PL81-R3 Blue Tinted Stop Off Lacquer

OMAT 7/40C

Very fast drying trike free lacquer for use as a plating insulation varnish, or a protective coating which can be removed with solvent. Applied by brush, spray, dip or roll.

PL106 Acid Resistant Stop Off Lacquer

OMAT 7/40

A red lacquer used for masking off products when acid etching is to be processed. Fast drying, this product is resistant to minerals acids including Nitric and Hydrochloric.

PL200 Weld Anti-Spatter Lacquer (Electron Beam Welding)

P & W PMC 2056-1; CSS 114; CSS 196; OMAT 3/37C; OMAT 3/171

A specially green tinted lacquer designed to aid the removal of weld splatters. Removable with strong solvent or trichloroethane. Non toxic, it is brushed onto areas to be welded. At very high temperatures, it volatilises without affecting weld strength whilst reducing weld spatter to surrounding areas. Most recently adopted by Toyota on line.

Ask for our leaflet on the Rockhard Range of products - particularly for Magnesium and other metal protection

PL221 Water Based Laser Stop Off

Halogen Free;

Used to seal titanium parts prior to welding. Removable with warm water.

PL258 Endorsing Ink

CSS 123; OMAT 264H

A general purpose chemical resistant black endorsing ink for use on a variety of metal and other products. Removable with IMS.

Spray Booth Removable Spray on Coating

IP40027

White peelable coating specifically formulated for application to spray booth, paint kitchen and drying room walls. Easily peeled off when excessively coated with overspray etc.

Indestructible
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Indestructible
® specialist coatings manufacture

High Performance Paints and Coatings for Turbine and Aero Engine Production and Overhaul

Indestructible Paint have long been involved with the aerospace and high technology end of the coatings market, including Formula 1 and military requirements. As a result, many specialist products have been developed for use at high temperature, or with particular chemical or erosion resistance. Our customer base includes Rolls Royce Aero Engines, Pratt & Whitney, Leonardo, British Aerospace, Goodrich, Safran Group & Airbus.

In this information sheet, we have highlighted a few of these specialist products, which are of interest across a range of industries, but specifically the turbine/engine manufacture and overhaul.

Where products have been released to a specification (e.g. MSRR), a specific test process is followed and results are available. Each product has its own, detailed technical data sheet; please contact our sales team for more details.

We are committed to developing and enhancing our range of high temperature and sacrificial coatings and are happy to engineer coatings for specific applications at our customers' request. Not restricted in our vision, we always attempt to find the best solution using both organic and inorganic alternatives.

Engineered Paints and Surface Coatings

IP9029-R1 and R3 - High Heat Resisting Lead Free Aluminium Stoving Enamel

MSRR 9029; PWA 578 F; OMAT 7/1 D
(Alt to PL101-E3746) **HONEYWELL P6430, NGPS 134, NSN: 8010 99 258 & NSN: 8010 99 749 4329**

A high temperature, lead free, spraying aluminium enamel resistant to corrosion and aero engine lubricants and temperatures to 650°C. For use on steel, aluminium, titanium etc.

IP9029-R3 is used as a high temperature organic coating. Superior in performance to PL101, this material has been recently re-formulated to improve thicker film capabilities, and runs at 100°C higher in temperature.

Ipcote IP9183-R1

MSRR 9140; OMAT 7/46 B, PCS2550; (PS637 & PS639) LB598; SNECMA DMR 74-052; ITP SMM-903; GE A50TF1 SIEMENS 552208

Used typically as a coating on turbine blades and other parts, this product becomes sacrificial when baked at 560°C, and at 350°C with glass bead peening. Minimal Chromium VI content (37ppm). Tested to 1000 hours high temperature and salt water resistance.

As an alternative to such products as Alseal, Sermetal W, Ceracote 484, Ipcote is the base of a range of other high temperature sacrificial coatings including thin film coatings for bolts, flanges, etc, and very smooth coatings to enhance performance.

IP9442 Smoothcote

CPW 88; LB598

New smooth surface version of Ipcote IP9183-R1, which is easy to apply and gives very smooth surface finishes, typically less than 20 micro-inches.

Presents little resistance to airflow or roughness for carbon deposits to adhere to.

Used typically with Smoothseal as an alternative to Sermetal 5380DP. Reduced Chromium VI content compared to IP9183-R1 (14ppm).

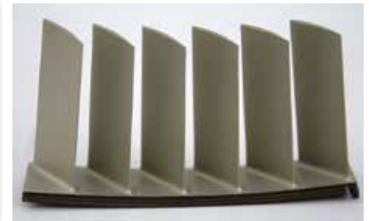
Ipseal IP9184 Green and Khaki

MSRR 9140; OMAT 7/168 B/G; NSN: 8030 99 434 2295 TURBOMECA LB714, PC 2550; GE A50TF196; SIEMENS 552208

For use with Ipcote and Smoothcote, this product withstands a temperature range up to in excess of 600°C and can also be applied to the organic coating IP9253-R2. Used as a system with Ipcote as an alternative to Sermaseal 570 and VPW 360, this product is single part and easy to apply.

IP9444 Smoothseal (system similar to 5380 system)

MSRR 3010; OMAT 7/262; SIEMENS 552208



Typically used as a sealcoat for burnished and polished IP9442 Smoothcote,to give extremely smooth surface finishes and excellent air flows. Temperature resistant up to 600°C.

IP1041 Aluminium Silicon Diffusion Coating for High Temperature Protection against Sulphidation

MSRR 1041; OMAT 7/129A

Another addition to the high temperature range, this material is far superior for protection than pack aluminising. Approved by Rolls Royce, it is used as an alternative to Sermalloy J. Tested for more than 2000 hours alternately in a hot gas flame at 800°C+, followed by salt spray.

IP9253-R2 High Heat Chrome Free Organic Sacrificial Aluminium Coating

MSRR 9253; OMAT 7/126B (Alt to PL219-3863-A6000)

Used on aero engine and other components as an organic sacrificial coating up to 600°C on 12% Cr steel, and 500°C on low alloy steel, this aluminium filled coating resists aggressive medial such as skydrol and salt spray, it becomes a sacrificial corrosion protective coating if baked at 490°C and bead peened, or at 560°C. Latest R3 version is totally chrome free and formulated on environmentally friendly solvents.

NML 58 Extended Shelf Life Two Part Attrition Coating

RPS 340 (IP9103)

Two pack system developed as a long shelf life field overseas replacement for NML 40. Used on engine compressor components.

EPWA 27 Graphite Filled Attrition Coating

MSRR 9316; RPS 340; OMAT 782A

A graphite filled two part attrition compound, it is currently used on the AV8B Harrier.

Composites

NML 21 Inspection Fluid for Composites

CSS 251; OMAT 641

Used as a water break test to check readiness of composite surface before bonding. Brush random lines across surface, if lines break up, the surface is imperfect.

IP3-00015BLK (Black); IP3-00015WHT (White); IP3-00015GRY (Grey) Low VOC Epoxy Surfacer

Def Stan 80-216

Low VOC 2 component epoxy primer-surfacer formulated for easy priming and levelling of carbon fibre and other composites. Usually used as a post mould spray application, recent work has been successfully completed on in-mould application, where the primer becomes an integral part of the composite structure.

IP3-00019 Low VOC Epoxy Thermal Filler

Low VOC 2 component epoxy high build, low weight low heat transfer material. Has been used in conjunction with IP9189 and IP1265 as thermal insulation coating, for example on composite helicopter fire walls and around exhaust ductings. Low weight characteristics allow use of thick films to aid insulative properties without greatly affecting overall weight of component.

Production Aids

PL37 Anti Nitriding Stop Off

CSS 60; OMAT 7/181A

Tin rich lacquer used as a stop off in the nitriding process. Apply using RPS 135.

PL111-R1/110 Heat Resistant Marking Paint

MSRR 9187; OMAT 7/276

A spraying marking paint resistant to a wide range of chemicals. Temperature resistant to 400°C, but discolours after 200°C. Used on BAe Hawk etc.

PL111-R1: Yellow
PL110: Red

PL268 Casting Silica Core Anti Canalling Coat

For use on performed cores before urea or resin treatment as an anti-canalling treatment.

Air Drying Marking Paints Without Heavy Metals

PL58-70

Weather resistant air drying colour stable marking paints free from lead and heavy metals. Volatilises at temperatures so that it will not pollute if the marked metal is molten. Used for example, for identifying welding rods. Removable with strong solvents.

PL55 / IP9126 - White
PL60 / IP9128 - Green
PL68 / IP9130 - Blue
PL70 / IP9132 - Orange
PL58 / IP9127 - Brown
PL65 / IP9129 - Black
PL69 / IP9131 - Yellow
PL66 - Red

Dry Film Lubricants

PL237-R2 Molybdenum Based Dry Film Lubricant

MSRR 9274; RAE (F) LV/486/265; RPS 661-9; OMAT 4/43

Molybdenum disulphide pigmented spraying product for operating in adverse conditions to 300°C with resistance to lubricants, skydrol, and corrosive engine by products. Lead & heavy metal free, this product is used in critical parts including rotating engine parts. Both PL237 and IP9136 are tested for 100,000 rubs at temperature under load, with no loss of material. Recently re-formulated and approved as R2 grade, eliminating xylene / toluene.

IP9136-R3 Graphite Based Dry Film Lubricant

CPW 27; MSRR 9276; OMAT 4/44C; CoMat 10-002 (Alt to PL239; 3862-X-9010)

Spraying graphite lubricant resistant to skydrol, lubricants and corrosion to 400°C (500°C where oxygen is excluded). With similar properties to PL237, but at higher temperatures. IP9136-R3 is used to obtain stable torque figures in, for example, bolted assemblies. Recently re-formulated and approved as R3 grade, eliminating xylene / toluene.

Both IP9136 and PL237 also resist fretting and resist corrosion and pitting problems caused by chemical attack at high temperature.

PL181 High Temperature Inorganic Boron Nitride Dry Film Lubricant

MSRR 9200; Def 91-19; OMAT 4/36

Speciality dry film lubricant designed to operate at temperatures up to 700°C, it is also resistant to skydrol at high temperatures and engine by products.

PL470 Rapid Dry Film Lubricant Repair Kit

OMAT 4/70

Newly developed rapid repair MoS_2 dry film lubricant touch up kit developed in conjunction with Rolls Royce. For use in on-wing repair and overhaul, typically to re-seat compressor blades.

IP3016 Tungsten Disulphide High Temperature Dry Film Lubricant

MSRR 3016; OMAT 4/80

Developed for high heat applications, in excess of 400°C. Excellent resistance to fretting or galling.

IP9286 Range of PTFE Filled Polymide Coatings

MSRR 9286; OMAT 7/95A

Range of various colours and lubricities according to specification. Used as an erosion resistant material, or for lubricity, for example in hinge pins and under-carriage assembly.

Attrition Coatings

We describe below a range of attrition coatings designed for use by Rolls Royce and other turbine manufacturers. All can be machined and if used in engine rings make repair easy, reducing aircraft on ground times.

NML 46 Thick Film Attrition Coating: Pre-Mixed 2 Component Product, Supplied as a Stable Frozen Stick

MSRR 9012; RPS340 (IP9100); OMAT 7/78

A thick abradeable mastic stoved coating which has similar co-efficient of expansion to aluminium and can be machined. Used on the interior of engine compressor components, aluminium, steel and titanium, it is resistant to oils, fuels and abrasion. This product is supplied frozen, and should be stored at -20°C. Allow to return to room temperature before use; use within 8 hours of full de-frosting. Used in conjunction with NML 52, it can also be used to make preformed parts.

NML 52 Primer Adhesive for Attrition Coatings

MSRR 9072 (IP9100); OMAT 7/82

A clear adhesive for use with the thick film attrition coating NML 46.

IP9138-R1 High Heat Resistant Air Drying Aluminium Coating

MSRR 9040 (Alt to PL82-E3592)**; OMAT 7/22B; CoMat 07-038; MTU-MTS 1254**

Air drying, organic coating with resistance to heat, corrosion, and aircraft fluids. For use on steel, aluminium, and other metal parts, this product is routinely tested for 100 hours at 500°C, 100 hours in lubricant at 150°C and skydrol for 3 hours at 70°C. Although often used as an air drying touch up for sacrificial products such as our IP9029, Ipcote and Sermetal W, it is also used as an air drying high temperature product in its own right. Being skydrol resistant, it is used for example for undercarriage and wheel protection.

IP9138-R1 Aerosols

Aerosol version suitable for both cosmetic touch up and as a high temperature coating. Supplied in 400ml cans.

IP9188-R2 Erosion and Heat Resisting Coating

MSRR 9188; OMAT 7/5E (Alt to PL205)

White stoving coating providing good resistance to erosion, corrosion, aircraft fluids and temperatures continually up to 250°C and up to a peak of 280°C.

Applied to engine parts of steel and aluminium, it is best recognised on the air intake of many Rolls engines. Reformulated recently for US environmental purposes as Xylene-Toluene free.
(Also available in grey and blue - to order)

PL177 Touch-Up Coating

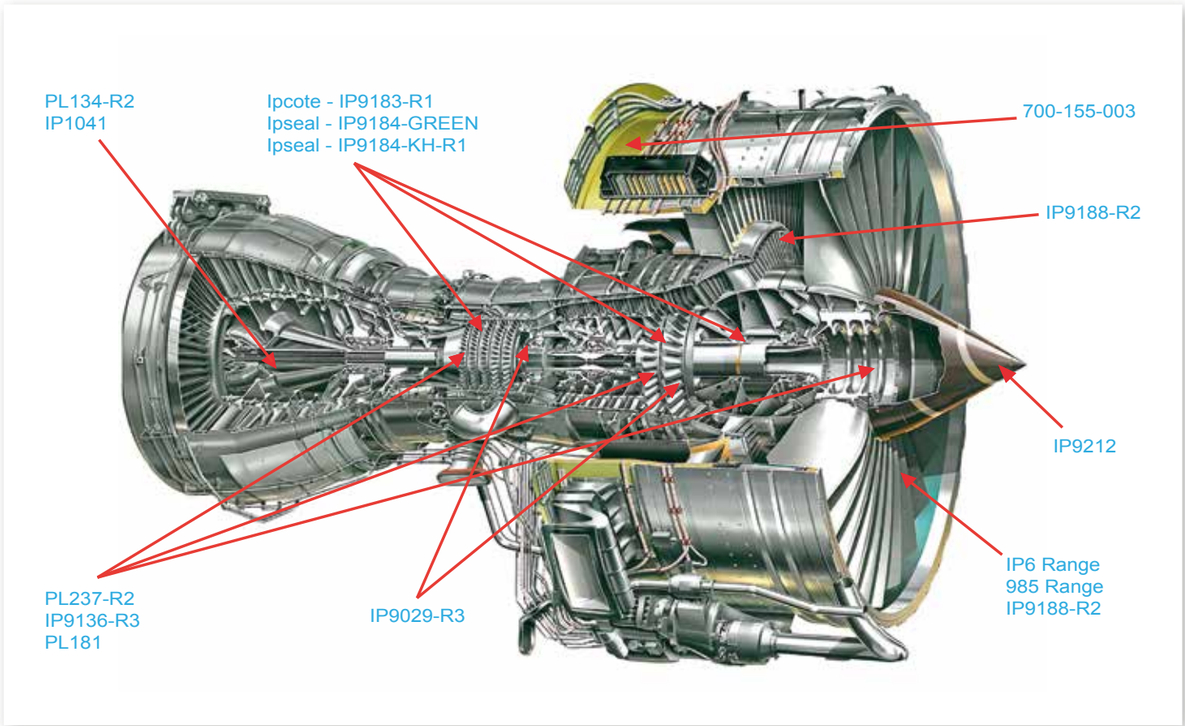
MSRR 9141; OMAT 7/47

Corrosion resistant coating designed for use as a touch up for 560°C processed Ipcote, on ferritic stainless steel aero engine and turbine components operating to 600°C, and corrodible steel components to 500°C. Also resistant to 100 hours dry heat 600°C, 100 hours intermittent salt spray, 100 hours skydrol, and 100 hours soak in methanol and water solution.

PL270 Touch-Up Coating for Ipseal

MSRR 9394; OMAT 7/169A

Inorganic air drying brushing touch-up coating for Ipseal Khaki. Resistant to heat and a wide range of fuels including Skydrol.



PL163 Clear High Heat Polymide Aero Engine Coating

MSRR 9142; OMAT 7/134; AFS 1566;
NSN: 8010 990 516 491 (IP9144)

Clear stoving coating for use on aero engines. Resistant to dry heat 300°C - 100 hours minimum, skydrol - 100 hour and salt spray - 100 hours, it also confers erosion and corrosion resistance. Used on engines such as RB211.

IP9134-R1 Aluminium Polymide Engine Coating

MSRR 9134; NSN: 8010 99 1925127; OMAT 7/136A
(Alt to PL165)

Aluminium filled stoving coating for spray application to aero engine components. For operating temperatures to 300°C, it is resistant to skydrol, and confers both erosion and corrosion resistance. Tested to the same specification as PL163, it has good ester lubricant resistance at high temperature. Used for example at the back end of the Viper, it gives
increased corrosion protection to magnesium parts.

Metal Protective Varnishes (Stoving Varnishes) - Aerolac Alternatives

MTU-MTS 1026A

IP9140 (Clear) - comply with the requirements of withdrawn specifications **MSRR 9051; OMAT 712A** and **OMAT 710**

IP9149 (Aluminium) - comply with the requirements of withdrawn specifications **MSRR 9051** and **OMAT 729B**

IP9155 (Green) - comply with the requirements of withdrawn specifications **MSRR 9051** and **OMAT 701A**

Stoving, anti-corrosive protective coatings especially suitable for a wide range of metals including light alloys of Magnesium and Aluminium. They have a high level of resistance to heat, corrosion, lubricants, hydraulic fluid and aviation fuel, excellent adhesion and outstanding water resistance. The thin green version, for example, is used for protecting the inside of gear boxes.

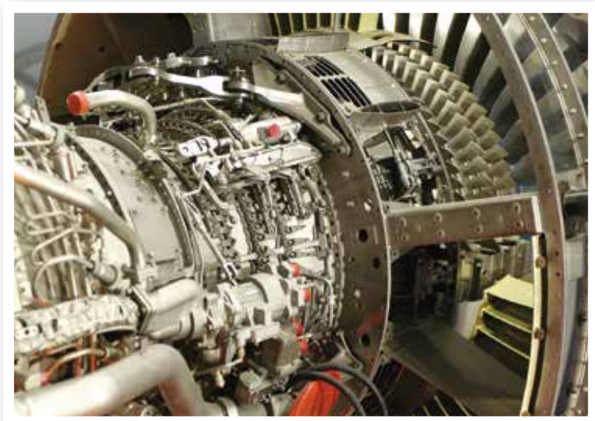
Metal Protective Varnishes (Air Drying Versions)

Comply with requirements of withdrawn specification **MSRR 9037**

IP9169 OMAT 7/24A Air Drying Metal Touch Up Clear (Alt to 1721-C-8187-CO 5187, CV114)

IP9170 OMAT 7/35A Air Drying Metal Touch Up Grey 693 (Alt to 1721-D-6930-CO 5153/693)

IP9173 OMAT 709 Air Drying Metal Touch Up Black (Alt to 1721-X9520-CO 5152)



These materials are used for overspraying and touching up unprotected parts on engines, and damaged areas on cadmium plated parts. Resistant to Aviation fuels, and lubricants including esters, and temperatures to 200°C. A red oxide primer IP9174 alternative to 1721-P-4011 is available but this is no longer recommended by Rolls Royce.

PL134-R2 Ceramic Blade Coating to 850°C

MSRR 9176; OMAT 7/75

Water based green ceramic coating for aero engines and compressors. Spray applied, it is effective to 850°C. Used on nickel based alloys to prevent against 'green rot' oxidation, it will withstand the thermal shock of being heated to 1000°C and then plunged into cold water.

PL95-R1 Mica Impregnated Insulating Coating

MSRR 9054; OMAT 773

An excellent insulating coating for spray application to aero engine components, it is extremely resistant to heat, corrosion, lubricants, coolants and fuels. The cured coating can be machined to product accurate dimensions on working surfaces. Tested at 500°C dry heat, lubricants 100 hours at 150°C, skydrol 100 hours at room temperature and 100 hours intermittent salt spray heat.

IP9189 Air Drying Intumescent

BSX38; MSRR 1055; OMAT 7/28B; ECS 7029

Formulated to run at 180°C and be air curable, replacement for PL161. Approved by Airbus Helicopters for use on the EC135; Airbus for Raceways and by Bombardier-Shorts. New recent approval as part of a system to include: IP-FP-8000 Non-Burn topcoat on oil tank and other parts of TP-400 engine for Airbus A-400 military freighter.

IP1897 Air Drying Intumescent; Low Temperature Capability

BSX38, Rolls Royce (CDS) 1897

Modified grade of IP9189, formulated to remain flexible at -40°C, for use on fuel pumps manufactured by Rolls Royce (CDS).

IP1265 Thermal Ceramic Barrier Coating

Our experience in thin film intumescent and 'thermal barrier' coatings expands continuously.

This was the latest to be used on the Aquada Sports car and is being appraised by aerospace companies, including GKN, for use on de-icing equipment.

Two Pack Epoxy Air Drying Coatings

IP3 range; ultra low VOC; xylene / toluene (<200gm / litre)

IP9064 series; standard VOC

BSX 33; Def Stan 80-161 (DTD 5555); MSRR 9064 and several manufacturer specs
(Alt to SL 5459; 9110-X-0000; CSH 5538 etc)

Please ask for separate sheets

These ranges include 2 pack etch primer, 2 pack strontium chromate primer, 2 pack chromate free anti-corrosive primer and a range of 2 pack top coats in different colours and sheens, including bright and dull aluminium, blacks, whites, greys, blues, reds, etc.

Resistant to abrasion, corrosion and most aircraft fluids, this range can be used inside or out. Used as marking paints, on instruments, on composite and metals etc.

IP714 and IP715 Low VOC Chromate Free Engine Coating System

PWA 36568; CPW 714 (IP714 Primer);
CPW 714: (IP-714-2-A Primer)
CPW: 36569; CPW 715 (IP715 Finish)

Produced to stringent environmental and technically demanding specifications as a low VOC; chromate free anti-corrosive primer and topcoat system; xylene and toluene free. For use on steel, aluminium, sealed magnesium and most composites.

IP6 Two Pack Low VOC Polyurethane Air Drying Coatings

BS2X34 A/B; MSRR 1006; PRO 599; PCS 2530; HCP 355 plus several manufacturer specifications

Low VOC (<420gm / litre) 2 pack polyurethane finishes with good erosion, UV, and chemical resistance. Normal top coat for air frames. Available in a range of colours and gloss levels. Including on certain colours, infra-red reflectance. Can be force cured to speed up production of small parts. Typically used on engine nacelles and airframe ancillaries, the range is now specified by Hindustan Aeronautics as the finish coat on DHRUV-ALH helicopter composite airframe.

PL149-168 High Heat Resistant Paints

MSRR 9041

Spraying (brushable on small areas), inorganic paint resistant to a wide range of fuels, oils and lubricants including skydrol up to 650°C. Used for example on the hot end of the BAe Tornado. This range has undergone a lot of R&D recently and is now being used as a completely solvent free stoving coating capable of continuous operation at 700°C, and impervious to chemicals and solvents.

PL149 - White
PL152-R1 - Black
PL151 - Blue
PL167-R1 - Red
PL150 - Green
PL153 - Grey
PL155-R1 - Orange
PL168-R1 - Yellow