

**PROCEDURE/WORK INSTRUCTION**

<b>Dept.:</b> Quality Improvement	<b>Number:</b> QCI 012.2
<b>Subject:</b> Vendor/Supplier Quality System Requirements & Q-Codes	<b>Revision:</b> R

Title Page

## Vendor/Supplier Quality System Requirements And Quality Clauses (Q-Codes)

Date Issued: <u>14 MAR 2022</u>	Supercedes Issue Dated 15 OCT 2020
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Document Review and Revision Log

Date	Revision Level	Review/Change/Add/Delete [R] [C] [A] [D]	Name and/or Initials
5/10/04	-	[A] New Procedure	B. Esposito
1/7/09	A	[A] Add FOD and Brokered Components/ Parts/ Materials instructions/requirements, reformat	A. Closson
5/24/10	B	[A] para. 5.6.2 and correct attachment 1 Form 7-2098	S.I./F.D.
10/27/11	C	[A] Add references and updated Q-Codes and updated work instructions	S.I./F.D.
8/7/12	D	[A] Added AS5553 counterfeit part flow down requirements	B.D.
		[A] Added Paint Certificate of Conformance requirement	S.I.
9/17/12	E	[C] Changed paragraph 6.1 to clarify 1 <sup>st</sup> article inspection requirements.	S.I.
10/19/12	F	[C] Made Quality Clauses part of the QCI , archive Form Number 7-2098	S.I.
12/2/13	G	[C] Changed Q-Code C. 2. b from 80% to 90%	S.I.
4/28/14	H	[A] Reference to QCI 12.4 Counterfeit Avoidance & Mitigation Procedure. [C] Para. 5.11 Reference Mil-STD-980 FOD Prevention to NAS 412 FOD Prevention. [C] Para 5.12 to Reference QCI 12.4	S.I.
3/12/15	J	[A] ANSIESD S20.20-2007 to Para. 4.0 [C] Para. 5.0 to clarify Vendors/Suppliers minimum requirements [C] Para. 5.8 to clarify Vendors/Suppliers notification requirements [C] Para. 5.10 from 10 yrs. to 16 yrs. [C] Para. 5.11.1 to clarify FOD requirements [C] Para. 5.13 to Para. 5.14 [A] Para 5.13 ESD & Electronic Assy Suppliers [A] ESD Prevention Specification to Para. 7.0 Quality Clauses for Purchase Orders [A] h. Brazing to Para. C-6 [C] Para. 2 to clarify Scope [C] Para. 3 to clarify Objectives	S.I.
6/10/15	K	[C] Corrected typo in Para 5.10 from written # ten to written # sixteen [R] "Quality Assurance" from Para. 5.6 & 5.9	SAI
10/1/15	L	[A] Para 5.13.2 Packaging [A] Added Para 5.15 Special Process requirements per QCI 22.1 [A] "Special" Para 7, C [A] Para 7, C 6 Paint, Welding, Soldering [D] Para 7, C 6 Black Oxide, Impregnation	S. Ingamells
10/18/16	M	[A] C. Certification 2. c. Must include certification from original manufacturer. [R] Corrected typos [C] Clarified Para 5.0 to "as applicable" [A] Para 7.0 Records	S. Ingamells
1/18/20	N	[C] Section 3.0 from "Objective" to "Responsibilities". [A] QCI 18.6 to ref sec 4.0; "for production" to sec 5.12.3 [C] Moved disposition approval from sec 5.8 to 5.7. [A] 3 <sup>rd</sup> party cert status and ownership change notification to sec. 5.8. [A] Sec 5.14.1 and 5.14.2 and 5.16 [C] Sec 6.0 to sec 5.17 ; Sec. 7.0 to 6.0; and Sec 8.0 to 7.0 [A] Q-Codes B.1.a and B.1.b to Sec 7.0	T. Post
10/15/2020	P	[C] approval sign-off block; [C] 5.16.1 & [A] 5.16.2	A. Hite
03/14/2022	R	[A] 3.0 Define responsibility for website maintenance; [C] 3.0 Change Material Manager to Supply Chain Manager [A][C] add approvals for Human Resources; change Supply Chain Manager approval to RADS Buyer & FADS Buyer (Supply Chain Manager position open	A. Hite

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### **1.0 Purpose:**

This document has been established to provide the minimum flow down quality system requirements for Aerosonic Vendors/Suppliers listed on the Aerosonic Approved Vendors List (AVL).

### **2.0 Scope:**

This procedure is applicable to all Vendors/Suppliers that supply parts or perform a service for Aerosonic that form, or is performed on, a part of an assembly or of a finished instrument manufactured and supplied by Aerosonic.

### **3.0 Responsibilities:**

The Quality Manager is responsible to ensure that requirements defined in this standard are implemented.

The Supply Chain Manager is responsible to ensure only approved vendors are chosen for the procurement of material and services and that the requirements defined in this standard are properly flowed down in all Aerosonic Purchase orders.

The Supplier Quality Engineer is responsible for vendor approval and continued surveillance to ensure vendor compliance to the applicable requirements defined in this standard.

Human Resource representative is responsible for maintaining the website, [www.aerosonic.com](http://www.aerosonic.com), to ensure all information is current.

### **4.0 References:**

SAE-AS9102, Aerospace 1<sup>st</sup> Article Inspection Requirements (current revision)  
AS9100, Aerospace Requirement, Quality Management Systems (current revision)  
ISO9001 (current revision)  
NAS412 FOD Prevention (current revision)  
Aerosonic Purchase Order Terms & Conditions, Paragraph 7  
QCI 012.4, Counterfeit Avoidance and Mitigation Procedure  
ANSI/ESD S20.20 Electrostatic Discharge Control (Current Revision)  
QCI 22.1 Special Processes  
QCI 18.6 Special Characteristic Classification

### **5.0 Minimum Supplier Quality System Requirements**

When this document (QCI 012.2) is cited as a requirement on purchase orders issued by Aerosonic, and unless otherwise directed by Aerosonic Quality Manager (or designee), the following sections are minimum Quality System requirements that all Vendors/Suppliers to Aerosonic must comply with to be considered an approved source of supply to Aerosonic as applicable.

- 5.1** Quality Assurance organization's authorities and responsibilities shall be clearly defined in a Quality Assurance Manual.
- 5.2** Inspection stamps or other unique methods for the identification of inspection status are issued to inspection personnel and are controlled.
- 5.3** Adequate inspection instructions shall be maintained for all in-process and final inspection personnel.
- 5.4** Sampling inspection, when applicable, shall be performed in compliance with established and recognized standards such as the latest revisions of ANSI-Z1.4, Mil-Std-1916 or equivalent.

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- 5.5** Calibrated measuring devices, inspection gages and test equipment must be available to in-process and final inspection personnel and shall be adequate for the inspection task.
- 5.6** The organization shall maintain procedures that require periodic inspection and re-calibration of all measuring and test equipment in accordance with the requirements of ISO-10012-1 or ANSI-Z540-1 (latest revisions) or equivalent standard.
- 5.6.1** Working standards of required accuracy shall be maintained and periodically calibrated to primary standards that are traceable to N.I.S.T. or equivalent national/international agency.
- 5.6.2** Any calibration purchase orders initiated by Aerosonic require the calibration service to calibrate the equipment to the accuracy of the original manufacturer's specifications unless otherwise specified. All initial purchase orders of new equipment requiring calibration should include Terms and Conditions that calibration certification is provided.
- 5.7** A documented system must be in place and maintained for the handling of non-conforming materials including: the notification and recall of escapes; removing non-conforming materials from the production flow of good items; obtaining Aerosonic approval of non-conforming product dispositions; and taking corrective action in order to prevent repetitive discrepancies.
- 5.7.1** Corrective actions issued to Vendor/Suppliers must be answered in a timely manner per Aerosonic's Purchase Order General Terms and Conditions, Paragraph 7.
- 5.8** Documented procedures must exist that require notifying Aerosonic of: changes in product and/or processes; changes of suppliers; change in 3<sup>rd</sup> party certification status (i.e. AS9100 certification) and changes of manufacturing facility location, ownership or name.
- 5.8.1** This requirement must also be flowed down to any sub-tier suppliers.
- 5.9** The organization shall maintain procedures for the flow down of quality and/or specification requirements, when applicable, to sub tier suppliers including, the use of Aerosonic (or Aerosonic's customers) approved suppliers.
- 5.10** Quality records generated as the results of performance to an Aerosonic issued purchase order shall be maintained for a period of sixteen (16) years and available for review by authorized Aerosonic representatives, Aerosonic customers, and/or Government representatives.
- 5.10.1** These records shall include, but are not limited to, receiving, in-process, and final inspection records, Certificates of Conformance, raw material Mil certifications, test results, documented non-conformances and corrective actions, and Measuring and Test Equipment calibration documentation.
- 5.11 Foreign Object Debris (FOD or Foreign Matter)**
- 5.11.1** All Vendors/Suppliers of Aerosonic shall have a FOD program compliant to NAS 412 and use all reasonable means necessary to eliminate the possibility of Foreign Object Debris or Foreign Matter from contaminating parts or assemblies prior to packaging and to pack parts and assemblies to preclude the packaging materials themselves from contaminating such parts and assemblies during shipment.

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### **5.12 Counterfeit Parts/Materials and Brokered Components**

**5.12.1** Suppliers shall comply with QCI 012.4 requirements of electronic parts and materials and have in place a counterfeit prevention plan. If a supplier discovers counterfeit parts have been introduced into their facility, supplier needs to contact Aerosonic Supplier Quality with part type, part number, source of supply and quantity, and detection method.

**5.12.2** Brokered purchases are only permitted with prior notice and with written permission from Aerosonic, and must comply with requirements of QCI 012.4. Brokered parts shall be tested, as applicable, by the supplier and delivered with a test report from a recognized testing facility and accompanied by a valid Certificate of Conformance and a statement from the supplier that the parts are new and original. The supplier's employee issuing the certification letter must be identified along with contact information.

**5.12.2.1** For all electronic components, applicable testing shall be performed for all brokered parts, and all part lots that can not be traced back to the OEM. Testing shall be performed by an independent third party utilizing AS5553 Appendix E as a reference.

**5.12.3** *Used parts are completely unacceptable for new production.*

### **5.13 ESD and Electronic Assembly Suppliers**

**5.13.1** All suppliers of electrostatic sensitive components or assemblies containing ESD sensitive components shall have a documented ESD prevention and control plan that is compliant to ANSI/ESD S20.20 or equivalent.

**5.13.2** All electrostatic sensitive components or assemblies containing ESD sensitive components shall be packaged and tagged in static free sealed bags.

### **5.14 Inspection of Goods Prior to Shipment**

**5.14.1** Seller shall inspect all parts prior to delivery to Aerosonic, and provide a Certificate of Conformance for each lot which certifies all items meet the design requirements and terms and conditions as specified in each Purchase Order.

**5.14.2** Where procured item's design data include special characteristic per QCI 18.6, and when specified by Buyer PO quality clauses, the seller shall implement inspection methods and variation management in accordance with QCI 18.6.

**5.14.3** Aerosonic reserves the right to inspect all goods prior to shipment by Seller, and in furtherance thereof, Seller shall permit employees or representatives of Aerosonic to have access to Seller's facilities, at all reasonable hours.

**5.14.4** The same right is reserved for authorized government, Federal Aviation Administration or customer representative of Aerosonic.

**5.14.5** All goods received shall nevertheless be subject to inspection and approval by Aerosonic after delivery. Parts may be rejected within one (1) year if they are non-conforming during receiving inspection or are detected as non-conforming during manufacturing, testing or customer failure.

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### **5.15 Special Processes**

- 5.15.1** All Vendors/Suppliers of Aerosonic that perform special processes as defined in QCI 22.1, shall perform processes in accordance with requirements specified in QCI 22.1.
- 5.15.2** All Vendors/Suppliers of Aerosonic that outsource special processes to sub-tier suppliers shall utilize only those vendors that are approved by Aerosonic to perform those special processes as defined in QCI 22.1 or shall utilize only those vendors that are NADCAP certified to perform those special processes.

### **5.16 Capacity Management**

- 5.16.1** Vendors must have tools in place to monitor and measure capacity to prevent overload of equipment and prevent missed and/or delayed shipments. The equipment capacity utilization is listed on the Aerosonic Supplier Quality Survey and is a facet for consideration for approval. This information must be supplied on-going as requested.
- 5.16.2** All vendors shall have a capacity management process which utilizes material requirements planning (MRP) for the purpose of delivering parts on-time to Aerosonic.

### **5.17 Vendor 1<sup>st</sup> Article Inspection**

- 5.17.1** New vendors/suppliers, or vendors/suppliers providing an item or new revision level for the first time, shall be required to provide a “first article” piece part and an accompanying AS9102 First Article Inspection Report (FAIR) prior to the release of parts for production. Deviation from this requirement must be approved by Aerosonic’s Quality Manager.
- 5.17.2** Per AS9102 the vendor/supplier shall perform a new FAI, and submit the FAIR to Aerosonic for review, when any of the following events occurs:
- A change in the design affecting fit, form or function of the part.
  - A change in vendor’s manufacturing sources(s), process(es), inspection method(s), location of manufacturing site, tooling or materials.
  - A change in numerical control program or translation to another media that could potentially affect fit, form or function.
  - A natural or man-made event, which may adversely affect the manufacturing process.
  - A lapse in production of the procured item for a period of two years or more.
  - Or as required by the Customer.
- 5.17.3** Non-conforming first articles will be handling in accordance with QCI 17.2.

## **6.0 Records**

All records defined herein shall be retained per “QCI 04.1 Quality Records”.



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## 7.0 Quality Clauses for Purchase Orders

### A. Quality System Requirements

1. AS9100 (Current Revision)
2. ISO9001 (Current Revision)
3. AS9102 (Current Revision)
4. QCI 012.2 (Current Revision)
5. QCI 012.4 (Current Revision)
6. ANSI/ESD S20.20 (Current Revision)
7. QCI 22.1 (Current Revision)
8. QCI 18.6 (Current Revision)
9. Other: \_\_\_\_\_

### B. Inspection Requirements

1. Special Characteristics per QCI 18.6
  - a. Statistical Process Control on identified Key Characteristics (KCs)
  - b. 100% Inspection on identified Significant Characteristics (SCs) and/or Critical Characteristics (CCs)
2. First Piece Inspection Report required per AS9102.
3. Customer Inspection
  - a. Source
    1. Government Source Inspection required. Upon receipt of this order, notify your local government representative contact for source activities.
    2. At any time during this order, Government inspection may be exercised.
  - b. Destination
4. Aerosonic Inspection
  - a. Source
  - b. Destination

### C. Certification

1. Certification of Conformance
2. Certification of Conformance
  - a. Date of manufacture/Cure date & Shelf Life
  - b. Must have minimum 90% remaining Shelf Life (per ARP 5316)
  - c. Must include certification from original Manufacturer (per QCI 12.4)
3. Chemical & Physical Certification
  - a. Mil Certification
  - b. Independent Laboratory
4. Test Certification
  - a. Dye Penetrate
  - b. Magnetic Particle
  - c. X-ray
  - d. Test / Inspection results
5. Special Process Certification (per QCI 22.1)
  - a. Anodize
  - b. Chemical Conversion Coating
  - c. Paint
  - d. Plating
  - e. Passivation
  - f. Soldering
  - g. Heat Treatment
  - h. Brazing
  - i. Welding
6. Calibration Certificate required with Instruments

### D. Packaging

1. Bag and tag static sensitive devices in static free sealed bags (per ANSI/ESD S20.20)
2. Best commercial practice that prevents damage to part (physical electrical, shock, thermal stress, and Foreign Object Debris during shipment (per NAS 412)
3. Other: \_\_\_\_\_