BOMBARDIER

Toronto (de Havilland)

PROPRIETARY INFORMATION

PPS 34.07

PRODUCTION PROCESS STANDARD

Application of F14 Primer to Thermoplastic Surfaces

Issue 15
- This standard supersedes PPS 34.07, Issue 14.
- Vertical lines in the left hand margin indicate technical changes over the previous issue.
- Direct PPS 34.07 related questions to michael.wright@aero.bombardier.com.
- This PPS is effective as of the distribution date.
- Validation of issue status is the responsibility of the user. Signed original on file.

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Table of Contents

Sections **Page**

1 Scope

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for the application of F14 primer to thermoplastic surfaces.

1.1.1 This PPS complements the engineering drawings that specify its use as an authorized instruction. The procedure specified in this PPS must 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.

2 Hazardous Materials

2.1 Before receipt at Bombardier Toronto (de Havilland), all materials must be approved and assigned Material Safety Data Sheet (MSDS) numbers by the Bombardier Toronto (de Havilland) 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 (de Havilland) Environment, Health and Safety Department.

3 References

3.1 General

3.1.1 Unless a specific issue is indicated, the issue of the reference documents specified in this section in effect at the time of manufacture shall form a part of this specification to the extent indicated herein.

3.2 Bombardier Toronto (de Havilland) Process Specifications

3.2.1 PPS 13.13 - Personal Protective Respiratory Equipment.

3.2.2 PPS 13.26 - General Subcontractor Provisions.

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

3.2.4 PPS 31.17 - Solvent Usage.

3.2.5 PPS 34.20 - Application of F42 Urethane Enamel.

3.3 Bombardier Aerospace Engineering Requirements Documents

3.3.1 BAERD GEN-023 - Contamination Control for Compressed Air.

4 Materials and Equipment

4.1 Materials

4.1.1 F14 primer -
- Mapaero FR4-45 to DHMS C4.22 Type IX, or
- Akzo Noble Aerodex WB 9001W100, to DHMS C4.22 Type I or BMS 10-83 Type I. However, Akzo Noble Aerodex WB 9001W100 is being phased out and may not be commercially available; use only to depletion of existing stock.

4.1.2 Abrasive paper, aluminum oxide, 180 - 220 grit (e.g., 3M TRI-M-ITE).

4.1.3 Compressed air for use with spray guns. Compressed air used with spray application equipment must meet the requirements of BAERD GEN-023.

4.2 Equipment

4.2.1 Paint spray rooms equipped with forced or induced ventilation systems capable of maintaining sufficient ventilation to meet the requirements of the Occupational Health and Safety Act. The air flow must not cause turbulence or excessive air currents but be adequate to prevent dried overspray from settling on surfaces which have already been primed but remain tacky. Adequate lighting shall be provided, including in under surface areas. Spray rooms must be equipped with calibrated temperature and humidity indicators.

4.2.2 Lint free cheesecloth or filter mesh.

4.2.3 Tack rag (e.g., DSC 375-1).

4.2.4 Relative humidity recording and/or indicating equipment: sling psychrometer or hygrometer (e.g., Extech RHT20). Relative humidity recording and/or indicating equipment must be calibrated and operated according to the manufacturers' instructions.

4.2.5 Neoprene rubber gloves (e.g., DSC 422-5).

4.2.6 Mechanical paint shaker, capable of agitation of primer to ensure uniform distribution of solids without adversely affecting the primer.

4.2.7 Spray guns and associated equipment (e.g., HVLP, air electrostatic, high pressure air assist, etc.) capable of applying coatings to the dry film thicknesses specified herein without unacceptable defects as specified in section 6. Operate spray guns and associated equipment according to the equipment manufacturers instructions.

4.2.8 Viscometer, “Gardco EZ cup” Zahn #2 cup; do not use other brands of Zahn cups. Verify the spray viscosity of F14 primer against the specified requirements with a “Gardco EZ cup” Zahn #2 cup. Ensure that the cup is thoroughly cleaned after every use. If there is reason to doubt the accuracy of the cup (e.g., clogging of the orifice) submit the cup for calibration or replace with a new certified cup.

5 Procedure

5.1 General

5.1.1 Mapaero FR4-45 primer is intended to be used as part of a paint system along with Mapaero FR2-55 enamel (applied according to PPS 34.20). Unless explicitly otherwise specified by the engineering drawing, Mapaero FR4-45 should not be used with any other topcoat.

5.2 Paint Shop Conditions

5.2.1 Wash floors as frequently as required to avoid build-up of dust and loose overspray.

5.2.2 Ensure that the temperature in the paint application is 75 ± 10°F (24 ± 5°C) when applying F14 primer, and the relative humidity is 30% - 60%. Monitor and record temperature and humidity using calibrated indicators.

5.3 Preparation of Parts

5.3.1 Prepare thermoplastic surfaces to which F14 primer is to be applied as follows:

Step 1. Lightly abrade the surface using 180 - 220 grit aluminum oxide abrasive paper.

Step 2. Scrub the surface with mild alkaline soap and water.

Step 3. Rinse thoroughly.

Step 4. Solvent clean the surface according to PPS 31.17.

Step 5. Use a tack rag to remove loose particles (i.e., dust, etc.) from the surface.

5.3.2 Apply F14 primer within 1 hour of surface preparation.

5.4 Preparation of Primer

5.4.1 General

5.4.1.1 Use only primer within its storage life (as marked on the containers) which show no signs of deterioration (e.g., no skinning, gelling, lumping, pigment separation, etc.). Submit primer which has exceeded its storage life for shelf life extension testing and action according to PPS 13.28.

5.4.2 Preparation of Akzo Nobel Aerodex WB 9001W100 Primer

5.4.2.1 Akzo Nobel Aerodex 9001W100 primer is a one part primer; prepare according to the manufacturer's instructions, or as follows:

Step 1. Agitate the primer on a mechanical paint shaker (ref. para. 4.2.6) for a minimum of 1 minute.

Step 2. Strain the primer through a clean, lint free cheesecloth or filter mesh.

Step 3. If necessary, reduce the primer to the spraying viscosity specified by the manufacturer, by adding 3 to 20 parts water, by volume. In principle, Aerodex WB 9001W100 primer is delivered in a ready-to-use viscosity for a smooth or texture-like application; water should only be added if the viscosity is out of the required viscosity range. Best coverage is achieved without reduction. Do not reduce primer to be used for brush touch-up.

Step 4. Stir the primer until it has a uniform consistency.

5.4.3 Preparation of Mapaero FR4-45 Primer

5.4.3.1 Prepare Mapaero FR4-45 primer according to the manufacturer's instructions, or as follows:

Step 1. Manually stir the base component in its original container to break solids on the bottom of the container.

Step 2. Blend the base component to a uniform consistency under low speed (200 rpm) agitation.

Step 3. Hand mix the base and the catalyst in the ratio specified in Table 1.

Step 4. Stir the mixture until homogeneous.

Step 5. Reduce the mixture to the spraying viscosity specified by the manufacturer as specified in Table 1. Do not reduce primer to be used for brush touch-up.

Step 6. Strain the mixed primer through a clean, lint free cheesecloth or filter mesh.

Step 7. Stir the reduced primer until it has a uniform consistency.

Table 1 - Preparation of Mapaero FR-4-45 Primer

Components	Mixing Ratio		Induction Time	Reducing Ratio		Pot Life
	By Volume	By Weight		By Volume	By Weight	
Base: FR4-45	15	100	None	Reduce to spaying viscosity by adding 1.1 - 3.5 parts water, by volume	Reduce to spaying viscosity by adding 5 - 15 parts water, by weight	3 hours for a 10% dilution
Hardener/Catalyst: FR4-45	1	5				
Thinner: water	---	---	---			

5.5 Application of Primer

5.5.1 Apply one spray coat of F14 primer to achieve a dry film thickness of 1.5 - 2.0 mils.

5.5.2 Promptly clean equipment with the solvent specified in PPS 31.17 to avoid dried coating on or in the equipment.

5.6 Curing of Primer Coating

5.6.1 Allow Aerodex WB 9001W100 primer to dry for 1 - 1.5 hours at 75 ± 10°F (24 ± 5°C) before applying the next coat of paint.

5.6.2 Allow Mapaero FR4-45 primer to cure according to Table 2.

Table 2 - Curing of Mapaero FR4-45 Primer

	Minimum Cure Time			
Minimum Cure Temperature	at 73°F (23°C)	at 104°F (40°C)	at 140°F (60°C)	at 176°F (80°C)
Before overcoating with Mapaero FR2-55 enamel	3 hours	1 hour	30 minutes	15 minutes
Fully cured	7 days	3 days	12 hours	4 hours

5.7 Rework of Damaged or Defective Coatings

5.7.1 Use a suitable brush to touch up damaged or defective F14 coatings in non-appearance areas.

5.7.2 Remove damaged or defective F14 coatings in visible areas or in areas to be painted by sanding with 240 - 400 grit aluminum oxide abrasive paper and wiping with a tack rag. After removing the damaged or defective coating, re-prime the area with the applicable F14 primer according to the procedure specified herein.

6 Requirements

6.1 Ensure that coated surfaces are free of damage (such as scratches), defects (such as blemishes, runs, sags, pits, streaks, excessive orange peel, dried overspray, blisters, peeling), or other irregularities that impair appearance or protective qualities.

6.2 The dry film thickness, as measured with a micrometer, must be:

- Mapaero FR4-45: 2.0 - 3.1 mils.
- Aerodex WB 9001W100: 1.5 - 2.0 mils.

6.2.1 Check the dry film thickness at locations where the underlying material has been previously measured and recorded.

6.2.2 In small repair areas touched up by brush application, it is acceptable to vary from the dry film thickness limitations provided that complete coverage is visually verified. Take care to avoid application of an excessively thick or thin coating beyond the dry film thickness limitations specified.

7 Safety Precautions

7.1 The safety precautions specified herein are specific to Bombardier Toronto to meet Canadian Federal and Provincial government environmental, health and safety regulations. It is recommended that other facilities consider these safety precautions; however, suppliers, subcontractors and partners are responsible for ensuring that their own environmental, health and safety precautions satisfy the appropriate local government regulations.

7.2 Observe general shop safety precautions when performing the procedure specified herein.

7.3 Do not smoke or eat in paint spraying areas.

7.4 When applying primer, wear protective respiratory equipment as specified in PPS 13.13**.**

7.5 Keep all containers closed when not in use.

7.6 Spray booths and spray rooms shall be equipped with a suitable exhaust system.

7.7 No open flames or naked lights are allowed where painting operations are carried out. The use of infra-red or other heat lamps in the paint shop is prohibited.

7.8 Always wear protective coveralls, rubber gloves, and splash goggles when handling primer.

7.9 Avoid skin contact with primer. If contact occurs, wash contact area thoroughly with soap and water. If accidental eye contact occurs, flush eyes immediately with large quantities of water at an eye wash station and report to the Health Centre.

8 Personnel Requirements

8.1 Personnel responsible for the application of F14 primer must have a good working knowledge of the procedure and requirements as specified herein and shall have exhibited their competency to their supervisor.

9 Storage of Primer

9.1 Store primer in a dry area at a temperature of 40°F - 100°F (4°C - 38°C); for optimum storage life, a temperature of 60°F - 80°F (16°C - 27°C) is recommended. Store primer base and catalyst components with the precautions necessary for flammable materials. Refer to PPS 13.28 for the storage life of F14 primer.