



PPG PPG Aerospace
Bringing innovation to the surface.™



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AEROCRON™ 
Electrocoat Primer for Aerospace Applications





PPG Industries

Bringing innovation to the surface.™

COATINGS

from a Global Leader



RESPECTED AND TRUSTED THE WORLD OVER

PPG Aerospace is part of PPG Industries, the world's largest coatings and specialty materials company. Founded in 1883 and headquartered in Pittsburgh, PA, PPG employs 40,000 people in nearly 70 countries around the world. Through leadership in innovation, sustainability and color, PPG helps customers in the industrial, transportation, consumer products and construction markets enhance countless surfaces across the globe.

PPG Aerospace is a leading manufacturer of transparencies, sealants and coatings, and a supplier of electrochromic window systems, surface solutions, packaging and chemical management services. PPG also supplies transparent armor for military vehicles, buildings and rail. A respected innovator in the industry, PPG Aerospace has a history of delivering new technologies and solutions to airframe manufacturers, airlines and maintenance providers for the commercial, military and general aviation industries.

A LEADER IN ELECTROCOAT TECHNOLOGY

Electrodeposition coatings, commonly referred to as electrocoat or e-coat, use an electrical current to deposit aqueous coatings onto a conductive substrate, such as aluminum parts for automobiles and other types of complex, industrial machinery. In fact, over 95% of all automobiles produced worldwide use electrocoated components.

Pretreated substrates are immersed into an electrically charged paint bath. The charged coating particles are electrically drawn to the substrate, creating a tightly packed, insulated layer that reaches every recess of the surface. The process stops automatically, with coating thickness regulated by the amount of voltage applied. At the end of the line, the substrate is baked, creating a tough coating that offers more thorough protection than spray-applied coatings.

PPG has been credited with almost every major development in the technology since pioneering anodic electrocoat technology in 1963. This highly efficient, automated process leads the industry in applied cost efficiency, with products that contain near-zero volatile organic compounds (VOCs) and no hazardous air pollutants (HAPs) or heavy metals. With more than 50 years of application experience and a global network of manufacturing facilities and technical experts, PPG is the world's leader in electrocoat technology.

Traditionally, electrocoats have not met the rigorous performance demands of the aviation sector, where the substrates must often endure rapidly changing temperatures and require long-lasting, anti-corrosion performance and fluid resistance. Thanks to the innovative research and development of PPG, that has now changed.



Aerospace Coatings



Aerospace Sealants



Aerospace Transparencies



Chemical Management



Packaging & Application Systems

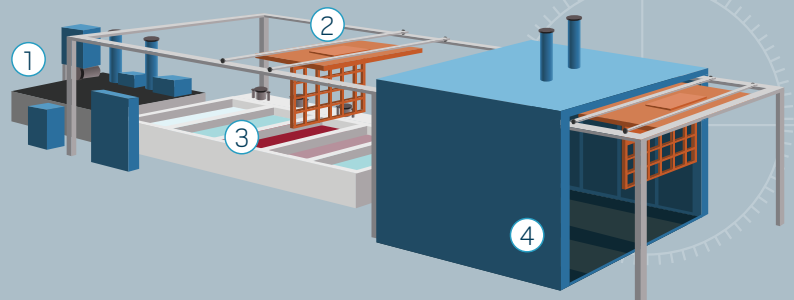


Transparent Armor & Specialty Products

How It Works:

ELECTROCOAT SYSTEM

1. The power supply and filtration for the entire electrocoat line is managed at the control station.
2. Parts are moved through the electrocoat bath process via a racking system. Other systems use a monorail.
3. Typical system tanks might include: pretreatment, rinse, e-coat, rinse and a final rinse of water purified by reverse osmosis or deionization.
4. Once the process is complete, the parts are loaded into an oven where the e-coat is cured. Parts are ready to go once they leave the oven.





Delivering the First

ELECTROCOAT

to the Aerospace Industry

AEROCRON™ ELECTROCOAT PRIMERS

Aerocron electrocoat primer is the first electrocoat that has been specifically formulated for the demanding needs of the aerospace industry.

The PPG research and development team engineered this anodic epoxy electrocoat for use on a variety of common aerospace substrates, including aluminum alloys (2024, 2050, 2214, 5083, 6056, 6061, 7075, 7175 and AS7G), titanium and stainless steel. The result is a quality finish that maximizes paint adhesion and delivers outstanding corrosion protection.

Aerocron primers are designed to be used over chromate and chrome-free pretreatments and are fully compatible with all industry standard pretreatments and topcoats.



The Advantages of ELECTROCOAT

Environmental, Health and Safety

- Chrome-free, metal-free process
- Low VOCs, low solvent emission
- Minimal waste discharge, closed loop process
- Minimal exposure of workers to hazardous materials

Productivity / Efficiency

- Fully automated process
- 90-95% material utilization, no overspray
- Immediate part handling after thermal cure
- No "dry to touch / tape / fly" restrictions

Application / Performance

- Uniform film on entire surface, even recessed areas
- High transfer efficiency, i.e. holes and gaps coated
- Excellent barrier / corrosion resistance properties

PERFORMANCE vs. Liquid Coatings

	LIQUID	E-COAT
Transfer Efficiency	Limited	High
Manual Labor	High	Limited
Automation	Good	Best
# of Parts Processed	Limited	Best
Environmental Impact	High	Low
Pot Life	Limited	Infinite
Colors Versatility	Best	Limited
Equipment Investment	Low	High

Designed and
TESTED
 for Toughness



AMS3144 QUALIFICATION TESTING FOR AEROCRON ELECTROCOAT PRIMERS

PPG led the coatings industry to develop SAE Aerospace Material Specification 3144, organizing key performance criteria that includes corrosion, fluid resistance, adhesion, flexibility and more. *Aerocron* electrocoat primers meet the following test standards:

CORROSION

<i>Neutral Salt Spray</i>	No blistering or loss of adhesion beyond 0.125 inch from scribe line. No pitting in the scribe for Class N, but some discoloration and corrosion products are acceptable (3,000 hrs.).
<i>Filiform</i>	No filiform corrosion extending beyond 0.25 inch from the scribe (outside of the upper edge of the grid), and no more than a rating of 60 squares in the outer grid after exposure for 1,000 hours.
<i>SO₂ Salt Spray</i>	No blistering or loss of adhesion beyond 0.125 inch from the scribe line after exposure to sulfur dioxide salt spray for 500 hours. No pitting in the scribe for Class N, but some discoloration and corrosion products are acceptable.

FLUID RESISTANCE

<i>Immersion, 30 days 75° F</i>	With a pencil hardness no softer than HB and without any failures such as blistering, cracking, or peeling. Hydraulic Fluid (MIL-PRF-83282)
<i>Immersion, 14 days 75° F</i>	With a pencil hardness no softer than HB and without any failures such as blistering, cracking, or peeling. Lubricating Oil (MIL-PRF-7808, MIL-PRF-23699); Hydraulic Fluid (MIL-H-5606); Jet Reference (AMS2629 Type I); Phosphate Ester (AS1241)

ADHESION

<i>Wet Tape</i>	Immersion 7 days RT (75° F). Rating of no less than 4B with in 10 min after removal from water.
<i>Dry Tape</i>	Rating of no less than 4B.

FLEXIBILITY

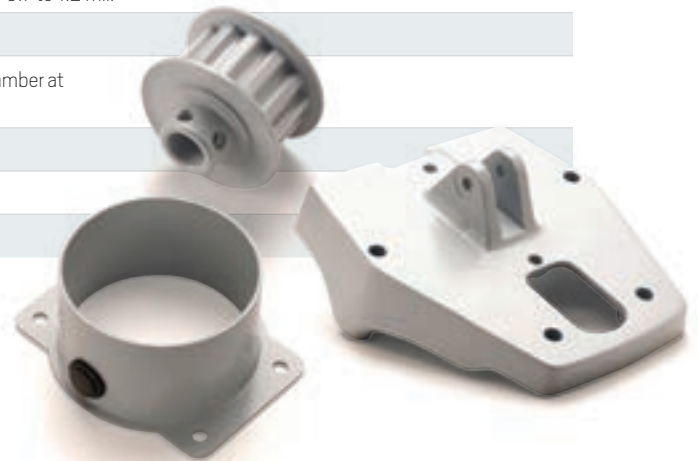
<i>Impact Resistance</i>	No cracking or loss of adhesion under 50 in. lbs. direct / 40 in. lbs. reverse.
<i>Low Temperature Flexibility</i>	No cracking or delamination under visual examination when bent over a 4" mandrel at -65° F.
<i>Elongation</i>	Exhibits an elongation of not less than 10%.

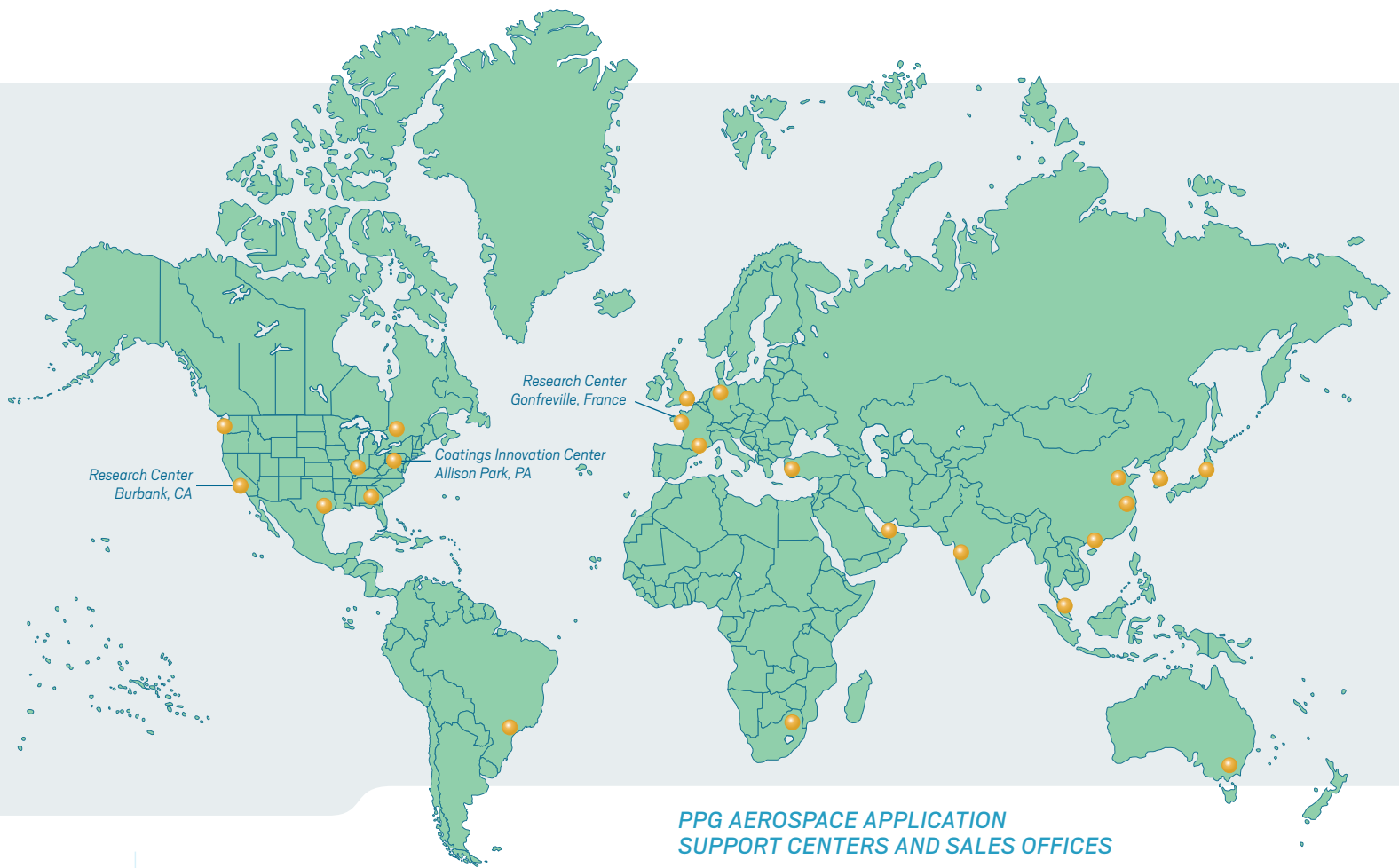
COMPATIBILITY

<i>Topcoats</i>	Primer passes the adhesion requirements dry and wet adhesion no less than 4B.
<i>Repair Primer</i>	Primer passes the adhesion requirements dry and wet adhesion no less than 4B.
<i>Sealant Adhesion</i>	Average peel strength of at least 20 lbs. per inch of width with no value lower than 15 lbs. per inch of width. The separation during peel is at least 95% cohesive in sealant.

ADDITIONAL TESTING

<i>Quality</i>	The primer components (resin feed and pigment paste) are uniform in quality and condition, free of grit, seeds, lumps, abnormal thickening or livering. The components do not show pigment flotation nor excessive settling, and mix into a smooth, homogeneous and pourable condition.
<i>Color</i>	Primer is the natural color of the corrosion-inhibiting pigments used in the formation unless otherwise agreed upon by the purchaser and the primer manufacturer.
<i>Thickness</i>	The dry film thickness of the thermally cured primer shall be in the range of 0.7 to 1.2 mil.
<i>Hardness</i>	Scratch hardness is a minimum pencil hardness of F.
<i>Humidity Resistance</i>	Does not blister, soften or peel after exposure for 30 days in a humidity chamber at 95% ffl 5 relative humidity and 120° F of ffl 5 (49 °C ffl 3).
<i>Solvent Resistance</i>	Withstands 200 passes (100 back and forth rubs).
<i>Rain Erosion</i>	Maximum peel of 0.25 inch from the edge and no erosion to substrate.
<i>Strippability</i>	Minimum of 90% of the primer shall be stripped (6/12 hrs.).





A Global
PARTNER

WORLDWIDE CUSTOMER SERVICE AND TECHNICAL EXPERTISE

Whether your business is in North America, South America, Europe or the Asia/Pacific region, PPG offers a full range of customer support services provided by knowledgeable sales, technical and manufacturing personnel trained in multiple coating technologies. With over 20 facilities worldwide dedicated to aerospace coatings alone, PPG's global manufacturing and product development presence means consistent raw material supply and uniform coatings that can be manufactured and delivered cost-effectively anywhere in the world.

If you are considering a switch to electrocoat from your current coatings configuration, PPG can recommend system implementation strategies and equipment manufacturers that best fit your needs. Whether you are a new or established customer, PPG can provide on-site training and address a multitude of other issues that include environmental, health and safety compliance; fine-tuning of equipment and troubleshooting. PPG's world-class technical support also encompasses pre-production application testing, routine production process evaluations, cost-reduction consultation and formal documentation of problems and their resolutions.

For the PPG Aerospace Application Support Center nearest you, please visit our website at ppgaerospace.com.

