

INTERIOR AND EXTERIOR FINISH - CLEANING/PAINTING

1. General

- A. Interior and exterior finish cleaning/painting consists of general information and instructions for applying chemical film treatments, primer and topcoats to the airplane.

2. Interior and Exterior Finishes

- A. Detail aluminum parts are chemically pretreated and epoxy primed prior to assembly. The chem-film pretreatment and the epoxy primer are primary coatings and must be maintained and preserved for corrosion control. Exterior assemblies that are to be topcoated receive ScotchBrite, hand solvent cleaning and another overall application of epoxy primer. The airplane exterior then receives an overall topcoat of polyurethane paint including stripes.

CAUTION: All plastic and fiberglass parts, except bushings, bearings, grommets and certain purchased antenna covers which are not colored or painted, shall be colored or painted to match adjacent surface. The head of the pitot tube must be open and free from paint and other foreign objects. The surface adjacent to static port must be smooth and free from all paint imperfection. Do not paint pitot tube, fuel caps, trim tab pushrods where they operate in an actuator, oleo strut sliding surfaces, standard polished spinners, exhausts stall warning vanes, chromed items (handles, locks, ect.) or the tie-down lugs (located on struts) or light lens. Paint the landing gear barrels and torque links to match the overall color.

3. Paint Facility

- A. Painting facilities must include the ability to maintain environmental control of temperature at a minimum of 65°F (18°C). All paint equipment must be clean. Accurate measuring containers should be available for mixing protective coatings. Use of approved respirators while painting is a must for personal safety. All solvent containers should be grounded to prevent static buildup. Catalyst materials are toxic, therefore, breathing fumes or allowing contact with skin can cause serious irritation. Material stock should be rotated to allow use of older materials first, because its useful life is limited. All supplies should be stored in an area where temperature is higher than 50°F (10°C), but lower than 90°F (32°C). Storage at 90°F (32°C) is allowable for no more than sixty days, providing it is returned to room temperature for mixing and use.
 - (1) Areas in which cleaning or painting are done shall have adequate ventilation and shall be protected from uncontrolled spray, dust, or fumes.
 - (2) Areas for prolonged storage of cleaned parts and assemblies awaiting painting shall be free from uncontrolled spray, dust, or fumes, or else positive means of protecting part cleanliness such as enclosed bins or wrapping in kraft paper shall be provided.
 - (3) Areas in which cleaning or painting are done shall be periodically cleaned and dusted.
 - (4) Compressed air used for dusting and paint spraying shall be free from oil, water and particulate matter.

4. Sanding Surfacers

A. Purpose and Requirements.

- (1) Surfacer is applied over fiberglass and Kevlar assemblies to provide aerodynamic contour, smoothness and to seal porous surfaces. Application of surfacer also provides a good surface for a polyurethane finish.
- (2) The objective of a surfacer is to fill local depressions, pits, pin holes and other small surface defects so a smooth surface is obtained for paint. The total surfacer thickness shall not be greater than 15 mils (0.38 mm). Only enough surfacer shall be applied to obtain a smooth surface for paint. If less thickness will provide a smooth surface, this is better. A thick layer of surfacer is less flexible and may crack in service.
- (3) To complete the airplane's polyurethane finish over surfacer, begin by applying the intermediate coat. Apply topcoat (polyurethane enamel) using same procedure.
- (4) Should a repair be required (cracked or chipped paint) to areas where surfacer is applied, sanding surfacer should be removed to expose fiberglass or Kevlar. It may be necessary to remove all sanding surfacer on that individual assembly and/or component to obtain a satisfactory finish. For additional information, refer to Cleaning.
- (5) Sanding surfacer methods.
 - (a) Do not intermix vendor material or substitute material. Also, do not substitute instructions. Select and use one vendor's material and use the corresponding instructions.

B. Cleaning.

CAUTION: Do not use chemical strippers on fiberglass, kevlar and graphite composite assemblies. Paint

stripper solvent will damage these assemblies. Exterior composite assemblies include: inside of nose compartment doors, inside of nose landing gear doors, wing tips, aileron tips, inside tailcone access door, tailcone stinger cap, pylon ram air scoop and vertical stabilizer bullet

CAUTION: Sanding of paint and/or sanding surfacer must be very carefully accomplished. Do not sand into the fabric layers of composite assemblies as this will result in loss of strength.

- (1) Remove paint covering sanding surfacer by sanding. Paint should be removed well beyond damaged area. For best results, it is recommended to remove all paint covering sanding surfacer of that individual composite component.
- (2) Remove sanding surfacer by sanding from individual component to expose fabric.
- (3) Scuff sand area to be refinished with 320 grit paper. Do not over expose fabric.
- (4) Clean surface with Methyl n-Propyl Ketone. Follow manufacturer's instructions for final cleaning prior to sanding surfacer application.

5. Paint Stripping

A. Mechanical Stripping

- (1) Mechanical methods of stripping include power sanding with a disc or jitterbug type sander, grinder, hand sanding, and wire brushing.
 - (a) Ensure mechanical methods do not damage surfaces being stripped. Damage may include, but is not limited to, cutting fibers of composite structures or scratches in the surface of metallic surfaces.

CAUTION: Do not use low carbon steel brushes on aluminum, magnesium, copper, stainless steel or titanium surfaces. Steel particles may become embedded in the surfaces, and later rust or cause galvanic corrosion of the metal surfaces.
- (2) Mechanical stripping must be used for stripping composite or plastic surfaces.
- (3) Mechanical stripping is recommended for surfaces which might entrap chemical strippers and result in corrosion.
- (4) Mechanical stripping is required for painted surfaces masked during chemical stripping.

B. Chemical Stripping.

WARNING: All paint strippers are harmful to eyes and skin. All operators should wear goggle-type eyeglasses, rubber gloves, aprons and boots. In case of contact with skin, flush with water. In case of contact with eyes, flush eyes thoroughly with water and consult physician immediately. Paint stripping should be done in a well ventilated area.

CAUTION: Use of a heater with an open flame in an area in which stripping with a methylene chloride type stripper is used produces hydrochloric acid fumes. If acid is deposited on airplane it will corrode all surfaces.

- (1) Thoroughly clean airplane surfaces to remove all grease and other dirt which might keep stripping agent from attacking paint.
- (2) All seams and joints must be protected by applying a tape, resistant to strippers, to every joint to prevent stripping chemicals from entering the skin joints. Chemicals used for stripping polyurethane paint are very difficult to remove from joints, and may promote corrosion or deteriorate bonding agents used in assembly of airplane.
- (3) Mask following surfaces using plastic sheeting or waxed paper and plastic tape so as to make a safety margin of at least one-half inch (13 mm) between protected surface and surface to be stripped.

NOTE: Do not use masking tape.

- (a) Mask all windows and transparencies.

CAUTION: Acrylic windows may be softened or otherwise damaged by paint stripper, solvent or paint. Use water and grease-proof barrier material and polyethylene coated tape to protect windows.

- 1 Place barrier material over window and seal around periphery with polyethylene backed masking tape.
- 2 Cut second sheet of barrier material an inch (26 mm) or more larger than window.
- 3 Place second sheet of barrier material over window and seal with polyethylene tape.

- (b) Mask all rubber and other non metals.
- (c) Composites if possible, shall be removed from airplane prior to stripping.

- (d) Mask all honeycomb panels and all fasteners which penetrate honeycomb panels.
- (e) Mask all pivots, bearings and landing gear.
- (f) Titanium, if used on airplane, must be protected from strippers.
- (g) Mask all skin laps, inspection holes, drain holes, or any opening that would allow stripper to enter airplane structure.

CAUTION: Do not allow paint stripper to contact high heat treated steel pins, such as pins attaching landing gear components. Paint strippers may induce hydrogen embrittlement in high heat treated steel.

- (4) Apply approved stripper by spray or brush method.

WARNING: Use normal safety precautions when using flammable materials during cleaning and painting procedures.

WARNING: Paint stripper solution is harmful to eyes and skin. Wear goggles, rubber gloves, apron and boots when working with paint stripper. Also wear appropriate respirator when applying "spray-on" strippers. The chemical supplier bulletins and instructions should be closely followed for proper mixing of solution, application methods and safety precautions.

- (a) If using spray method, apply a mist coat to area to be stripped, then when paint begins to lift, apply a second heavy coat.
- (b) If applying with brush, brush across the surface only once, in one direction.

- (5) Allow stripper coating to lay on the surface until paint lifts.
- (6) After paint begins to lift, use a propylene bristle brush to agitate stripper to allow deeper penetration of stripper.
- (7) Remove lifted paint with a plastic squeegee. Dispose of residue in accordance with local regulations.
- (8) Inspect all surfaces for incomplete paint removal.
 - (a) Repeat previous procedural steps as necessary until all paint is removed.
- (9) After stripping airplane, thoroughly rinse to remove any stripping residue.
- (10) Remove tape applied to protect joints and other masked areas.
- (11) Carefully remove remaining paint at skin joints and masked areas by sanding with a hand or jitterbug type sander.
- (12) If necessary to remove paint from inside skin joints, refer to Cleanout of Skin Joints.
- (13) If corrosion is encountered, refer to Structural Repair Manual, Chapter 51, Corrosion/Repair, for corrosion treatment.

C. Cleanout of Skin Joints.

- (1) Install a surface conditioning disc on a pneumatic drill.
- (2) Taper edge of disc to an edge which will allow edge to fit into skin joint seam.
 - (a) Run disc against a piece of coarse abrasive paper or a mill file until edge is tapered.
- (3) Using tapered surface conditioning disc, remove paint and other material from joint seams.
- (4) Carefully, and using as low speed as possible, remove paint and all other material from joint.

NOTE: Surface conditioning disc will wear rapidly, it will be necessary to resharpen (retaper) disc frequently.

6. Hand Solvent Cleaning

WARNING: Work in a well ventilated area free from sources of ignition. Use only approved solvents and materials.

CAUTION: Airplane shall be grounded during solvent wipe.

A. Surface Cleaning.

- (1) Apply solvent to a clean wiping cloth by pouring from a safety can or other approved container. The cloth should be well saturated with solvent. Avoid dipping wipers into open solvent containers as this contaminates the solvent.
- (2) Wipe the surface with the wet cloth as required to dissolve or loosen soils. Work on a small enough area so that the area being cleaned remains wet with solvent.
- (3) With a clean dry cloth, immediately wipe dry the area being cleaned. Do not allow the surface to evaporate dry.

- (4) Repeat steps (1) through (3) as required and change cloths often.

7. Maintenance of the Interior and Exterior Primary Coatings and Topcoat

- A. Rework and repair primary coatings on airplane interior and exterior surfaces for protection and corrosion control.
- (1) Minor scratches or defects, which do not penetrate the epoxy primer or which penetrate the primer and expose bare metal, with the total area of exposed bare metal less than the size of a dime, touch up as follows:
- (a) Hand solvent clean and sand with 320 grit or finer sandpaper.
 - (b) Clean with compressed air, hand solvent clean again, then wipe with a tack rag.
 - (c) Mix and reapply epoxy primer (MIL P-23377 or equivalent) as directed by the primer manufacturer or supplier.
 - (d) On a properly prepared surface, mix and apply polyurethane topcoat as directed by the paint manufacturer or supplier.
- (2) Major defects which expose bare metal to an area larger than the size of a dime, touch up as follows:
- (a) Hand solvent clean and sand with 320 grit or finer sandpaper.
 - (b) Clean with compressed air, hand solvent clean again, then wipe with a tack rag.
 - (c) Apply a spray wash primer or (preferred method) brush chem film primer. Mask the area to minimize the amount of primer from spreading over the existing epoxy primer. Let cure according to the product manufacturers recommendations.
 - (d) Mix and apply epoxy primer (MIL P-23377 or equivalent) to the affected area within four hours.
 - (e) If an exterior painted surface, mix and apply polyurethane topcoat as directed by the paint manufacturer or supplier.