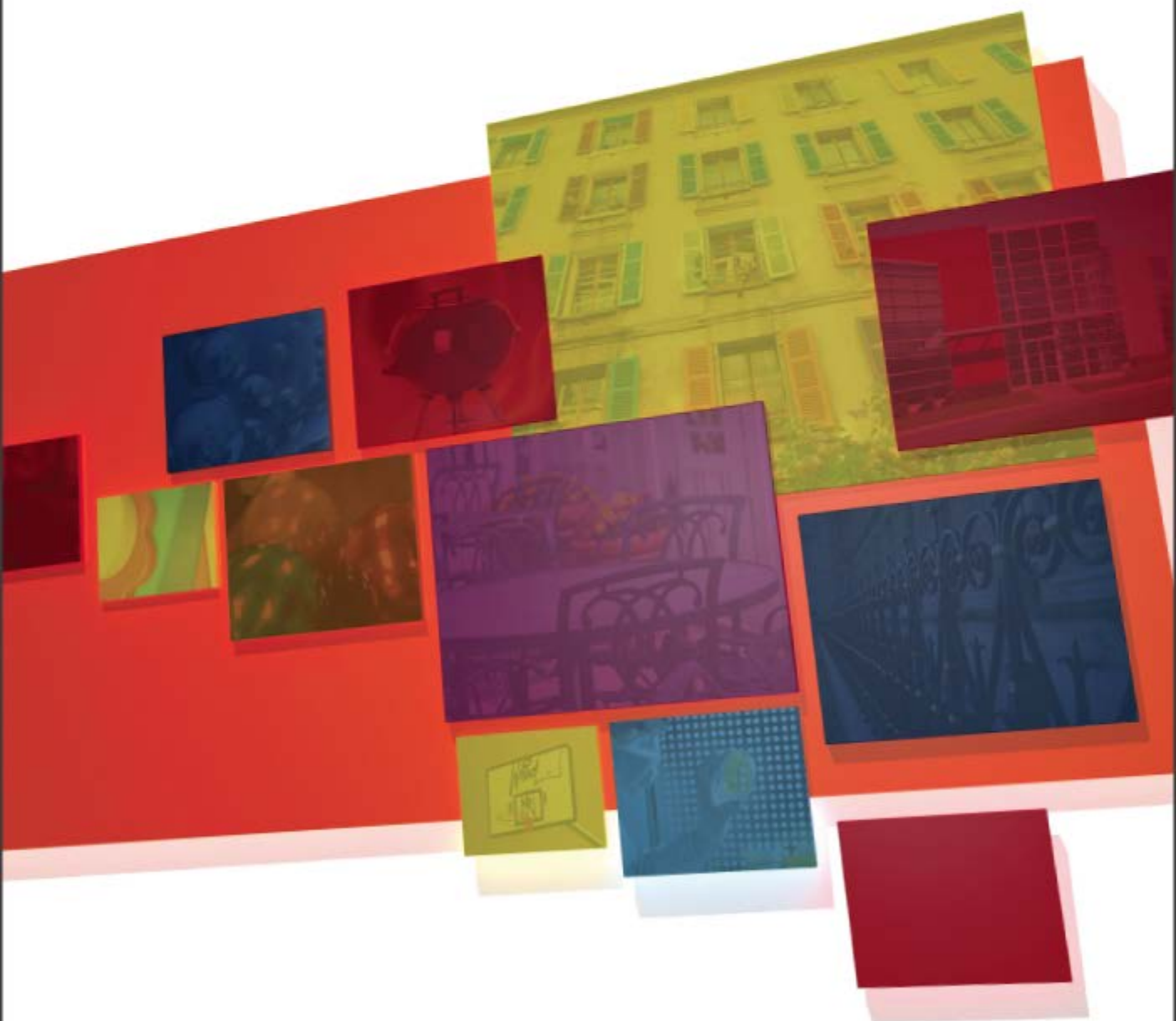


AXALTA COATING SYSTEMS



Alesta[®] Powder Coatings

Technical Guide



General Information

Performance That Lasts

Alesta® powder coatings are premium formulations manufactured to meet performance specifications on a consistent basis. These powder coatings are designed to provide tough, durable, but highly decorative and functional finishes for virtually any metal finishing need. The standard chemistries are noted for their mechanical, chemical, and corrosion protection in a wide range of colors, gloss, and surface effects.

Because powder coatings are virtually free of volatile organic compound (VOC), the mass loss during cure coupled with good application techniques - such as maximized first-pass efficiency and reclaiming - can render excellent powder utilization. Clean-up and disposal considerations are less troublesome than those of wet painting.

Recent industry innovations have provided improvements in the standard Alesta® product line. Technological advancements have provided a full complement of new chemistries, including HAA Polyester (TGIC Free), high temperature resistant, graffiti and out-gas resistant, low energy, antimicrobial, post-formable, and weatherable wrinkle finish powders. All new Axalta® powder technologies are tested to assure maximum performance consistency upon commercialization. This provision makes Axalta® Powder Coatings a name that can be trusted.

General Information

Specific Gravity	1.2 to 1.8, formulation dependent.
Theoretical Coverage	110 to 160 sq.ft/lb./mil, formulation dependent.
Storage Stability	One year minimum at 75°F and 50% relative humidity.*
Bulk Density	Approximately 40-60 lbs./cu.ft.
Packaging	Heavy polyethylene bag in a corrugated carton, fiber drum, or bulk bag.

**Low cure and specialized products may require cold room storage. Refer to product specific technical data sheets for proper handling.*

Safety Considerations

Powder-in-air concentrations of 0.02- 0.05 ounces per cubic foot can be ignited by flame or strong electrical discharge. Properly engineered application equipment is designed to keep powder-in-air concentrations well below this range. Powder concentrations below 0.02 oz/cu. ft. or above 0.05 oz/cu. ft. are too sparse or too dense to support flame or combustion. All equipment should be inspected periodically for proper operation and electrical ground. Hangers, hooks, racking system, and conveyor should be cleaned to eliminate powder build-up. Eliminate all sources of ignition. For more information, refer to NFPA 33, section 13, on powder coating.

Disposal

Alesta® powder coatings are classified as a Class I Non-hazardous Industrial Waste. Consult the Material Safety Data Sheet provided for the product you are using and verify the proper disposal procedure with your local municipal/industrial facility. To eliminate powder dusting when discarding, sinter refuse powder with low heat (-200° F), or wet down. Do not place corrugated containers or refuse powder in oven because the paper may ignite.

Fundamentals

Of Powder Coating Optimization

Storage And Handling

Alesta® powder coatings' charging properties are optimized when powder is free-flowing and moisture-free. Storage temperatures should be kept below 75°F and 50% relative humidity. If storage room temperature is lower than the application area, powder coatings which are hygroscopic, should be acclimated in unopened containers prior to adding into the spray hoppers. Unused powder should be stored in closed containers to prevent contamination. Powder should not be stored in hoppers for long periods of time. If moisture condensation occurs, fluidize powder to dry-out or replace moisture-laden powder with virgin powder.

Powder coatings are referred to as "particulates not otherwise classified" (PNOC). Properly fitted NIOSH-approved respirators or dust masks should be used by workers exposed to powder in their *respirable range in order to avoid dust inhalation. Powder spills should be swept or vacuumed up and placed in refuse containers for proper disposal.

**Respirable range - Particulates up to 10 microns in size and up to 8 inches from the nasal area, can be inhaled into the respiratory system.*

General Information

Substrate	Steel, aluminum, and other electrically conductive substrates.
Substrate Preparation	Bare metal clean with no trace of oil, grease, rust, or moisture. Conversion coatings enhance adhesion and corrosion protection.
Optimum Application Instructions	Axalta electrostatic spray-grade* powder coatings should be applied with well maintained equipment where hoses, gun parts, and hoppers are free of refuse powder. Contact points should be kept between 20-100 kV. Compressed air to the gun must be oil and moisture free. Spray booth and collection system should be maintained to provide sufficient air velocities. Safety procedures should be followed. <i>*Fluid-bed dip formulations are available.</i>
Reclaiming	Reclaim-to-virgin ratios should be carefully monitored to maintain spray consistency. Sieving powder before adding to hopper eliminates potential clumping or foreign matter.

Specialty

Powder Coatings

Metallic- Effect Powders

Alesta® metallic-effect powder coatings are designed to provide application and physical performance properties equivalent to non-metallic formulation. Certain limitations do exist when using metallic-containing powders:

- **Reclaiming metallic powders** requires careful monitoring of reclaim-to-virgin ratios in order to maintain consistency.*
 - **Metallic-effect pigments** (brass and copper) oxidize and darken upon prolonged or elevated temperature exposure. Avoid overbaking or curing at elevated temperatures.
- **Exterior exposure or high traffic** and handling can cause the soft metallic-effect pigments to erode and discolor. A clear topcoat is recommended for oxidizing atmospheres, harsh environments, or high-wear uses.
- **Independent laboratory testing** has proven that the minimum explosive concentration (MEC) of Axalta metallic-effect powders is the same as non-metallic powders. The MEC range is 0.02-0.05 oz./cu.ft.

* *Bonded metallic products using Axalta's unique process reclaim more efficiently than non-bonded products.*

Approvals

Underwriters Laboratories

Certain Alesta® powders in the standard chemistry lines are UL recognized for steel of outdoor-use, air conditioning and electrical equipment (DVO2). This recognition pertains to fast or low cure powders in the complete gloss range (0-100 units at 60 degrees) where application is over either 3-stage iron phosphates or 5-stage zinc phosphate pretreatment. Excluded from this listing are fluoropolymers, textured coatings and wrinkles finishes, among others. Check individual technical data sheet for specific approvals.

NSF® (Potable Water 61)

Certain epoxy-grade formulations have been deemed acceptable for use on pipes, valves, tanks, and fittings which will contact drinking water.

Caterpillar® High Performance

Certain formulations approved as primer coatings and topcoats for various equipment.

CNH®

Certain formulations approved for CNH® equipment.

John Deere® Agricultural

Certain formulations approved for farm equipment.

FDA-Compliant

Certain epoxy and hybrid powders meet the guidelines under Code of Regulations, Title 21, Section 175.300; Resinous and Polymeric Coatings.

AAMA

Alesta® AR products are designed to meet AAMA 2603, 2604, 2605 specifications and qualifies for the U.S. GreenBuilding Council's LEEDS program, EQ 4.2.

Numerous specifications for airline equipment, computer hardware, automotive accessories, telephone and telegraph casing, and many industries have listed various Axalta® powder coatings as acceptable for use in their predetermined applications. Product information provided upon request.

Antique Powders

Alesta® antique powders are two-toned rolling texture coatings displaying metallic-effect colors in the peaks and solid colors in the valleys. The thick films of 3.0-6.0 mils are excellent to hide substrate imperfections, scratches, and chips. Certain chemicals and solvents attack the metallic pigments, but the base coat remains intact. The same limitations apply to antique coatings that are applicable to metallics. Refer to that section for application recommendations.

Textured Powders

Alesta® textured powders are highly decorative finishes. The thick films of 2.5-4.0 mils are excellent to hide substrate defects. Close control of the film thickness is important for maintaining pattern consistency. Axalta textures are available in various standard patterns.

Mini Textures - a low gloss to semi-gloss sandpaper finish

River Textures - a high gloss rolling finish

Grain Textures - a low gloss to semi-gloss more open finish

Wrinkle Textures - a low gloss to medium gloss crinkle finish

Ridge Textures - a medium to high gloss pronounced finish

Alesta® Decorative Coatings System

	Epoxy	Hybrid	Aliphatic Urethane	TGIC Polyester	Polyester Wrinkle	HAA Polyester (TGIC Free)	*Fluoropolymer
Hardness	Excellent	Very Good	Good	Very Good	Very Good	Very Good	Superior
Flexibility	Excellent	Excellent	Excellent	Excellent	Excellent	Excellent	Good
Overbake Stability	Fair	Very Good	Excellent	Excellent	Good	Very Good	Superior
UV Resistane	Not Recommended	Not Recommended	Excellent	Excellent	Excellent	Excellent	Superior
Corrosion Protection	Excellent	Very Good	Good	Very Good	Good	Good	Very Good
Chemical/ Solvent Resistance	Excellent	Good	Good	Very Good	Good	Good	Very Good
Ease Of Application	Very Good	Excellent	Very Good	Excellent	Excellent	Excellent	Excellent

This table shows the difference among binder types in the various performance characteristics.

*Listed properties are achieved when applied as per AAMA 2605-05 guidelines.

Alesta® Product Number System



The First Letter: Binder Type

E = Epoxy

R = Epoxy - Polyester hybrid

G = Polyester, TMMGU Glycouril curative

P = TGIC-Polyester

S = Siloxane or Silicone Polyester

H = Non-TGIC Polyester, HAA Curative

U = Aliphatic-Urethane

F = Fluoropolymers

The Second Letter: Cure Response

F = Fast cure. Generally 10 minutes @ 400°F or 10-20 minutes depending on chemistry is sufficient to cure 20-gauge metal and lighter. Low gloss products may require a slightly longer cure.

L = Low cure. Generally 10 minutes @ 325°F is sufficient to cure EL and RL products on 20-gauge metal and lighter. For PL and UL products, 15-20 minutes @ 350°F is sufficient for cure.

R = Radiation rather than thermal cure system.

S = Slow cure. Generally 10-15 minutes @ 450°F or higher is sufficient to cure 20-gauge metal or lighter. Heavier substrates require more time and/or higher temperatures. Properties summarized are typical. Refer to individual product technical data sheet for specific cure information.

The Third Letter: Color

A = Aluminum or Silver

B = Black

C = Clear

D = Gold, Brass or Copper

G = Green

H = Gray

J = Brown or Bronze

K = Blue

L = Ivory or Cream

M = Maroon

P = Pink or Purple

R = Red

S = Orange

T = Tan or Beige

W = White

Y = Yellow

The Fourth Letter: FasTrac™ or RAL

If fourth letter is present: **F** = FasTrac™ **R** = Clear

The Numbers

The numbers are sequential to provide a unique identification for each product.

The Next Letter: Surface Type

S = Smooth

M = Metallic or Metallic Effect Smooth

T = Fine-Textured

H = Heat Resistant

G = Grain-Textured

P = Protective (Functional)

R = River or Ridge Texture

A = Antique-Textured Metallic Vein

W = Wrinkle

B = Bonded

The Last Number: Gloss At 60°

0 = 0 to 9

2 = 20 to 29

4 = 40 to 49

6 = 60 to 69

8 = 80 to 89

1 = 10 to 19

3 = 30 to 39

5 = 50 to 59

7 = 70 to 79

9 = 90 to above

The Last Letter: Antimicrobial

If last letter is present: **A** = Antimicrobial

Axalta Coating Systems

Contact us to learn how our dedicated team can help you find new ways to improve productivity and reduce overall costs - so you can deliver superior quality products while increasing profits.

Alesta® - decorative powder coatings

Nap-Gard® - fusion-bonded epoxy (FBE) powder coatings

CorMax® - electrodeposition coatings

Abcite® - thermoplastic powder coating

In the U.S., call 1-800-247-3886 or e-mail info.powder@axaltacs.com

In Canada, call 1-877-887-0880 or e-mail powder.info@axaltacs.com

axalta.us/powder

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