BOMBARDIER
AEROSPACE
Toronto (de Havilland)

PPS 38.06

PRODUCTION PROCESS STANDARD

THERMAL INSULATION REPAIR ON BLEED AIR DUCTS

Issue 2
- This standard supersedes PPS 38.06, Issue 1.
- PPS ACN 38.06/1 has been superseded in this or previous issues.
- Vertical lines in the left hand margin indicate changes over the previous issue.

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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) 375-4365.

TABLE OF CONTENTS

Sections **Page**

Figures

1 SCOPE

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for the repair of thermal insulation on bleed air ducts, using phenolic pre-impregnated glass fabric cloth over ceramic fibre insulation.

1.1.1 This PPS complements the engineering drawings that specify its use as an authorized instruction and the procedure specified 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 Aerospace Process Specification (BAPS) or Bombardier Aerospace Montreal (Canadair) Materials and Processes Specification (MPS) **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 or MPS is specified.

2 HAZARDOUS MATERIALS

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

3 REFERENCES

3.1 PPS 13.13 - Protective Respiratory Equipment.

3.2 PPS 13.26 - General Subcontractor Provisions.

3.3 PPS 31.17 - Solvent Usage.

4 MATERIAL AND EQUIPMENT

4.1 Material

4.1.1 Ceramic fibre insulation, 1/2" thick, 4 lb/cubic foot density, Kaowool.

4.1.2 Glass fibre cord, Paisley Products EC 9-3-U.

4.1.3 Phenolic pre-impregnated (“pre-preg”) glass fabric cloth, Ferro Corp. Pyropreg AC 1581.

4.1.4 High temperature pressure sensitive tape to DSC 234-15-1, 1" wide.

4.1.5 Aluminum oxide abrasive paper, 180 - 220 grit.

4.2 Equipment

4.2.1 Curing oven capable of maintaining a temperature of 350° F ± 25° F.

4.2.2 Personal protective equipment, including dust masks, safety goggles and gloves where required.

5 PROCEDURE

5.0.1 Apply the repair as follows:

Step 1. Carefully cut out the section of ceramic fibre insulation to be repaired or reworked. Take care to avoid damaging the bleed pipe assembly.

Step 2. Cut new ceramic fibre insulation to the required size.

Step 3. Wrap the ceramic fibre insulation around the area of the duct to be insulated and hold in place using glass fibre cord as shown in Figure 1.

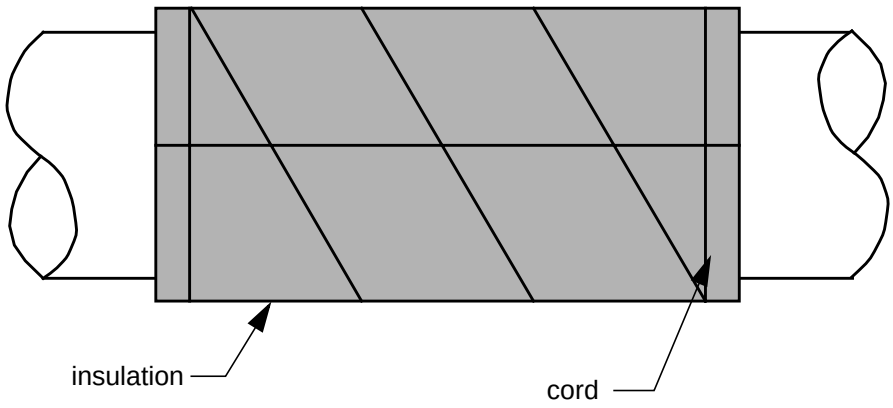

FIGURE 1 - ASSEMBLY OF INSULATION ONTO DUCT

Step 4. Solvent clean the circumference of the duct for 2" - 3" from the end of the ceramic fibre insulation according to PPS 31.17.

Step 5. Cut pre-preg glass cloth to the length of the insulation along the duct plus 2 1/2" and to the circumference of the insulated duct plus 3/4" for the seam.

Step 6. Wrap the pre-preg cloth around the insulation, positioning it so that it extends evenly beyond the insulation at both ends.

Step 7. After placing the pre-preg cloth in position, seal the seam and ends with high temperature tape. Seal the ends against the duct using at least two wraps of tape overlapping approximately 1/2" onto the duct (see Figure 2).

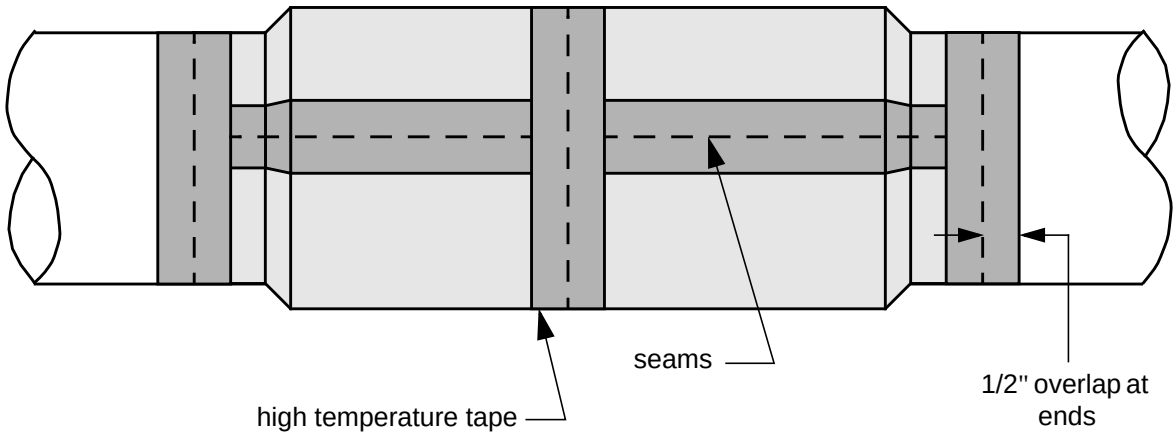

FIGURE 2 - APPLICATION OF PRE-PREG CLOTH TO DUCT

Step 8. Oven cure the completed assembly for 1 1/2 to 2 hours at a temperature of 350 ± 25°F.

Step 9. After curing, remove the tape and taper the overlapped portion of the pre-preg cloth by hand sanding using aluminum oxide abrasive paper to blend out the edge of the seam.

6 REQUIREMENTS

6.1 Ensure that the ceramic fibre insulation fits snugly on the part with no evidence of buckling or gaping

6.2 Pre-preg cloth showing evidence of cuts or other damage is not acceptable.

6.3 Ensure that the seams and ends of the pre-preg cloth are sealed against the ingress of moisture, oils, fuels, etc.

6.4 Ensure that the completed reworked assembly is uniform in appearance (e.g., repaired insulation blends in with original insulation) and is correctly positioned on the duct with respect to the engineering drawing or engineering order.

7 SAFETY PRECAUTIONS

7.1 Avoid skin contact with uncured phenolic pre-preg.

7.2 Ensure that sufficient ventilation is supplied when working with or near uncured phenolic pre-preg. Wear protective respiratory equipment according to PPS 13.13.

8 PERSONNEL REQUIREMENTS

8.1 Personnel responsible for repair of thermal insulation on bleed air ducts, using phenolic pre-impregnated glass fabric cloth over ceramic fibre insulation 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 Do not use Pyropreg AC phenolic pre-preg glass beyond its shelf life (e.g., 14 days at 80° F max. or 90 days at 40° F max.).