

Quality Code Matrix Appendix A for 8.4.3		
Code	Subject	Requirements
1	Quality System Requirements	1.1) The supplier must meet all applicable requirements of Arconic, Washington Operations (WO), Purchasing requirements located in Q-107.4
		1.2) The supplier is responsible for meeting all requirements of specifications, drawings and other purchase order instructions relating to the following:
		a) Requirements for approval of product or process
		b) Personnel qualifications
		c) Requirements for inspection, testing and certification
		1.3) Supplier procedure shall include what production records, test records and test samples are kept and where the records and test samples are stored for final retention.
		1.4) Supplier procedure shall include the minimum time each record and test samples are kept.
		1.5) Supplier shall retain purchaser's records for a minimum of 10 years unless part(s) are Flight Critical, then retention is 40 years.
		1.6) The supplier shall notify Arconic, WO of any change in product and/or process definition.
		1.7) If fixed practices are in place approval of any product and/or process changes must be granted in writing by Arconic, WO prior to making the change.
		1.8) All requirements of 8.4.3 and the purchase order must be flowed down to any sub-tier supplier.
		1.9) If, in the event that during the purchase order review the supplier determines that the requirements of the purchase order or specification cannot be met, the supplier must: (1) notify Arconic, WO and (2) prior to processing obtain revised purchase order and/or instructions in writing stating services to be performed that are within capabilities of the sub-tier.

		1.10) The supplier shall be responsible for meeting any additional requirements identified by Q Code(s) on the purchase order. The supplier must notify Arconic, WO in writing of non-conformance(s) prior to shipment
		1.11) For purchased products Arconic, WO must issue in writing approval to ship any nonconforming material.
		1.12) The supplier shall allow right of access by Arconic, WO, its customers and all appropriate regulatory or governmental authorities the right to enter supplier's facility at reasonable times to inspect the facility, goods, materials, applicable records and any property of Purchaser covered by this order. Supplier shall ensure that employees are aware of their contribution to product conformity, product safety, and the importance of ethical behavior.
		1.13) Supplier must notify Arconic, WO of any changes to any significant personnel, such as Management, Ownership, Nadcap and or Quality Systems Certifications, or any other significant personnel.
		1.14) Acceptance Authority Media (AAM). Suppliers shall comply with the AS/EN/JISQ 9100 requirements and 14CFR part 21.2. Supplier shall, with in its organization and its supply chain, ensure that the use of AAM is clearly defined within its Quality Management System.
		1.15) NDT process materials shall be acquired from supplier per latest revision of AMS2644.
		1.16) Supplier shall have a process that detects and prevents the procurement and delivery of counterfeit material.
		1.17) No work shall be subcontracted without prior written approval from Arconic, WO. Suppliers must flow down all applicable requirements in the purchasing document , including key characteristics when required.
		1.18) Foreign Object Debris&/or Damage (FOD) - The supplier shall maintain a FOD prevention program at a minimum the following: Design &/or Manufacturing Process Review, Performance Measurement, Training, Material Handling & Parts Protection, Housekeeping, Tool Accountability, Hardware Accountability, Lost Items, Physical Entry Control into FOD Critical Areas and FOD Focal Points

		1.19) Supplier shall ensure they are aware of: their contribution to product or service conformity; their contribution to product safety; The importance of ethical behavior.
2	Gage & Instrument Calibration	A) Gage and instrument calibration procedures and system must conform to ISO-10012 & ISO/IEC17025
		B) The supplier shall have a calibration procedure system that meets ISO-10012 specification for all process control equipment and recording instruments.
3	Raw Material Certification	Certifications shall state "This material was produced by the process approved by Arconic, WO".
4	100% Dimensional Inspection	100% dimensional inspection required unless your sampling plan has been approved in writing by Arconic, WO Quality. Copies of the inspection reports shall be submitted with each shipment
5	First Article Inspection	First Article Inspection shall be performed in accordance with latest revision of AS9102
6	Nonconformance	If at any time the supplier detects a process violation, purchase order noncompliance, raw material nonconformance or part nonconformance, Arconic, WO shall be informed as soon as practicable. Nonconforming material or parts shall be segregated and tagged as nonconforming. Tags shall indicate the nature of the nonconformance. Root cause corrective action shall be determined and submitted within 10 working days of de detection of the nonconformance unless otherwise agreed upon by Arconic, WO Quality and/or Outside Conversion Coordinator.
		NOTE: Critical nonconformances must be addressed within 48 hours when so directed by Arconic, WO Quality and/or Outside Conversion Coordinator. Arconic, WO disposition shall be obtained prior to release.
7	Software Quality	Supplier's Software Quality System shall have approval of Arconic, WO Quality.
8	Heat Treatment/Instrumentation	Titanium supplier must comply with and certify to the current revision of AMS-H-81200 and AMS 2750. The heat treatment suppliers must be Nadcap certified.
9	Customer Source Inspection	Arconic, WO inspection/witness is required on this purchase order. Contact Arconic, WO five (5) working days prior to performing services as required by the purchase order to arrange for source inspection/witness of operations or as required by purchase order or conversion release.

10	Arconic, WO Customer Source Inspection	Arconic, WO's customer source inspection/witness is required on this purchase order. Contact Arconic, WO five (5) working days prior to performing services as required by this purchase order to arrange for source inspection/witness of operations or as required by purchase order or conversion release.
11	Change in Significant Personnel	Supplier must notify Arconic, WO of significant changes to personnel (General Manager, Quality Manager, NDT Level III personnel) and any additional significant personnel
12	Raw Material Inspection	100% inspection required unless your inspection sampling plan has been approved by Arconic, WO Quality. Copies of the inspection reports shall be submitted with each shipment
13	Approving & Implementing Specs & Operating Procedures	A) Supplier procedures for approving and implementing specifications & operating procedures shall include how all changes or additions are documented and controlled
		B) Supplier procedures shall include how obsolete specifications & operating procedures are removed from service and how current ones are put into service
		C) Supplier procedures shall include how Arconic, WO is notified of all significant changes in the processing of material.
14	Safran GRF-003	Supplier must complete Safran GRF-003 or equivalent and must be approved by Arconic, WO Quality
15	Approving & Disqualifying Suppliers	A) Supplier shall maintain a list of approved suppliers
		B) Supplier shall have a procedure for approving suppliers
		C) Supplier shall have a procedure for disqualifying and requalifying suppliers

16	Procedure for Certification of Raw Material	A) Supplier procedure shall include how production and test records are reviewed prior to the material being shipped
		B) Supplier procedure shall include how the certification is reviewed to ensure all the required information is included
		C) Supplier procedure shall include who is authorized to approve the material for shipment and to sign the certification
17	First Time Raw Material Inspection	A) The first time raw material inspection report shall contain all applicable characteristics required by purchase order and/or purchase specification. The report shall be dated and signed by the person performing the inspection and testing and shall be verified by another person. The first time raw material shall be tagged, "First Time Raw Material."
		B) The first raw material report shall be approved by a Arconic, WO representative prior to the supplier becoming an approved supplier of the raw material. A copy of the first time raw material report shall be forwarded to Arconic, WO Quality when the finished material is shipped.
18	Statistical Process Control	A) The supplier shall have a statistical quality control procedure approved by Arconic, WO
		B) The object of the statistical process control procedure is to continually reduce variation in the process. A CPK of 1.33 is considered the minimum acceptable level for any key characteristic of the material
		C) Where SPC is required, copies of the control charts, the control plan and supporting documentation shall be available upon request
		D) The object of the statistical process control procedure is to continually reduce variation in the process. A CPK of 1.33 is considered the minimum acceptable level for any key characteristic of the material
		E) Where SPC is required, copies of the control charts, the control plan and supporting documentation shall be available upon request.

19	Test Laboratory Control	The supplier shall have a test laboratory or use a test laboratory that is Nadcap approved.
20	Calibration Procedure	<p>The supplier shall have a calibration procedure and system that meets ISO-10012 & ISO/IEC17025 specifications for all process control equipment and recording instruments 3rd Party Calibration Statement of Work Purchasing Terms and Conditions</p> <ul style="list-style-type: none"> •Payment terms of "Net 90 EOAP" (note that "EOAP" has specific legal meaning, which does apply) •Must provide Arconic with a current copy of calibration supplier's W-9 form <p>General Requirements (apply to all calibrations) Note: "M&TE" = Measurement & Test Equipment and refers to anything that gets calibrated</p> <ul style="list-style-type: none"> •Calibrations must be covered by ISO 17025 accreditation (if a calibration type is not covered, notify Arconic's Calibration Coordinator of the situation; If possible, quote the outsourcing of the calibration to an accredited facility) •Each level of calibration must be done by a standard of greater accuracy than required of the component being calibrated; if a minimum required uncertainty ratio is not defined elsewhere, the default value is 4:1 •Calibration standards must only be employed for calibration points within the certified range of the standard •Any calibration event where an "As Found" reading is "Out of Tolerance" must be communicated to the Arconic Calibration Coordinator (or designee) via e-mail, along with a copy of the resultant calibration report •Sticker shall be applied to calibrated M&TE identifying: <ul style="list-style-type: none"> *GageID (M&TE equipment ID; use Arconic's current ID system) *calibration agency *identity of technician performing calibration *date of calibration *next due date •Calibrations performed offsite from Arconic must be processed and tool returned within 7 calendar days from receipt (failing M&TE, M&TE needing repair, and calibrations sent to external calibration facilities exempted) •Completed calibration reports shall be either e-mailed to the Arconic Calibration Coordinator (or designee) or made available in an online report within 2 business days of the calibration event. If revisions are made to a previously issued report, Arconic Calibration Coordinator (or designee) must be e-mailed to notify of the change in the report. •Repair quotes for M&TE needing repair must be submitted to Arconic Calibration Coordinator and approved prior to processing repair •M&TE containing internal batteries must have the voltage checked prior to taking readings during calibration event (re-calibrations after repairs exempted); batteries with voltage

readings failing to deliver at least nominal specified voltage (e.g. 1.5V, 3V, 5V, 9V etc) shall be replaced (Note: rechargeable batteries exempt)

- Calibration frequency default interval shall be 12 months unless a tighter specific interval is stated in section 20.1 or otherwise communicated to calibration supplier for specific tools and tool types
- Travel and shipping for on-site pick-up/return of items not to be invoiced without prior agreement, in writing
- Calibration reports must include all of the following:
 - * GageID (M&TE equipment ID; use Arconic's current ID system)
 - * Tolerance (accuracy)
 - * Agency performing calibration
 - * Calibration Date
 - * Next Due Date
 - * Identification of standards used to perform calibration, including last calibration date and next due date
 - * Restrictions (if any apply)
 - * "Nominal", "As Found" reading, and "As Left" reading at each calibration point
 - * Reporting of ambient temperature and humidity conditions at the time and place of calibration, as measured by calibrated standard(s)
 - * Procedure used to perform calibration (copies of procedures must be provided to Arconic Calibration Coordinator upon request)
 - * Name of technician performing calibration
 - * As Received tool condition (e.g. "In Tolerance", "Out of Tolerance" or "Inoperable")
 - * As Left tool condition (e.g. "In Tolerance" or "Rejected")
 - * Statement claiming ISO 17025 accreditation coverage of the calibration
 - * Statement claiming traceability to SI units through NIST or equivalent national or international standards

20.1) Special Calibration Requirements for Specific Tool Types

These are minimum requirements. Exceeding these minimum requirements is also acceptable. Individual tools may have requirements that differ from the below, which must be communicated between calibration provider and Arconic Quality representative receiving the calibration reports.

Pressure Gages

- 6 month calibration interval
- 3 or more calibration points included
- Calibrated range includes zero point through full scale
- ±2 PSI accuracy

Thermohygrometers

- 12 month calibration interval
- Calibrated range includes 70-100°F
- ±5°F accuracy for temperature
- Humidity range calibrated includes 50%-70%RH
- ±5%RH accuracy for humidity

Light Meters

- 6 month calibration interval
- 460-675nm (Visible) calibrated range includes: 1-190 foot-candles
- 3 or more calibration points included
- ±5% accuracy

UV Meters

- 6 month calibration interval
- 320-400nm (UV-A) calibration range includes: 1000, 5000 microW/cm²
- 3 or more calibration points included
- ±5% accuracy

±2% accuracy

Timers

- 3 month calibration interval
- Calibrated range includes 1-20 minutes
- ±2 second accuracy

Infrared Thermometer

- 12 month calibration interval
- Calibrated range includes 75-200°F
- ±5°F accuracy

Infrared Source

- 12 month calibration interval
- Calibrated range includes 75-250°F
- ±2°F accuracy

Transparent Slide with Dimensions (excluding stage micrometers)

- 12 month calibration interval
- ±10% accuracy

Thermometer

- 6 month calibration interval
- ±2°F accuracy

Temperature Controller

- 3 month calibration interval
- Calibrated points include min. and max. of operating range plus a mid-point

- ±2°F accuracy
- Sensitivity to change of input by 1°F checked for each channel
- Test standard used must be calibrated at least quarterly to ±1.0°F accuracy at 6 or more points on each input/output used
- State compliance to AMS 2750

Hi-Limit/Overtemperature Controller

- 3 month calibration interval
- Alarm function tested to trigger within 10°F of target
- ±10°F accuracy
- Test standard used must be calibrated at least quarterly to ±1.0°F accuracy at 6 or more points on each input/output used
- State compliance to AMS 2750

Chart Recorder

- 3 month calibration interval
- Calibration points include operating range min. and max. plus a midpoint on each channel
- ±2°F accuracy
- Sensitivity to change of input by 1°F checked on each channel
- Time/Date checked within 5 min. of www.time.gov
- Test standard used must be calibrated at least quarterly to ±1.0°F accuracy at 6 or more points on each input/output used

Fluke 714B

- 3 month calibration interval
- ±1.0°F accuracy
- Calibration must be performed in laboratory conditions with controlled and monitored temperature and humidity with at least 1 hour acclimation prior to start of calibration
- Test standard used must be a Fluke Multi-Function Product Calibrator meeting AMS 2750 requirements for a Secondary Standard instrument (including 12 month maximum calibration interval requirement)
- Calibration must include both Type K and N thermocouple types for both measure and source function
- Calibration points must include 0.0°F through 2000.0°F at 100°F increments

		<ul style="list-style-type: none"> •Sensitivity to change of input by 0.1°F must be checked on each thermocouple type and each function (source/measure) •Excel file spreadsheet containing correction factors (opposite sign of deviation/error) for each input at each calibration point must be included with calibration report <p>AMS 2750 Temperature Uniformity Survey Test Instrument</p> <ul style="list-style-type: none"> •3 month calibration interval •±1.0°F accuracy •Calibration must be performed in laboratory conditions with controlled and monitored temperature and humidity with at least 1 hour acclimation prior to start of calibration •Test standard used must be a Fluke Multi-Function Product Calibrator meeting AMS 2750 requirements for a Secondary Standard instrument (including 12 month maximum calibration interval requirement) •Calibration must include every channel represented by available thermocouple plug on test instrument •Calibration points must include 0.0°F through 2000.0°F at 100°F increments •Sensitivity to change of input by 0.1°F must be checked on each channel •Excel file spreadsheet containing correction factors (opposite sign of deviation/error) for each input at each calibration point must be included with calibration report
21	Corrective Actions	The supplier shall have a Corrective Action procedure that shall identify and correct errors and improve process capability.
22	In-Process Audits	A) The supplier shall monitor the effectiveness of their process by conducting periodic audits
		B) The audit procedure and schedule shall be approved by executive management to assure independence and to establish the effectiveness of the system.

23	Buyer Evaluation	Arconic, WO's customer has the right of access to supplier facilities when accompanied by Arconic, WO personnel
24	Source Verification by Customer	Where specified in the contract, Arconic, WO's customer or his representative shall be afforded the right to verify at source or upon receipt that purchased product conforms to specified requirements. Verification by the customer shall not absolve the supplier of the responsibility to provide acceptable product nor shall it preclude subsequent rejection.
25	Customer Verification Limitation	When Arconic, WO's customer or their representative elects to carry out verification at the supplier's plant, such verification shall not be used by the supplier as evidence of effective control of quality by the supplier
26	Quality Plan	A quality plan shall be prepared and submitted for Arconic, WO approval. Once developed, any deviation from the plan must be reported immediately to Arconic, WO.
27	Arconic, WO Observation	A) Arconic, WO observation required - processing shall not take place unless observed by a qualified Arconic, WO employee
		B) Arconic, WO source inspection required
28	Lab - Rolls Royce Approval	Laboratory shall be approved by Rolls Royce before laboratory work is performed
29	Lab - Pratt & Whitney Approval	Laboratory shall be approved by Pratt & Whitney before laboratory work is performed
30	ASTM	All testing shall be in accordance with applicable ASTM specification

31	Tensile Test	Tensile testing must be conducted at a strain rate of
32	Calibration Procedures	Written calibration procedures must be sent to Arconic, WO for all equipment or gages that are calibrated under this order. Any revision or change in procedure must be approved by Arconic, WO Quality
33	As Found - As Left	All calibration shall be conducted in accordance with the latest revision of ISO-10012 & ISO/IEC17025, including "As found" and "As left" conditions.
34	Method of Calibration - ASTM	Method of calibration shall be in accordance with the latest revision of all applicable ASTM specifications
35	Calibration Traceability	All verification devices and/or standards utilized shall be traceable to NIST and a copy of the certification shall be provided to Arconic, WO with calibration documentation
36	Standards of Change	Changes or revisions of industry standards shall be the responsibility of the company performing the calibration
37	Metal Assessment	Must certify that material supplied is free from radioactive contamination. Radioactivity is defined as 0.19uSv(microsieverts) and above. Background levels in the United States range from 0.05 to 0.15 uSv
38	Quality Manual	Quality Manual must be in English
39	Acceptance Sampling	Where acceptance sampling is performed and the customer prior approval of the sampling plan, the plan shall be submitted to Arconic, WO for customer approval

40	Personnel Qualification	Personnel shall be qualified to Special Processes in accordance with appropriate specifications and industry standards. Evidence of qualification shall be provided
41	Changes	Arconic, WO shall be notified in advance of changes in product/process definition and obtain written approval
42	Right of Access	Arconic, WO's, customers and Regulatory authorities shall have the right of access to all facilities involved in the order and to all applicable records
43	Audit	Annual audit required
44	Domestically Melted Material	Material must be melted domestically and certification must state that material has been melted in the United States
45	GE Lab Approval	The supplier shall have a test laboratory or use a test laboratory that is GE S400 approved
46	Government Property	The supplier shall adhere to all requirements of FAR52.245.1 including but not limited to proper storage, handling and the extent of liability for loss, theft, damage or destruction of Government Property
47	FAA-PMA Markings	The supplier hereby acknowledges that the parts produced under this order are intended for use under Boeing's Federal Aviation Administration (FAA) issued Production Certificate 700 and no articles (or constituent parts thereof) or accompanying paperwork (e.g., packages, shippers, etc.) contain any Federal Aviation Administration-Parts Manufacturer Approval (FAA-PMA) markings."
48	Delegation of Final Inspection Authority	Supplier is delegated authority to perform final inspection activity of product for Arconic, WO. Supplier remains responsible for furnishing product that conform to requirements of this contract. Supplier is subject to any additional requirements or limitations related to this authority as communicated by Arconic, WO. Authority of final inspection activity may be revoked by Arconic, WO at anytime. Arconic, WO reserves the right to perform inspection and product verification on product affected by this authority. Suppliers process for performing Arconic, WO final inspection activity is subject to review by Arconic, WO at anytime.