

TGIC-POLYESTER TECHNICAL SUMMARY

General Specifications

TGIC-polyester powders are designed for decorative and protective end service applications where exterior durability is a requirement. Recent enhancements have provided premium durability TGIC-polyester grade powders that withstand South Florida weathering exposures beyond five years. Premium durability coatings are available upon request.

TGIC-polyester powders can be formulated to provide very good chemical and solvent resistance, Faraday cage penetration, out-gas resistance caused by substrate porosity, and scratch and mar resistance. Many Alesta® TGIC-polyesters have a variety of formal recognitions from Underwriters Laboratories, Caterpillar®, and automotive companies.

Typical Performance Properties

Physical performance results were measured using 24-gauge Bonderite 1000 Parcolene® 60 steel panels with 1.5-2.0 mils of a high gloss formulation. Heavier ware require longer cure times or higher temperatures. Low gloss or textured finishes may require longer cure times. Physical properties typically decrease with decreasing gloss. Since results are formulation dependent, product specific testing is recommended.

Typical Film Thickness

1.5-6.0 mils

Cure Schedules

F-cure

20 minutes at 350°F
15 minutes at 375°F
10 minutes at 400°F
8 minutes at 425°F

L-cure

20 minutes at 300°F
15 minutes at 350°F
7 minutes at 375°F
5 minutes at 400°F

Overbake Stability

TGIC-polyesters can withstand three times the recommended cure time without discoloration.

Dielectric Properties

Typical values equal 700 - 1,000 volts per mil for films up to 10 mils.

Reflectance

Unshaded white TGIC-polyester powders can provide reflectance values (Y-value) of 90 and greater.

Adhesion (ASTM D-3359, Method B)

Using pressure sensitive tape, no coating is lifted or removed between 1/8" cross-hatch scribes. (Rating = 5B).

Pencil Hardness (ASTM D-3363)

Using Eagle Turquoise pencil leads, surface hardness ranges from H to 2H.

Impact Resistance (Modified ASTM D-2794)

Using a falling weight impact tester, the film surface withstands up to 160 inch lbs. of direct and reverse impact.

Flexibility, Mandrel (Modified ASTM D-522)

The film surface withstands a 180° bend over a 1/8" diameter with no loss of adhesion or surface cracking.

Abrasion Resistance (Modified ASTM D-4060)

Coating weight loss after 1,000 cycles of Taber abraser equipped with CS-10 wheels loaded to 1 kg per wheel is approximately 40-60 mg.



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Corrosion and Chemical Performance Properties

Salt Spray Resistance (ASTM B-117)

Scribed Bonderite 1000 steel panels in a 5% salt fog at 95° F and 100% relative humidity, exhibit no undercutting of the film after 500 hours exposure. No rusting or blistering occurs on panel face away from scribe. After 1,000 hours there is less than 1/16" undercutting. Alodine 1200 aluminum panels show no effect after 1,000 hours.

Chemical and Solvent Resistance

After ambient temperature immersion in the listed solvent or reagent, the following results were reported for TGIC-polyester formulations. *Verification of resistance properties should be made for each chemical proposed for use with a specific coating, as results can vary greatly depending on formulation. Specific test results or additional testing can be acquired upon request.

| SOLUTION | 1 MONTH | 3 MONTHS | 6 MONTHS | 12 MONTHS |
|-----------------------------------|------------------------------------|----------------------------------|----------------------------------|----------------------------------|
| 0.1% Chlorine | No Effect | No Effect | No Effect | No Effect |
| Anti-Freeze (50% Ethylene Glycol) | No Effect | No Effect | No Effect | No Effect |
| 87 Octane Unleaded Gasoline | Dulls, Softens - 7 days | Dulls, Softens | Dulls, Softens | Dulls, Softens |
| 15% Hydrochloric Acid | *No Effect Oxidizes Metallics | *No Effect Oxidizes Metallics | Discolors, Dulls | Discolors, Dulls |
| 40% Hydrochloric Acid | Discolors, Dulls | Discolors, Dulls | Discolors, Dulls | Discolors, Dulls |
| 15% Sulfuric Acid | No Effect | *No Effect Oxidizes Metallics | *No Effect Oxidizes Metallics | *No Effect Oxidizes Metallics |
| 40% Sulfuric Acid | *No Effect Oxidizes Metallics | *No Effect Oxidizes Metallics | *No Effect Oxidizes Metallics | *No Effect Oxidizes Metallics |
| Isopropyl Alcohol | No Effect | Dulls, Crazes | Dulls, Softens | Dulls, Softens, Crazes |
| Brake Fluid D.O.T. Type 3 | Dulls, Softens - 1 hour | Dulls, Softens | Dulls, Softens | Dulls, Softens |
| Acetone | Dulls, Softens - 1 hour | | Test Terminated - 1 hour | |
| Methyl Ethyl Ketone | Dulls, Softens - 1 hour | | Test Terminated - 1 hour | |
| Dow Oven Cleaner | Dulls, Discolors, Softens - 7 days | | Test Terminated - 1 month | |

*Axalta™ formulates TGIC-polyester products that exceed the above results. Since formulations may contain ingredients which enhance or detract from chemical resistance, performance has been summarized for this chemistry. This chart is intended as a general guide for chemical resistance.

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