

		Title : SUPPLIER QUALITY ASSURANCE REQUIREMENTS (SQAR)		
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Name	Rev	Date	Document Change Description	
Gary Kougl Corporate Quality Manager	00	02/10/09	Initial Release	
Gary Kougl	01	04/02/09	Minor changes and clarifications: SQAR 101, 201-204, 105, 114, 212, and 300b	
Kent Larson	02	03/15/10	Updated SQAR 120 per DCR 180: added FAI report details	

Overview

Supplier Quality Assurance Requirements (SQAR) is the Suppliers' guide to understanding SprayCool's quality requirements and expectations. This document forms a part of all SprayCool purchase orders.

The requirements in the engineering specifications/drawings, and/or purchase order take precedence over the requirements in SQAR.

Additionally, SprayCool Standard Terms and Conditions for Purchase Orders as well as FAR and DFAR clauses apply to all purchase orders unless otherwise noted. The released version of this document at the time of the purchase order date applies. The current version is found on our website at <http://www.spraycool.com/company/quality.asp>

Please consult your SprayCool Purchasing Representative if you have difficulty in identifying or determining applicability.

How to Use

This document applies to all SprayCool purchase orders for the production and modification of contract deliverables. This also includes service deliverables.

Unless otherwise stated on the purchase order, all General Requirement SQAR's apply. This includes SQAR101 through SQAR 199.

No additional quality clauses apply unless they are listed on the purchase order.

Please consult your SprayCool Purchasing Representative if you have difficulty in identifying or determining applicability.

General Requirements

SQAR 101: Basic Quality Management System
SQAR 102: Nonconforming Material Control
SQAR 103: Inspection Rights
SQAR 104: Quality Record and Retention
SQAR 105: Shipping Documentation Requirements
SQAR 106: Corrective and Preventive Action
SQAR 107: Key Characteristics
SQAR 108: Foreign Object Debris/Damage
SQAR 109: Supplier Sub-tier Control
SQAR 110: Inspection Sampling
SQAR 111: Raw Material and Process Requirements
SQAR 112: Notification of Design or Process Changes
SQAR 113: Measuring and Test Equipment Control
SQAR 114: Preference for Domestic Specialty Metals
SQAR 115: ESD Sensitive Material
SQAR 116: Part Marking Requirements
SQAR 117: Software Control
SQAR 118: Certificate of Conformance
SQAR 119: Special Process Requirements
SQAR 120: Supplier First Article Inspection – General
SQAR 121-199: *Reserved for future use*

Special Requirements

SQAR 201: Quality Management System: AS/EN9100
SQAR 202: Quality Management System: ISO 9001
SQAR 203: Quality Management System: Supplier specified
SQAR 204: Quality Management System: None imposed
SQAR 205-209: *Reserved for future use*
SQAR 210: Certifications and Reports
SQAR 211: General Certificate of Conformance
SQAR 212: Supplier First Article Inspection – AS9102
SQAR 213: Special Process Certification
SQAR 214-299: *Reserved for future use*

Program Specific Requirements

SQAR 300: Research and Development/Advanced Program Requirements

1.0 Supplier Quality Assurance Requirements – General

101 Basic Quality Management System

Supplier shall implement and maintain a basic Quality Management System, which addresses at minimum (as appropriate for the organization) the elements of management responsibility for quality, quality review and improvement, management of resources (people and work environment), product development, purchasing, control of production and service, documentation control, measurement and analysis, corrective action, and preventive actions.

Initial and periodic review of the supplier's quality system may be performed by SprayCool.

102 Nonconforming Material Control

Nonconforming material must be, identified, documented, evaluated, segregated (where practical), and dispositioned to prevent its unintended release or use.

a) MRB Disposition Authority

For items procured to a SprayCool specification or drawing the supplier's disposition authority of nonconformances is limited to rework to specification, return to supplier and scrap. These terms are defined as follows:

1) Rework - Restore material to specification compliance in accordance with specified process(s) and addressed by governing process specification(s). Specific rework instructions shall be created and available for review..

2) Return To Supplier - Return of sub-tier supplier product found to be discrepant for subsequent rework or replacement.

3) Scrap - Permanent removal from production and destruction of product found to be unfit for use. Scrapped product shall be controlled until destroyed.

4) Other - All other dispositions of nonconforming material shall be submitted to the SprayCool Purchasing Representative for approval.

b) MRB Disposition for Supplier Designed Hardware

Suppliers of product that retain design authority to a Source/Specification Control Drawing (SCD) or Customer Performance Specification and are ISO 9001 or AS9100 compliant may use dispositions of use-as-is or repair, as long as the nonconformity does not result in a departure from the requirements of the SCD/Customer Specification. This includes those suppliers that produce products of proprietary design, and products to military and industry standards.

The supplier MRB shall not perform any disposition on any nonconformance to customer requirements that affect form, fit, function, weight, interchangeability, maintainability, reliability, unique key characteristics or safety. These nonconformances shall be submitted to the SprayCool Purchasing Representative for disposition.

c) Notification/Disclosures

The supplier's system shall provide for timely reporting of nonconformities that may affect already delivered product. Notification to the SprayCool Purchasing Representative shall be submitted on company letterhead and include a clear description of the discrepancy, and identification of all suspect parts (to include SprayCool part numbers, Purchase Order Numbers and Item Numbers, serial numbers, manufacturing dates, quantities, etc.) and material affected by the deficiency, date(s) delivered, any information relating to the Root Cause / Corrective Action steps initiated to address the defective condition, and preventive measures taken to preclude recurrence of the process failure. For suppliers with Design Authority, a technical assessment and recommended disposition shall be provided.

103**Inspection Rights**

If SprayCool requires activity on the part of the supplier for an on-site inspection the SprayCool Purchasing Representative will contact the supplier to make appropriate arrangements.

SprayCool, its customer, and/or their authorized Inspection Agency, or Regulatory Authorities shall have the right to send representatives to the supplier's facilities or its sub-tier suppliers to determine contract compliance by either monitoring, witnessing, and/or performing such activities as inspections, test witness or other system, process and/or product evaluations and verifications as necessary to determine product acceptability to contractual requirements. The type, necessity and degree of demonstration of conformance will be at the sole discretion of SprayCool taking into consideration such factors as product complexity, the environment where the product is used, and the ability to determine product quality after receipt and past supplier performance. Without additional charges, the supplier and/or their subcontractor shall make their facility and applicable records available for these activities and provide all reasonable support for the safety and convenience of these representatives during their stay at the supplier's and/or their subcontractor's plants and facilities.

SprayCool has the following inspection types:

a) Receiving Inspection at SprayCool

Deliverable product(s) are subject to SprayCool inspection upon receipt at SprayCool facility. This is the default inspection type.

b) Government Source Inspection

Deliverable products are subject to Government oversight during the performance of this Purchase Order prior to shipment. Additionally, the Government reserves the right to perform surveillance or Government Source inspection of a supplier's quality and/or manufacturing operation during the performance of this Purchase Order.

c) SprayCool Source Inspection

Deliverable product(s) are subject to SprayCool Source Inspection. Supplier shall notify SprayCool Purchasing Representative, at least forty-eight (48) hours in advance of need, to schedule "in process" or "final" Source Inspection. All shipping documentation and documentation provided to show evidence of conformity to Purchase Order and SQAR requirements shall be made available at the time of inspection.

Note: Verifications accomplished by SprayCool or its customer shall neither be used as evidence of effective control of quality by the supplier nor shall it preclude subsequent rejection by SprayCool or its customer for non-compliance with the SprayCool purchase order.

d) SprayCool Inspection Not Required

This applies internally to SprayCool for lot sampling control. No specific SprayCool inspection is required.

104 Quality Records and Record Retention

The supplier shall maintain a documented procedure for record creation, change (handwritten or other), completion and control of Quality records in accordance with the applicable Quality System standard (i.e. – ISO 9001, AS/EN9100, etc.).

These records shall be retained for a period of not less than seven (7) years from completion of purchase order. The supplier must impose this requirement on their sub tiers.

Records shall include, but not be limited to:

- Evidence of inspection to assure adherence to applicable drawings/specifications
- First Article Inspection Report
- Receiving Inspection Reports
- Test Reports
- Periodic inspection and control of inspection media
- Records to indicate control of Special Tooling and Special Test Equipment
- Test data records of all qualification and acceptance test performed
- Certification of personnel as required by specification and/or contract
- Raw Material and Process certifications
- Material Review Reports.

105 Shipping Documentation Requirements**a) Packing Slips** (always required)

Supplier shall provide a packing sheet or attachments for each separate shipment with the following minimum requirements:

- Supplier's company name and address.
- SprayCool Purchase order number, line item(s) and part numbers
- SprayCool dispositioned nonconformance document number(s); as applicable.
- Evidence of SprayCool and/or Government Source Inspection acceptance when applicable.

b) Suppliers of Age-Sensitive Materials (if applicable)

Supplier shall provide original manufacturing/cure date, and lot number(s), and the shelf life expiration date (if indefinite or unlimited, so state). The supplier shall physically identify the shelf life expiration date on the deliverable product or the unit packaging according to the applicable standard. If less than 50% of the original shelf life remains, the supplier must obtain written authorization from the SprayCool Purchasing Representative prior to shipping.

In addition, supplier is to forward any special storage/handling instructions. Supplier is responsible to determine if acceptance test report submittal is required in accordance with applicable material specification.

c) Material Data Safety Sheets (if applicable)

Material Safety Data Sheets shall be included with each shipment of materials or chemicals as appropriate.

d) Special Process Certification(s) (if applicable)

If there are special processes used for the deliverable(s) as described in *Special Process Requirements* (SQAR 119), associated certifications shall be provided with each shipment.

e) First Article Inspection Report(s) (if applicable)

If *First Article Inspection Report – General* is required (see SQAR 120) the associated report shall be provided with each first article.

f) Rework/Repair/Replacement/Modified Items (if applicable)

Supplier's Certification of Conformance and/or packing sheet document shall indicate the action taken on the item(s) returned to supplier for rework, replacement, repair or modification, including work performed by supplier at SprayCool's facility.

- 1) The item(s) have been reworked, repaired, replaced, or modified (as applicable), in accordance with respective nonconformance documents or Purchase Order.
- 2) The item(s) meet the requirements of the engineering document(s).
- 3) The original configuration and qualification status of the item(s) remains in effect (as applicable).
- 4) All applicable nonconformance document numbers or other references to insure traceability.

106 Corrective and Preventive Action

The supplier shall respond to all requests for corrective action on or before the requested response due date. Supplier shall maintain a documented system for determining root causes of documented defects and obtaining corrective action and preventive action both internally and from its suppliers. The supplier is accountable for effectiveness of corrective and preventive actions taken. Analysis must include root cause, correction of the defect, action taken to prevent recurrence, and the effective date corrective action was implemented.

107 Key Characteristics

Reserved for future use – does not currently apply to any purchase orders.

108 Foreign Object Debris/ Damage (FOD)

Supplier shall maintain good housekeeping and a Foreign Object Debris/Damage (FOD) prevention program, at minimum to preclude introduction of foreign objects into deliverable items.

Supplier shall employ appropriate housekeeping practices to assure timely removal of residue/debris generated during manufacturing operations or tasks. Supplier shall determine if sensitive areas that have a high probability for introduction of foreign objects should have special emphasis controls in place for the manufacturing environment.

109 Supplier Sub-tier Control

Supplier is responsible for ensuring the following:

- All items procured from its sub-tiers conform to all relevant requirements of the SprayCool purchase order.
- All applicable provisions of this document are flowed to its subcontractors including copies of the latest revision process specifications.
- Sub-tier supplier quality systems shall be compliant to the same or a higher level than the supplier requirement.
- Non-disclosure agreements need to be flowed down to sub-tiers when providing proprietary drawings, specifications or data.

110 Inspection Sampling

Supplier may use sampling plans, provided the sampling plans are in accordance with military or government standards such as ANSI Z1.4, Mil-Std-1916 or ARP9013

111 Raw Material and Process Requirements**a) Certifications**

Supplier shall maintain a copy of all suppliers procured raw material certifications, which must be readily retrievable and shall include material specification, dimension/ description, alloy and condition. The supplier shall maintain the original mill certification and any secondary independent test laboratory certification(s) if any additional process was done after original mill certification for procured metallic material that shall include physical properties, chemical analysis and lot number(s).

b) Validation of Properties – Metallic Raw Material Suppliers/Distributors

Metallic Raw Material Suppliers/Distributors shall periodically validate selected physical and/or chemical properties documented on mill certification test reports (other than hardness and conductivity) in accordance with internally established requirements for all metallic raw materials. Such validation will be documented and retained for record purposes and shall be provided to SprayCool upon request.

112 Notification of Design or Process Changes

The Supplier shall notify SprayCool of design and process changes to any of their parts or any sub-tier supplied parts that affect the form, fit, functionality or safety of the product being ordered prior to the delivery of the affected product.

113 Measuring and Test Equipment Control

Supplier measuring and test equipment used as a basis for acceptance of product must be of suitable accuracy and undergo calibration at regular intervals in accordance with ANSI/NCSL Z540 with results traceable to the National Institute of Standards and Technology (NIST).

114 Preference for Domestic Specialty Metals

Supplier shall comply with DFAR 252.225-7014, Alt. 1 "Preference for Domestic Specialty Metal" when providing any items containing specialty metals as listed in the document.

115 ESD Sensitive Material

All components which are Electro-Static Discharge (ESD) and/or electromagnetic forces (EMF) sensitive must be processed and packaged in accordance with MIL-STD-1686, "Electrostatic Discharge Control Program" or ANSI/ESD S20.20, "Protection of Electrical and Electronic Parts, Assemblies and Equipment."

116 Part Marking Requirements

Supplier shall mark all deliverable products as required by the engineering drawing and/or purchase order.

In the event the engineering drawings do not specify part mark requirements the Supplier shall record the date of manufacture, date code(s) or other control identifier number for all deliverable hardware, either marking the part of associated bags, tags, or labels as applicable.

Information must be traceable to supplier's build documentation. Hardware produced in lots, batches, groups, etc., shall have traceable control information applied. When physical or process restrictions do not permit data application to individual hardware (such as standard parts), the information shall be similarly placed on bags, tags, or labels as applicable.

Examples of traceable information may include, but are not limited to: date of manufacture, serial number, lot/control number, heat lot number, final inspection date, batch number, casting number, work order number.

117 Software Control

Supplier shall establish and maintain a Software Quality Assurance (SQA) program in accordance with contractual requirements.

Non-deliverable software that is used to inspect, test and manufacture (e.g. CNC machines and automated test systems) the product shall be adequately controlled and validated by the supplier to assure conformance of the product to drawings, specifications and PO requirements.

118 Certificate of Conformance

By acceptance of the purchase order, the Supplier hereby certifies that the materials and processes used in the manufacture of the deliverables conform to the requirements of the applicable specification(s).

119 Special Process Requirements

Special processes include (but are not limited to): Chemical film, hard coat, passivation, powder coat, heat treat, plating, soldering, welding, chemical processes, nondestructive testing, material testing laboratories, non-conventional machining & surface enhancements, composites, and CARC application.

Special processes are performed to a standard process specification called out in either the engineering drawing(s) or the purchase order. Examples are -

IPC/EIA J-STD-001 - SOLDER REQUIREMENTS FOR ASSEMBLIES, CLASS 3 for electronic assemblies
MIL-DTL-5541F ALUM CHEM FILM TYPE II, CLASS 3 for aluminum chemical film coating
AMS/MIL-C-26074 ELECTROLESS NICKEL PLATING CLASS 1 for nickel plating

Suppliers shall ensure that the processing source performing the work, including their suppliers, is capable/approved for that process specification prior to processing of each lot of hardware.

Special Processor approval is not applicable to standard hardware (nuts, bolts, washer, etc.) that are ordered to military, federal or industry specifications.

When a Special Process is called out, as described above, Special Process Certification(s) must be provided with each shipment, which includes at minimum the specification number and revision letter, along with the agency/source performing the certification.

120 Supplier First Article Inspection – General

This requirement applies to “Build to Print” parts and assemblies. First Article Reports are required for the first time build by a supplier and shall be required for any subsequent builds at a new drawing revision, or if the last fabrication was more than 2 years prior. Supplier First Article Inspection (FAI) shall be performed in accordance with best commercial practices. At a minimum, the first article report shall be done in ink or other indelible method, and validate and record the following:

- All design characteristics (dimensions and notes) found on the control drawing (either SprayCool’s or Supplier’s) which describe and constitute the design of the article.
NOTE: Reference dimensions may be excluded.
- All design characteristics must have a unique characteristic number (aka bubble number) assigned on the control drawing and must be referenced in the FAI report.
- Fabricated parts within an assembly must be included in the FAI report, and must include their drawing(s) with design characteristics identified and validated.
- Any/all special process requirements
- Parts list (for assemblies): Provide certificate of conformance verifying the parts list (manufacturer and part numbers) were followed. No substitutions allowed without prior approval.

The first article piece will be clearly identified and first article report shall accompany shipment.

121-199 *Reserved for future use*

Supplier Quality Assurance Requirements – Special Requirements

201-204 Quality Management System

Supplier shall implement and maintain a Quality Management system, which complies with the requirements listed in the table below. Initial and periodic review of the supplier's quality system may be performed by SprayCool. *(If called out, SQAR 201-204 replaces the requirement found in SQAR 101)*

For SQAR 201 or SQAR 202, submittal of a current third party accreditation certificate may be requested. Any changes to the certification such as a change of the registrar, withdrawal or disapproval must also be forwarded to SprayCool Purchasing Representative immediately.

QMS Level	Applicable Standard(s)	Typical Usage
201 Level 1	AS/EN9100 Registered	<i>(Applies where specified by SprayCool's customer)</i> Manufacturer with Design Authority or Manufacturer (Build-to-Print)
202 Level 2	ISO 9001 Registered or AS/EN9100 Registered	<i>(Preferred QMS default for SprayCool suppliers)</i> Manufacturer with Design Authority or Manufacturer (Build-to-Print)
203 Level 3	Supplier's recognized quality system imposed.	<i>(Supplier approval from SprayCool is on file from either supplier audit/visits or third-party/customer certification)</i>
204 Level 4	None imposed by SprayCool	Commercial off the shelf (catalogue items), and developmental work

205-209 Reserved for future use

210 Certifications and Reports

If this SQAR clause is called out on the purchase order, a test/inspection certification or report is required.

Accompanying certification and reports shall be provided with each shipment. These shall indicate revision level of engineering drawings, specifications, and applicable design or specification changes as stated in purchase order.

211 General Certificate of Conformance

Suppliers will provide a general Certificate of Conformance (C of C) assuring that all materials, processes and/or finished items supplied under this order are as specified and conforms to requirements therein. The C of C may be a separate document or included on the packing sheet. The supplier's Quality management or designee must sign and/or stamp this document.

212 Supplier First Article Inspection – AS9102

Supplier First Article Inspection (FAI) shall be performed in accordance with the requirements of AS9102 ("Aerospace First Article Inspection Requirement") as per the revision level established at time of purchase order issuance. First Article Inspection (FAI) shall be performed **prior** to product acceptance and/or shipment to SprayCool. Where product does not meet the intent of "first production run", FAI may be deferred until product manufactured meets the intent of "first production run", as defined within AS9102.

If a supplier is required to utilize AS9102 for their first article inspection, their sub-tiers are also.

The first article piece will be clearly identified and first article report shall accompany shipment. Documentation per AS9102 using forms described or their equivalent shall be used to document the FAI. Ballooned dimensions and numbered drawing notes along with raw material, process and hardware certifications shall be supplied as part of the FAI package.

213 Special Process Certification

In addition to the requirements found in SQAR 119, Special Processors are required to be either accredited by NADCAP (SAE AS 7003), or approved by SprayCool.

2.0 Supplier Quality Assurance Requirements – Program Specific Requirements**300 Research and Development/Advanced Program Requirements**

Note: The intent of this SQAR is to define all quality requirements applicable for Research and Development/Advanced Programs. If SQAR 300 appears on the purchase order, no additional SQAR's apply, unless they are specifically called out on the purchase order. (Additional requirements found in the FAR, DFAR, engineering drawings, specifications, and PO notes, still apply.)

a) General

SprayCool reserves the right to visit the supplier's facilities to determine purchase order compliance. The type, necessity and degree of demonstration of conformance will be based on the confidence in the supplier's quality system and other factors such as product complexity, the environment where the product is used, the ability to determine product quality after receipt, degree of "non-developmental design", and past supplier performance. SprayCool reserves the right to reject non-conforming products.

b) Quality System Requirements

Supplier shall implement and maintain a basic Quality Management System, which addresses at minimum (as appropriate for the organization) the elements of management responsibility for quality, quality review and improvement, management of resources (people and work environment), product development, purchasing, control of production and service, documentation control, measurement and analysis, corrective action, and preventive actions.

Initial and periodic review of the supplier's quality system may be performed by SprayCool.

c) Product Release

SprayCool reserves the right to perform First Article Inspection, In Process Inspection, and Final Inspection.

d) Material Review Board Authority (MRB)

Suppliers have MRB authority for those items that are of supplier design and are not unique to SprayCool. This does not extend authority for areas that effect form, fit, function, weight, interchangeability, maintainability, reliability, safety or unique key characteristics of delivered end item. Dispositions of "Use As Is" or repair may be used as long as the nonconformity does not result in a departure from the requirements of the Supplier's controlled drawing or specification.

e) Part Marking Requirements

Supplier shall mark all deliverable products as required in the engineering drawing(s) and purchase order.