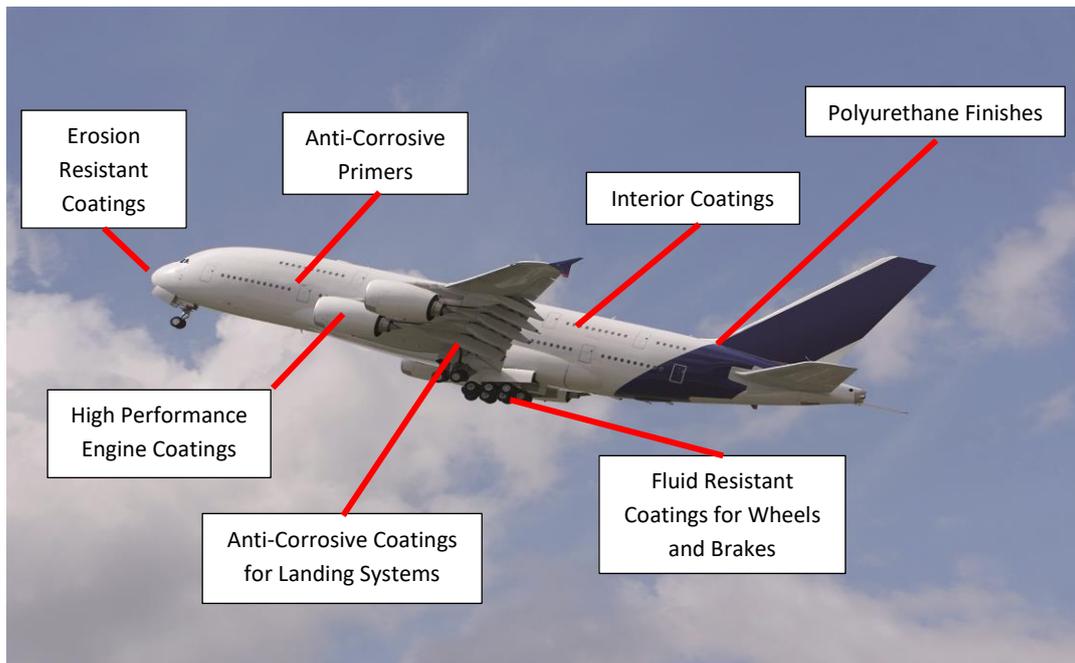


This information sheet gives an introduction to the range of specialist products, pre-treatments and coatings manufactured by Indestructible Paints for the Aerospace and allied industries.

More information on the products discussed in this sheet can be found in our industry area targeted brochures and technical data sheets; for more information please get in touch with your usual sales contact or our sales office.



This schematic gives an idea of the areas paints and surface coatings are used in aircraft manufacture. The majority of these coatings are produced to meet stringent technical specifications drawn up by the primes and tier 1 suppliers to ensure full technical performance on the aircraft and allow maximum operating time between overhauls.

Pre-Treatment Systems

Chrome free pre-treatment systems formulated for specific applications within aerospace.

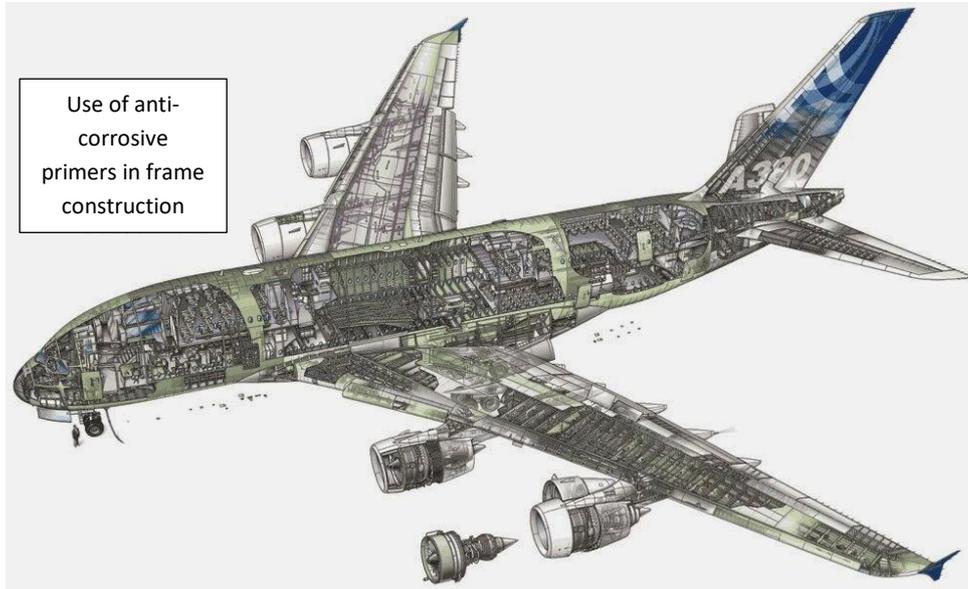
Iptreat 12: Chrome free immersion “conversion coating”. Gives some corrosion protection in its own right, but works as an adhesion promoter when overcoated with 2 component chrome free anti-corrosive primers on 2024 and 7075 aluminium alloys to greatly reduce filiform corrosion.

CFIP2020: Three coat treatment system specifically formulated as a chrome free pre-treatment for magnesium alloys, consisting of special magnesium pickle (CFIP2020-001), magnesium conditioner (CFIP2020-002) and sol-gel treatment (CFIP2020-003).

IP3-4853/4854: Chrome free 2 component etch/wash primer to comply with latest BSX42 aerospace British Standard specification.

Anti-Corrosive Primers

Primers for frame, structural parts and components formulated for use over pre-treatment systems and as “direct to metal”.



700-155-003: Stoving epoxy chromate primer: has REACH authorisation until 2032. Confirmation of use on flight only components required before sale of this primer.

IP985-6500: Stoving epoxy chrome free primer.

IP9064-6362/IP3-6362: 2 component epoxy strontium chromate primers. Confirmation of use on flight only components required before sale.

IP3-6500/IP3-6700: Low VOC 2 component epoxy chrome free primers. IP3-6700 fluid resistant grade.

Polyurethane Finishes

IP6-Range of low VOC 2 component polyurethane finishes. Multiple aerospace approvals. Used on a variety of components, and particularly as the finish paint on Indian “Advanced Light Helicopter” and Hawk display team aircraft.

Specialist Polyurethane Finish Coats

IPSTAT-6 Black: matt black conductive coating, formulated initially to dissipate static on propeller blades.

IP6-HERC37038: Ultra matt black finish for use on military propeller blades.



Aircraft Wheels and Brakes.

Stoving and cold cure primers and finishes formulated specifically for use on wheels and brakes to have excellent fluid resistance, particularly to Skydrol Aviation Hydraulic Fluids.

Brake Components: IP2066 quick dry chrome free anti-corrosive primer, red oxide, formulated specifically as protection for brake wear components.

Anti-Corrosive Primers:

IP9064-6362/IP3-6362: Standard/low VOC Strontium Chromate, fluid resistant 2 component epoxy primers.

Note: REACH authorised primers: Confirmation of use on flight only components required before sale of these products.

IP9064-6500: Standard VOC chrome free, 2 component epoxy primer.

IP3-6600/6700: Low VOC chrome free, fluid resistant 2 component epoxy primers.

IP985-6500: Rockhard chrome free, stoving epoxy anti-corrosive primer

Fluid Resistant Topcoats:



IP6-Range: Low VOC 2 component polyurethane finishes, gloss, semi-gloss, and matt in a range of colours.

IP985-Range: Rockhard Stoving Epoxy Finishes, gloss, semi-gloss and matt in a range of colours.

IRR/LIR systems:

Specially formulated chrome free 2 component epoxy anti-corrosive primer and matt 2 component polyurethane finishes to be infra-red reflectant/Low infra-red reflectant.

Landing Systems

High Performance anti-corrosive, erosion resistant systems for use on undercarriage axles, struts etc.

Sacrificial Basecoat and Sealcoat: Used as a replacement for cadmium plating, discontinued due to environmental and safety issues.

IP9183-R1 Ipcote sacrificial basecoat and **IP9184-KH-R1 Ipseal Khaki** sealcoat, overcoated with varying systems, to include low friction coating **IP9286-1166**, chrome free anti-corrosive primers, polyurethane finishes and thick film erosion coatings.

EROS Range Erosion Resistant Coatings

A range of clear and pigmented elastomeric polyurethane UV and erosion resistant coatings with varying uses in aerospace applications, to include radomes, nacelle leading edges, propellers. Most typically used on composite substrates, but also used on aerospace metal alloys. Excellent rain and particle erosion resistance.



EROS 1: UV resistant clear gloss 3 component kit; typical use on aero engine nose spinners over a system of 2 component epoxy basecoats.

EROS 2: 2 component system for military radomes, utilising special pigmentation to allow “electrical transparency”.

EROS 3: Conventional pigmented 3 component system.

EROS 4: Clear system to meet the requirements of Def-Stan 80-158.

EROS 5: Pigmented system to meet the requirements of Def-Stan 80-158.

EROS 6: Fast set up high build 2 component clear with short pot life. Applied through plural spray system with component mixing at the spray gun head.

EROS 7: “Soft” Polyurethane 2 component finish; available in gloss and matt finish.

Coatings for Interior Components

Primers and finishes for coating composite and metal substrates used on seating, partitions and other interior fitments in commercial aircraft. Requirement to meet specification FAR28.853 for non-burn and smoke emission (65/65 test). Finish systems also feature decorative requirements.

Sealers

IP2439: 2 component low VOC sealer, green tinted, for use on variable surface composites to provide smooth, even surface for further decoration.

Primers

Post Mould

IP3-00015: 2 component low VOC epoxy primer-surfacer, available in white, grey and black. Excellent filling and sanding properties.

IP3-00019: 2 component low VOC lightweight spray primer-filler, which also provides some insulative properties.

In-Mould

IP 1130: 2 component low VOC primer for application in-mould during composite manufacture. Coating is applied to surfaces of the mould before lay-up of the “pre-preg” or injection moulding. Primer becomes an integral part of the composite moulding with smooth surface that reflects surface of the mould. Greatly reduces filling and sanding of moulded component.

Intumescent Coatings

IP9189: 2 component cold cure/low temperature cure intumescent coating for use in a range of applications.

IPFP-1000: Water based intumescent paint formulated for use on composites.

Finishes

2 component polyurethane finishes in a range of colours and finishes to include metallic.

High Temperature Coatings

High Temperature Marking Paints: both organic (**PL368**) and inorganic (**PL149-168**) ranges of marking paints capable of temperatures up to 650°C.

Ceramic Blade Coating: Water based green ceramic coating, used on nickel alloys to prevent “green rot” oxidation. Effective up to 850°C.

Ultra-High Temperature Air-Dry Coating: IPHT range of 2 component spray/brush coatings, resistant to temperatures and hot air gases up to 1000°C.

High Temperature Air Dry Coatings: IP46 range single pack modified silicone air dry coating, resistant to permanent temperatures up to 300°C, with a peak of 600°C.



Intumescent and Thermal Barrier Coatings

A range of coatings used to reduce transfer of heat and to quell fire in engine, frame and wing applications.

IP9189: 2 component cold cure/low temperature cure intumescent coating for use in a range of applications, including actuators systems, raceways and engine hatches.

IP1897: Low temperature capable alternative to IP9189 formulated to remain flexible at -40°C.

IP1265: Intumescent coating containing ceramic to give a combination of thermal barrier and intumescent properties.

IPFP-1000: Water based intumescent paint formulated for use on composites, typically for aircraft interiors.

Insulation Coatings: Stoving (**PL95**) and 2 component cold cure (**IPENG21**) Mica impregnated insulation coatings, combined with temperature and corrosion resistance.

Dry Film Lubrication

A range of dry film lubricants containing synergistic blends of finely controlled particle size dry lubricants and anti-corrosion pigments in tough, thermosetting resin binders.

PL237-R2: Molybdenum Di-Sulphide lubricant carried in full epoxy stoving system. Capable of operating at temperatures up to 350°C.

IP9136-R3: Graphite lubricant carried in silicone/epoxy resin system, for operating at temperatures up to 450°C. "R4" version to specific MTU specification, melamine free.

PL181: Boron Nitride lubricant carried in inorganic water-based silicate resin system, to operate at temperatures up to 700°C.

IP9286 Range: PTFE lubricant carried in polyimide resin system to run at temperatures up to 300°C.

IP7985 Range: PTFE lubricant carried in full epoxy stoving resin system to run at temperatures up to 250°C.

Low Friction Coatings

A range of coatings used in areas to prevent rubbing wear, provide surface slip or mould release. Mainly use PTFE as lubricant but can use other low friction additives on high temperature applications.

IP9286: stoving polyimide, for operation up to 300°C.

IP7985: stoving full epoxy, for operation up to 250°C.

IP7420: low VOC 2 component epoxy, for use on cold cure application. For operation up to 200°C.

IP7480: low VOC 2 component polyurethane, for use on cold cure exterior application. For operation up to 150°C.

IP5105: for high temperature applications. Molybdenum di-sulphide carried in stoving epoxy, for operation up to 350°C.

High Performance Engine Coatings

Indestructible have been involved in development, manufacture, and supply of high-performance coatings for aerospace and allied industrial and power generation turbine engines for over 40 years.



Our coatings are used from the front of the engine, with flexible erosion resistant coatings for nose spinners to the back of the high-pressure compressor where high temperature corrosion resistant coatings are specified.

We work closely with all the major engine manufacturers throughout the world, to include GE, Pratt & Whitney, Rolls-Royce, Safran.

A snapshot of these coatings is as follows:

IP9029-R3: Aluminium filled high temperature chemical and corrosion resistant coating for operation up to 650°C.

IP9188-R2: Erosion and heat resistant coating, operating up to 250°C. Typically used on guide vane assemblies.

Ipcote Range of Sacrificial Aluminium Basecoats and Sealcoats: Inorganic basecoats and sealcoats for use on compressor stators and blades, shafts and associated components. High temperature (650°C), corrosion and chemical resistant. Range includes **IP9183-R1**, **IP9356** and **IP9442** basecoats, and **IP9184** and **IP9444** sealcoats. Touch up systems available.

PL163 and IP9134-R1: Polyimide stoving coatings, clear and aluminium filled. High chemical and temperature resistant (300°C) products.

IP714/IP715: 2 component epoxy chrome free anticorrosive primer and aluminium finish coating system for aluminium engine casings, specially formulated to comply with Pratt & Whitney USA and Canada specification requirements.

Metal Protective Varnishes: Stoving (**IP9140 clear**, **IP9149 Aluminium**, **IP9155 Green**) and air drying (**IP9169 Clear**), anti-corrosive coatings. Now being replaced by the **Rockhard** range, these products are regularly called up on legacy applications.

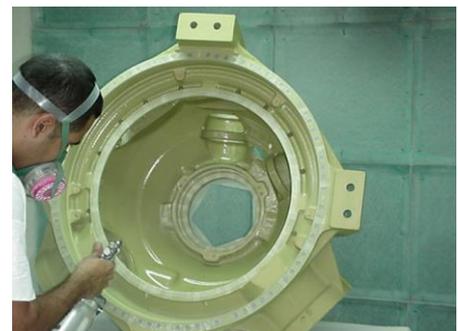
Rockhard Range of Sealers, Primers and Finishes

Stoving full epoxy systems used in multiple aerospace applications, but particularly on magnesium for such as helicopter gearboxes.

Sealers

576-450-002-R1 Epoxy phenolic sealer: used extensively on helicopter gearboxes. "Chocolate Brown" colour after full curing

IP985-547 Epoxy-Amine sealer: used in a variety of applications on magnesium and aluminium. Remains virtually water-white on full cure.



Primers:

700-155-003: Chromate primer: has REACH authorisation until 2032. Confirmation of use on flight only components required before sale of this primer.

IP985-6500: Chrome free primer; multiple approvals and uses in aerospace applications on both magnesium and aluminium.

Finishes

IP985-Range: Multiple aerospace approvals. Limited colours and gloss levels to typically meet client specification.

Specialist Coating Systems

Clear Hardcoat

51003-R1: UV (UVC) curable clear hardcoat to protect clear polycarbonate mouldings from scratching. Used typically on military jet canopies, including SAAB Gripen.

Fluorescent and Luminescent Systems



2-3 coat system for metals and composites featuring matt white epoxy basecoat, fluorescent or luminescent polyurethane colour coat, and, where required, polyurethane clear gloss glaze coat.

Chemical Agent Resistant Coating

IPLVCARC: Chemical Agent Resistant 2 component finishes for both flight and non-flight military applications.

Colortherm Temperature Indicating Paints

A limited range of environmentally acceptable paints and labels that indicate thermal activity on a component. When the component is subjected to temperature above a certain value, the coating will permanently change colour to give a visual indicator of issues. Detailed brochure available on request.

Wadpol: Super-Shine Polish. Highly effective polish impregnated wadding that cleans and polishes weathered or corroded aluminium and painted surfaces. Provides long term protection due to in-built corrosion inhibitors.

Production Aids

Stop Off Lacquers: Temporary protective coatings or maskants for use where short term protection of a substrate is required. Typically used as maskants in plating operations where parts of components do not require treatment, laser machining operations and electron beam welding.

Paint Stripping/Removal Systems

All current paint strippers and removal systems are free from DCM (Dichloromethane) but are still specifically recommended for industrial use only.

300-100-001 Rockhard Paint Stripper

Highly effective one component product for removal of high-performance coatings.

Used in an immersion process, at 40°C temperature; rapidly removes most paint systems. Benefits from use with ultra-sonic system.

IPstrip 500 Gelled Paint Stripper

Ipstrip 500 Gel is a highly effective gelled paint stripper which is user/ environmentally friendly as it is non-toxic and biodegradable. Ipstrip 500 Gel also offers very low VOC emissions, is non ozone depletant and is not regulated by authorities for transport, storage or health and safety. Ipstrip 500 Gel is safe for use on most metal components, including steel and aluminium and can also be used for stripping plastics and composites; however, it is recommended that a small area is initially tested for compatibility. Recently approved within "Warpaint".

For copies of our information on our coatings for use in both aerospace and land based military applications, to include UK Defence Standards, particularly Def-Stan 80-225 for land based vehicles, and our information sheet on the range of General Industrial Coatings, please get in touch with your usual sales contact , or our sales office at sales@indestructible.co.uk.