

<b>DEPARTMENT:</b> <b>QUALITY</b>	<b>Doc. No.:</b> <b>8.4.3</b>
<b>TITLE:</b> <b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b> 01/20/2017 <b>Date Revised:</b> 04/01/2024

**Purpose:** This procedure provides a method for flowing down requirements to suppliers.

**Scope:** Quality Management System for RTI Advanced Forming Inc., which includes but not limited to ISO 9001 and AS9100 standards.

### Reference Documents

Q107.4 Purchasing  
Q-108.1AFI Corrective Actions  
Appendix A for 8.4.3. Quality Code Matrix

## 1. Application

- 1.1. Purchase order/Conversion releases issued to RTI Advanced Forming Inc. suppliers shall contain Code 1, where applicable. These may contain additional codes listing other requirements that apply.

## 2. Responsibility

- 2.1. The Quality system requirements for the supplier will be identified in Code 1 for that supplier on the Appendix A Quality Code Matrix.
- 2.2. Quality and/or designee is responsible for the flow down of RTI Advanced Forming Inc. and/or customer/government requirements defined by this procedure. At the time of issuance of the purchase order/conversion release the applicable codes and descriptions shall be added.
- 2.3. By accepting the purchase order, the supplier/contractor shall also be indicating that they accept all identified flow downs.
- 2.4. The supplier is responsible for meeting requirements of appendix A code 1 and any other applicable codes that are unique to their process.
  - 2.4.1. The supplier shall tag all non-conforming material with the appropriate information, before shipment to RTI Advanced Forming Inc. Quality or designee will determine if any additional information is needed from the supplier.

## 3. Flow down

### 3.1. Characteristic Flow down

Where a characteristic is to be flowed down to a supplier, the characteristic shall be documented on the Purchase Order/Conversion Release. A complete description of the characteristic and what is expected from the supplier shall be detailed.

### 3.2. System Flow downs

In addition to Code 1, Howmet shall also flow down Quality Systems and/or Government Requirements to the extent necessary to ensure that characteristics not verifiable upon receipt are adequately controlled by the supplier. This shall be done via the Purchase Order/Conversion Release.

### 3.3. Responsibility

Quality and/or designee will be responsible for the administration of this procedure.

<b>DEPARTMENT:</b> <b>QUALITY</b>	<b>Doc. No.:</b> <b>8.4.3</b>
<b>TITLE:</b> <b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b> 01/20/2017 <b>Date Revised:</b> 04/01/2024

**4. Codes**

4.1. The supplier requirements matrix details codes which may be flowed down (See Attached Appendix A, QCode Matrix).

**5. Country of Origin**


5.1. If requested, supplier shall disclose to RTI Advanced Forming Inc. on an annual basis on a conflict minerals reporting template if any material contains tin, tantalum, tungsten or gold (“3TGs”) that is necessary to the functionality or production of such material manufactured by you or supplied by you to RTI Advanced Forming Inc. and use commercially reasonable efforts to conduct a reasonable country of origin inquiry to determine the country of origin of 3TGs. Supplier further agrees to provide any additional documentation requested by RTI to ensure compliance with Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act (the “Act”).

5.2. If supplier identifies that the country of origin of the 3TGs is the Democratic Republic of the Congo or its adjoining countries, Angola, Burundi, Central African Republic, Rwanda, South Sudan, Tanzania, Uganda, and Zambia, then it shall use commercially reasonable efforts to conduct and assist RTI Advanced Forming Inc. in conducting due diligence on the chain of custody of the source of the 3TGs for the purpose of identifying the smelter of those 3TGs. In addition, supplier agrees to require of its lower tier sellers this same obligation.

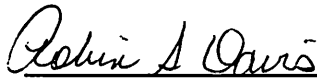
UNCONTROLLED

<b>DEPARTMENT:</b> QUALITY	<b>Doc. No.:</b> 8.4.3
<b>TITLE:</b> Flow Down of Customer Quality System Requirements	<b>Date Issued:</b> 01/20/2017 <b>Date Revised:</b> 04/01/2024

Approved by:

  
 \_\_\_\_\_  
 Angela Blanchard  
 Quality Manager

04/08/2024  
 Date

  
 \_\_\_\_\_  
 Robin S. Davis  
 Procurement Manager

4/8/2024  
 Date

  
 \_\_\_\_\_  
 Jamie Weber  
 Supply Chain Manager

04-08-2024  
 Date

<b>DEPARTMENT:</b> <b>QUALITY</b>	<b>Doc. No.:</b> <b>8.4.3</b>
<b>TITLE:</b> <b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b> 01/20/2017 <b>Date Revised:</b> 04/01/2024

**CHANGE HISTORY:**

This is a newly issued specification dated 1/20/2017, formerly known as Q-023.

3/16/2018 – Revised by Bradon Hayes to add updated appendix A and update company name throughout document. BH

4/18/2019 – Revised by Brandon Hayes to add updated appendix A, removed Quality assurance from section 4.2 and replaced with “Quality and or designee”. All references to Q-203 as the flowdown matrix were removed and replaced with Appendix A Quality Code Matrix. BH

9/10/2020 – Revised by Paul Elliott as follows:

- Removed multiple documents from Reference Documents section and added Q107.4
- Replaced references to variants of “Arconic” with “RTI Advanced Forming Inc.”
- Revised sections 4.4 and 4.4.1
- Removed section 4.4.2
- Made slight wording changes to various Q-Codes in Appendix A
- Made signification additions and slight modifications to Q-Code 20.1 in Appendix A

02/21/2022 – Appendix A Revised by Supplier Q-Code Review Team (Shannon Robinson, William Knowles, Stephanie Ward, Jeremy Busse-Jones, and Paul Brawley), the following changes have been made:

- Reworded Code 1.2 (Incorporated Code 13 into 1.2)
- Reworded Code 1.5
- Reformatted Code 1.9
- Revised Code 1.13 (Incorporated Code 11 into 1.13)
- New Code 1.20 (Incorporated Code 6 into 1.20)
- New Code 1.21
- Revised Code 7 to include DPD statement
- Reworded Code 38
- Removed Code 47 and 48
- Added Codes 49, 50, 51 and 52
- Removed rows for Codes that were removed

Revised 03/28/2024- Originated by Shane Ultsch, the following changes have been made:

- Updated appendix A to current Q codes.
- Removed “critical” from section 3.1.
- Removed “Quality Engineer” and replaced with “Quality” in section 2.4.1.
- Replaced “Arconic” with “Howmet” throughout.
- Updated titles on signature page to current.
- Section 3.3 removed Procurement and added Quality “and/or designee”.

<b>DEPARTMENT:</b> <b>QUALITY</b>	<b>Doc. No.:</b> <b>8.4.3</b>
<b>TITLE:</b> <b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b> 01/20/2017 <b>Date Revised:</b> 04/01/2024

### Quality Code Matrix Appendix A for 8.4.3

Code	Subject	Requirements
1	Quality System Requirements	<b>1.1)</b> The supplier must meet all applicable requirements of Howmet, Washington Operations (WO), Purchasing requirements located in Q-107.4
		<b>1.2)</b> The supplier is responsible for meeting all requirements of specifications, drawings and other purchase order instructions relating to the following:
		<b>a)</b> Requirements for approval of product or process
		<b>b)</b> Personnel qualifications
		<b>c)</b> Requirements for inspection, testing and certification
		<b>1.3)</b> 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.
		<b>1.4)</b> Supplier procedure shall include the minimum time each record and test samples are kept.
		<b>1.5)</b> Supplier shall retain purchaser's records for a minimum of 10 years unless part(s) are Flight Critical, then retention is 40 years.
		<b>1.6)</b> The supplier shall notify Howmet, WO of any change in product and/or process definition.
		<b>1.7)</b> If fixed practices are in place approval of any product and/or process changes must be granted in writing by Howmet, WO prior to making the change.
<b>1.8)</b> All requirements of 8.4.3 and the purchase order must be flowed down to any sub-tier supplier.		
<b>1.9)</b> 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 Howmet, 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.		
<b>1.10)</b> The supplier shall be responsible for meeting any additional requirements identified by Q Code(s) on the purchase order. The supplier must notify Howmet, WO in writing of non-conformance(s) prior to shipment		

<b>DEPARTMENT:</b>	<b>QUALITY</b>	<b>Doc. No.:</b>	<b>8.4.3</b>
<b>TITLE:</b>	<b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b>	<b>01/20/2017</b>
		<b>Date Revised:</b>	<b>04/01/2024</b>

		<b>1.11)</b> For purchased products Howmet, WO must issue in writing approval to ship any nonconforming material.
		<b>1.12)</b> The supplier shall allow right of access by Howmet, 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.
		<b>1.13)</b> Supplier must notify Howmet, WO of any changes to any significant personnel, such as Management, Ownership, Nadcap and or Quality Systems Certifications, or any other significant personnel.
		<b>1.14) Acceptance Authority Media (AAM).</b> 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.
		<b>1.16)</b> Supplier shall have a process that detects and prevents the procurement and delivery of counterfeit material.
		<b>1.17)</b> No work shall be subcontracted without prior written approval from Howmet, WO. Suppliers must flow down all applicalbe requirements in the purchasing document , including key characteristics when required.
		<b>1.18) Foreign Object Debris&amp;/or Damage (FOD) -</b> 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
		<b>1.19)</b> Supplier shall ensure they are aware of: their contribution to product or service conformity; their contribution to product safety; The importance of ethical behavior.
<b>2</b>	<b>Gage &amp; Instrument Calibration</b>	<b>A)</b> Gage and instrument calibration procedures and system must conform to ISO-10012 & ISO/IEC17025
		<b>B)</b> The supplier shall have a calibration procedure system that meets ISO-10012 specification for all process control equipment and recording instruments.
<b>3</b>	<b>Raw Material Certification</b>	Certifications shall state "This material was produced by the process approved by Howmet, WO".

<b>DEPARTMENT:</b>	<b>QUALITY</b>	<b>Doc. No.:</b>	<b>8.4.3</b>
<b>TITLE:</b>	<b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b>	<b>01/20/2017</b>
		<b>Date Revised:</b>	<b>04/01/2024</b>

4	<b>100% Dimensional Inspection</b>	100% dimensional inspection required unless your sampling plan has been approved in writing by Howmet, WO Quality. Copies of the inspection reports shall be submitted with each shipment
5	<b>First Article Inspection</b>	First Article Inspection shall be performed in accordance with latest revision of AS9102
6	<b>Nonconformance</b>	If at any time the supplier detects a process violation, purchase order noncompliance, raw material nonconformance or part nonconformance, Howmet, 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 Howmet, WO Quality and/or Outside Conversion Coordinator.
		<b>NOTE: Critical nonconformances must be addressed within 48 hours when so directed by Howmet, WO Quality and/or Outside Conversion Coordinator. Howmet, WO disposition shall be obtained prior to release.</b>
7	<b>Software Quality</b>	Supplier's Software Quality System shall have approval of Howmet, WO Quality.
8	<b>Heat Treatment/Instrumentation</b>	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	<b>Customer Source Inspection</b>	Howmet, WO inspection/witness is required on this purchase order. Contact Howmet, 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	<b>Howmet, WO Customer Source Inspection</b>	Howmet, WO's customer source inspection/witness is required on this purchase order. Contact Howmet, 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	<b>Change in Significant Personnel</b>	Supplier must notify Howmet, WO of significant changes to personnel (General Manager, Quality Manager, NDT Level III personnel) and any additional significant personnel
12	<b>Raw Material Inspection</b>	100% inspection required unless your inspection sampling plan has been approved by Howmet, WO Quality. Copies of the inspection reports shall be submitted with each shipment

<b>DEPARTMENT:</b> <b>QUALITY</b>	<b>Doc. No.:</b> <b>8.4.3</b>
<b>TITLE:</b> <b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b> 01/20/2017 <b>Date Revised:</b> 04/01/2024

13	<b>Approving &amp; Implementing Specs &amp; Operating Procedures</b>	<b>A)</b> Supplier procedures for approving and implementing specifications & operating procedures shall include how all changes or additions are documented and controlled
		<b>B)</b> Supplier procedures shall include how obsolete specifications & operating procedures are removed from service and how current ones are put into service
		<b>C)</b> Supplier procedures shall include how Howmet, WO is notified of all significant changes in the processing of material.
14	<b>Safran GRF-003</b>	Supplier must complete Safran GRF-003 or equivalent and must be approved by Howmet, WO Quality
15	<b>Approving &amp; Disqualifying Suppliers</b>	<b>A)</b> Supplier shall maintain a list of approved suppliers
		<b>B)</b> Supplier shall have a procedure for approving suppliers
		<b>C)</b> Supplier shall have a procedure for disqualifying and requalifying suppliers
16	<b>Procedure for Certification of Raw Material</b>	<b>A)</b> Supplier procedure shall include how production and test records are reviewed prior to the material being shipped
		<b>B)</b> Supplier procedure shall include how the certification is reviewed to ensure all the required information is included
		<b>C)</b> Supplier procedure shall include who is authorized to approve the material for shipment and to sign the certification
17	<b>First Time Raw Material Inspection</b>	<b>A)</b> 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>DEPARTMENT:</b> <b>QUALITY</b>	<b>Doc. No.:</b> <b>8.4.3</b>
<b>TITLE:</b> <b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b> 01/20/2017 <b>Date Revised:</b> 04/01/2024

		<b>B)</b> The first raw material report shall be approved by a Howmet, 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 Howmet, WO Quality when the finished material is shipped.
<b>18</b>	<b>Statistical Process Control</b>	<b>A)</b> The supplier shall have a statistical quality control procedure approved by Howmet, WO
		<b>B)</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
		<b>C)</b> Where SPC is required, copies of the control charts, the control plan and supporting documentation shall be available upon request
		<b>D)</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
		<b>E)</b> Where SPC is required, copies of the control charts, the control plan and supporting documentation shall be available upon request.
<b>19</b>	<b>Test Laboratory Control</b>	The supplier shall have a test laboratory or use a test laboratory that is Nadcap approved.

<b>DEPARTMENT:</b> <b>QUALITY</b>	<b>Doc. No.:</b> <b>8.4.3</b>
<b>TITLE:</b> <b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b> 01/20/2017 <b>Date Revised:</b> 04/01/2024

<b>20</b>	<b>Calibration Procedure</b>	<p>The supplier shall have a calibration procedure and system that meets ISO-10012 &amp; 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"> <li>•Payment terms of "Net 90 EOAP" (note that "EOAP" has specific legal meaning, which does apply)</li> <li>•Must provide Howmet with a current copy of calibration supplier's W-9 form</li> </ul> <p>General Requirements (apply to all calibrations) Note: "M&amp;TE" = Measurement &amp; Test Equipment and refers to anything that gets calibrated</p> <ul style="list-style-type: none"> <li>•Calibrations must be covered by ISO 17025 accreditation (if a calibration type is not covered, notify Howmet's Calibration Coordinator of the situation; If possible, quote the outsourcing of the calibration to an accredited facility)</li> <li>•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</li> <li>•Calibration standards must only be employed for calibration points within the certified range of the standard</li> <li>•Any calibration event where an "As Found" reading is "Out of Tolerance" must be communicated to the Howmet Calibration Coordinator (or designee) via e-mail, along with a copy of the resultant calibration report</li> <li>•Sticker shall be applied to calibrated M&amp;TE identifying: <ul style="list-style-type: none"> <li>*GageID (M&amp;TE equipment ID; use Howmet's current ID system)</li> <li>*calibration agency</li> <li>*identity of technician performing calibration</li> <li>*date of calibration</li> <li>*next due date</li> </ul> </li> </ul>
-----------	------------------------------	---

<b>DEPARTMENT:</b> <b>QUALITY</b>	<b>Doc. No.:</b> <b>8.4.3</b>
<b>TITLE:</b> <b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b> 01/20/2017 <b>Date Revised:</b> 04/01/2024

		<ul style="list-style-type: none"> <li>•Calibrations performed offsite from Howmet must be processed and tool returned within 7 calendar days from receipt (failing M&amp;TE, M&amp;TE needing repair, and calibrations sent to external calibration facilities exempted)</li> <li>•Completed calibration reports shall be either e-mailed to the Howmet 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, Howmet Calibration Coordinator (or designee) must be e-mailed to notify of the change in the report.</li> <li>•Repair quotes for M&amp;TE needing repair must be submitted to Howmet Calibration Coordinator and approved prior to processing repair</li> <li>•M&amp;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)</li> <li>•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</li> <li>•Travel and shipping for on-site pick-up/return of items not to be invoiced without prior agreement, in writing</li> <li>•Calibration reports must include all of the following: <ul style="list-style-type: none"> <li>*GageID (M&amp;TE equipment ID; use Howmet's current ID system)</li> <li>*Tolerance (accuracy)</li> <li>*Agency performing calibration</li> <li>*Calibration Date</li> <li>*Next Due Date</li> <li>*Identification of standards used to perform calibration, including last calibration date and next due date</li> <li>*Restrictions (if any apply)</li> <li>*"Nominal", "As Found" reading, and "As Left" reading at each calibration point</li> <li>*Reporting of ambient temperature and humidity conditions at the time and place of calibration, as measured by calibrated standard(s)</li> <li>*Procedure used to perform calibration (copies of procedures must be provided to Howmet Calibration Coordinator upon request)</li> <li>*Name of technician performing calibration</li> <li>*As Received tool condition (e.g. "In Tolerance", "Out of Tolerance" or "Inoperable")</li> <li>*As Left tool condition (e.g. "In Tolerance" or "Rejected")</li> <li>*Statement claiming ISO 17025 accreditation coverage of the calibration</li> <li>*Statement claiming traceability to SI units through NIST or equivalent national or international standards</li> </ul> </li> </ul>
--	--	---

<b>DEPARTMENT:</b> <b>QUALITY</b>	<b>Doc. No.:</b> <b>8.4.3</b>
<b>TITLE:</b> <b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b> 01/20/2017 <b>Date Revised:</b> 04/01/2024

		<p><b>20.1) Special Calibration Requirements for Specific Tool Types</b>  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 Howmet Quality representative receiving the calibration reports.</p> <p>Pressure Gages</p> <ul style="list-style-type: none"> <li>•6 month calibration interval</li> <li>•3 or more calibration points included</li> <li>•Calibrated range includes zero point through full scale</li> <li>•±2 PSI accuracy</li> </ul> <p>Thermohygrometers</p> <ul style="list-style-type: none"> <li>•12 month calibration interval</li> <li>•Calibrated range includes 70-100°F</li> <li>•±5°F accuracy for temperature</li> <li>•Humidity range calibrated includes 50%-70%RH</li> <li>•±5%RH accuracy for humidity</li> </ul> <p>Timers</p> <ul style="list-style-type: none"> <li>•3 month calibration interval</li> <li>•Calibrated range includes 1-20 minutes</li> <li>•±2 second accuracy</li> </ul> <p>Infrared Thermometer</p> <ul style="list-style-type: none"> <li>•12 month calibration interval</li> <li>•Calibrated range includes 75-200°F</li> <li>•±5°F accuracy</li> </ul>
--	--	--

<b>DEPARTMENT:</b> <b>QUALITY</b>	<b>Doc. No.:</b> <b>8.4.3</b>
<b>TITLE:</b> <b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b> 01/20/2017 <b>Date Revised:</b> 04/01/2024

		<p>Infrared Source</p> <ul style="list-style-type: none"> <li>•12 month calibration interval</li> <li>•Calibrated range includes 75-250°F</li> <li>•±2°F accuracy</li> </ul> <p>Transparent Slide with Dimensions (excluding stage micrometers)</p> <ul style="list-style-type: none"> <li>•12 month calibration interval</li> <li>•±10% accuracy</li> </ul> <p>Thermometer</p> <ul style="list-style-type: none"> <li>•6 month calibration interval</li> <li>•±2°F accuracy</li> </ul> <p>Temperature Controller</p> <ul style="list-style-type: none"> <li>•3 month calibration interval</li> <li>•Calibrated points include min. and max. of operating range plus a mid-point</li> <li>•±2°F accuracy</li> <li>•Sensitivity to change of input by 1°F checked for each channel</li> <li>•Test standard used must be calibrated at least quarterly to ±1.0°F accuracy at 6 or more points on each input/output used</li> <li>•State compliance to AMS 2750</li> </ul> <p>Hi-Limit/Overtemperature Controller</p> <ul style="list-style-type: none"> <li>•3 month calibration interval</li> <li>•Alarm function tested to trigger within 10°F of target</li> <li>•±10°F accuracy</li> <li>•Test standard used must be calibrated at least quarterly to ±1.0°F accuracy at 6 or more points on each input/output used</li> </ul>
--	--	--

<b>DEPARTMENT:</b> <b>QUALITY</b>	<b>Doc. No.:</b> <b>8.4.3</b>
<b>TITLE:</b> <b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b> 01/20/2017 <b>Date Revised:</b> 04/01/2024

		<ul style="list-style-type: none"> <li>•State compliance to AMS 2750</li> </ul> <p>Chart Recorder</p> <ul style="list-style-type: none"> <li>•3 month calibration interval</li> <li>•Calibration points include operating range min. and max. plus a midpoint on each channel</li> <li>•±2°F accuracy</li> <li>•Sensitivity to change of input by 1°F checked on each channel</li> <li>•Time/Date checked within 5 min. of <a href="http://www.time.gov">www.time.gov</a></li> <li>•Test standard used must be calibrated at least quarterly to ±1.0°F accuracy at 6 or more points on each input/output used</li> </ul> <p>Fluke 714B</p> <ul style="list-style-type: none"> <li>•3 month calibration interval</li> <li>•±1.0°F accuracy</li> <li>•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</li> <li>•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)</li> <li>•Calibration must include both Type K and N thermocouple types for both measure and source function</li> <li>•Calibration points must include 0.0°F through 2000.0°F at 100°F increments</li> <li>•Sensitivity to change of input by 0.1°F must be checked on each thermocouple type and each function (source/measure)</li> <li>•Excel file spreadsheet containing correction factors (opposite sign of deviation/error) for each input at each calibration point must be included with calibration report</li> </ul>
--	--	---

<b>DEPARTMENT:</b> <b>QUALITY</b>	<b>Doc. No.:</b> <b>8.4.3</b>
<b>TITLE:</b> <b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b> 01/20/2017 <b>Date Revised:</b> 04/01/2024

		<p>AMS 2750 Temperature Uniformity Survey Test Instrument</p> <ul style="list-style-type: none"> <li>•3 month calibration interval</li> <li>•±1.0°F accuracy</li> <li>•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</li> <li>•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)</li> <li>•Calibration must include every channel represented by available thermocouple plug on test instrument</li> <li>•Calibration points must include 0.0°F through 2000.0°F at 100°F increments</li> <li>•Sensitivity to change of input by 0.1°F must be checked on each channel</li> <li>•Excel file spreadsheet containing correction factors (opposite sign of deviation/error) for each input at each calibration point must be included with calibration report</li> </ul>
<b>21</b>	<b>Corrective Actions</b>	The supplier shall have a Corrective Action procedure that shall identify and correct errors and improve process capability.
<b>22</b>	<b>In-Process Audits</b>	<b>A)</b> The supplier shall monitor the effectiveness of their process by conducting periodic audits
		<b>B)</b> The audit procedure and schedule shall be approved by executive management to assure independence and to establish the effectiveness of the system.

<b>DEPARTMENT:</b> <b>QUALITY</b>	<b>Doc. No.:</b> <b>8.4.3</b>
<b>TITLE:</b> <b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b> 01/20/2017 <b>Date Revised:</b> 04/01/2024

23	<b>Buyer Evaluation</b>	Howmet, WO's customer has the right of access to supplier facilities when accompanied by Howmet, WO personnel
24	<b>Source Verification by Customer</b>	Where specified in the contract, Howmet, 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	<b>Customer Verification Limitation</b>	When Howmet, 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	<b>Quality Plan</b>	A quality plan shall be prepared and submitted for Howmet, WO approval. Once developed, any deviation from the plan must be reported immediately to Howmet, WO.
27	<b>Howmet, WO Observation</b>	<b>A)</b> Howmet, WO observation required - processing shall not take place unless observed by a qualified Howmet, WO employee
		<b>B)</b> Howmet, WO source inspection required
28	<b>Lab - Rolls Royce Approval</b>	Laboratory shall be approved by Rolls Royce before laboratory work is performed
29	<b>Lab - Pratt &amp; Whitney Approval</b>	Laboratory shall be approved by Pratt & Whitney before laboratory work is performed
30	<b>ASTM</b>	All testing shall be in accordance with applicable ASTM specification
31	<b>Tensile Test</b>	Tensile testing must be conducted at a strain rate of
32	<b>Calibration Procedures</b>	Written calibration procedures must be sent to Howmet, WO for all equipment or gages that are calibrated under this order. Any revision or change in procedure must be approved by Howmet, WO Quality
33	<b>As Found - As Left</b>	All calibration shall be conducted in accordance with the latest revision of ISO-10012 & ISO/IEC17025, including "As found" and "As left" conditions.



<b>DEPARTMENT:</b>	<b>QUALITY</b>	<b>Doc. No.:</b>	<b>8.4.3</b>
<b>TITLE:</b>	<b>Flow Down of Customer Quality System Requirements</b>	<b>Date Issued:</b>	<b>01/20/2017</b>
		<b>Date Revised:</b>	<b>04/01/2024</b>

<b>34</b>	<b>Method of Calibration - ASTM</b>	Method of calibration shall be in accordance with the latest revision of all applicable ASTM specifications
<b>35</b>	<b>Calibration Traceability</b>	All verification devices and/or standards utilized shall be traceable to NIST and a copy of the certification shall be provided to Howmet, WO with calibration documentation
<b>36</b>	<b>Standards of Change</b>	Changes or revisions of industry standards shall be the responsibility of the company performing the calibration
<b>37</b>	<b>Metal Assessment</b>	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
<b>38</b>	<b>Quality Manual</b>	Quality Manual must be in English
<b>39</b>	<b>Acceptance Sampling</b>	Where acceptance sampling is performed and the customer prior approval of the sampling plan, the plan shall be submitted to Howmet, WO for customer approval
<b>40</b>	<b>Personnel Qualification</b>	Personnel shall be qualified to Special Processes in accordance with appropriate specifications and industry standards. Evidence of qualification shall be provided
<b>41</b>	<b>Changes</b>	Howmet, WO shall be notified in advance of changes in product/process definition and obtain written approval
<b>42</b>	<b>Right of Access</b>	Howmet, WO's, customers and Regulatory authorities shall have the right of access to all facilities involved in the order and to all applicable records
<b>43</b>	<b>Audit</b>	Annual audit required
<b>44</b>	<b>Domestically Melted Material</b>	Material must be melted domestically and certification must state that material has been melted in the United States
<b>45</b>	<b>GE Lab Approval</b>	The supplier shall have a test laboratory or use a test laboratory that is GE S400 approved
<b>46</b>	<b>Government Property</b>	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