BOMBARDIER

Turboprops *(de Havilland)*

PPS 10.14

PRODUCTION PROCESS STANDARD

TEFLON COATING

Issue 3
- This standard supersedes PPS 10.14, Issue 2.
- Extensive changes and/or deletions have been made at this issue and, therefore, detail changes have not been noted.

Prepared By:	(Christie Chung)	January 17, 2005
	Production Process Standards Group	
Approved By:	(L.K. John)	January 26, 2005
	Materials Technology	
	(D. Godin)	February 1, 2005
	Quality	

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.

TABLE OF CONTENTS

Sections **Page**

Tables

Flow Charts

1 SCOPE

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for the application of Teflon coating to produce low friction surfaces where specified on Engineering drawings.

1.1.1 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.

1.1.2 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 Turboprops, all materials must be approved and assigned Material Safety Data Sheet (MSDS) numbers by the Bombardier Turboprops 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 Turboprops Environment, Health and Safety Department.

3 REFERENCES

3.1 PPS 13.26 - General Subcontractor Provisions.

3.2 PPS 17.02 - Abrasive Blasting.

3.3 PPS 31.04 - Degreasing Processes.

4 MATERIALS AND EQUIPMENT

4.1 Materials

4.1.1 Abrasive paper, aluminum oxide, 400 - 600 and 80 - 150 grits.

4.1.2 Dupont 958-203 Teflon-S Coating (Black).

4.1.3 Dupont T8595 thinners.

4.2 Equipment

4.2.1 Suitable spraying equipment for applying coatings.

4.2.2 Suitable oven for baking coatings.

4.2.3 Clean cotton gloves (e.g., DSC 422-1).

5 PROCEDURE

5.1 Preparation of Material

5.1.1 Thoroughly stir Teflon-S coating material in its original container and filter through a 150 mesh wire or cheesecloth immediately before using.

5.1.1.1 Avoid violent agitation as this will cause foaming and separation of solids.

5.1.1.2 Teflon-S material may be reduced to spray viscosity, if required, using T8595 thinners.

5.2 Preparation of Parts

5.2.1 Except as noted below, complete all process operations before applying Teflon coatings.

5.2.1.1 Apply protective treatments (e.g., zinc chromate primer), that would be deleteriously affected by the Teflon baking temperature, after Teflon coating.

5.2.2 Clean all parts according to Flow Chart 1 before applying Teflon coating.

5.2.3 Immediately before applying Teflon coating, pre-bake all parts at 650°F for 15 minutes and air cool to room temperature.

5.3 Application of Teflon Coating (See Flow Chart 2)

5.3.1 The type and thickness of Teflon coating used shall be as specified on the engineering drawing.

5.3.2 Apply Teflon coating by spraying using standard spraying equipment.

5.3.2.1 The maximum dry film thickness of each coat of Teflon shall be 0.0012".

5.3.2.2 If a dry film thickness of more than 0.0012" is required, multiple coats may be applied.

5.3.3 Remove all masking, if applicable, immediately after spraying.

5.3.4 Except as noted below, allow the sprayed Teflon coating to air dry for approximately 5 minutes before baking:

- If the relative humidity is above 85%, place parts in baking oven immediately after spraying.
- Bake parts according to the applicable baking schedule specified in Table I.

TABLE I - BAKING OF COATINGS

TYPE OF APPLICATION		INITIAL BAKE (Note 1)	FINAL BAKE (Note 1)
Single Coat		15 minutes at 375°F – 425°F	12 minutes at 600°F - 650°F
Multiple Coats	Initial and Intermediate Coats	15 minutes at 275°F - 325°F	N/A
	Final Coat	15 minutes at 275°F - 325°F	15 minutes at 600°F - 650°F
Note 1. Baking schedules shown are for cure time at metal temperature and do not include time required to bring metal up to temperature.			

5.4 Re-Coating

5.4.1 If it is necessary to re-coat a fully cured Teflon finish, lightly sand the entire surface with 400 - 600 grit abrasive paper.

5.4.1.1 Blow off residual grit with clean dry air.

5.5 Handling Finished Parts

5.5.1 If further manufacturing operations are required on parts having finished Teflon coatings, suitably protect the Teflon coating by masking to prevent damage to the coating during working.

5.5.2 Adequately protect parts during handling, transporting or storage by wrapping parts in clean Kraft paper or boxing so as to prevent damaging the coating.

5.5.3 Wear clean cotton gloves when handling cleaned parts.

5.6 Removal of Coating

5.6.1 Unbaked coatings may be removed from materials and equipment using T8595 thinners.

5.6.2 Baked coatings can only be removed by mechanical means (i.e., abrasive cleaning with 80 - 150 grit abrasive paper).

5.6.2.1 Take extreme care when stripping a baked coating to prevent damaging the surface finish or altering the finish dimensions of the part.

6 REQUIREMENTS

6.1 The finished Teflon coating must show no evidence of flaking, chalking, blistering or lack of adhesion.

6.2 Teflon coating must be smooth and continuous and must be free from runs, ripples, heavy build-up at edges, overspray, craters or pin holes.

6.3 There must be no evidence of cracks in the coating when examined under 40X magnification.

6.4 The type of coating and thickness must be as specified on the engineering drawing.

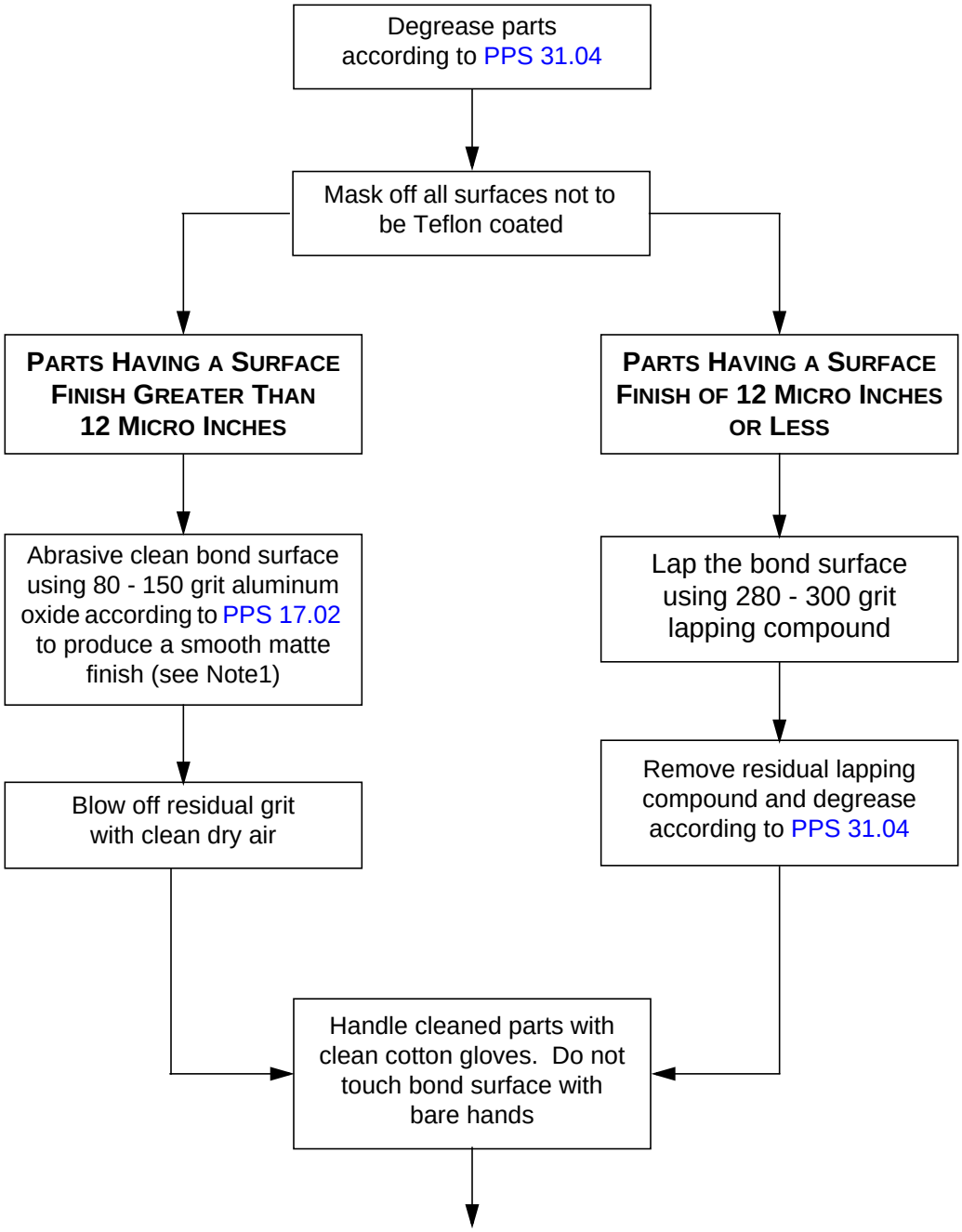
7 SAFETY PRECAUTIONS

7.1 Handle Teflon materials according to the safety precautions specified by the manufacturer.

8 PERSONNEL REQUIREMENTS

8.1 Personnel responsible for the application of Teflon coating to produce low friction surfaces where specified on Engineering drawings must have a basic understanding of the procedure and requirements as specified herein and must have exhibited their familiarity to their supervisor.

FLOW CHART 1 - PREPARATION OF PARTS



Note1. Do not allow the abrasive blast to dwell at any point on the bond surface. The part dimensions shall be substantially unchanged after blasting.

FLOW CHART 2 - APPLICATION OF TEFLON COATING