BOMBARDIER

Toronto Site

PROPRIETARY INFORMATION

PPS 16.05

PRODUCTION PROCESS STANDARD

APPLICATION OF NON-SKID COATINGS

Issue 11
- This standard supersedes PPS 16.05, Issue 10.
- Vertical lines in the left hand margin indicate technical changes over the previous issue.
- Direct PPS related questions to christie.chung@aero.bombardier.com or (416) 375-4365.
- This PPS is effective as of the distribution date.

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1 SCOPE

1.1 This standard specifies the procedure and requirements for the application of non-skid coatings to aircraft walkways, floors, stair treads, etc., where specified on engineering drawings.

1.1.1 This PPS complements the engineering drawings that specify its use as an authorized instruction. The procedure specified in this PPS shall be followed to ensure compliance with all applicable specifications. In general, if this PPS conflicts with the engineering drawing, follow the engineering drawing. The requirements specified in this PPS are necessary to fulfil the engineering design and reliability objectives.

1.1.2 Refer to PPS 13.26 for the subcontractor provisions applicable to this PPS.

1.1.3 Procedure or requirements specified in a Bombardier BAPS, MPS, LES or P. Spec. do not supersede the procedure or requirements specified in this PPS. Similarly, the procedure and requirements specified in this PPS are not applicable when use of a BAPS, MPS, LES or P. Spec. is specified.

2 HAZARDOUS MATERIALS

2.1 Before receipt at Bombardier Toronto, all materials shall be approved and assigned Material Safety Data Sheet (MSDS) numbers by the Bombardier Toronto Environment, Health and Safety Department. Refer to the manufacturer's MSDS for specific safety data on any of the materials specified in this PPS. If the MSDS is not available, contact the Bombardier Toronto Environment, Health and Safety Department.

3 REFERENCES

3.1 EHS-OP-005 - Hazardous Materials Management, *Bombardier Toronto internal operating procedure*.

3.2 PPS 13.13 - Personal Protective Respiratory Equipment.

3.3 PPS 13.28 - Storage Life of Adhesives, Sealants, Paints and Composite Products.

3.4 PPS 13.26 - General Subcontractor Provisions.

3.5 PPS 16.08 - Application of Polyurethane Protective Coating (F20).

3.6 PPS 31.07 - Cleaning and Stripping of Painted Surfaces.

3.7 PPS 34.03 - Application of Polyurethane Enamel.

4 MATERIALS AND EQUIPMENT

4.1 Materials

4.1.1 Polyurethane protective coating (Finish Code F20) 3400 Series, base and catalyst (Tempo Paint and Varnish Co.) to DHMS C4.05.

4.1.2 Polyurethane enamel (Finish Code F24):

- 800 Series base and 91C06 Catalyst (PPG Aerospace, PRC-DeSoto) to DHMS C4.04 Type 4.
- 6600 Series Base and Catalyst (Tempo Paint and Varnish Co.) to DHMS C4.04 Type 4.

4.1.3 Polyurethane enamel (Finish Code F37): 4600 Series, Base and Catalyst to DHMS C4.04 Type 2 (Tempo Paint and Varnish Co.).

4.1.4 Polyurethane base varnish coating: Durock 2 part varnish - V90 varnish and C90 catalyst (Tempo Paint and Varnish Co.).

4.1.5 Sanding sealer, 2478 Lacquer (Tempo Paint and Varnish Co.).

4.1.6 Carborundum grit #46RA (Canadian Carborundum Co.).

4.1.7 Aluminum granules, Exxo 90-30 (Aluminum Metallurgical Granules Co.).

4.1.8 Crushed walnut shells: Shelblast AD-7 (#45 Mesh), Shelblast AD-9B (Ritchey Supply Ltd.).

4.2 Equipment

4.2.1 Suitably perforated container for the application of non-skid materials.

4.2.2 Suitable spraying equipment.

4.2.3 Wiping cloth (e.g., DSC 378 -2).

4.2.4 Tack cloth (e.g., DSC 375-1).

4.2.5 Abrasive paper, aluminum oxide or Garnet, 180 to 220 grit size.

4.2.6 Protective wrapping material (e.g., Brown Kraft Paper, Kimpac K41, AIR CAP C120 or D120 plastic bubble film, Poly Foam).

4.2.7 Light duty neoprene rubber gloves (e.g., DSC 422-5).

5 PROCEDURE

5.1 General

5.1.1 The non-skid coatings specified in this standard consist of F24 or F37 polyurethane enamel, F20 polyurethane protective coating or polyurethane base varnish mixed with non-skid material (Carborundum grit, aluminum granules and crushed walnut shells).

5.1.2 Polyurethane enamel catalyst and varnish catalyst contain **isocyanate**. All personnel working with these materials shall be familiar with the safety precautions listed in section 7 for handling or using such material.

5.1.3 Apply non-skid coatings to wooden parts as specified in Flow Chart 1.

5.1.4 Apply non-skid coatings to aluminum parts as specified in Flow Chart 2.

5.2 Preparation of Parts for Application of Non-Skid Coating

5.2.1 Prepare F2 painted wood or aluminum for application of non-skid coating by solvent cleaning according to PPS 31.17.

5.2.2 Prepare unpainted wood for application of non-skid coating as follows:

Step 1. Lightly sand all wooden parts with 180 - 220 grit abrasive paper.

Step 2. Dust off and tack rag to remove loose particles, dust, etc.

Step 3. Apply one coat of sanding sealer (see paragraph 4.1.5).

Step 4. Allow sealer to dry for 5 to 10 minutes.

Step 5. Sand sealer with 180 - 220 grit abrasive paper.

Step 6. Immediately before coating, dust off and tack rag to remove loose particles, dust, etc.

5.2.3 Prepare primed or painted aluminum parts for application of non-skid coating using F20 polyurethane protective coating according to PPS 16.08.

5.2.4 Prepare primed or painted aluminum parts for application of non-skid coating using F24 or F37 polyurethane enamel according to PPS 34.03.

5.2.5 If clear F37 enamel is to be applied directly to untreated aluminum alloys, solvent clean parts according to PPS 31.17 before the application of non-skid coatings.

5.3 Preparation of Polyurethane Base Varnish/Walnut Mix Non-Skid Coating

5.3.1 Prepare polyurethane base varnish/walnut mix as follows:

Step 1. Thoroughly stir varnish and catalyst in their original containers. Use only varnish and catalyst within its storage life (as marked on the container). Scrap varnish showing signs of skinning, gelling, lumping or any other deterioration. Dispose of catalyst showing signs of milkiness, precipitation or other deterioration.

Step 2. Add Durock C90 catalyst to Durock V90 varnish in the ratio of 4 fl. oz. catalyst per gallon of varnish.

Step 3. Mix thoroughly.

5.4 Application of Non-Skid Coatings

5.4.1 Apply polyurethane base varnish/walnut mix non-skid coating to wooden parts as follows:

Step 1. Apply one even coat of varnish/walnut mix to the parts.

Step 2. Air dry the first coat for 20 to 30 minutes.

Step 3. Apply a second coat of the varnish/walnut mix.

Step 4. Allow the second coat to cure for a minimum of 30 minutes.

Step 5. Tack rag to remove loose particles, dust, etc.

5.4.2 Apply non skid coatings using F24 or F37 polyurethane enamel or F20 polyurethane protective coating, as specified on the engineering drawing, as follows:

Step 1. Apply one even coat of F24 or F37 polyurethane enamel according to PPS 34.03 or one even coat of F20 polyurethane protective coating according to PPS 16.08.

Step 2. Evenly sprinkle non-skid material (carborundum grit, aluminum granules or walnut shells) over the wet coat using a suitably perforated container.

Step 3. Allow to air dry for 15 to 20 minutes.

Step 4. Apply a second coat of F24 or F37 polyurethane enamel according to PPS 34.03 or a second coat of F20 polyurethane protective coating according to PPS 16.08.

Step 5. For F20 polyurethane protective coatings, allow the second coat to cure according to PPS 16.08. For F24 or F37 polyurethane enamel, allow the second coat to cure according to PPS 34.03.

5.5 Rework of Damaged or Defective Non-Skid Coatings

5.5.1 For polyurethane base varnish/walnut mix non-skid coatings, if there is any evidence of any defects as specified in section 6, apply a third coat to the part. Allow the third coat to cure for a minimum of 30 minutes and then tack rag to remove loose particles, dust, etc.

5.5.2 For non skid coatings using F24 or F37 polyurethane enamel or F20 polyurethane protective coating, touch up small pits and scratches by brush.

5.5.3 For non skid coatings using F24 or F37 polyurethane enamel or F20 polyurethane protective coating, rework coatings with minor defects other than small pit or scratches as follows:

Step 1. Locally strip coatings in the area of the minor defect according to PPS 31.07.

Step 2. Feather edge the old finish adjacent to the stripped area by sanding with 180 - 220 grit abrasive paper.

Step 3. Remove sanding debris by wiping with a tack rag.

Step 4. Spot in the original pre-treatment coatings (e.g., such as primer or lacquer) where the base material has been exposed, lapping over the old finish.

Step 5. Re-apply the non-skid coating according to the procedure specified herein.

5.5.4 For non skid coatings using F24 or F37 polyurethane enamel or F20 polyurethane protective coating, rework coatings with major defects as follows:

Step 1. Completely strip the non-skid coating according to PPS 31.07.

Step 2. Re-apply the original pre-treatment coatings (e.g., such as primer or lacquer).

Step 3. Re-coat with non-skid coating according to the procedure specified herein.

5.6 Protection for Transport and Storage

5.6.1 Individually wrap non-skid coated parts to be transported or stored in protective wrapping material (see Equipment section, paragraph 4.2.6) and place the wrapped parts in cardboard boxes to provide protection against damage.

6 REQUIREMENTS

6.1 Examine non-skid coated surfaces for damage (such as scratches), defects (such as blushes, runs, sags, streaks, dried overspray, blistering, peeling) or other irregularities that impair appearance or protective qualities. Rework parts showing such damage or defects according to section 5.5.

6.2 Ensure that the non-skid material is firmly bonded with no loose particles remaining on the surfaces.

7 SAFETY PRECAUTIONS

7.1 Smoking or eating is prohibited in paint spraying areas.

7.2 Wear protective aprons, rubber gloves and safety glasses at all times when handling mixed coatings or raw catalysts.

7.3 Avoid inhalation of fumes or vapours from mixed coatings or raw catalysts. Ensure spray booths and spray rooms are equipped with suitable exhaust systems. Wear protective respiratory equipment according to PPS 13.13 when working with mixed coatings or raw catalysts.

7.4 Open flames or naked lights are not allowed where coating operations are carried out. The use of infra-red or other heat lamps in the paint shop is prohibited.

7.5 Dispose of excess F24 or F37 polyurethane enamel, F20 polyurethane protective coating or varnish mix, empty catalyst cans or containers, contaminated paper, rags or wipers and raw catalyst according to the appropriate in house operating procedure.

7.6 In the event of spillage of F24 or F37 polyurethane enamel, F20 polyurethane protective coating or varnish mix or raw catalyst, clear the immediate area of all personnel and clean up the spill according to the appropriate in-house operating procedure.

8 PERSONNEL REQUIREMENTS

8.1 Personnel responsible for application of non-skid coatings shall have a basic understanding of the procedure and requirements as specified herein and shall have exhibited their familiarity to their supervisor.

9 DISPOSAL OF CHEMICAL WASTES

9.1 Dispose of all chemical wastes according to national legislation and local regulations. At Bombardier Toronto, dispose of chemical wastes according to EHS-OP-005.

10 STORAGE

10.1 Store F24 or F37 polyurethane enamel, F20 polyurethane protective coating and polyurethane base varnish components used for non-skid coatings with the precautions necessary for flammable material at a temperature of 60 to 80°F (16 to 27°C).

10.2 Issue material on a first in/first out (FIFO) basis.

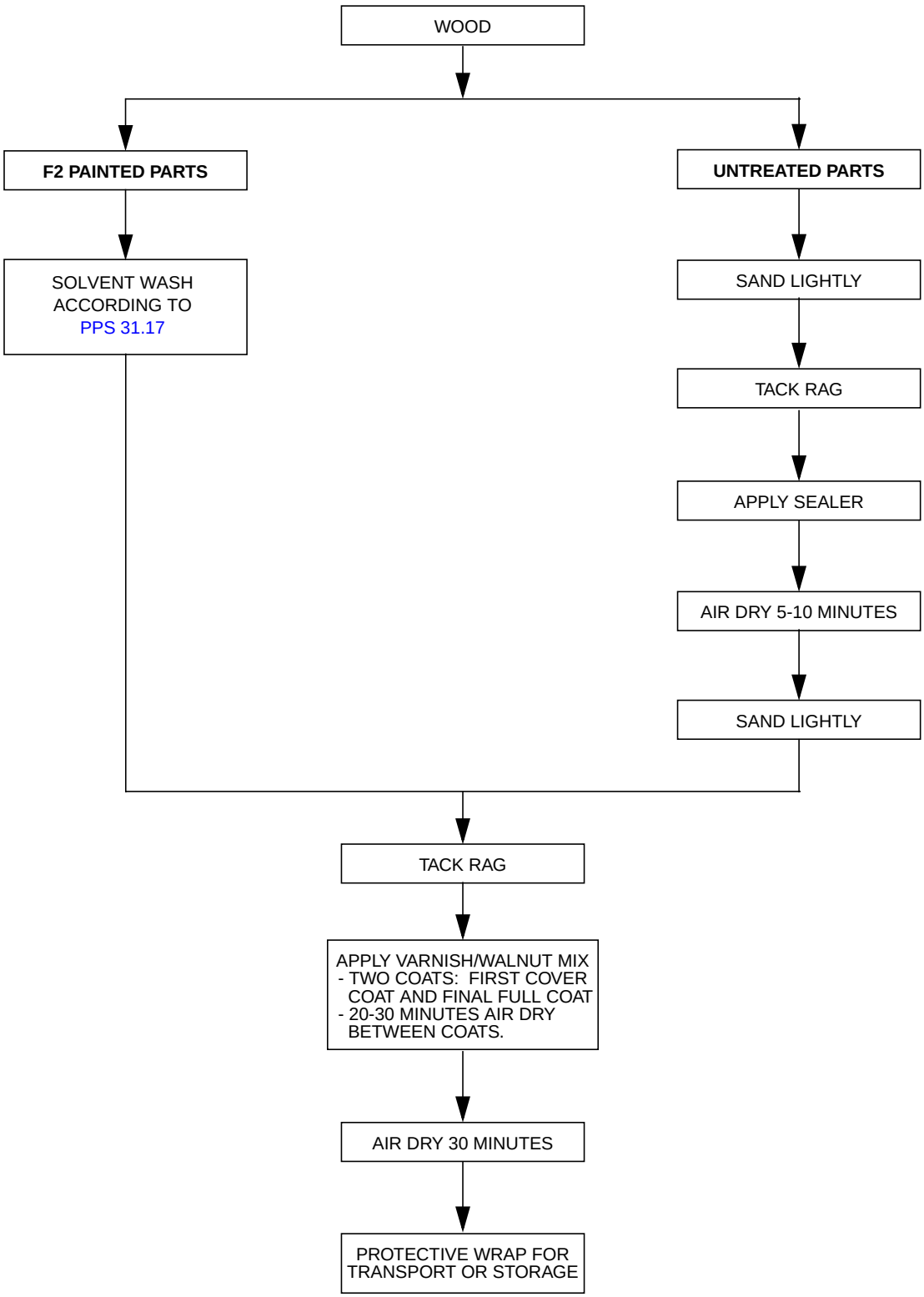
10.3 When not in use, keep containers tightly closed.

10.4 Refer to PPS 13.28 for the storage life of materials specified herein. If the material is not specified in PPS 13.28, follow the manufacturer's specified storage life.

11 ADDITIONAL INFORMATION

11.1 Solvent clean equipment according to PPS 31.17 immediately after use.

FLOW CHART 1 - APPLICATION OF POLYURETHANE BASE VARNISH/WALNUT MIX NON-SKID COATINGS



FLOW CHART 2 - APPLICATION OF NON-SKID COATING USING F24 OR F37 POLYURETHANE ENAMEL OR F20 POLYURETHANE PROTECTIVE COATING