BOMBARDIER
Toronto Site
PROPRIETARY INFORMATION

PPS 32.08

PRODUCTION PROCESS STANDARD

APPLICATION OF ZINC PHOSPHATE COATINGS TO PLATED PARTS (C5)

Issue 9
- This standard supersedes PPS 32.08, Issue 8.
- Vertical lines in the left hand margin indicate 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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1 SCOPE

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for the application of zinc phosphate coatings (C5).

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 13.26 - General Subcontractor Provisions.

3.2 PPS 13.39 - Bombardier Toronto Engineering Process Manual.

3.3 PPS 17.02 - Abrasive Blasting.

3.4 PPS 31.04 - Degreasing Processes.

3.5 PPS 31.17 - Solvent Usage.

4 MATERIALS, EQUIPMENT AND FACILITIES

4.1 Materials

4.1.1 Galvaprep 5, Henkel Surface Technologies.

4.1.2 Chromic acid, technical grade, A-A-55827 or equivalent.

4.1.3 Glass beads or aluminum oxide as specifies in PPS 17.02.

4.2 Equipment

4.2.1 Soft bristle brush.

4.2.2 Acid resistant container (e.g., plastic, rubber or stainless steel).

4.2.3 Dip tank or containers for chromic acid, stainless steel or equivalent.

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 the application of zinc phosphate coatings (C5) according to this PPS.

4.3.2 Bombardier subcontractors shall direct requests for approval to Bombardier Aerospace Supplier Quality Management. Bombardier Aerospace 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 the application of zinc phosphate coatings (C5) 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 in section 6.

5 PROCEDURE

5.1 General

5.1.1 Galvaprep 5 is a concentrated non-flammable phosphoric acid based coating.

5.1.2 The application of zinc phosphate coating is usually performed before painting, bonding or dry film lubricant applications.

5.1.3 Do not allow the temperature of the Galvaprep 5 solution to exceed 120°F.

5.2 Application of Zinc Phosphate Coatings

5.2.1 Apply Galvaprep 5 as follows:

Step 1. Degrease parts according to PPS 31.04 or manually solvent clean according to PPS 31.17.

Step 2. Dilute one part Galvaprep 5 with one part water in an acid resistant container. Do not use a galvanized container.

Step 3. Thoroughly wet the surface to be zinc phosphated with diluted Galvaprep 5 using a brush. If the surface has been chemically treated or passivated, apply using a Galvaprep soaked Scotch-Brite pad (the pad will abrade through the treatment and allow the solution to react with the metal surface).

Step 4. Allow the solution to remain on the surface for 2 to 5 minutes. Do not allow the solution to dry. If drying does occur, re-wet the surface before rinsing.

Step 5. Thoroughly rinse the surface with clean water to remove all traces of solution. Blistering and corrosion problems may occur as a result of poor rinsing.

Step 6. Allow surface to air dry.

5.3 Stripping of Zinc Phosphate Coatings

5.3.1 Strip damaged zinc phosphate coating as follows:

Step 1. Immerse parts in 20% chromic acid solution operating at 170 to 180°F for 1 minute.

Step 2. Rinse immediately with clean hot water (180 to 190°F). Wash off any residual zinc phosphate with an air-water blast.

Step 3. Allow surfaces to air dry.

5.3.2 Alternatively, it is acceptable to remove zinc phosphate coatings by abrasive blast cleaning using glass beads or aluminum oxide according to PPS 17.02.

5.4 Clean-Up

5.4.1 Rinse tools and equipment with clean water to remove all traces of Galvaprep 5 solution.

6 REQUIREMENTS

6.1 Zinc phosphated surfaces shall show a uniform staining and darkening over the entire area.

6.2 Zinc phosphated surfaces shall be powder-free.

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

9.1 Store Galvaprep 5 at a temperature above 32°F. Galvaprep 5 will freeze at 32°F. If freezing occurs, thaw and stir before use.