BOMBARDIER
Toronto Site
PROPRIETARY INFORMATION

PPS 21.16

PRODUCTION PROCESS STANDARD

AIRCRAFT WEATHER/PRESSURE SEALING

Issue 14
- This standard supersedes PPS 21.16, Issue 13.
- 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.

Prepared By:	(Christie Chung)	August 23, 2017
	PPS Group	
Approved By:	(*K. Quon*, for Bruce Campbell)	August 24, 2017
	Materials Technology	
	(Michael Lightbody)	August 30, 2017
	Quality	

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

TABLE OF CONTENTS

Sections **Page**

1 SCOPE

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for weather and pressure sealing of aircraft structures.

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 2.60 - Installation of Barrel Nuts.

3.2 PPS 13.08 - Air Leak Testing DASH 8 Fuselage Structures.

3.3 PPS 13.13 - Personal Protective Respiratory Equipment.

3.4 PPS 13.26 - General Subcontractor Provisions.

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

3.6 PPS 21.20 - Mixing and Handling Two-Part Sealants.

3.7 PPS 21.21 - General Sealing Practices.

3.8 Bombardier Engineering Order (E.O.) 7336 - Standardization E.O.

4 MATERIALS AND EQUIPMENT

4.1 Materials

4.1.1 Use the sealant material specified on the engineering drawing or PPS except as follows:

- PR-1431G Type I, II and III sealants are replaced by DHMS S3.06 Type I, Class C-80 sealant (see E.O. 7336).
- Do not use PR-1436G sealant. Where PR-1436G E-2 or DHMS S3.06 Type I Class E sealants are specified on the engineering drawing, use P/S 870 C-80 sealant for all fay sealing and for all other applications contact Liaison Engineering.
- For fay sealing applications, if the engineering drawing specifies DHMS S3.06 sealant (i.e., no type or class is specified), use P/S 870 C-80 sealant to DHMS S3.06 Type I Class C-80 sealant.
- DHMS S3.01/B2 Type I sealant is replaced by DHMS S3.01/B2 Type II sealant.
- When the engineering drawing does not specify the type of DHMS S3.01 sealant, use DHMS S3.01 Class B Type II sealant.
- With the exception of fuel tank, firewalls and high temperature zones (e.g., nacelles), where use of DHMS S3.01 Type II Class B sealant is specified, it is acceptable to use BAMS 552-008 sealants as specified in PPS 21.20 in place of DHMS S3.01 Type II Class B sealant.
- Where use of PR-1422 A-1/2 or A-2 sealant to DHMS S3.01 Type I Class A is specified, it is acceptable to use PR-1440 A-1/2 or A-2 to AMS-S-8802 Type II Class A in place of PR-1422 A-1/2 or A-2 sealant.

4.2 Equipment

4.2.1 PPS 21.21 specifies equipment for applying sealant.

5 PROCEDURE

5.1 General

5.1.1 Weather/pressure sealing consists of applying sealant to aircraft structures, during and after assembly, preventing the passage of air or moisture from external aircraft surfaces to internal areas and surfaces and to prevent air leakage from pressurized areas to non-pressurized areas.

5.1.2 Seal areas specified on the engineering drawing.

5.2 Sealant Preparation

5.2.1 Prepare two-part sealants according to PPS 21.20.

5.3 Sealing

5.3.1 PPS 21.21 specifies general practices for preparation of parts and sealant and for applying sealant.

5.3.2 Except as noted below, seal butt joints at any time after assembly.

- Do not seal butt joints on integral fuel tank structures until after leak testing the fuel tank.
- Whenever possible, perform leak testing on the fuselage before sealing butt joints on pressurized fuselage structures.

5.3.3 It is not necessary to paint DSC 233-7 white silicone applied around access panels on exterior surfaces finish painted white.

5.3.4 When specified, seal barrel nuts according to PPS 2.60.

5.4 Curing

5.4.1 Allow sealed structures to cure for a minimum of 7 days before water tightness or leak testing.

5.4.2 Allow sealed structures to full cure according to PPS 21.20 before painting.

5.4.3 For aerodynamic sealing, sealant application and curing outside of the temperature and relative humidity specified in PPS 21.20 may result in an unacceptable aerodynamic fillet seal (e.g., excessive shrinkage, etc.) or butt joint seal (e.g., excessive shrinkage, dragging effect on vertical surfaces, etc.).

5.4.4 Post “WET SEALANT” warnings on sealed areas susceptible to damage by nearby assembly operations until the sealant cures tack-free.

5.5 Repairs

5.5.1 Refer seams or joints showing evidence of leakage during leak or water tightness testing to Liaison Engineering for repair.

6 REQUIREMENTS

6.1 Before application of sealant, areas to be sealed shall be thoroughly cleaned.

6.2 After final assembly, before installing interior fittings that would interfere with the detection of leaks, and before external painting, leak test the aircraft as follows:

- Leak test all DASH 8 pressurized fuselage structures according to PPS 13.08.
- Allow sealed structures to cure according to section 5.4 before leak testing.

7 SAFETY PRECAUTIONS

7.1 Observe standard plant safety precautions when performing the procedure specified herein.

7.2 Keep sealants away from flame and other sources of ignition.

7.3 Do not smoke or eat in areas where sealants are being applied. Avoid ingestion of sealants. If ingestion occurs, obtain medical attention immediately.

7.4 Wash hands thoroughly with soap and water immediately after working with sealants.

7.5 Ensure sufficient ventilation is suppied when using sealants in confined areas.

7.6 Avoid skin and eye contact with sealant. Wear protective gloves when handling sealants. If skin contact occurs, wash the affected area immediately and thoroughly with soap and water. Do not use protective hand cream as it may cause contamination. 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.

8 PERSONNEL REQUIREMENTS

8.1 Personnel responsible for weather and pressure sealing of aircraft structures shall have a good working knowledge of the procedure and requirements as specified herein and shall have exhibited their competency to their supervisor.

9 STORAGE

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

9.2 Store sealants according to PPS 21.20.

9.3 Refer to PPS 13.28 for the storage life of sealants.