

HDL RESEARCH LAB, INC.

QUALITY REQUIREMENT CODES

SCOPE:

The quality requirements defined herein are applicable to HDL Research Lab's purchase orders when incorporated by reference to the applicable clause or clauses by code numbers (QRC) in such purchase orders. (These codes may also be referred to as "inspection codes".) Acceptance of the articles or materials specified on the purchase order will be withheld pending receipt of all required data and documentation.

SIGNIFICANCE:

These requirements and the execution thereof shall be in addition to and not in derogation of other purchase order requirements.

CODES:

1. Basic Quality Program Required

The supplier shall maintain a quality program in compliance with the latest specifications of MIL-I-45208, MIL-Q-9858 or ISO-9001. Compliance with this requirement is subject to review and approval by HDL's Quality Department.

2. Calibration Program Required

The supplier shall maintain a calibration program in accordance with MIL-STD-45662A or ANSI Z540-1-1994. All measurement / test equipment must be accompanied by certification that calibration to manufacturer's specifications was performed in accordance with one of the aforementioned standards. This requirement is also applicable to all re-calibrated, repaired, leased, and/or rented measurement / test equipment.

3. Test/Inspection Data Required

The supplier shall furnish a copy of test/inspection data with each shipment. Test/inspection data will contain manufacturer's name and part numbers or HDL part numbers, serial numbers, purchase order number and required test limits as well as actual measured values.

4. Chemical and Physical Test Data Required

The supplier shall include a copy of the chemical and physical test data with each shipment for each part number, lot, or batch as applicable. Test data must reference this purchase order number, applicable specification and part numbers, and contain actual measured values.

5. Record Storage

The supplier shall maintain all applicable test/inspection and contract quality data for a period of not less than five years. HDL shall be allowed access to all applicable data at any time within normal business hours given 48-hour notice.

6. Certificate of Conformance

The supplier shall provide a Certificate of Conformance with each shipment. The certificate shall contain (1) an identification of the material shipped; (2) the specification(s) to which the material was inspected/tested; (3) a statement that the material conforms to purchase order requirements; (4) the HDL purchase order number; (5) the title and signature of the suppliers' authorized agent; (6) the quantity inspected/tested and whether the tests were "go/no go" or quantitative type; and (7) the location of substantiating data for Buyer review if required.

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- 7. Customer Access**
The supplier shall allow HDL personnel and the customers of HDL access to any and all of the suppliers facilities. HDL and its customers may arrive at any time without previously announcing their visit.
- 8. Notice of Changes**
The supplier shall notify HDL, in writing, of any changes in part number or nomenclature that differ from purchase order information prior to shipment. The supplier shall notify the buyer of any proposed changes in design, fabrication method, or process that affects the form, fit, or function of the item, and obtain prior written concurrence from HDL to implement such changes on products to be delivered to HDL. Appropriate identification of those articles on which the change is incorporated shall be required.
- 9. Control of ESD**
The supplier shall practice ESD control when storing, handling, or shipping static sensitive devices. Proper measures shall be taken to ensure that clean, static free bags and containers are used and that parts are clearly labeled stating that they are static sensitive.
- 10. Established Reliability Semi-Conductor/Micro-Electronics Certification and Traceability**
The supplier shall comply with the certification and traceability requirements of MIL-S-19500 and CML-19500 when furnishing, JAN, JANTX, JANTXV and JANS devices to Buyer.
- 11. Shelf-Life Identification**
The supplier shall mark the expiration date on articles covered by this purchase order which are subject to shelf-life deterioration, and not deliver articles with less than 50% of shelf-life remaining at time of receipt by Buyer. Marking of individual containers with cure date, assembly date, or expiration date may be by decal, rubber stamp or tag.
- 12. Control of Raw Materials**
The supplier shall control the quality of their raw materials at incoming inspection. Raw materials used in the manufacture of any product to be delivered under the purchase order must be accompanied by a certificate of conformance and/or physical laboratory analysis to substantiate the conformance of the raw material. The supplier shall be responsible to periodically verify the integrity of the certificates and/or analyses.
- 13. Higher Level Quality Program per MIL-Q-9858A**
The supplier shall maintain a quality program in compliance with the latest specifications of MIL-Q-9858. Compliance with this requirement is subject to review and approval by HDL's Quality Department.
- 14. Solderability**
All parts delivered shall be solderable. Part leads and/or wires shall meet the solderability requirements of ANSI J-STD-002 or equivalent. Printed wiring shall be meet the solderability requirements of ANSI J-STD-003 or equivalent.
- 15. Military Part Certification and Traceability**
The supplier shall comply with the certification and traceability requirements of the applicable military specification when furnishing military parts and/or materials to Buyer.

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16. Printed Wiring per MIL-P-55110

Printed wiring shall be fabricated and tested in accordance with the requirements of MIL-P-55110 for multi-layer and two-sided plated through hole boards, as applicable. In addition to MIL-P-55110 requirements, 100 percent inspection is required on multi-layer boards. A minimum of one test tab for each board or panel shall be solder floated at 260°C for 10 seconds then micro-sectioned and examined for cracks or innerplane separation. Electrical testing of each board for circuit continuity, current carrying capacity, dielectric withstanding voltage, and insulation resistance shall be accomplished. In addition, one board per lot shall be floated on 260°C for 10 seconds, micro-sectioned, and examined for plating cracks.

17. General Requirements for Printed Wiring

Printed wiring shall meet requirements of IPC-A-600, IPC-A-610, and ANSI J-STD-001 (Class 3). Qualification per IPC-RB 276 shall be required only when specifically invoked by the purchase order. X outs are NOT permitted.

18. Control of Filmwork, Drawings, and Electronic Media

Filmwork shall be returned with the delivery of printed wiring boards or panels. Drawings may be returned or destroyed at the supplier's option. Electronic media shall be returned or erased at the supplier's option. Data storage is strictly prohibited. All data shall be controlled during use.

19. Packing and Packaging

All parts shall be packed so as not to be damaged in shipment. Best commercial practices shall be applied. All solderable parts, including printed wiring boards, shall be packaged and preserved to meet the solderability requirements a minimum of two (2) years after the delivery of the products. All non-solderable parts shall be packaged and preserved so as not to degrade in form, fit, function, and/or finish after five (5) years of storage in a climate-controlled environment. Shelf-life sensitive materials shall be so marked.

20. HDL Customer Source Inspection (CSI) Required

HDL customer source inspection is required. Contact the HDL buyer to schedule a CSI date when material is ready for shipment. Do not ship without CSI or CSI waiver.

21. Government Source Inspection (GSI) Required

Government source inspection is required prior to shipment. The supplier shall notify the appropriate Government Representative of this requirement. The supplier shall sign for acceptance of this purchase order agreement and indicate on the face of the purchase order the name and phone number of the appropriate Government Representative and return a copy to HDL. The supplier shall provide notification to the appropriate Government Representative prior to commencement of the work effort under this purchase order.

22. Preference for Domestic Specialty Metals

The supplier furnishing this product must provide a Specialty Metals Certificate of Compliance reflecting all requirements of the contractual performance clause at DFARS 252.225-7014 Alt 1 are met for each part number listed on the purchase order. Any specialty metals (as defined in paragraph (a) of the clause) included in any articles delivered under this purchase order must comply with that clause. The supplier shall flow down the requirements of DFARS 252.225-7014 Alt 1 to all lower tier subcontractors, suppliers and vendors supplying any articles and/or materials delivered under this purchase order that include specialty metals. A sample Specialty Metals Certificate of Compliance is provided at Addendum A to the QRC list.

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- 23. Printed Boards (IPC – 6011/6012)**
The supplier furnishing printed wiring boards shall meet the requirements of IPC-6011/6012 (class and all notes as specified on the drawing).
- 24. Plating, Surface Finishes and Conditioning Requirements (NADCAP)**
The purchase order requires plating, surface finishing or conditioning to be performed by an approved NADCAP (National Aerospace and Defense Contractors Accreditation Program) processor. This requirement, if applicable to the order, must be flowed down to any and all subcontractors, suppliers and/or vendors. A list of NADCAP approved processors can be found at www.eauditnet.com.
- 25. Product Non-Conformance**
Supplier shall notify the HDL Research Lab, Inc. Buyer within five (5) business days of any discovery of nonconforming product. Supplier shall request a Waiver / Deviation from HDL Research Lab, Inc. and receive written authorization prior to shipping any nonconforming materials to HDL Research Lab, Inc.
- 26. Record Retention**
Supplier shall control and retain records and documents which are created by and/or acquired for the purpose of complying with the contract, or maintaining the quality management system for a period of five (5) years minimum.

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ADDENDUM A QUALITY REQUIREMENT CODE 22 SPECIALTY METALS CERTIFICATE OF COMPLIANCE

EACH SUPPLIER OF SPECIALTY METALS SHALL PROVIDE A SPECIFIC CERTIFICATION OF COMPLIANCE ADDRESSING DFARS 252.225-7014 ALT 1, PREFERENCE FOR DOMESTIC SPECIALTY METALS WITH EACH SHIPMENT.

THIS IS AN ESSENTIAL AND INTEGRAL PART OF THE PERFORMANCE REQUIREMENTS ASSOCIATED WITH THE PURCHASE ORDER WHEN INVOKED BY REFERENCE ON THE FACE OF THE ORDER.

THE FORMAT PROVIDED WITH THIS NOTICE MAY BE USED OR A SIMILAR SUPPLIER FORMAT MAY BE USED PROVIDED SPECIFIC REFERENCE TO THE APPLICABLE DFARS CLAUSE IS MADE.

REF: HDL PURCHASE ORDER _____

ANY SPECIALTY METALS PROVIDED UNDER THE REFERENCED PURCHASE ORDER COMPLY WITH DFARS 252.225-7014 ALT 1, PREFERENCE FOR DOMESTIC SPECIALTY METALS.

PREFERENCE FOR DOMESTIC SPECIALTY METALS (JUN 2005)

(a) DEFINITIONS. AS USED IN THE CLAUSE-

- (1) "QUALIFYING COUNTRY"- MEANS ANY COUNTRY LISTED IN SUBSECTION 225.872-1 OF THE DEFENSE FEDERAL ACQUISITION REGULATION SUPPLEMENT.
- (2) "SPECIALTY METALS" MEANS-
 - (i) STEEL
 - (A) WITH A MAXIMUM ALLOY CONTENT EXCEEDING ONE OR MORE OF THE FOLLOWING LIMITS: MANGANESE, 1.65 PERCENT; SILICON, 0.60 PERCENT; OR COPPER, 0.60 PERCENT; OR
 - (B) CONTAINING MORE THAN 0.25 PERCENT OF ANY OF THE FOLLOWING ELEMENTS: ALUMINUM, CHROMIUM, COBALT, COLUMBIUM, MOLYBDENUM, NICKEL, TITANIUM, TUNGSTEN, OR VANADIUM;
 - (ii) METAL ALLOYS CONSISTING OF NICKEL, IRON-NICKEL, AND COBALT BASE ALLOYS CONTAINING A TOTAL OF OTHER ALLOYING METALS (EXCEPT IRON) IN EXCESS OF 10 PERCENT;
 - (iii) TITANIUM AND TITANIUM ALLOYS; OR
 - (iv) ZIRCONIUM AND ZIRCONIUM BASE ALLOYS.

(b) ANY SPECIALTY METALS INCORPORATED IN ARTICLES DELIVERED UNDER THIS CONTRACT SHALL BE MELTED IN THE UNITED STATES OR ITS OUTLYING AREAS.

(c) THIS CLAUSE DOES NOT APPLY TO SPECIALTY METALS MELTED IN A QUALIFYING COUNTRY OR INCORPORATED IN AN ARTICLE MANUFACTURED IN A QUALIFYING COUNTRY.

____ WE COMPLY WITH THE REQUIREMENTS -OR-

____ THE REQUIREMENTS ARE NOT APPLICABLE BECAUSE _____

SUBMITTED,

SIGNATURE

DATE

COMPANY NAME

NAME

TITLE

END OF DOCUMENT

REV 03/13/2006