BOMBARDIER
Toronto (de Havilland)
PROPRIETARY INFORMATION

PPS 25.62

PRODUCTION PROCESS STANDARD

BONDING USING FAST-WELD #10 EPOXY ADHESIVE

Issue 3
- This standard supersedes PPS 25.62, Issue 2.
- Extensive changes and/or deletions have been made at this issue and, therefore, detail changes have not been noted.

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This PPS is effective as of the distribution date specified on the accompanying distribution notice.

Direct any PPS related questions to the PPS Group (416) 375-7641.

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1 SCOPE

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for bonding aircraft parts and assemblies using Fast-Weld #10 epoxy adhesive.

1.1.1 Refer to PPS 2.64 for potting aircraft fasteners using Fast-Weld #10.

1.1.2 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.

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

1.1.4 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 (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 PPS 2.64 - Installation of Potting Type Sandwich Panel Fasteners.

3.2 PPS 13.26 - General Subcontractor Provisions.

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

3.4 PPS 25.66 - Cleanliness Requirements for Application of Adhesives.

3.5 PPS 31.17 - Solvent Usage.

3.6 PPS 34.08 - Application of Epoxy-Polyamide Primer.

4 MATERIALS AND EQUIPMENT

4.1 Materials

4.1.1 Fast-Weld #10 epoxy adhesive.

4.1.2 Aluminum oxide abrasive paper, 50 - 80 grit size and 120 - 180 grit size.

4.1.3 Lint-free cotton gloves (e.g., DSC 422-1).

4.2 Equipment

4.2.1 Suitable metal palette.

4.2.2 Disposable spatula.

5 PROCEDURE

5.1 Preparation of Parts

5.1.1 Wear clean cotton gloves when handling bonding surfaces. Do not touch or contaminate prepared surfaces with bare hands or other foreign objects.

5.1.2 Ensure the bonding surfaces of aluminum alloy parts and cadmium plated parts have been primed with F19 according to PPS 34.08.

5.1.3 Immediately before applying adhesive, prepare the bond surfaces as specified in Table I.

TABLE I - PREPARATION OF PARTS FOR ADHESIVE BONDING

MATERIAL	CLEANING PROCEDURE
All F19 primed parts	Solvent clean according to PPS 31.17.
Unprimed metal parts	Solvent clean according to PPS 31.17.
Unprimed fibreglass (including Kevlar laminates and composites)	Step 1. Lightly scuff the bonding surfaces with 120 to 180 grit abrasive paper. Step 2. Solvent clean according to PPS 31.17.
Unprimed phenolic (except Formica, Arborite, etc.)	Step 1. Lightly scuff the bonding surfaces with 120 to 180 grit abrasive paper. Step 2. Solvent clean according to PPS 31.17.
Unprimed Formica, Arborite, etc.	Solvent clean according to PPS 31.17.
Unprimed plastic parts (except Kevlar and fibreglass)	Solvent clean according to PPS 31.17.
Rubber parts (neoprene, nitrile, Buna-N, etc.)	Solvent clean according to PPS 31.17.
Rubber parts (silicones)	Step 1. Solvent clean according to PPS 31.17. Step 2. Lightly scuff the bonding surfaces with 120 to 180 grit abrasive paper.
Wood (except balsa)	Step 1. Sand bond surfaces with 50 to 80 grit abrasive paper. Step 2. Remove residual dust with clean compressed air.
Porous materials (Velcro, fabrics, balsa, cork, etc.)	Do not clean porous materials in any way. If the bonding surface is contaminated, refer the part to Liaison Engineering.
Rulon A	Solvent clean according to PPS 31.17.
Flexible polyurethane foam	Solvent clean according to PPS 31.17.
Rigid polyurethane foam	Step 1. Lightly scuff the bonding surfaces with 120 to 180 grit abrasive paper. Step 2. Remove residual dust with clean compressed air.

5.2 Preparation of Adhesive

5.2.1 Immediately before bonding, prepare adhesive as follows:

Step 1. Extrude resin and an equal volume of hardener from their separate tubes onto a suitable clean palette.

Step 2. Using a disposable spatula, thoroughly mix the components together until the mixture appears as a continuous light grey colour. Ensure there is no evidence of streaks or blotches in the mixed adhesive.

5.2.2 Mixed Fast-Weld #10 epoxy adhesive has a pot life of 5 minutes based on 24°C (75°F) and 50% relative humidity. These are the time and conditions during which the mixed adhesive will remain suitable for application. Higher humidity and temperature conditions will shorten the pot life.

5.2.3 Mix only sufficient material for the job on hand or which will be used up within the pot life of the material.

5.2.4 Discard excess mixed adhesive after expiration of the pot life.

5.3 Bonding

5.3.1 In a clean area according to PPS 25.66, perform bonding specified by the engineering drawing as follows:

Step 1. Immediately after mixing, apply a thin uniform coat (0.010" - 0.015" thick) of adhesive to both bonding surfaces using a suitable spatula.

Step 2. Immediately assemble the parts to be bonded in the correct alignment.

Step 3. Apply pressure using clamps or weights to ensure intimate contact over the full bonding area.

Step 4. Allow the adhesive to cure at room temperature (65°F minimum) for 1 hour minimum before being further worked or installed in the aircraft.

5.4 Clean-Up

5.4.1 Remove uncured adhesive from tools and equipment according to PPS 31.17.

6 REQUIREMENTS

6.1 Bonded parts and assemblies must have intimate contact over the full bonding area.

6.2 Visual indication of poor adhesion must be cause for rejection.

6.3 Allow bonded assemblies to cure at room temperature (65°F minimum) for 1 hour minimum before being further worked or installed in the aircraft.

7 SAFETY PRECAUTIONS

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

7.2 Refer to PPS 31.17 for the safety precautions for handling and using solvents.

7.3 Keep adhesive away from fire and other sources of ignition.

7.4 Ensure sufficient ventilation is supplied when using adhesive in confined areas. Avoid inhalation of fumes or vapours from adhesive.

7.5 Avoid skin contact with adhesive. Do not use protective hand cream as it may contaminate cleaned or adhesive coated surfaces. If skin contact occurs, wash thoroughly with soap and water. If eye contact occurs, immediately flush eyes for 15 minutes minimum with large quantities of water at an eye wash station and report to the Health Centre.

7.6 Wash hands thoroughly with soap and water immediately after using adhesive.

8 PERSONNEL REQUIREMENTS

8.1 Personnel responsible for bonding aircraft parts and assemblies with Fast-Weld #10 epoxy adhesive must have a basic understanding of the procedure and requirements as specified herein and must have exhibited their familiarity to their supervisor.

9 STORAGE

9.1 Store adhesive resin and hardener at a temperature of 16 to 26°C (60 to 80°F) according to the precautions necessary for flammable materials.

9.2 Keep adhesive resin and hardener containers tightly closed when not in use.

9.3 Refer to PPS 13.28 for the storage life of the adhesive components.

9.4 Ensure adhesive components containers are clearly marked with the storage life expiry date.