ASQR-06-02A - Aerospace Supplier Quality Requirements

Approved By _____ Date 6-7-2018

1.0 Purpose

This specification defines the requirements for Mech-Tronics' aerospace suppliers.

2.0 Scope

Applies to the suppliers of material, parts and services used in Mech-Tronics' aerospace products.

3.0 Requirements

Q1) Supplier must provide verification of the product including objective evidence of the product quality (e.g. certificate of compliance, test reports, statistical records, process control).

All certifications related to Special Processes (e.g. Plating, Anodizing, Heat Treat) must state the specification(s) including revision levels of the specification(s) to which the parts were processed.

All certifications related to Raw Materials must include a record of actual physical and chemical material analysis and a certificate of conformance to the applicable material specification(s). The certificate shall contain a list of the applicable specification(s), including revision levels and traceability by heat lot or melt numbers.

All certifications shall include:

A) Name of organization
B) Mech-Tronics Purchase Order Number
C) Drawing number and revision
D) If applicable, specification number(s) and latest revision(s)
E) Quantity
F) If applicable, serial numbers or lot numbers
G) Authentication by an authorized representative of the supplier's quality organization.

Q2) Personnel performing work on product for Mech-Tronics must be competent and qualified for the type of work being performed. (e.g. welder certification)

Q3) Quality management system requirements:
Supplier is to maintain an effective quality system to ensure product and process integrity that is compliant with ISO9001, AS9100 or equivalent. The quality management system is subject to Mech-Tronics review and approval.

Q4) Nonconforming Material:
Nonconforming material will not be accepted by Mech-Tronics unless approved in advance in writing by the Quality Manager. Requests for authorization to ship nonconforming material should be addressed in writing Mech-Tronics' Quality Manager with a full explanation of the nonconformance.
If the supplier suspects nonconforming product has shipped, the supplier must notify Mech-Tronics within 24 hours or the next business day. This notification must include a clear description of the nonconformity, including, as necessary; Purchase Order(s) affected, part number, quantity and date(s) delivered.

Q5) Supplier must notify Mech-Tronics in writing of any changes in product and/or process definition which could impact the form, fit or function and, where required, obtain Mech-Tronics approval.

Q6) Suppliers are required to notify Mech-Tronics of any significant organizational or facility changes such as company name, location or senior management including changes of the supplier's external providers.

Q7) Mech-Tronics, Mech-Tronics' customer and regulatory authorities are afforded the right of entry to all facilities involved in the order to determine and verify the quality of our products and to all applicable quality records.

Q8) Supplier must flow down to the sub-tier suppliers the applicable requirements in this document and the purchasing documents, including key characteristics where required and the use of approved sources for Special Processes as applicable to specific customer requirements. Supplier must apply the appropriate controls to sub-tier suppliers to ensure that requirements are met.

Q9) Suppliers are required to retain quality records related to the production of the item(s) and/or processes ordered on Mech-Tronics' purchase order for a minimum of 11 years unless otherwise specified on the purchase order. Examples of quality records are (but not limited to) records of product/material manufacture, test, inspection (including radiographic film), calibration and acceptance/certification.

Q10) When indicated on a drawing the supplier will monitor key characteristics KEY using statistical process control (SPC). Key characteristics must be demonstrated to be in statistical control with a process capability (Cpk) > 1.33.

Q11) Measuring and Test Equipment:
The supplier shall provide and maintain measuring and test equipment (M&TE) necessary to assure conformance to purchase order requirements. All M&TE shall be calibrated for accuracy at established intervals against standards that have a known valid relationship to the National Institute of Standards and Technology (NIST). If production tooling, jigs or fixtures are used as a media of inspection, this equipment shall also be verified for accuracy at established intervals.

Calibration Systems shall meet the applicable requirements of ISO 10012, ISO 17025 or ANSI/NCSL Z540.3.

If ANSI/NCSL Z540.3 is applicable, the Handbook shall be used as the interpretive guide.
In accordance with the industry standards and guidance referenced above, stated reliability goals, accuracy ratios and significant out of tolerance condition criteria must be established.

1) The Calibration interval analysis methodology used to maintain the reliability of M&TE shall have a stated reliability goal to meet a minimum 95% reliability target for M&TE in-tolerance at the end of their interval schedule.
2) Significant out of tolerance conditions are defined as any M&TE out– of–tolerance condition exceeding 25% of the product tolerance. These conditions require documented review of impact on quality and notification to Mech-Tronics if product received by the Mech-Tronics has been affected.

Q12) Suppliers must certify compliance with DFARS Clause 252.225-7009 Restriction on Acquisition of Certain Articles Containing Specialty Metals, with each shipment. Suppliers are required to flow this clause down to all levels of the supply chain. Evidence of compliance must be kept on file per Requirement Q9 and submitted to Mech-Tronics upon request.

Q13) Much of the technical data is export controlled under ITAR (International Traffic in Arms Regulations) or EAR (Export Administration Regulations). Export of this information in any form is restricted. Suppliers shall not disclose this information in any form to a foreign person entity, or export it from the United States without US Government authority and the express written authorization of Mech-Tronics or our customer. In addition – any supplier accepting such work certifies that they are not on the Denied Persons List or any other list of companies restricted from working on export controlled product. You shall flow down the substance of this notice to all lower tier suppliers where export controlled technical data is involved. It may be necessary for you to return all copies of the technical data provided or certify in writing that the data has been destroyed.

Q14) A First Article Inspection Report (FAIR), in compliance with AS9102 requirements, is required on one (1) part randomly selected from a production lot for each part number. The FAIR must accompany the part with the shipment. The part which the FAIR was performed on must be tagged as “First Article”.
The documentation shall include the drawing with numbered (ballooned) characteristics corresponding to the itemized FAIR report.

FULL FAIR:
A Full FAIR will be required for all incoming parts that meet all of the following criteria:

1) The part is controlled by a Mech-Tronics drawing or a Mech-Tronics Customer designed part.
2) The part is NOT a MIL-SPEC part or a catalog item (e.g. AS, MS or NAS items).
3) The part is the first production lot to be produced for Mech-Tronics by the Supplier or a period of 24 months has elapsed since the previous delivery of the part to Mech-Tronics.

“DELTA” FAIR:
A “Delta” FAIR (a limited scope FAIR of a part which had already previously passed a Full FAIR) will be required when one (1) of the following criteria is met:

1) A design or process change has been made that affects the form, fit or function of the part upon which the previous FAIR was performed.
2) The drawing revision level, manufacturing process or tooling has changed.
3) A change in the manufacturing location.

Q15) Parts received from Mech-Tronics tagged with a FAIR tag must be kept identified throughout the manufacturing process and returned to Mech-Tronics with the tag attached.

Q16) All items with limited shelf life shall be clearly marked with the manufactures name, type of material, shelf life, date of manufacture and expiration date. The shelf life remaining must be a minimum of 6 months at time of shipment to Mech-Tronics unless otherwise specified on the Purchase Order.

Q17) FOD (Foreign Object Debris) Control – Suppliers shall have a FOD control plan for the organization and shall define areas where FOD controls are necessary to ensure FOD free products are delivery to Mech-Tronics. Suppliers shall ensure that appropriate personnel have received FOD awareness training.

For additional information regarding FOD prevention, refer to *National Aerospace Standard NAS 412 - Foreign Object Damage/Foreign Object Debris (FOD) Prevention.*

Q18) If an item on this Purchase Order invokes by reference military specifications, military standards, or other revision controlled requirement documents, the revisions in effect are as of the date of this Purchase Order. The supplier may contact Mech-Tronics for the current revision level.

Q19) Counterfeit part avoidance – Suppliers shall implement and enforce a written Counterfeit Parts Prevention and Control Plan designed to prelude, detect, and remove any counterfeit components or non-compliant material from all Mech-Tronics deliveries. Suppliers shall provide certification showing un-broken traceability from all intermediaries back to the OCM (Original Component Manufacturer) or OEM (Original Equipment Manufacturer).

Q20) In order to satisfy the requests of our customers for Conflict Materials Information we may periodically require information from you regarding the sources of tantalum, tungsten, tin or gold in any products or plating that may contain these items. You must be able to provide the name and country of the smelters in your supply chain when requested and certify they are in compliance with the Wall Street Reform and Consumer Protection Act.

Q21) Suppliers shall be responsible for safeguarding all technical information in accordance with DFARS 252.204-7012, Safeguarding Covered Defense Information and Cyber Incident Reporting.

Q22) Suppliers shall ensure that personnel performing work on product for Mech-Tronics are aware of:
A. their contribution to product or service conformity
B. their contribution to product safety
C. the importance of ethical behavior

Q23) Process and Product Verification: Unless otherwise required by a specification or print requirement, at a minimum, the supplier will inspect all design characteristics per the aerospace sampling plan ANSI / ASQ Z1-4. C = 0
Sampling plans are derived from ANSI/ASQC Z1.4, but are modified to zero defects only for acceptance.

If UNITED TECHNOLOGIES ASQR-01 is called on the Purchase Order,
ASQR-20.1 Supplier Sampling Requirements shall be used in lieu of ANSI / ASQ Z1-4. C = 0
Prior to using ASQR-20.1, 25 consecutive pieces are to be inspected for the characteristic being produced with no nonconformances detected. Historical data (i.e., in-process or final inspection record of 25 consecutive conforming pieces) may be used to meet this requirement.

Q24) All electrical / electronic manufacturers and distributers are required to maintain access to GIDEP (Government IndustrData Exchange Program). It is the responsibility of the manufacturer / distributor to ensure all products supplied to Mech-Tronics at the time of purchase order fulfillment are not affected by a GIDEP alert. When GIDEP initiates an alert for previously deliver product, the manufacturer / distributer will notify Mech-Tronics in writing with the following information:
Manufacturer's part number
P.O. material was delivered against
GIDEP alert number defining product issue / alert

Q25) Suppliers shall provide test specimens for design approval, inspection / verification, investigation, or auditing when the purchase order has a specific line item for such.

Q26) Unless otherwise specified, procedures shall be implemented to ensure that eye examinations, including visual acuity and color vision, as applicable, are administered by a medically qualified / trained person to all individuals performing visual inspection, other product acceptance activities and/or M&TE calibration that require visual acuity.

- Intervals shall not exceed one year.
- Individuals shall be tested in at least one eye, either corrected or uncorrected.
- Color Perception testing is required one time only. Individuals shall be capable of adequately distinguishing and differentiating colors used in the method for which certification is required, the process being performed or inspection activity.
- Records shall be retained for each individual.

***Note**: Vision tests may be substituted for the options listed in the Table 6 providing the equivalence is verified and documented by a licensed optometrist or ophthalmologist.*

Table 6: Minimum Vision Requirements

Individual performing …	**Shall be compliant with minimum vision requirements of**
Visual inspection (i.e. calibration, non-weld, in-process, layout, dimensional)	Near vision requirements of Snellen 14/18, (20/30), or Jaeger 2
Visual Inspections on Welds	American Welding Society Standard(AWS) D17.1
Nondestructive Testing (NDT)	Aerospace Industries Association National Aerospace Standard (AIA/NAS) 410