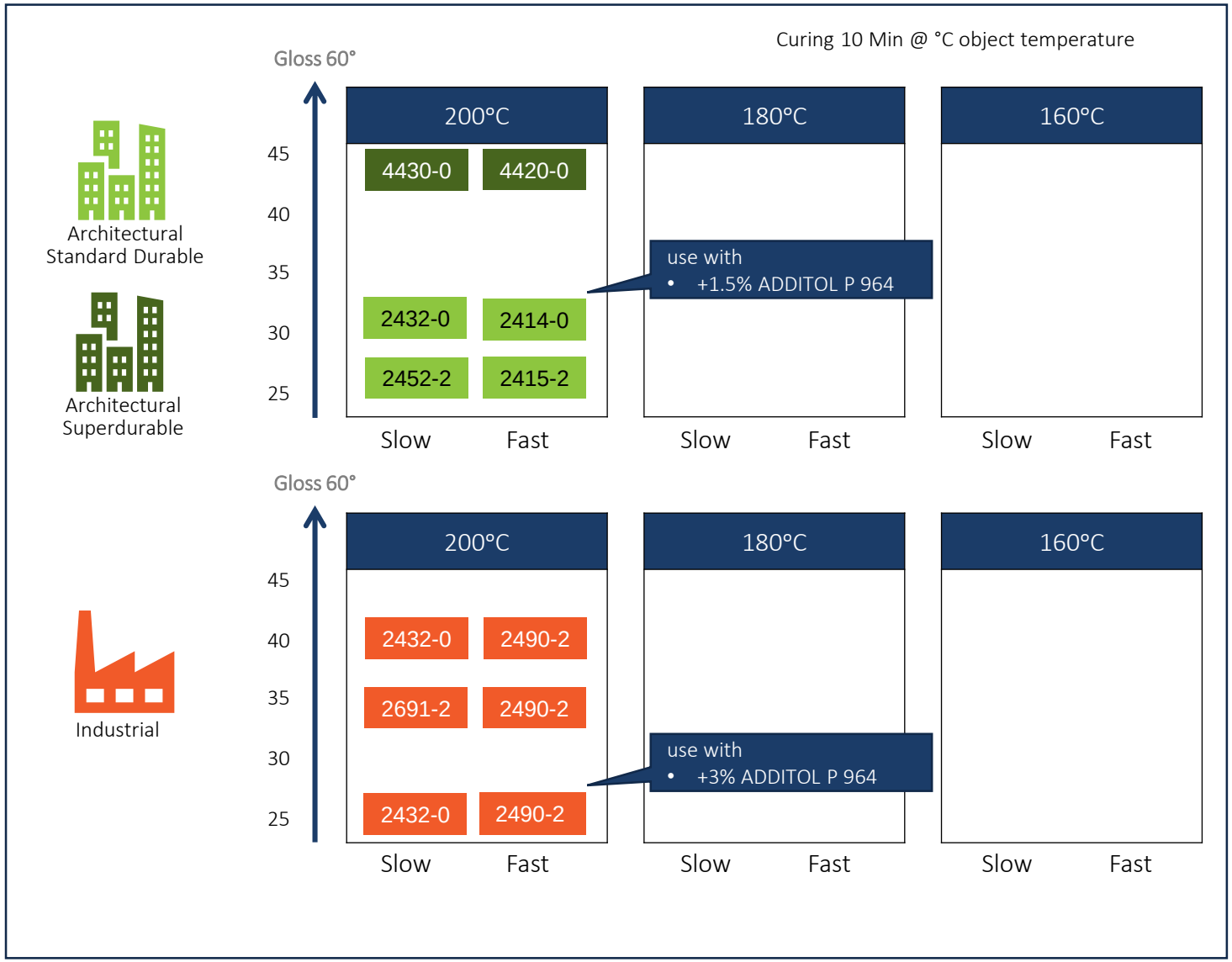
Semi-Matte: Polyesters for HAA

Gloss Level	➢ Semi-matte
Application	Architectural, Industrial
Processing Technology	➢ Matte Dry Blend
Curative	➢ HAA
Characteristics	➢ Easy formulation ➢ Robust gloss levels ➢ Good mechanicals



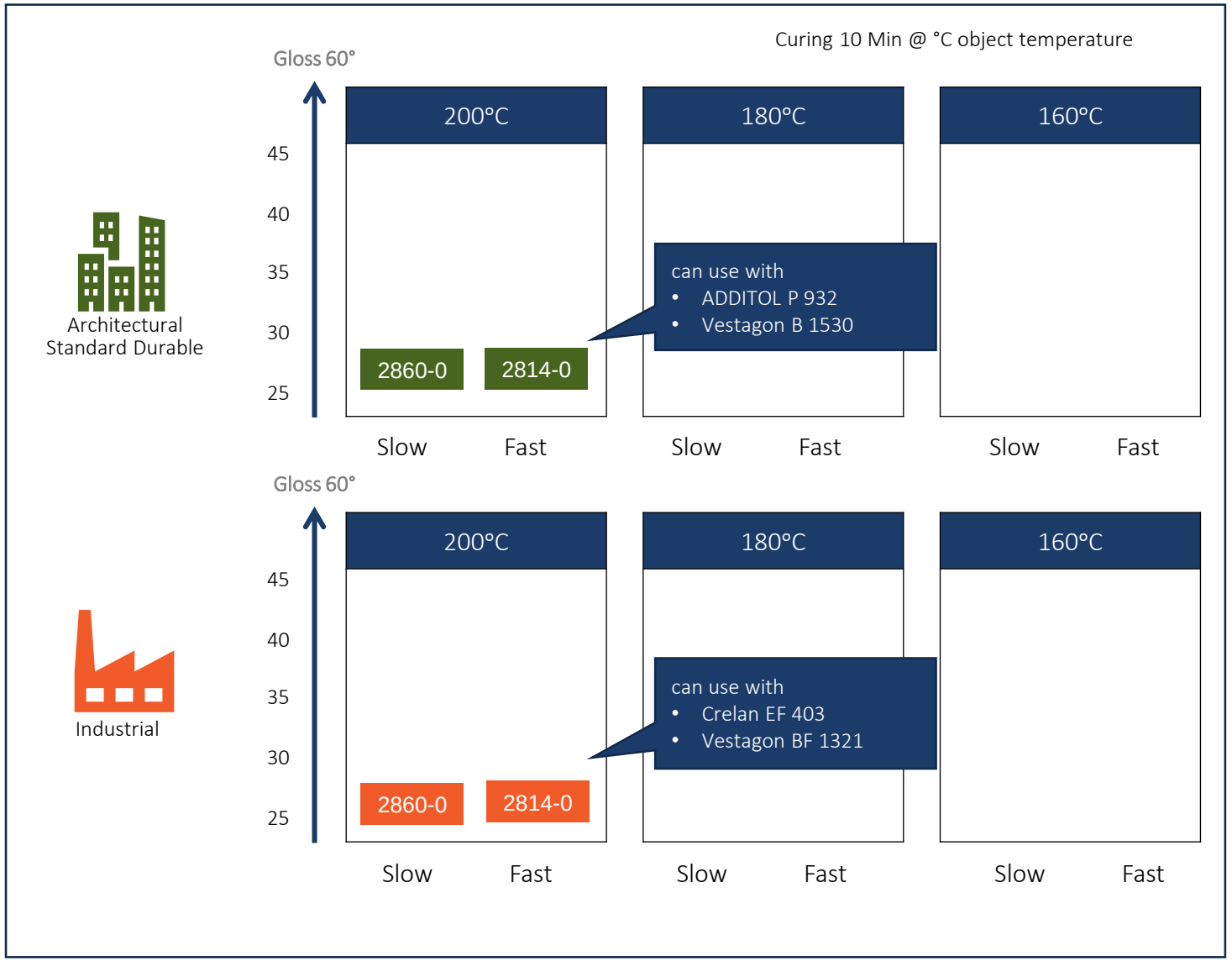
Semi-Matte: Polyesters for TGIC

Gloss Level	➢ Semi-matte
Application	Architectural, Industrial
Processing Technology	➢ Matte Dry Blend
Curative	➢ TGIC
Characteristics	➢ Flexible gloss levels ➢ Storage stability ➢ Overbake stable



Semi-Matte: Polyesters for PU

Gloss Level	➢ Semi-matte
Application	Architectural, Industrial
Processing Technology	➢ One Shot Matte
Curative	➢ Blocked Isocyanates ➢ Uretdiones
Characteristics	➢ Formulation flexibility



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All Gloss Levels

Matting of Indoor Powder Coatings

All gloss ranges achievable

Gloss Description	60° Gloss %
Dead Matte	< 10
Matte	10 – 25
Semi Matte	25 – 45
Semi Gloss	45 – 70
Glossy	70 – 90
High Gloss	>90

Tools for controlling gloss

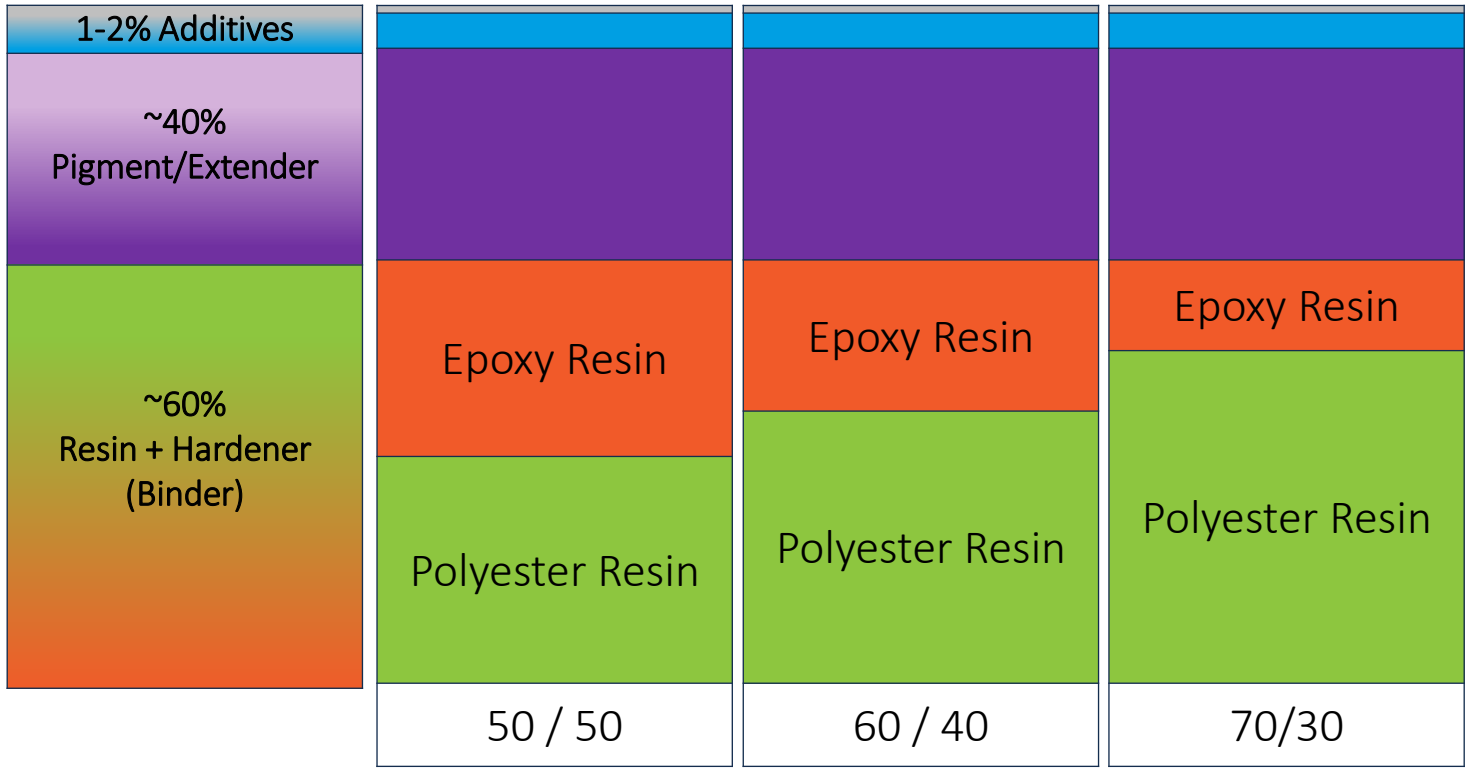
Waxes

Fillers

Matting Agents

Matting Hardeners

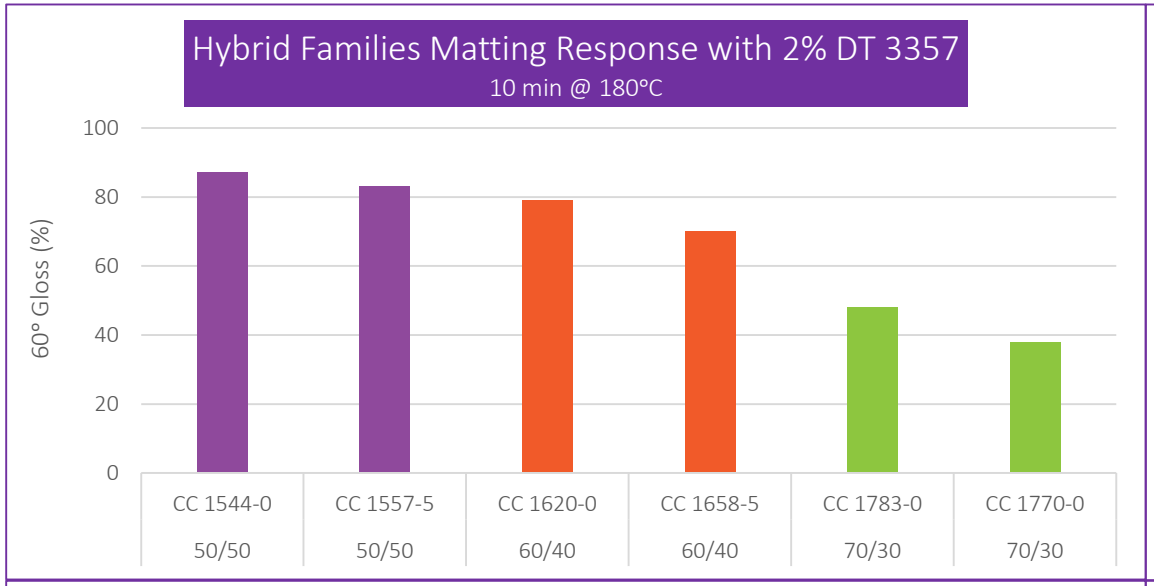
Hybrid Powder Formulations

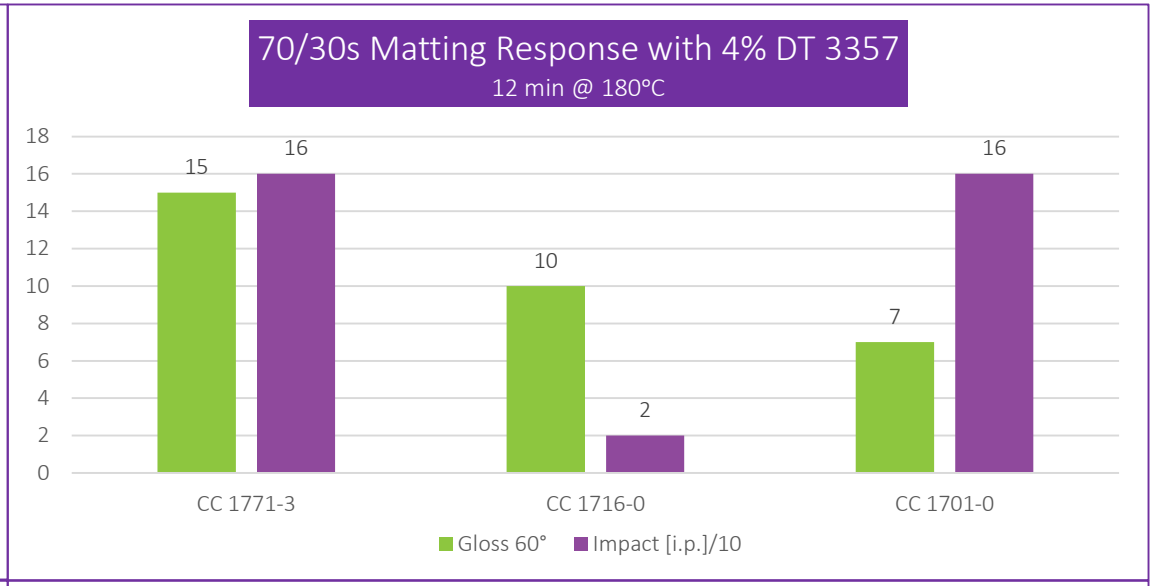


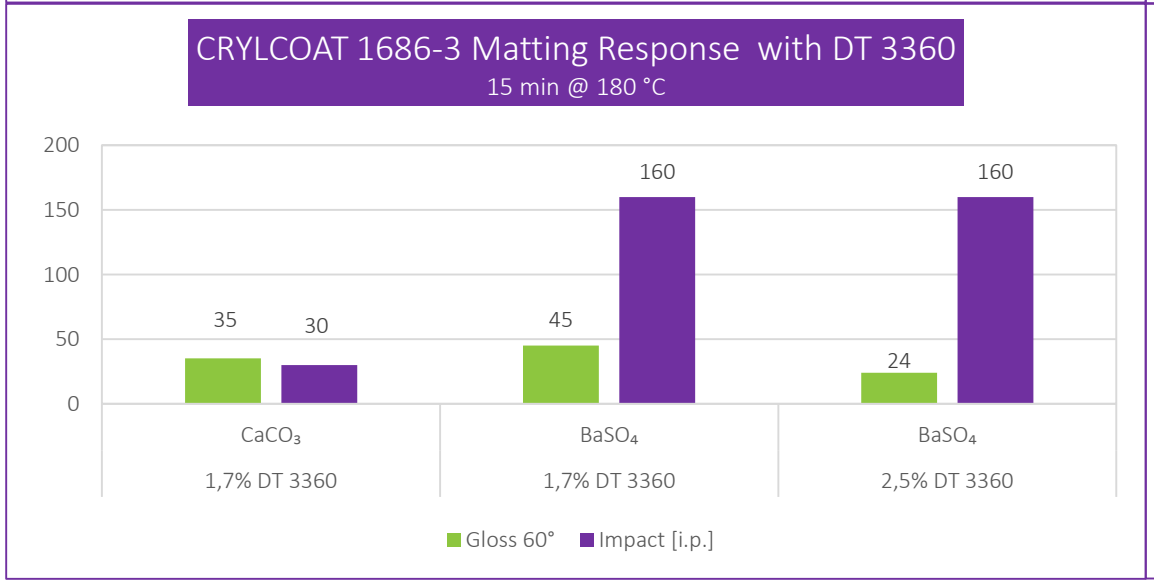
Characteristics

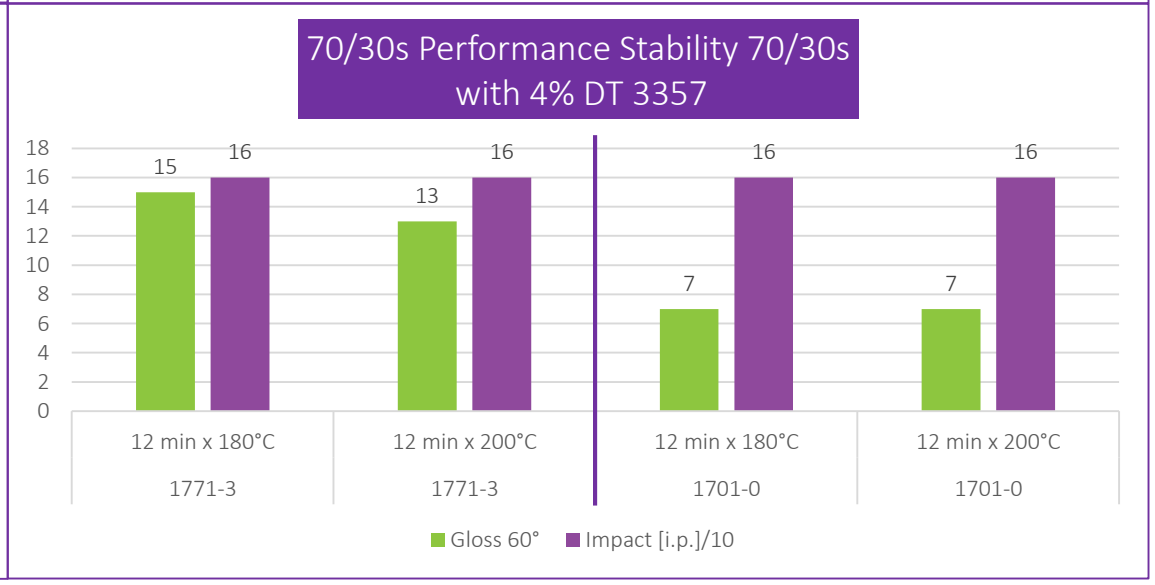
1. Increased tendency to yellowing
2. Reduced flexibility
3. Reduced storage stability
4. Occurrence of odours

Polyesters for Matting Hardeners



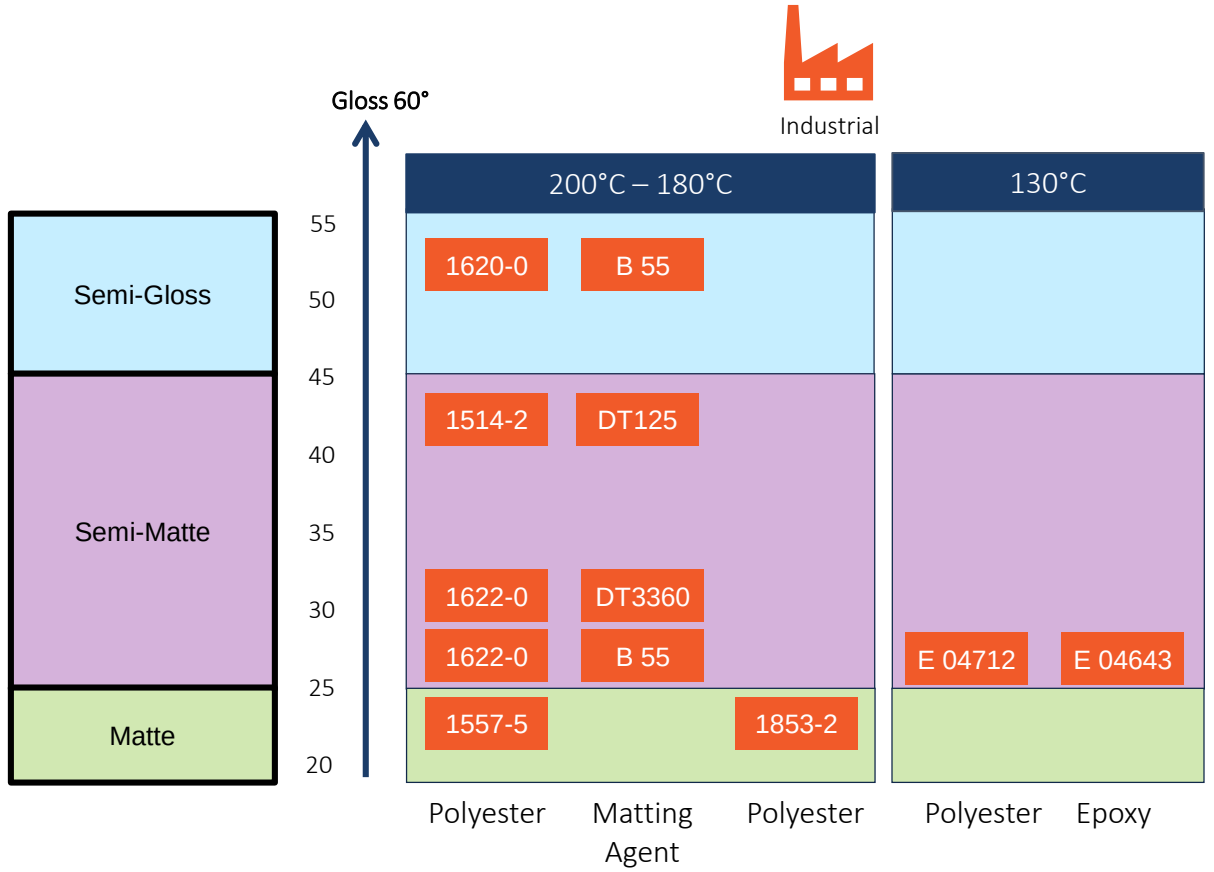






Overview of Matting Technologies

Gloss Level	➢ Matte ➢ Semi-matte ➢ Semi-gloss
Application	Industrial
Processing Technology	➢ One Shot Matte ➢ Matte Dry Blend
Curative	➢ Epoxy Resin ➢ Matting Agent
Characteristics	➢ Easy formulation ➢ Less cleaning



Controlling Gloss Levels in Powder Coatings

Gloss Description	60° Gloss %
Dead-Matte	< 10
Matte	10 – 25
Semi-Matte	25 – 45

Application		Durability	Polyester Type	Crosslinker
Indoor	Industrial 		Hybrid	Epoxy
Outdoor	Industrial 		Standard Durable	TGIC / HAA / PUR
	Architectural 		Standard Durable	TGIC / HAA / PUR
			Superdurable	TGIC / HAA / PUR

Curing Schedules		
	Low bake:	10 min @ 160 - 170°C
	Standard bake:	10 min @ 180 - 200°C

For more details check our dedicated website

https://lowglosspowdercoatingresins.com/

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