

# BOMBARDIER

Toronto Site

PROPRIETARY INFORMATION

# PPS 31.11

## PRODUCTION PROCESS STANDARD

### VAPOUR BLAST CLEANING

- Issue 6
- This standard supersedes PPS 31.11, Issue 5.
  - Vertical lines in the left hand margin indicate technical changes over the previous issue.
  - Direct PPS related questions to [christie.chung@aero.bombardier.com](mailto:christie.chung@aero.bombardier.com) or (416) 375-7641.
  - This PPS is effective as of the distribution date.

Prepared By: \_\_\_\_\_ (Christie Chung) \_\_\_\_\_ April 8, 2016

PPS Group

Approved By: \_\_\_\_\_ (K. Quon, for Bruce Campbell) \_\_\_\_\_ April 11, 2016

Materials Technology

\_\_\_\_\_ (Stephen Pitt) \_\_\_\_\_ April 12, 2016

Quality

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## 1 SCOPE

- 1.1 This Production Process Standard (PPS) specifies the procedure and requirements for vapour blast cleaning of metal parts.
  - 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.
- 1.2 In place of vapour blast cleaning as specified herein, it is acceptable to perform abrasive blast cleaning according to [PPS 17.02](#).

## 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 BAERD GEN-023 - Contamination Control for Compressed Air.
- 3.2 [PPS 13.26](#) - General Subcontractor Provisions.
- 3.3 [PPS 13.39](#) - Bombardier Toronto Engineering Process Manual.
- 3.4 [PPS 16.20](#) - Temporary Corrosion Protection of Carbon and Low Alloy Steel Parts.
- 3.5 [PPS 17.02](#) - Abrasive Blasting.
- 3.6 [PPS 31.04](#) - Degreasing Processes.
- 3.7 [PPS 31.09](#) - Cleaning of Titanium and Titanium Alloys.

## 4 MATERIALS, EQUIPMENT AND FACILITIES

### 4.1 Materials

- 4.1.1 Vapour blast abrasive, #200 mesh or finer.
- 4.1.2 Corrosion inhibitor.
- 4.1.3 Rubber bungs, masking tape, or steel plates.

### 4.2 Equipment

- 4.2.1 Compressed air shall meet the requirements of BAERD GEN-023.
- 4.2.2 All equipment used for processing parts according to this standard, shall be approved by Bombardier Quality as meeting the requirements of this standard.

### 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 vapour blast cleaning of metal parts 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 vapour blast cleaning of metal parts according to this PPS, completion of a test program and submission of suitable test samples representative of production parts may be required. Test samples shall meet the requirements specified by Bombardier Toronto Engineering.

## 5 PROCEDURE

### 5.1 General

- 5.1.1 The abrasive material and grit size, and the procedure used shall be such that after cleaning machined parts, the surface roughness shall not be increased and all dimensions shall be within the tolerance limits stated on the engineering drawing.
- 5.1.2 Add a suitable amount of corrosion inhibitor to the slurry when vapour blasting ferrous parts only.
- 5.1.3 Abrasive stream should not dwell on any one area of the part.
- 5.1.4 The nozzle should move continuously over the part to produce a uniformly matt surface.

### 5.2 Preparation of Parts for Blasting

- 5.2.1 Before vapour blasting, degrease all parts with the exception of titanium and titanium alloy according to [PPS 31.04](#). Alkaline clean titanium and titanium alloy parts according to [PPS 31.09](#).
- 5.2.2 Protect areas not requiring vapour blasting with rubber bungs, masking tape, or steel plates as required.
- 5.2.3 Before vapour blasting, remove all burrs by filing or grit blasting.

### 5.3 Post Blast Cleaning Procedure

- 5.3.1 After blasting, thoroughly rinse all parts with clean water, ensuring that all traces of adhering grit have been removed. The parts shall then be dipped in hot de-ionized water and air dried.
  - 5.3.1.1 Clean, oil-free, compressed air may be used to blow off excess water and to aid in air drying of part.
- 5.3.2 Protect all cleaned parts with the exception of stainless steel, titanium and titanium alloy against corrosion according to [PPS 16.20](#) before shipping.

## 6 REQUIREMENTS

- 6.1 Cleaned surfaces shall be evenly matt and shall not show any evidence of the previous finish, however, machined parts may show machining marks through the matt surface.

## **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.