

**Amphenol Printed Circuits Inc. (APC)**

91 Northeastern Blvd.  
Nashua NH 03062  
Main Phone: 603-324-4500  
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**STANDARD QUALITY REQUIREMENTS FOR SUPPLIERS**

F05-QP008 Rev A Dated 10/22/07

For questions concerning Standard Quality Requirements for Suppliers (F05-QP008), please contact your APC buyer.

**1. SCOPE**

This document establishes requirements for supplier's quality control systems. These requirements are in addition to those set forth in specific purchase orders or any other contractual documents. Excluded are suppliers of stationary and janitorial supplies.

**2. QUALITY SYSTEM REQUIREMENTS**

The supplier shall follow APC's Standard Quality Requirements for Suppliers (F05-QP008) during the fabrication of all parts, sub-assemblies, assemblies, and tooling involved in the manufacturing, distribution, and shipping of APC products or when performing and providing a service for APC. The supplier must retain on file evidence of conformance. By shipping the product to APC, suppliers confirm that the product meets or exceeds all applicable APC engineering and / or purchase agreements, purchase orders, functional test requirements, and / or supplier design control documents. The supplier is also responsible for ensuring sub-tier supplier-produced parts, components, or services conform to APC approved design data. Certification with ISO9001, AS9100 or NADCAP standards is preferred for all suppliers. However, as a minimum, suppliers must meet APC's requirements to the extent further imposed by the provisions of applicable drawings, specifications and Purchase Orders.

**3. DISTRIBUTORS**

Distributors as the direct supplier to Amphenol Printed Circuits Inc. and the representative manufacture, Distributors are responsible for compliance with all procurement action requirements. The applicable requirements of all quality clauses and technical requirements listed on the procurement action will apply to both the distributor and the manufacture of the product.

Note: Distributors, if a manufacture's Certificate of Conformance is not provided with each shipment of product, Amphenol Printed Circuits Inc. reserves the right to request at that time of, or after receipt of product, a manufacturer's Certificate of Conformance to ensure that the product provided is as specified in the Amphenol Printed Circuits Inc. procurement document.

**4. QUALITY AUDITS**

The supplier's Quality System may be subject to initial and/or periodic audits, at a frequency determined by Amphenol Printed Circuits or its customers, to determine compliance to these or any other contractually imposed requirement.

**5. RIGHT OF ACCESS**

Amphenol Printed Circuits, its customers and applicable regulatory agencies shall be granted access to the facilities involved in a specific Purchase Order and all applicable records pertaining to that order.

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**6. FLOWDOWN**

The supplier shall flow down all applicable quality requirements to any subcontractors used in the performance of any contract received from Amphenol Printed Circuits. This includes key characteristic(s) where required.

**7. SUPPLIER RESPONSIBILITY – PRODUCT / PROCESS CHANGES**

The supplier shall maintain a system for the control of quality that complies with the standards as listed above. This system shall be subject to Amphenol Printed Circuits Inc. approval and shall include, but not be limited to, the following:

- The Quality Manager and / or the Purchasing Manager at Amphenol Printed Circuits Inc. shall be notified, in writing, when any changes are made to the quality system that may affect product conformance. Notification shall also be sent when changes in product and/or process definition will affect product conformance or its intended use.
- The quality system shall assure that all services and product offered for acceptance has been subject to all examinations and tests required to prove conformance to contract or purchase order requirements.
- The supplier shall notify Amphenol Printed Circuits Inc. of organizational changes affecting quality management, supply chain management, or ownership within 10 business days of the change. A change in location or certification status, as well as significant organizational changes, may constitute an on-site visit from Amphenol Printed Circuits inc.

**8. DOCUMENTATION**

Supplier is responsible to obtain all referenced documents. Documents not provided with the purchase order are available upon request of Amphenol Printed Circuits Inc. Purchasing. In the event a purchase order does not have a revision listed, it is the responsibility of the supplier to obtain this information from the buyer.

**9. RECORDS**

RECORDS of manufacturing planning, certifications and test reports required to assure product conformity to contractual and technical requirements of the purchase order shall be retained for a minimum of ten (10) years unless stated otherwise on the purchase order. Unless otherwise specified on the purchase order, the supplier's quality system shall provide for procedures which will assure that the latest applicable drawing, specification and instructions required by contract or purchase order, as well as authorized changes thereto, are used for fabrication, inspection and testing. Copies of drawings, specifications and / or procedures supplied by Amphenol Printed Circuits shall not be reproduced except for internal use. Such proprietary items shall be controlled to preclude their use for other than contract work with Amphenol Printed Circuits inc.

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**10. CORRECTIVE ACTION**

Requests for Corrective Action shall be answered and returned by the due date given on the Corrective Action Request (CAR). The supplier is responsible for determining and implementing corrective action and for performing follow-up actions to verify the effectiveness of corrective action.

**11. MEASURING AND TEST EQUIPMENT**

The supplier shall provide and maintain sufficient gauges and other measuring and test devices that are accurate enough to assure product conformance. The devices shall be calibrated at established intervals against certified standards, which have known valid relationships to national standards. Calibration of inspection equipment shall be in accordance with ANSI (NCSL) Z540-1, MIL-STD-45662, or other ISO/industry recognized calibration system standards.

**12. AMPHENOL PRINTED CIRCUITS INC. SUPPLIED MATERIAL**

When Amphenol Printed Circuits furnishes material, the supplier's procedures shall include, as a minimum,

- Examination upon receipt to detect damage in transit,
- Periodic inspection and precautions to assure adequate conditions and to guard against damage from handling and deterioration during storage,
- Functional testing, either prior to or after processing, or both, as required by contract or specification to determine satisfactory operation.
- Identification and protection from improper use or disposition.
- Verification of quality.
- Notification/Reporting of any discrepancies/concerns to the Amphenol Printed Circuits Inc. Quality department.

**13. RECEIVING INSPECTION**

Unless otherwise stated within the purchase order, purchased material, product and processes will be subject to inspection at Amphenol Printed Circuits inc, as necessary to assure conformance to contract or purchase order requirements. Initial acceptance of the order at Amphenol Printed Circuits does not relieve the supplier of any responsibility to produce acceptable product for which they are contracted.

**14. NON-CONFORMING MATERIAL**

The supplier shall establish and maintain an effective and positive system for controlling non-conforming material, product and processes, including procedures for the identification, segregation, presentation and disposition of reworked product. All non-conforming product shall be positively identified to prevent use, shipment and intermingling with conforming product. Nonconforming product shall not be submitted without prior notification and authorization / approval from Amphenol Printed Circuits inc.

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**15. CERTIFICATE OF CONFORMANCE**

Each shipment of material, product and / or processed parts shall be accompanied by a legible and reproducible copy of a Certificate of Conformance with the signature of an authorized company representative stating that the material, process or product being shipped meets the requirements of applicable drawings or specifications cited in the purchase order. The certificate must list each special process that appears on the drawing such as: non-destructive examination, and plating or coating, etc. Perishable products controlled by batch number or cure date and products controlled by heat number will have applicable controlling number on the individual certificate. The supplier shall include the date of manufacture and the Amphenol Printed Circuits Inc. purchase order number and APC part number (as it appears on the PO) on the C of C with a statement of conformity of the product shipped. Blanket statements of conformance are unacceptable, as are statements of belief rather than fact. Evidence / records substantiating the C of C must be on file and available upon request in accordance with Records Clause of this document.

**16. CHEMICAL AND / OR PHYSICAL TEST REPORTS**

When required, legible and reproducible copies of all chemical and / or physical test reports, identifiable with the furnished materials, must accompany each shipment. These reports must contain the signature and title of the authorized representative of the agency performing the test. The reports shall be identified with the specification number, revision and lot identification (heat, run, batch, and/or cure lot number as applicable to the product). Chemical and Physical test reports shall include the actual numerical values for each property testing in accordance with the applicable specification. When more than one specimen is required, a test result of each is required on the report.

**17. PROCESS CERTIFICATION REQUIREMENTS**

A legible and reproducible copy of special process certifications (i.e. testing, assembly, nondestructive testing, plating, etc.) shall accompany each shipment of material or parts for which such processing has been accomplished. Special processes shall be performed by customer (process specification owner) approved sources. Certifications are to include all specifications listed in the order of sequence and date performed.

**18. DOMESTIC MATERIALS**

Specialty metals, such as Titanium and Stainless Steel, must be of a domestic origin as defined by DFARS Clause 252.225-7014, Preference for Domestic Specialty Metals.

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**19. AGE SENSITIVE MATERIALS**

The supplier shall identify all materials that are age controlled or life limited with the date of manufacture and the date at which the useful life is expended (shelf life or cycle life). A signed statement regarding the commodity on company letterhead stating the shelf life conditions of the particular product is acceptable. When environment is a factor in determining useful life, the identification shall include the storage conditions required to achieve the stated life. Unless otherwise stated in the body of the purchase order, product supplied to Amphenol Printed Circuits Inc. shall have a minimum of 70% of its life expectancy remaining at time of delivery.

**20. PACKAGING**

Unless otherwise specified by the purchase order, the supplier is responsible for assuring that all items are delivered without damage or deterioration. Packaging and verification of the packaging will cover the prevention, detection and removal of foreign objects. Unit and intermediate packaging shall be employed as necessary to prevent damage or deterioration.

**21. ELECTROSTATIC DISCHARGE PROTECTION**

Static sensitive devices classified by the drawing or by the nature of the product must be properly handled, packaged and labeled as per BS EN 100015-1 or MIL-STD-1686.

**22. SHIPPING DOCUMENTS**

Every shipment shall be accompanied with a detailed Certificate of Conformance and packing slip listing purchase order number, APC part number, quantity, and description written as shown on the purchase order. Failure to provide this information will be just cause for withholding payment without loss of discount privileges until such documents are made available.

**23. Shipping, Packaging, and Labeling Requirements for material that is to be imported into the United States of America**

Supplier shall comply with all applicable recommendations or requirements of the Bureau of Customs and Border Protection's Customs-Trade Partnership Against Terrorism ("C-TPAT") initiative. Supplier, upon request shall provide evidence of compliance with the C-TPAT initiative.

**24. CONFIDENTIALITY ISSUE**

All documents provided for the purpose of submitting a quotation or fulfilling purchase order requirements, are Customer property and should be considered of a strictly confidential nature. These documents must be returned to Amphenol Printed Circuits Inc. upon request.

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**25. ON SITE CONTRACTORS - pre-requisite**

The following are pre-requisite to allowing any contractor on Amphenol Printed Circuits property to perform any work including, without limitation, custodial, cafeteria, security services, calibration service, routine or special maintenance, landscaping, snowplowing, garbage removal, building modifications, alterations or additions.

- **Contractor Safety video** - All employees and sub-contactors of the contractor must view a 15 minute "Contractor Safety video" prior to commencement of any work on the property.
- **Certificate of Insurance** – All contractors shall show that the contractor has "adequate" general liability and workman's compensation insurance coverage; Name Amphenol Printed Circuits Inc. as an "Additional Insured"; Include a 30 day advance notice provision of the cancellation modification of any of the indicated coverage.
- **Calibration Services** - Contractors performing calibration services for APC shall use equipment which has been calibrated and maintained using standards which are traceable to the National Institute of Standards and Technology (NIST), in accordance with the latest revisions of ANSI/NCSI, Z540-1, Calibration System Requirements.

**26. ELECTRICAL / ELECTRONIC ASSEMBLY & SOLDERING REQUIREMENTS**

- All electronic assembly and soldering shall conform to the criteria established in IPC-A-610, current revision unless otherwise stated on the purchase order.
- Technicians performing work on and inspectors engaged in final acceptance of electrical/electronic products for purchase by Amphenol Printed Circuits Inc. shall be Certified Application Specialists per IPC-A-610 or J-STD-001, current revisions.
- All electronic assembly and soldering shall conform to the criteria established in the process standard(s)/specification(s) stated on the Amphenol Printed Circuits Inc. purchase order.

**27. FIRST ARTICLE REQUIREMENT**

Compliance to requirements shall be verified by performance of a first article inspection. First article inspection reports shall include S/N when applicable, all drawing dimensions, general notes, and tolerance range along with actual measurement results, and where physical testing is required, the results of the tests. First Article parts shall be identified as "First Article" by tagging, separately packaging them or other suitable means. If required by contract or purchase order, the first article shall be in accordance with AS9102 latest revision.

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**28. SOURCE SURVEILLANCE**

When this SQR is imposed, the Amphenol Printed Circuits Inc. Quality Representative, Amphenol Printed Circuits Inc.'s Customer, and applicable regulatory authority shall perform evaluation / acceptance of product at the supplier's facility. This will include surveillance of the products and supplier's systems, procedures, and facilities. The supplier shall furnish, at no cost, the necessary facilities and equipment, supply data, and perform tests / inspections as required by applicable drawings, specifications, or Amphenol Printed Circuits Inc. directed Inspection Instructions under surveillance of Amphenol Printed Circuits Inc. Supplier Quality Representative, Amphenol Printed Circuits Inc.'s Customer, and / or applicable regulatory authority. The supplier is to notify Amphenol Printed Circuits Inc. Buyer, requesting source surveillance at a minimum of 48 hours in advance of desired inspection date.

**29. FOREIGN OBJECT PREVENTION, DETECTION AND REMOVAL**

The supplier shall maintain a FOD (Foreign Object Damage / Debris) control program assuring work is accomplished in a manner preventing foreign objects or material from entering and remaining in deliverable items. Maintenance of the work area and control of tools, parts, and material shall preclude the risk of FOD incidents. The supplier shall document and investigate all FOD incidents assuring elimination of the root cause. The Company shall have the right to perform inspection and / or audits as a method of verification that the supplier's FOD control program is functional, documented, and effective. The supplier shall identify a FOD control person responsible for implementing FOD prevention awareness and training.

Prior to closing inaccessible or obscured areas or compartments during assembly the supplier shall inspect for foreign objects/materials. Tooling, jigs, fixtures, test equipment, and handling devices shall be maintained in a state of cleanliness and repair to prevent FOD. Supplier shall provide a statement of certification that deliverable products are free of any foreign materials that could cause damage to the product or to the components/systems of which the product is a part or to which the product is attached.

**30. SPECIAL PROCESS CONTROL** – Special processes are those yielding products which cannot be evaluated for conformance to requirements through inspection or non-destructive testing, waste processing, . These include, but not limited to, welding, plating, heat treating, anodizing, printed circuit board fabrication (Rigid and / or Flexible), solder mask application, via fill application, assembly, electrical test, chemical machining, chemical coating, mechanical machining, etc. The Supplier shall, as a minimum, demonstrate a degree of control over these processes to provide assurance that Amphenol Printed Circuits Inc. purchase order specifications are complied with. Supplier is responsible to obtain all referenced documents. Documents not provided with the purchase order are available upon request of Amphenol Printed Circuits Inc. Purchasing. As applicable, the Supplier shall provide adequate training for personnel, certifications where required and destructive testing of samples and detailed procedures. Upon request, copies of special process procedures and certifications shall be supplied to Amphenol Printed Circuits Inc.. If the Supplier uses facilities other than his own, that facility is subject to the same conditions stated herein. All certifications supplied as objective evidence must indicate the name and location of the facility performing each special process.

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**ADDITIONAL REQUIREMENTS BY COMMODITY,**

(Unless otherwise stated within the P.O.)

**31. RAW MATERIALS – (METALLIC) SHEETS**

Material shall be free from surface defects and flat per specification. Original Mill certifications with actual chemical and physical values are required. Material must be identified with an identifier (heat, lot, run or batch number), temper, thickness, alloy and specification. The preferable means is via stenciling. Tags or labels may also be used so long as the material can be positively tied to all certifications. Each purchase order must be shipped on its own skid. This skid shall be of the same size as the material being shipped. When the shipment encompasses more than one heat (lot, run, batch), each heat must be segregated and positively identified. All banding must be cardboard protected. Sheets shall be paper interleaved. The paper may not be taped to the material.

**32. RAW MATERIAL – EPOXIE OR PHENOLIC SHEETS**

Material shall be free from surface defects. Original Mill certifications with actual chemical and physical values are required. Material must be identified within it package, positively traceable to all certifications. Each purchase order must be shipped on its own skid. This skid shall be of the same size as the material being shipped. When the shipment encompasses more than one heat (lot, run, batch), each heat must be segregated and positively identified.

**33. RAW MATERIAL – METALLIC FOIL**

Material must be of photo imagable, laminating quality, free from oil and other contaminants. Original Mill certifications with actual chemical and physical values are required. Packages must be marked with the purchase order, quantity, weight, heat (lot, run, batch), number and specification. Packaged one part number per skid.

**34. RAW MATERIAL – POLYIMIDE FILM**

Each roll must be identified with the Amphenol Printed Circuits Inc. Part Number, quantity and an identifier (Lot/ batch number) traceable to the certifications. Material certifications with actual test values are required.

**35. RAW MATERIAL – POLYIMIDE LAMINATE**

Material must be of photo imagable, laminating quality, free from oil and other contaminants. Original Mill certifications with actual chemical and physical values are required. Packages must be marked with the purchase order, quantity, weight, heat (lot, run, batch), number and specification. Packaged one part number per skid.

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**36. RAW MATERIAL – EXTRUSIONS, MOLDINGS AND CASTINGS**

Material shall be free from surface defects. Original Mill certifications with actual chemical and physical values are required. Material must be identified with an identifier (heat, lot, run or batch number), temper, part number, alloy and specification. The preferable means is via stenciling. Each purchase order must be shipped in its own container. The container shall offer sufficient protection from damage during transit. When the shipment encompasses more than one heat (lot, run, batch), each heat must be segregated and positively identified.

**37. PURCHASED PARTS**

Original mill raw material certifications with actual chemical and physical values are required.

Test reports for all processes performed are required with the shipment. Approved suppliers, as outline previously, shall be used for all special processes.

**38. CHEMICALS, GLUES AND ENCAPSULENTS**

A Certificate of Analysis (C of A) or Certificate of Conformance (C of C) is required with each shipment.

Documentation must include manufactured and expiration dates for each lot shipped. Containers are to be shipped in a single-level bundle and packaged to prevent damage in transit.