BOMBARDIER
Toronto (de Havilland)
PROPRIETARY INFORMATION

PPS 13.20

PRODUCTION PROCESS STANDARD

Manufacture, Storage and Control of No Part Number (NPN) Material

Issue 7
- This standard supersedes PPS 13.20, Issue 6.
- Vertical lines in the left hand margin indicate changes over the previous issue.
- Direct PPS related questions to PPS.Group@aero.bombardier.com or (416) 375-4365.
- This PPS is effective as of the distribution date.

Approved By:	*Ken Quon*, for (Bruce Campbell) Materials Technology		July 21, 2016
	Stephen Pitt (Stephen Pitt) Quality		August 12, 2016
Perpared By:	*Michael Wright* (Michael Wright) PPS Group		July 19, 2016

Table of Contents

Sections **Page**

Tables

Flow Charts

1 Scope

1.1 This Production Process Standard (PPS) specifies the procedure and requirements for manufacture, storage and control of No Part Number (NPN) material.

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

3 References

3.1 General

3.1.1 Unless a specific issue is indicated, the issue of the reference documents specified in this section in effect at the time of manufacture shall form a part of this specification to the extent indicated herein.

3.2 Bombardier Toronto (de Havilland) Process Specifications

3.2.1 PPS 1.02 - Forming Aluminum Alloys.

3.2.2 PPS 13.26 - General Subcontractor Provisions.

3.2.3 PPS 15.01 - Part Marking.

3.2.4 PPS 21.03 - Priming, Sealing & Repair of Integral Fuel Tanks.

3.2.5 PPS 30.01 - Heat Treatment of Aluminum and Aluminum Alloys.

3.2.6 PPS 32.01 - Chemical Conversion Coating of Aluminum and Titanium Alloys by Immersion (C1).

3.2.7 PPS 32.02 - Manual Application of C1 Chemical Conversion Coatings.

3.2.8 PPS 34.08 - Application of Epoxy-Polyamide Primer (F19 & F45).

3.3 Bombardier Toronto (de Havilland) Design Standards

3.3.1 DS 50 - Fits and Tolerances.

4 Materials and Equipment

4.1 Materials

4.1.1 Unless otherwise specified in this section, use only the materials specified; use of superseding or alternative materials is not allowed.

4.1.2 NPN material listed in Table 1.

4.2 Equipment

4.2.1 No equipment is specified herein.

5 Procedure

5.1 General

5.1.1 NPN material is standard stock material solution heat treated and age hardened to a certain temper. Under certain circumstances, Engineering Orders (EO's) or Non-Conformance Report (NCR) dispositions will specify the manufacture of parts using NPN material.

5.1.2 Identify and control NPN material such that all parts manufactured from NPN material can be traced back to their original source and process via the disposition instructions on NCR's, Shop Orders, Process Sheets, EO's, etc.

5.1.3 Manufacture NPN material according to the relevant process sheet and as follows:

- Perform heat treatment of NPN parts according to PPS 30.01.
- Clean heat treated NPN parts before application of chemical conversion coating according to PPS 31.02.
- Apply chemical conversion coating to cleaned, heat treated, NPN parts according to PPS 32.01 (immersion) or PPS 32.02 (manual), as specified by the process sheet.
- Prime NPN parts after application of chemical conversion coating according to PPS 34.08 (F19) or PPS 21.03 (F21), as applicable.

5.1.4 Identify NPN material with the relevant RIP number and the NPN number rolled over the entire surface using stamp pad inks specified in PPS 15.01. Space the identification markings no more than 6" apart.

5.1.5 Procure NPN material according to Flow Chart 1.

5.1.6 Issue NPN parts according to Flow Chart 2.

5.1.7 Store all NPN material in a controlled area. Order replacement material through the area Material Control representative.

5.2 Processing NPN Parts

5.2.1 When a Process Sheet, Shop Order, or NCR is received requiring the fabrication of an NPN part, record the RIP number and the operator's stamp on the Process Sheet, Shop Order or NCR that dispositions the manufacture of that NPN part.

5.2.2 Identify the finished NPN part with the Shop Order, Process Sheet or NCR number along with any other identification numbers required by the disposition instructions.

6 Requirements

6.1 All NPN material shall be controlled in such a manner as to ensure that only the proper and traceable material is used to make parts. Any NPN material which loses its identification shall be immediately removed from the area, forwarded to the Quality Inspection area and scrapped.

6.2 Quality Inspection shall monitor the Shop Orders and NCR's through random audits to ensure that the traceability data has been recorded as specified herein.

6.3 Reject and scrap completed parts not identified according to paragraph 5.1.4.

7 Safety Precautions

7.1 The safety precautions specified herein are specific to Bombardier Toronto (de Haviland) to meet Canadian Federal and Provincial government environmental, health and safety regulations. It is recommended that other facilities consider these safety precautions; however, suppliers, subcontractors and partners are responsible for ensuring that their own environmental, health and safety precautions satisfy the appropriate local government regulations.

7.2 Observe general shop safety precautions when performing the procedure specified herein.

8 Personnel Requirements

8.1 Personnel responsible for manufacture, storage and control of NPN material must have a good working knowledge of the procedure and requirements as specified herein and must have exhibited their competency to their supervisor.

Table 1 - NPN Material Numbers

NPN Material Number	Primer	Thickness	Initial Size	Material	Final Temper	Shape
NPN335-03-F19	F19	0.032"	8" x 24"	2024 clad to QQ-A-250/5	T3	4" x 4" 90° Angle Refer to Table 2 for the bend radius. Bend according to PPS 1.02 in the T3 heat treatment condition.
NPN335-03-F21	F21					
NPN335-04-F19	F19	0.040"				
NPN335-04-F21	F21					
NPN335-05-F19	F19	0.050"				
NPN335-05-F21	F21					
NPN335-06-F19	F19	0.063"				
NPN335-06-F21	F21					
NPN335-08-F19	F19	0.080"				
NPN335-08-F21	F21					
NPN335-10-F21	F21	0.100"				

Notes: 1. Do not use NPN parts which have been F19 primed in fuel tank areas.
2. NPN parts which have been F21 primed may be used in integral fuel tank areas and, except if the part is to be used on an external surface, in areas outside the integral fuel tank which are normally F19 primed.

Table 1 - NPN Material Numbers

NPN Material Number	Primer	Thickness	Initial Size	Material	Final Temper	Shape
NPN336-02-F19	F19	0.020"	36" x 48"	2024 alclad to QQ-A-250/5	T3	Flat
NPN336-03-F19	F19	0.032"				
NPN336-03-F21	F21					
NPN336-04-F19	F19	0.040"				
NPN336-04-F21	F21					
NPN336-05-F19	F19	0.050"				
NPN336-05-F21	F21					
NPN336-06-F19	F19	0.063"				
NPN336-06-F21	F21					
NPN336-08-F21	F21	0.080"				
NPN336-10-F21	F21	0.100"				
NPN336-12-F21	F21	0.125"				
NPN337-03-F19	F19	0.032"	8" x 24"	7075 alclad to QQ-A-250/13	T62	4" x 4" 90° Angle Refer to Table 2 for the bend radius. Bend according to PPS 1.02 in the W heat treatment condition and age harden to T62 after forming.
NPN337-03-F21	F21					
NPN337-04-F19	F19	0.040"				
NPN337-04-F21	F21					
NPN337-05-F19	F19	0.050"				
NPN337-05-F21	F21					
NPN337-06-F19	F19	0.063"				
NPN337-06-F21	F21					
NPN337-08-F19	F19	0.080"				
NPN337-08-F21	F21					
NPN337-10-F21	F21	0.100"				

Notes: 1. Do not use NPN parts which have been F19 primed in fuel tank areas.
2. NPN parts which have been F21 primed may be used in integral fuel tank areas and, except if the part is to be used on an external surface, in areas outside the integral fuel tank which are normally F19 primed.

Table 1 - NPN Material Numbers

NPN Material Number	Primer	Thickness	Initial Size	Material	Final Temper	Shape
NPN338-03-F19	F19	0.032"	36" x 48"	7075 alclad to QQ-A-250/13	T6	Flat
NPN338-03-F21	F21					
NPN338-04-F19	F19	0.040"				
NPN338-04-F21	F21					
NPN338-05-F19	F19	0.050"				
NPN338-05-F21	F21					
NPN338-06-F19	F19	0.063"				
NPN338-06-F21	F21					
NPN338-08-F19	F19	0.080"				
NPN338-08-F21	F21					
NPN338-10-F21	F21	0.100"				
NPN338-12-F21	F21	0.125"				
NPN338-160-F19	F19	0.160"	4" x 4"			
NPN339-04-F19	F19	0.040"	18" x 36"	2024 to QQ-A-250/5	T3	Roll formed to 53" radius across 18" width as per PPS 1.02
NPN339-06-F19	F19	0.063"				
NPN339-08-F19	F19	0.080"				

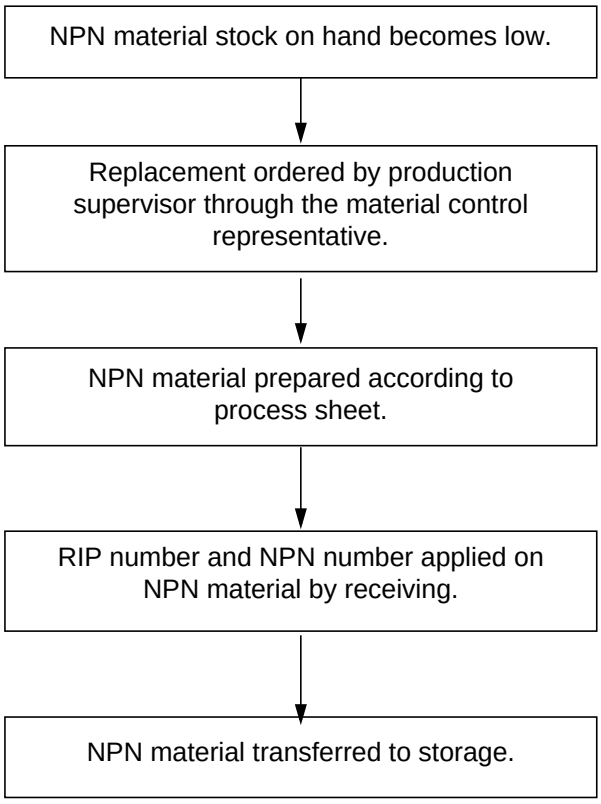
Notes: 1. Do not use NPN parts which have been F19 primed in fuel tank areas.
2. NPN parts which have been F21 primed may be used in integral fuel tank areas and, except if the part is to be used on an external surface, in areas outside the integral fuel tank which are normally F19 primed.

Table 2 - Bend Radius for 90 Degree Angle NPN Material (Note. 1**)**

Material Thickness	Bend Radius	Material Thickness	Bend Radius
0.032"	0.10"	0.063"	0.20"
0.040"	0.12"	0.080"	0.25"
0.050"	0.15"	0.100"	0.30"

Note 1. Refer to DS 50 for the tolerance on bend radius.

Flow Chart 1 - NPN Material Procurement Sequence



Flow Chart 2 - NPN Material Issuance Sequence