BOMBARDIER
Toronto (de Havilland)
PROPRIETARY INFORMATION

PPS 25.25

PRODUCTION PROCESS STANDARD

DHMS A6.15 FLUOROSILICONE SEALANT/ADHESIVE

Issue 9
- This standard supersedes PPS 25.25, Issue 8.
- Vertical lines in the left hand margin indicate changes over the previous issue.
- Direct PPS related questions to PPS.Group@aero.bombardier.com or (416) 375-7641.
- This PPS is effective as of the distribution date.

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1 SCOPE

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for bonding aircraft parts with DHMS A6.15 and DSC 584 fluorosilicone adhesive.

1.1.1 DSC 215-1 has been cancelled and superseded by DHMS A6.15. Therefore, whenever the engineering drawing or a PPS specifies bonding using DSC 215-1, bond using either DHMS A6.15 or DSC 584 fluorisilicone adhesive as specified herein.

1.1.2 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.

1.1.3 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, 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 31.17 - Solvent Usage.

3.5 PPS 34.08 - Application of Epoxy-Polyamide Primer (F19 & F45).

4 MATERIALS AND EQUIPMENT

4.1 Materials

4.1.1 Sealant/adhesive, fluorosilicone based to DHMS A6.15 or DSC 584.

4.1.2 Masking tape.

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

4.1.4 Abrasive paper, aluminum oxide, 50 - 80 grit and 120 - 180 grit.

4.2 Equipment

4.2.1 Spatula.

4.2.2 Rubber or stitch roller.

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 Prime the bonding surfaces of aluminum alloy parts and cadmium plated parts with F19 according to PPS 34.08.

5.1.3 Immediately before applying the adhesive, solvent clean the bonding surfaces according to Table I.

5.1.4 Mask off the bonding area with masking tape.

TABLE I - PREPARATION OF PARTS FOR BONDING

MATERIAL	CLEANING PROCEDURE
All F19 primed parts	Solvent clean according to PPS 31.17.
All F21 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. Solvent clean according to PPS 31.17.

5.2 Bonding

5.2.1 Perform bonding in a “clean” room environment.

5.2.2 Ensure that the relative humidity does not exceed 60% when bonding.

5.2.3 The adhesive cannot be worked after 5 minutes due to air contact causing the adhesive to skin over.

5.2.4 Perform bonding of parts within 5 minutes (from application of adhesive to parts assembly) as follows:

Step 1. Squeeze out the required amount of DHMS A6.15 or DSC 584 fluorosilicone adhesive from the tube onto one of the mating bond surfaces.

Step 2. Using a suitable spatula, immediately spread a thick (0.020" - 0.040") uniform coat over the entire bonding surface.

Step 3. Immediately assemble the parts together in the correct alignment.

Step 4. Roll down with a rubber or stitch roller or press down firmly with the fingers to displace the air and ensure intimate contact over the full bonding area.

5.3 Curing

5.3.1 Cure bonded assemblies for 4 hours minimum at room temperature (65°F minimum) before further handling.

5.3.2 Cure bonded assemblies for 72 hours minimum at room temperature (65°F minimum) before further working the assembly or installing it in the aircraft.

5.4 Clean-Up

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

5.4.2 Remove cured adhesive using a non-metallic scraper. Take care to prevent damage to parts or tooling requiring removal of cured adhesive.

6 REQUIREMENTS

6.1 General

6.1.1 Bonded parts shall have intimate contact over the full bonding area.

6.1.2 Visual indication of poor adhesion is not acceptable.

6.1.3 Bonded assemblies shall be allowed to cure at room temperature for a minimum of 4 hours before further handling.

6.1.4 Bonded assemblies shall be allowed to cure at room temperature for a minimum of 72 hours before further working the part or installing in the aircraft.

6.1.5 Before the next application, remove the small plug of adhesive that forms in the neck of the tube after each use.

6.2 Bonding Area Conditions

6.2.1 The cleanliness of the bonding area (e.g., tables, floors, equipment, walls, etc.) must be checked and cleaned as necessary to ensure that dust accumulation, dirt or other contamination will not be evident. Maintain records of dates of cleaning.

6.2.2 Maintain the temperature and relative humidity of the bonding areas within the range specified in Figure 1. Bonding when the relative humidity is below 30% will increase the chance of static discharge and worker discomfort, but will not affect part quality.

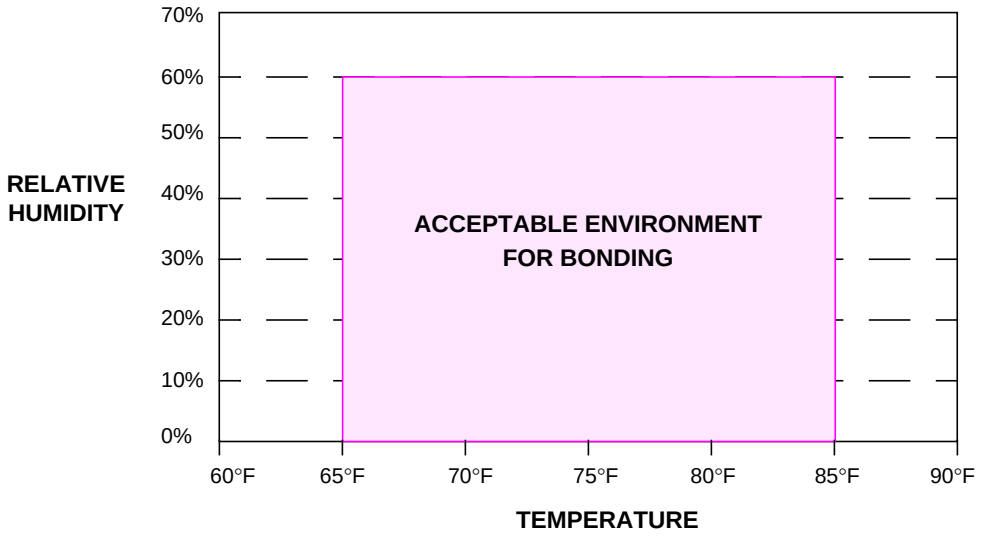

FIGURE 1 - TEMPERATURE AND HUMIDITY LIMITS

7 SAFETY PRECAUTIONS

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

7.2 Wear protective aprons, rubber gloves and safety glasses at all times when handling adhesive. Avoid skin and eye 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, flush eyes immediately with large quantities of water at an eye wash station and report to the Health Centre.

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

7.4 Ensure that sufficient ventilation is supplied at all times when using adhesive. Avoid inhalation of fumes or vapours from adhesive.

7.5 Always wear protective respiratory equipment according to PPS 13.13 when working with DHMS A6.15 or DSC 584 fluorosilicone adhesive.

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

8 PERSONNEL REQUIREMENTS

8.1 Personnel responsible for bonding aircraft parts using DHMS A6.15 or DSC 584 fluorosilicone sealant/adhesive shall have a good working knowledge of the applicable procedure and requirements as specified herein and shall have exhibited their familiarity to their supervisor.

9 STORAGE

9.1 Store adhesive according to the precautions necessary for flammable materials at 60°F - 80°F (16°C - 26°C).

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

9.3 Clearly mark the container with the adhesive storage life expiry date.

9.4 Tightly close the adhesive container when not in use.