



SUPPLIER QUALITY REQUIREMENTS (SQR-1)

Effective: Jan 1st, 2020

1.0 APPLICABILITY

This document defines restrictions and quality system requirements applicable when goods and services are procured to Moog Space and Defense Group design authority Build-to-Print and Build-to-Specification part numbers. Moog Aircraft and Industrial Group requirements are defined separately.

These requirements do not apply to Standard Catalog Hardware; often referred to as Commercial-Off-The-Shelf ("COTS"). Standard Catalog Hardware is defined as a part or material that conforms to an established industry or national authority published specification, having all characteristics identified by text description, National/Military Standard Drawing, or catalog item.

2.0 ORDER OF PRECEDENCE

The order of precedence for Moog purchases is defined in Moog Standard Terms and Conditions on the Purchase Order. Note that the purchase order cannot change design data.

3.0 PROCESS RESTRICTIONS

Unless otherwise directed by the Purchase Order, the following restrictions apply:

3.1 Glass Beads are prohibited from use in the processing or manufacturing of parts related to all Moog Purchase Orders unless allowed by specific note on the Moog drawing. Requests for exceptions shall be submitted to the Moog Buyer listed on the Purchase Order for each specific part number. Suppliers that use glass beads in their normal processing are required to have an effective method of segregation to prevent contamination of Moog hardware.

3.2 Life-limited items such as adhesives, compounds and elastomers, shall have 75% or greater storage life remaining upon receipt at Moog. In particular, elastomers shelf life shall be based on SAE ARP5316 (available at www.sae.org). The supplier shall identify on the shipped paperwork the manufacturers name, compound trade name, batch number, cure date, specific gravity range and QPL approval status, as applicable, by Moog print for each lot.

3.3 Electronic Components (i.e. transistors, integrated circuits, connectors, etc.) ordered to military specifications - The component manufacturer and lot / date code for each component must be identified on the shipping paperwork.

3.4 Electrical Discharge Machining (EDM) is not permitted for manufacture of parts related to all Moog purchase orders unless allowed by specific note on the Moog drawing, or via an explicit written authorization subsequent to a formal approval by Moog Engineering. Requests for exceptions or waiver of this requirement shall be submitted to the Moog Buyer listed on the Purchase Order for Moog Engineering approval for each specific part number. Note: Aircraft Group suppliers are required to submit an SN-type NC.

3.5 Electrostatic Discharge Protection - Devices designated by the drawing as static sensitive, or otherwise applying static sensitive technology, must be properly handled, packaged, and labeled in conformance with ANSI /ESD S20.20 (www.ansi.org), BS EN 100015-1 (www.bsigroup.com) or MIL-STD- 1686 (<http://quicksearch.dla.mil>).

4.0 QUALITY REQUIREMENTS

Unless otherwise directed by the Purchase Order, the following quality system requirements apply:

4.1 Quality System Requirements - Suppliers must maintain a quality system that, at a minimum, complies with ISO9001 (latest revision at time of Purchase Order). When supplier compliance and/or certification to AS9100, ISO9001, AS9110, EASA Part 21, EASA Part 145, or FAA 14 CFR part 145 is specified by Moog, the supplier is responsible to notify the Moog Buyer in writing within 5 working days of any changes in Quality System status, including extensions or reductions in scopes of approval, third party and/or regulatory Quality Approvals that are either gained or withdrawn. The supplier's loss of certification or failure to notify Moog of their loss of certification could result in being disapproved as a Moog supplier.

4.2 Record Retention - Suppliers shall retain quality records for minimum of (10) years from the date of shipment, unless a longer period is otherwise specified. If original records are not maintained, the method for transferring original records to electronic images, shall comply with FAR 21, subpart 4.7. Quality records include the following but not exhaustive list: Approved Certificates of Conformity, Test Reports, Raw Material Certifications, Special Process Certifications, First Article Inspection Reports (FAIR), Route Cards/Travelers, and Calibration Records. This data shall be made available to Moog upon request, at no extra charge. Records shall be appropriately identified in accordance with customer, regulatory and company defined requirements. Storage facilities shall provide environmental conditions to prevent deterioration or damage and to prevent loss. Records in storage shall be protected from unauthorized access. The nature of the information in the records, as well as its format, dictates the method by which they shall be destroyed. When records contain sensitive information (such as design detail, proprietary info, ITAR restricted info, etc.), they shall be disposed by irreversible destruction methods such as shredding, or "erasure"/reformatting for electronic/magnetic media.

4.3 Calibration System - Calibration of measuring and test equipment used for product acceptance shall be traceable to established international or national measurement standards (e.g., BSI, NIST, UKAS, etc.). Procedures for periodic calibration, certification, maintenance of tools and equipment, and an action plan, should measuring and/or test equipment be found to be out of calibration, shall be established and followed. The action plan shall contain, as a minimum, item identification (model, manufacturer, and serial number), found condition (including span/range and accuracy), date condition found, date of previous calibration, notification details, and any other pertinent measurement details.



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4.4 Inspection System - Suppliers shall develop inspection procedures and maintain records of inspection. Records *shall* include evidence of inspection for all attributes (e.g. first article inspection, acceptance test data) of products / processes supplied to Moog, show the product has been inspected and/or tested during all stages of manufacturing, identify the name of the individual (i.e. with stamps, etc.) who certified the results, and where applicable include the results of the inspections and tests.

The Moog buyer must be notified in writing prior to any changes in product, manufacturing location, or process definition that were not requested by Moog, in writing. Notification shall describe the change or changes that are being proposed. Moog Quality reserves the right to require its approval of the product, manufacturing location or the process change before the Supplier forwards the product. The supplier is also required to submit a new full or delta first article inspection report, if the change(s) affect any of the existing approved first article inspection report characteristics.

4.5 Travelers - Suppliers shall maintain a traveler, router, process flow sheet, or equivalent control mechanism that directs procedures appropriate for the control of quality and configuration through all stages of production. For Moog designed hardware when Moog changes P/Ns, dash numbers, or P/N revisions AND there is work in process (WIP) for a given contract, the rework instructions must be submitted in writing to the Moog Buyer to obtain Moog Engineering approval prior to rework.

4.6 Nonconforming Product - Suppliers shall ensure that non-conforming products are identified, segregated, and properly dispositioned as required per supplier's procedures. Only product that conforms to specified requirements shall be shipped to Moog. Dispositions of Use As Is or Repair for products under Moog design control shall require written authorization prior to shipment. Moog does not grant Material Review Board (MRB) Authority to suppliers, unless granted in writing by Moog Quality Engineering. Moog reserves the right to audit for compliance. Any reworked parts shall be re-inspected and/or tested prior to shipment to Moog.

4.7 Non conformance Affecting Shipped Products- Suppliers are required to notify the Moog Buyer within 24 hours of discovering any nonconformance that exists or is suspected of existing on hardware that has previously been shipped to Moog. This notification shall include the following information:

- Affected Part number(s), process(es) and name(s)
- Description of the nonconforming condition and the affected requirement (Both requirement and actual condition)
- Quantities, dates, purchase orders, and destination of delivered shipments.
- Lots, batch numbers, serial numbers or date codes as applicable of the affected lot.

Note: Aircraft Group suppliers are required to submit an SN-type NC.

4.8 Supplier Deviation Request (SR) - Suppliers shall use the electronic TipQA SR type nonconformance, accessible through the Supplier Portal, to request review of nonconforming material. If a supplier is unable to access TipQA, they shall contact the applicable Moog buyer for assistance.

Nonconforming material shall not be shipped to Moog without an approved TipQA SR type nonconformance. In addition, all nonconforming product shipped to Moog 1) Must be clearly identified as non-conforming product and packaged separately from the acceptable product 2) Must be accompanied by a copy of the approved TipQA SR type nonconformance(s), and 3) The applicable TipQA SR number(s) must be clearly listed on the packing slip and Certificate of Conformance and FAIR if applicable.

For corrective action requested, the supplier shall: 1) consider the details of the recorded non-conformance/corrective action and request clarification if necessary from the initiator of the request; 2) complete and respond to both the containment and whole corrective action requirements within the timeframe indicated on the non-conformance notification providing an effective short term and long term corrective action.

4.9 Statistical Techniques - Suppliers are responsible for understanding and reducing variation within processes, and are encouraged to use control-charting techniques. When control charting is not performed, sample inspection of all attributes shall be performed to ANSI/ASQ Z1.4 (MIL-STD-105), Level II, 1.0 AQL, c = 0, or an equivalent plan approved by Moog. Suppliers using sample (incl. Moog approved) inspection plans are not relieved from the responsibility for all attributes on the part/assembly.

4.10 Special Processes – The following are considered special processing, as a minimum: Heat treatment, Plating operations, Chemical processing, Chemical cleaning, Nondestructive Testing, Welding/Brazing, Shot Peening, Ion Vapor Deposition (IVD), High Velocity Oxygen Fuel (HVOF), other specialty coatings. When processing requirements are defined by Moog (e.g. ASTM E1417) or by Moog's end customer (e.g. BAC 5728), processors must be approved for the process specification by Moog (for Moog defined requirements) or by the end customer (for customer defined requirements). Moog approved special process suppliers (listed at www.moog.com/suppliers/asps) shall be used on parts related to all Moog purchase orders where Moog defines the processing requirements, unless the supplier is themselves approved for the process specification by Moog, or is otherwise directed by a Moog supplemental quality requirement. Suppliers may verify their own approval status via the Supplier TipQA Portal. The use of an approved sub-tier does not relieve the supplier from responsibility to furnish acceptable supplies. When Moog's customer's specifications are called out in the drawings (e.g. BAC spec, NASA spec, etc.), supplier shall use processors that are currently approved/certified by the end customer for the process specification and, in that case, the processor need not also be Moog approved. Suppliers are expected to establish and follow a formal documented process to verify, during contract review and prior to processing the parts, that either they or their chosen sub-tier are an approved processor for the Moog or end customer specification. When requested by Moog, suppliers must be able to furnish objective evidence (e.g. internal production records, certifications from sub-tiers) that the process has been followed, and that parts have been processed by approved suppliers according to defined process specifications.



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4.11 Supplier Control - Suppliers, including dealers and distributors, are responsible for ensuring that the applicable requirements of this purchase order are imposed on lower tier procurements for raw material, components or process services being used in the manufacture of products or services being provided.

4.12 Prohibited Sources - Moog suppliers and/or sub-tier suppliers are prohibited from using any source listed on the US government Excluded Parties List System (EPLS) (ref. <https://www.sam.gov>) in the production of products to be delivered to Moog.

4.13 Counterfeit Parts Prevention - The supplier shall have a program in place to prevent the delivery of counterfeit parts and materials to Moog. All parts, materials and assemblies (electrical, mechanical, raw material) included in the hardware delivered to Moog shall be procured directly from the Original Component Manufacturer (OCM) / Original Equipment Manufacturer (OEMs), or from the OCM/OEM authorized distributor. If it is determined in a specific instance that this is not possible, an SR type NC shall be submitted by the supplier to the Moog buyer within (5) working days of this determination. The supplier is responsible for the flow down of this requirement to its sub-tier contractors and their compliance to it. Further guidance on counterfeit parts avoidance can be found in SAE documents AS5553 (Electronics) and AS6174 (Material) (www.sae.org).

4.14 Right of Entry - Representatives of Moog, Moog's customer, and other regulatory authorities *shall* have access to supplier's facility and all other facilities involved in the fulfillment of the Purchase Order, where they *shall* have access to all procedures, practices, processes, associated documents, and records related to quality assurance, quality control, and configuration control. The supplier *shall* notify the Moog Buyer in writing to any significant facility or organizational changes such as company name, location, or senior quality management. Any change of location by the supplier *shall* require a full first article inspection on these parts. Moog reserves the right to determine and verify quality of work, records, and material. Such visits *shall* not preclude subsequent rejection of product and do not absolve the supplier of its product integrity responsibilities. Moog reserves the right to audit for compliance to all requirements.

4.15 Traceability & Product Identification - Supplier shall ensure that individual articles and materials and lots thereof are identified and segregated from all other articles, materials, and lots at all times. Records for articles shall indicate the part number, revision level, lot number and if applicable the serial number and associated detailed information. Records for materials shall indicate type, applicable serial numbers, lot numbers, heat numbers, batch, date code, cure date, etc. Material or articles furnished by Moog for outside operations must remain identifiable by the Moog supplied lot or serial number. This number must be recorded on all applicable supplier paperwork.

4.16 Certificate of Compliance - The Certificate of Compliance (CofC) shall be shipped with the product to Moog. The Certificate of Compliance is a quality record that shall include Moog part number and drawing revision, Military, Federal or Industry specification number and revision, Purchase Order number and line item, quantity, serial numbers (if applicable), work order number (if applicable), date shipped, manufacturer's name and authorized acceptance authority stamp or signature. The CofC shall include explicit confirmation of compliance to all PO requirements including drawings, specifications, SQR-1 and all S-clauses. For parts returned by Moog to the supplier, the CofC for the reshipment must contain the debit memo number and a summary of work performed or statement that part was replaced.

In addition, when requested the supplier shall be able to furnish information on their source(s) of supply that could include items such as serial numbers, lot numbers, heat numbers, batch, date code and cure dates and Qualified Products List approval status as applicable.

4.17 Responsibility for Conformance - Acceptance of product shall not be used as evidence of effective control of quality by the supplier, and shall not absolve the supplier of responsibility for acceptable products or preclude subsequent rejection by Moog customers.

4.18 Industry Specifications and Standards - For all Military, Federal, and Industry specifications and standards, unless specified on the contract or purchase order, the supplier may use either the latest specification or the specification in effect at the time of the PO. Moog reserves the right to request a different revision that would be specified on the purchase order.

4.19 Training - Suppliers shall ensure that all personnel performing activities on Moog product affecting quality have been suitably trained per supplier procedures or to Industry standards if applicable. Personnel performing assigned tasks must be qualified on the basis of appropriate education, training, and/or experience. The supplier shall ensure that training records are maintained and available upon request.

4.20 Handling, Packing, & Preservation - It is the responsibility of the supplier to ensure that the packaging is adequate to protect the components during transportation, handling, and storage. Packaging containers shall be appropriate for the size, weight, and fragility of the components being packed.

4.21 Contributions to Product and Service Conformity, Safety and Ethical Behavior - Products and services provided to Moog are typically used in mission critical applications where supplier product conformity can have an impact on the safety and well-being of people. It is incumbent upon Moog suppliers to communicate this to their employees, and to their sub suppliers to ensure the appropriate level of action and control.



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Revision History

Issue	Description
10 Aug 2016	Added Appendix A for AG orders.
1 Oct 2016	Various changes to Appendix A.
1 Feb 2018	Various changes.
1 Mar 2018	Amendments: - Added clause 4.21 regarding product/service conformity, contributions to product safety and ethical behavior. Also wording adjustments to clause A2.0 to reflect same. - Updated A5.0 to remove SQR-1 as a first article verification requirement. - Updated A8.0 hyperlink to MRQ52620 workmanship standards for machined parts.
1 Nov 2018	Amendments: - Section 3.4: AG suppliers required to submit SN-type NC for EDM waiver/approval. - Section 4.7: AG supplier required to submit SN-type NC when notifying Moog of non-conformances affecting shipped product. Time to notify Moog clarified as within 24 hrs. - Requirement for corrective actions responses A2.0 are made more explicit. Link to reference material is provided. - First article requirements A5.0 are simplified.
1 June 2019	Amendments: - Added exclusions to AS9146 clause A2.0 - Added exclusion for use of approved processors A11.0.
1 Jan 2020	Removed Appendix A for Aircraft. Aircraft and Industrial requirements are defined separately from Space and Defense. This version becomes applicable for Space and Defense Group supplier only.