



PERMAGARD®



WHAT IS PERMAGARD

Permagard is a reactive polymer coating that chemically bonds to the pores of the paintwork to seal and protect the surface. As the treated surface cures, the plasticized molecules elongate, interlocking with each other, resulting in a tough bonded protective coating maintaining a durable high gloss finish. Permagard is not a wax and does not create repaint issues.

SCIENTIFIC ANALYSIS

Permagard is a concentrated emulsion of aminomethoxysilane functional dimethylsiloxane polymers which forms an elasticized film on all hard slick painted surfaces by reacting with the moisture in the air. Once the film has been applied, it will strongly adhere to painted surfaces.

- Physical Form: Low viscosity thin liquid, milky white in color.
- Special Properties: High corrosion resistance, excellent water and chemical repellence, deep gloss.



THE PERMAGARD APPROACH

The Permagard concept is based upon the idea that “prevention is better than a cure”. It is more cost effective, quicker and easier to repair and maintain the Permagard coating than the surface of a high-valued object that it protects.

Depending on the condition of the livery professionally trained technicians use a two to six step process to apply Permagard onto the painted surfaces of the aircraft. The product bonds and cures over the surface of the paint, leaving a transparent, low friction, high gloss barrier between the paint and the environment. The earlier you Permagard a painted surface the better it is. If the livery has excessive dulling or hazing and would require a compound polish prior to the Permagard, then that service cost must be added to the cost of the initial application.

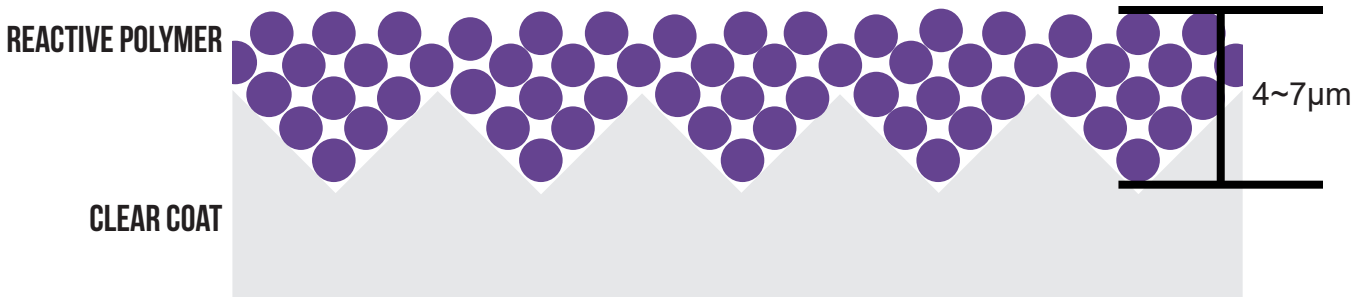
The initial application does include some minor buffing of areas with dull paint. It is important to remember that Permagard only preserves and protects the paint in whatever condition it is in when the product is applied. It is not sold as an enhancement for paint defects such as, rivet rash, crazing and paint erosion.

THE BENEFITS OF PERMAGARD

Paint coatings and clear coats are marketed as being reliable for up to 10 years; however, the reality is that at 3-4 years the paint begins to show signs of degradation, the gloss levels start to erode and the 'wet' new paint look slowly disappears. As the painted surface degrades it becomes rough and uneven making it harder to maintain and clean.

This results in harsher chemicals being required to clean the surface, followed by buffing and polishing the paint or clear coat on a regular basis to restore gloss levels. All of these measures expedite the deterioration process, leading to deeper levels of paint being exposed to oxidation, peeling and blistering. Ultimately, this results in a re-paint.

With the application of Permagard, minor scratches and imperfections on the painted surface are first removed and smoothed out. This means that there is less chance for harmful substances to adhere to treated surfaces, thereby greatly reducing the cost of maintenance. The paint will be protected from fading and oxidation thus retaining a brilliant gloss. Often times the cosmetic life expectancy of polyurethane paint will be doubled.



EASE OF MAINTENANCE AND ELIMINATION OF CARBON EXHAUST

Carbonization and exhaust fumes can have a dramatic effect on the appearance on an aircraft and removal from non-Permagard treated surfaces is arduous at best. There is no question that with the addition of Permagard, exhaust carbonization buildup is inhibited, and ease of cleaning is much improved.

The coating can be maintained without the use of hazardous chemicals and the system has significant benefits in reducing the time and human resources normally required to maintain the exterior of an aircraft to a high standard.



KEY ELEMENTS

- Bonds to the paint.
- Seals and locks in the paint finish.
- Eliminates the need to cut, polish and wax.
- Protects against fading and oxidation.
- Dramatically reduces maintenance time and cost.
- Easy to maintain and will not create re-paint issues.
- It is non-toxic and leaves virtually no carbon footprint.

FUEL SAVINGS

Permagard has received multiple reports and testimonials from customers stating how they have benefited from a savings in fuel cost once the Permagard coating has been applied. This is also supported by an Airbus' fuel economy study document stating that skin roughness results in aerodynamic performance deterioration and ultimately a higher rate of fuel burn.

The study covered a period of six (6) months prior-to and three (3) months following an application of Permagard.



CUSTOMER FACTS AND FINDINGS

- A study by Qantas Airlines has shown that dirty and oxidized aircraft were using up to 6% more fuel than a clean aircraft.
- A recent Boeing study reported that a 737 with a 1% reduction in drag equates to 15,000 gallons in fuel savings per year.
- A Gulfstream GIV treated in Australia has shown a fuel burn reduction of 4%.
- Boeing has confirmed that drag due to fluid leaks, corrosion, surface roughness, etc. is considered a relevant factor in the increase of fuel burn rates.



PAINT REJUVENATION

- Helps protect treated surfaces against acid rain, carbon, UV damage, fuel and fuel vapor, grease, solvents, fine sand and chemicals used in the maintenance of runways.
- Eliminates deterioration of paint from pre-mature fading and oxidation.
- Extends paint life.
- Allows for easier and quicker routine maintenance cleanings.
- Significantly improves the overall appearance of the aircraft.
- “Micro smooth” surfaces allow for a more efficient, uniform airflow by reducing parasitic drag, consequently reducing fuel consumption and engine work load.

CONFORMITY QUALIFICATIONS

- Boeing D6-17487 Rev N – Sandwich corrosion, acrylic crazing, paint softening and hydrogen embrittlement.
- Dassault DTAS/TME 112978 – Full qualification and approval, testing included Filiform Corrosion, Ageing QUV, Shore A Hardness and Galvanic Corrosion.
- ISO 1519 Mandrel Bend
- ASTM F483-02 Water Immersion
- ASTM F483-02 Solvent Resistance Test
- ASTM F502 Solvent Resistance Test
- ISO 2813 Accelerated Weathering (QUV Cabinet)
- Embraer – Letter of “No Technical Objection”.
- Airbus – Letter of “No Technical Objection”.
- Gulfstream approval.
- Offered by Cessna Textron Aviation.



WARRANTY

Permagard guarantees that the painted surfaces of a treated aircraft will not be damaged by loss of color, loss of gloss or oxidation from normal weathering for a period of one year following the date of application of the Permagard Reactive Polymer Treatment; if the conditions of the warranty are respected. To maintain the warranty, the treated surfaces of the aircraft must be cleaned and maintained with Permagard's Multi-Purpose Cleaner product. It can be purchased through the Authorized Permagard Dealer that applies the treatment.

The original warranty of one year can be extended for an additional year following an application of a Service Treatment. Application of the Service Treatment must be performed by a Certified Applicator between the 11th and 13th month following the original application. That procedure can be repeated for a total of four (4) annual reapplications in order to achieve the total of a five (5) year warranty. Failure to apply the Service Treatment at the required intervals will result in voiding the warranty.



A SUMMARY OF PERMAGARD

- It is a highly durable film.
- It contains UV blocking broad spectrum UV inhibitors.
- It is resistant to chemical corrosion.
- The polymer system is an amino functional one. This allows the polymers to cross-link, bonding to the aircraft's painted surface protecting paint from the effects of acid rain etching.
- Permagard is extremely resistant to a wide range of contaminants.
- It provides high level gloss enhancing and retention (85-95 Gloss Units).
- The application procedure is safe and non-toxic as the film cures with the moisture in the air.
- It produces no environmental contamination.
- Permagard is designed to bond and protect a painted surface whether or not it's a 'solid' or clear over base.
- If Permagard is applied to the exterior of a new aircraft, it will significantly enhance the appearance of a freshly painted surface.
- Once Permagarded, the aircraft is completely sealed and protected from the day to day elements that effect and degrade aviation paints.
- Permagard's aerospace coating keeps an aircraft in super-gloss pristine condition.

