BOMBARDIER
Toronto Site
PROPRIETARY INFORMATION

PPS 25.08

PRODUCTION PROCESS STANDARD

BONDING USING DHMS A6.10 TYPE II ADHESIVE

Issue 17
- This standard supersedes PPS 25.08, Issue 16.
- 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) 375-7641.
- This PPS is effective as of the distribution date.

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Signed original on file. Validation of paper prints is the responsibility of the user.

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1 SCOPE

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for bonding of aircraft parts using DHMS A6.10 Type II adhesive.

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 PPS 13.13 - Personal Protective Respiratory Equipment.

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 13.39 - Bombardier Toronto Engineering Process Manual.

3.5 PPS 25.66 - Cleanliness Requirements for Application of Adhesives.

3.6 PPS 31.17 - Solvent Usage.

3.7 PPS 34.08 - Application of Epoxy-Polyamide Primer.

4 MATERIALS, EQUIPMENT AND FACILITIES

4.1 Materials

4.1.1 DHMS A6.10 Type II room temperature curing nitrile-based adhesive. Receipt testing of DHMS A6.10 Type II adhesive shall be as specified in PPS 13.28.

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

4.2 Equipment

4.2.1 Abrasive paper, aluminum oxide, 120 - 180 grit size.

4.2.2 Bristle brush.

4.2.3 Protective wrapping, neutral Kraft paper.

4.2.4 Rubber or stitch roller.

4.3 Facilities

4.3.1 This PPS has been categorized as a Controlled Special Process according to PPS 13.39 and as such only facilities specifically approved according to PPS 13.39 are authorized to perform bonding of aircraft parts using DHMS A6.10 Type II adhesive according to this PPS.

4.3.2 Bombardier subcontractors shall direct requests for approval to Bombardier Supplier Quality Management. Bombardier facilities shall direct requests for approval to the appropriate internal Quality Manager.

4.3.3 Facility approval shall be based on a facility report, a facility survey and completion of a qualification test program, if required. The facility report shall detail the materials and equipment to be used, the process sequence to be followed and the laboratory facilities used to show compliance with the requirements of this PPS. Any deviation from the procedure or requirements of this PPS shall be detailed in the facility report. Based upon the facility report, Bombardier Toronto Engineering may identify additional qualification and/or process control test requirements. During the facility survey, the facility requesting qualification shall be prepared to demonstrate their capability. Once approved, no changes to subcontractor facilities may be made without prior written approval from Bombardier Aerospace Supplier Quality Management.

4.3.3.1 For approval of subcontractor facilities to perform bonding of aircraft parts using DHMS A6.10 Type II adhesive according to this PPS, completion of a test program and submission of suitable test samples representative of production parts is required. Test samples shall meet the requirements specified by Bombardier Toronto Engineering.

5 PROCEDURE

5.1 Preparation of Parts

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

5.1.2 Immediately before applying adhesive, solvent clean the bonding surfaces according to PPS 31.17.

5.1.3 Do not touch prepared surfaces with bare hands or allow the surface to be contaminated. Wear clean cotton gloves when handling prepared bonding surfaces.

5.2 Preparation of Adhesive

5.2.1 Before use, stir the adhesive thoroughly in its own container.

5.3 Bonding

5.3.1 General

5.3.1.1 Perform bonding in a clean area according to PPS 25.66.

5.3.2 Open Time Method

5.3.2.1 This method is recommended where only a small area is to be bonded or if one or both materials are porous.

5.3.2.2 Bond using the open time method as follows:

Step 1. Using a suitable bristle brush, apply a thin, uniform coat of adhesive to both bonding surfaces making as few strokes as possible.

Step 2. If necessary, apply two or more coats of adhesive to porous surfaces to ensure sufficient adhesive remains on the surface. Allow each preceding coat to air dry before the next coat is applied.

Step 3. Allow the final coat of adhesive to air dry until it is tacky, but does not transfer to the finger when touched lightly.

Step 4. Press parts together and roll down with a rubber or stitch roller to ensure intimate contact over the full bonding surface.

5.3.3 Re-Activation Method

5.3.3.1 This method is recommended if large areas of non-porous materials are to be bonded or a strong immediate bond is desired.

5.3.3.2 Bond using the re-activation method as follows:

Step 1. Using a suitable bristle brush, apply a thin, uniform coat of adhesive to both bonding surfaces making as few strokes as possible.

Step 2. If necessary, apply two or more coats of adhesive to porous surfaces to ensure sufficient adhesive remains on the surface. Allow each preceding coat to air dry before the next coat is applied.

Step 3. Allow the final coat of adhesive to air dry for a minimum of 1 hour.

Step 4. If parts will not be bonded on the same shift as when the adhesive was applied, cover the adhesive coated surfaces with Kraft paper after the adhesive has dried to a tack-free condition.

Step 5. Except for plastic parts, re-activate the dry adhesive coating of the less porous mating surface by solvent wiping with a clean cloth dampened with the solvent specified in PPS 31.17. For plastic parts, re-activate the non-plastic mating surface only according to PPS 31.17.

Step 6. Immediately join the parts together and roll down with a rubber or stitch roller to ensure intimate contact over the full bonding area.

5.4 Curing

5.4.1 Allow the bond to cure at room temperature (65°F minimum) for at least 24 hours before further working the assembly or installation in the aircraft.

5.5 Clean-Up

5.5.1 Remove adhesive from tools and equipment according to PPS 31.17.

6 REQUIREMENTS

6.1 Bonded assemblies shall have intimate contact over the full bonding surface.

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

6.3 Bonded assemblies shall be allowed to cure at room temperature (65°F minimum) for at least 24 hours before being worked or installed in the aircraft.

7 SAFETY PRECAUTIONS

7.1 Safety precautions applicable to the materials and procedures specified herein shall be defined by the subcontractor performing the work for Bombardier Toronto.

8 PERSONNEL REQUIREMENTS

8.1 This PPS has been categorized as a Controlled Special Process according to PPS 13.39. Refer to PPS 13.39 for personnel requirements.

9 STORAGE OF ADHESIVES

9.1 Always use the oldest adhesive stock first (i.e., first in/first out (FIFO) basis).

9.2 Refer to PPS 13.28 for the storage life of the adhesive.

9.3 Store DHMS A6.10 Type II adhesive at a temperature of 40 to 80°F according to the precautions necessary for flammable materials.

9.4 Clearly mark adhesive containers with the storage life expiry date.

9.5 Keep adhesive containers tightly closed when not in use.