

<u>REV</u>	<u>DATE</u>	<u>ORIGIN</u>	<u>REVISION HISTORY</u> <u>REASON FOR CHANGE(S)</u>
A	02/07/17	Brian Davis, Rachel Perry, Scott Ubl, Travis Quinn	New
B	5/04/18	Daniel Crouse	Added PCN language
C	10/30/18	Joyce Conn	Added hyper corrosion requirement

Q-CODE Q41B QUALITY REQUIREMENTS

The following are the quality requirements for product purchased under Q-code Q41B. These requirements are specific to our customer Parker Hannifin Aerospace. This includes but is not limited to granting the right of access to the supplier's facilities and all applicable records to Plexus, their customer Parker Hannifin Aerospace and regulatory authorities with the acceptance of this Purchase Order, flow down all applicable requirements to sub-tier suppliers including key characteristics and retention of all records for a minimum of 15 years that support the manufacturing or material per the requirements of this Aerospace customer. Unless a written waiver is received from Plexus, the supplier agrees to abide by the quality requirements listed below **for Acceptance of Printed Circuit Boards/Printed Wiring Boards.**

In addition to the PO requirements and requirements set forth below, all parts and products produced against this purchase order must also comply with Parker Hannifin P9112 Q010 – General Requirements Clause and Q510 Control of Printed Wiring. This document can be located at the following: www.parker.com. Find Company Information, Select Working with Parker, Select Parker Aerospace Suppliers and QA Purchase Order Clauses.

First Production Run/Pre 1st Shipment/Change to Product - Before a product can be released for production the supplier will be required to meet the documentation and quality requirements as follows:

- A. First Article Inspection Requirement** - Supplier will execute the Aerospace First Article Inspection requirements of the SAE standard, AS9102 and provide the results to Plexus with each shipment in which the requirement is to be executed.
- B. Additional First Article Inspection Requirements:**
 - Only one part or assembly will be selected and inspected as part of the First Article Inspection.
 - Only one part of assembly should accompany the FAIR unless otherwise requested.
 - Raw materials must have direct traceability with the chemical and physical properties submitted to Plexus.
 - Special processes utilized by the supplier will require a certificate of compliance at a minimum.
- C. For all shipments of Printed Circuit Boards/Printed Wiring Boards, the following requirements must be completed for Acceptance for the 1st Shipment:**
 - **First Article Inspection Report** – All dimensions and specifications on drawing must be verified and within print tolerance. Plexus must approve any dimension that is not within print specification in writing Before product/parts can be shipped.
 - **Cross-Section (with inspection data) for:**
 - A) Rigid Printed wiring that conforms to the quality assurance provisions of MIL-P-55110 or IPC-6012, including group 'A' and group 'B' inspections**

B) Flexible and rigid-flex printed wiring that conforms to the quality assurance provisions of MMIL-P-50884 or IPC-6013, including group 'A' and group 'B' inspections.

A Cross-Section must be supplied from **Every** manufacturing panel regardless of layer count.

A coupon must be supplied from **Every** manufacturing panel.

- **Hyper-corrosion** – For ENIG boards, process controls shall be implemented as per Plexus PCB specification G9000-3. Results and applicable cross-sections shall be retained by the supplier and provided to Plexus on request.
- **Contamination Test Report.**
- **PCB for Solderability Sample** – Complete and physically intact PCB or Array as supplied for the Part Number. This should be segregated and boldly identified. The box containing the solderability sample must also be identified as such.
- **100% Electrical Testing Certificate. Including an Impedance Report on impedance designs.** For Rigid Printed wiring boards, an electrical continuity test for all multi-layer boards. For Flexible and rigid-flex printed wiring, unless otherwise specified in the Contract, Electrical Test for group 'A' inspection per MIL-P-50884 or IPC-6013 shall be limited to Types 2, 3, 4 and 5.
- **Certificate of Compliance** – Must state compliance to all applicable specifications (drawing, PO, customer specifications, Plexus G9000-3, IPC specifications, etc. . .). The statement of compliance **Must** include the name and location of the facility that manufactured the Printed Circuit Board/Printed Wiring Board.
- All cartons, packing slips, reports and certificates must have Plexus Part Number, EC level or Revision, quantity and PO Number listed on them.

D. In addition to all the requirements of listed above also applicable are the controls listed below which establish specific requirements of the product/parts and processes for Parker Hannifin Aerospace and Must be followed:

P9112 1.6.1 QUALIFIED PROCESS SOURCES

All special processes must be performed by sources approved by Parker Hannifin Aerospace. Use of processes and/or process sources that have not been approved by Parker Hannifin Aerospace may result in return of all products to the Supplier at the Supplier's expense. Unless otherwise directed by the Contract or the procuring Plexus division, the Supplier shall select process sources from the list of Parker Hannifin Aerospace approved process sources that can be found on the 'Internet' on Parker Hannifin home page (www.parker.com) under the heading Parker Aerospace Group and subheading "Parker Aerospace Suppliers"

Subsequent Shipments – The documentation and quality requirements for all subsequent shipments will be as follows:

- A. First Article Inspection Requirement** – Supplier will execute **First Production Run requirements** and provide the results to Plexus with each shipment following any subsequent change that invalidates the previous First Article Inspection result per AS9102. In addition, products/parts held in inventory by the supplier for 2 or more years or not received by Plexus in 2 or more years **Must** have the **First Production Run requirements** performed to assure no revision change or product/part deterioration during storage.
- B. Cross-Section (with inspection data) for:**
 - A) - Rigid Printed wiring that conforms to the quality assurance provisions of MIL-P-55110 or IPC-6012, including group 'A' and group 'B' inspections.
 - B). Flexible and rigid-flex printed wiring that conforms to the quality assurance provisions of MIL-P-50884 or

IPC-6013, including group 'A' and group 'B' inspections.

A Cross-Section must be supplied from **Every** manufacturing panel regardless of layer count. A coupon must be supplied from **Every** manufacturing panel.

C. Hyper-corrosion – For ENIG boards, process controls shall be implemented as per Plexus PCB specification G9000-3. Results and applicable cross-sections shall be retained by the supplier and provided to Plexus on request.

D. Contamination Test Report

E. PCB for Solderability Sample – As defined in first shipment above, when a revision is made that affects the physical shape or the outerlayer artwork. The box containing the solderability sample must also be identified as such.

F. 100% Electrical Testing Certificate - An Impedance Report shall also be included on impedance designs. For Rigid Printed wiring boards, an electrical continuity test for all multi-layer boards. For Flexible and rigid-flex printed wiring, unless otherwise specified in the Contract, Electrical Test for group 'A' inspection per MIL-P-50884 or IPC-6013 shall be limited to Types 2, 3, 4 and 5.

G. Certificate of Compliance – Must state compliance to all applicable specifications (drawing, PO, customer specifications, Plexus G9000-3, IPC specifications, etc. . .). The statement of compliance **Must** include the name and location of the facility that manufactured the Printed Circuit Board/Printed Wiring Board.

H. All cartons, packing slips, reports and certificates must have Plexus Part Number, EC level or Revision, quantity and PO Number listed on them.

I. In addition to all other requirements listed, all required documentation, labels, packaging and packing slips must have Plexus part number, EC level or Revision, quantity and PO number listed on them.

*When the revision of the product/part changes, **First Production Run requirements** Must be completed as a new part Before the shipment of product/part to Plexus.*

The above listed required documentation must be submitted with each shipment. Shipments received without the completion and proper execution of these Quality Requirements is considered non-conforming and Plexus reserves the right to return to the supplier at the supplier's expense.

Product change notification

Upon acceptance of conforming product, documentation, and the requirements of this Q-code, the supplier's manufacturing process shall be considered "qualified". All changes require written approval from Plexus prior to implementation. Product or Process change notification requests (PCNs) shall be submitted to pcns@plexus.com.