

Title: *Surmotech Supplier Quality
Requirements (SSQR)*

Doc. No: *MAT-012*

Rev: *C*

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1.0 Purpose

This document defines the quality requirements for suppliers and sub-tier sources associated with a purchase order.

2.0 Scope

This document applies to all suppliers and purchase orders for purchased product or services associated with Surmotech, LLC

3.0 Reference Materials

3.1 Surmotech Supplier Quality Requirements (SSQR)

SSQR 1: Minimum Surmotech Supplier Requirements

SSQR 2: Printed Circuit Board Requirements

SSQR 3: Requirements for Test Specimens

SSQR 4: Solder Analysis

SSQR 5: Manufacturer/Distributor C of C and Traceability

SSQR 6: AS9102 First Article Inspection

SSQR 7: Surmotech Source Inspection

SSQR 8: Special Process Control Requirements

4.0 Definitions/Acronyms

- 4.1 **SSQR:** A Surmotech Supplier Quality Requirement is a specific requirement for documentation or services which extends beyond the Purchase Specification (PS) and which the supplier is contractually bound to meet.
- 4.2 **Surmotech:** Surmotech, LLC
- 4.3 **PO:** Purchase Order
- 4.4 **PS:** Purchase Specification
- 4.5 **MRB:** Material Review Board
- 4.6 **Class I (Major Change):** Class I changes are those changes that may affect the performance, quality, reliability, radiation (when specified) or interchangeability of the product. Acquiring activity approval is required if specified by contract.
- 4.7 **Class II (Minor Change):** Class II changes are all changes except Class I and Class III changes (e.g. conformance to the military specification revision, vendor metallization mask change, package height change within the envelope tolerances of the detail drawing, etc.). Control procedures, records, and rationale for the changes should be kept available for review.
- 4.8 **Class III (Editorial Change):** Class III, editorial changes are those changes to documentation necessary to ensure the understanding and execution of the affected document (e.g., format changes, spelling, word identity, etc.). Change documentation history for Class III type changes should be kept available for on-site review.

SSQR 1: Minimum Surmotech Supplier Quality Requirements

a) Certificate of Compliance (C of C)

Material supplied on this purchase order shall conform to requirements stated therein, and shall be accompanied by a C of C, which must contain the following information:

- Surmotech purchase order number, purchase order revision, line item number,
- Part number of item (as specified on the purchase order), revision, quantity
- Drawing or specification number and revision if different than the Surmotech part number and revision.
- If applicable, the supplier shall also furnish a C of C specifically stating the material(s) provided conform to applicable safety agency requirements.
- Serial number(s), date code(s), lot, batch, heat number(s), must be recorded when applicable.
- Cage Code (if applicable)
- Authorized agent's name, title and date (N/A for distributors)

A lot is defined as a homogenous quantity of parts/material received and controlled as a single procurement transaction.

The supplier or distributor shall provide a certificate of conformance with each shipment of items delivered to Surmotech. The certificate shall state that the supplier and/or the original manufacturer has performed all inspections and required tests identified on the Surmotech Purchase Order and the delivered items meet all of the requirements identified on the Surmotech Purchase Order.

Completion of this Certificate shall not modify or limit any representations, warranties or commitments made or in any way that affect the obligation of Seller to perform strictly in accordance with the provisions of the Purchase Order.

b) Configuration Management

The parts, materials, processes used to build the product on this PO are controlled by Surmotech. Suppliers must notify Surmotech of any changes to product, processes, suppliers, and facilities. No changes may be made unless approved in writing by authorized Surmotech personnel. Copies of specifications, standards, and drawings required by suppliers and sub-contractors in connection with specific procurements may be obtained from the Surmotech buyer.

c) Supplier Discovered Nonconforming Material

All material(s) provided are to be supplied in conformance with drawings, and specifications as required in the PO. Unless specified in the PO, the supplier and their subcontractors do not have authority to process "Use-As-Is", "Repair", "Standard Repair Procedures (SRP)" or "Non-SRP" via their MRB. These dispositions, as well as deviations and request for waivers, shall be submitted for approval prior to delivery of the product. If the MRB authorizes the deviation, a written Deviation Request / Authorization shall be issued to the supplier. This form must accompany the nonconforming material when shipped.

d) Packaging

Material supplied under this PO must be packaged in accordance with specific direction provided on attached drawings or specifications. If not specified, the supplier is responsible for packaging the product in such a manner as to protect the material from the hazards of contamination or physical damage encountered in transport, general handling, storage, and issue.

Regardless of such direction, the supplier continues to be responsible for protecting material from the hazards of contamination or physical damage encountered in transport, general handling, storage, and issue. If additional packaging is required to provide said protection, the supplier must provide it, or contact their Surmotech buyer for explicit directions.

If an ESD symbol is contained within the PS then material shipped on this order shall be packaged and labeled as Electro Static Sensitive (ESDS). Parts are to be protected from corrosion or oxidation, for example, packaged with desiccant when applicable

e) Records

Records of manufacture, qualification, inspection and test, and traceability shall be maintained by the supplier and made available for review. Such records shall be maintained for at least **10** years, unless otherwise specified. The records shall indicate the nature and number of observations, the number and type of deficiencies found, the quantities approved and rejected and the nature of corrective action taken, as appropriate.

Prior to disposal of any such records, supplier shall offer such records to Surmotech.

f) Inspection and Testing (unless otherwise specified)

Material shall be subjected to inspection after receipt, as necessary, to assure conformance to purchase order requirements. Inspection and testing shall be prescribed with clear, complete and current instructions. The instructions shall assure inspection and test of materials, work in process and completed articles, as required, by the item specification and the purchase order. In addition, criteria for approval and rejection of product shall be included.

When requested, inspection and/or tests required to prove full conformance of a line item to purchase order requirements must be recorded and provided. If the material requires Surmotech source inspection, the data must be made available for review by the Surmotech Quality Representative prior to delivery. The data submitted shall cover the lot of material being shipped.

When critical characteristics are documented on the PS, the supplier is required to measure those characteristics and supply variables data with the product.

If critical characteristics are not identified, the supplier is required to retain the inspection results for all other characteristics outlined on the PS on a pass/fail basis unless otherwise noted.

The aforementioned inspection results shall include at minimum:

- Quantity of product checked
- Characteristics checked
- Whether or not the product is within the tolerances specified in the PS

All inspection results shall be made available upon request. When applicable, inspection results may be reported in the Supplier's standard format; a copy of existing records is acceptable, unless otherwise noted on the PS. Surmotech reserves the right to re-inspect the product upon receipt. Compliance with this SQR does not exonerate the supplier from ensuring that all characteristics meet the PS. To facilitate rapid retrieval of the test data, the test data should be enclosed in the same container as the product when applicable. (Certified Suppliers and Distributors are exempt from this requirement)

Sampling inspection procedures used by the Supplier to determine quality conformance of supplies shall be described in the Supplier's inspection system and shall comply with industry sampling practices. If supplier's sampling process is internally developed they must demonstrate their ability to comply with industry statistical methods proven over time. If sampling instructions are described in the Surmotech purchase order or technical documents within the purchase order, the Supplier shall assure that the purchase order requirements are complied with. The sampling plan utilized by the supplier must be documented on the inspection and test data.

g) Calibration System Requirements

The Supplier shall provide and maintain gages and other measuring and testing devices necessary to assure that supplies conform to the technical requirements. In order to assure continued accuracy, these devices shall be calibrated at established intervals against certified standards considering areas of uncertainty which have known valid relationships to national standards. If production tooling, such as jigs, fixtures, templates and patterns used as a media of inspection, such devices shall also be proved for accuracy at established intervals. Calibration of inspection and test equipment shall be performed with standards that have certifiable traceability to NIST.

h) Quality System Requirements

The Supplier's Quality Systems must comply with ISO 9001 Quality System Requirements or the supplier must show evidence of developing systems towards compliance.

In addition Distributors shall (where applicable):

- Maintain an approved and/or qualified manufacturers list (QPL) or for source listed on the purchase order.
- Have available and use the Government Qualified Products List (QPL) and the Government Qualified Manufacturers List (QML).
- Procure all Military specification parts from QPL sources. Define and stipulate in Distributor's purchase order to the manufacturer, applicable Surmotech I and/or Military specifications and related requirements.

i) Right of Entry Provisions

These provisions shall allow Surmotech; it's Customer, and Regulatory Agencies the right of entry to the applicable areas of all facilities, at any level of the supply chain involved with the order, to determine and verify the quality of work, records, and materials. During performance of this order, the suppliers quality inspection system, manufacturing processes, inventory control and lot traceability and quality records are subject to review, verification and analysis by an authorized customer / Government or Regulatory representative. This also applies to the supplier's subcontractors. The seller shall, at no additional cost, supply inspection records, and, when requested, perform or repeat selected inspection and / or tests which are required by purchase order, drawing, specification, statement of work, or inspection instruction.

j) First Article Inspection - Initial Sample Inspection Report (FAI/ISIR)

A completed ISIR must accompany the first manufactured lot of a new product. The ISIR must be completed on product manufactured with the actual process utilized for production. The ISIR is a complete inspection of every characteristic on at least three samples of a lot. The inspection must be performed in accordance with the PS, report actual variable measurements where possible. To facilitate rapid retrieval of the ISIR, it should be enclosed, where possible, in the same container as product.
(Distributors are exempt from this requirement)

k) Requirement Flow Down

Suppliers are required to flow down all applicable requirements in the PO to sub-tier suppliers, including key characteristics as required. When required by customers, any change that is regarded as a Class I change cannot be implemented without approval from Surmotech as well as the specific customer that the product is being built for. At a minimum, all sub-tier suppliers must notify Surmotech of any Class II changes. All changes either Class I or Class II refer only to the product and the specific process used to construct the product. Personnel changes and changes within a site are not included if NO impact is made to fit, form or function.

l) Shelf Life

At time of Surmotech receipt, material must have a minimum of 80% of its original shelf life remaining, as defined by the manufacturers' expiration date.

Components destined for Printed Circuit Board mounting shall have manufacturer date codes of no more than 5 years in age.

m) Foreign Object Debris/Damage (FOD) Prevention

Whenever FOD entrapment or foreign objects can migrate, the Supplier shall maintain a FOD prevention program. Prior to closing inaccessible or obscured areas and compartments during assembly, the Supplier shall inspect for foreign objects/materials and ensure no FOD exists. The supplier shall ensure tooling, jigs, fixtures, and test or handling equipment, are maintained in a state of cleanliness and repair sufficient to prevent FOD. By delivering items, the supplier shall be deemed to have certified that such items are free from any foreign materials that could result in FOD. The supplier's quality program shall include FOD preventive practices and packaging.

n) Customer Furnished Material

When material is furnished by Surmotech/ Surmotech Customer, the supplier's procedures shall include, as a minimum:

- Examination upon receipt, consistent with practicability, to detect damage in transit
- Inspection for completeness and proper type
- Periodic inspection and precautions to assure adequate storage conditions and to safeguard against damage from handling and deterioration during storage
- Functional testing, either prior to or after installation, or both, as required by the purchase order; to determine satisfactory operation
- Identification and protection from improper use or disposition
- Verification of quantity
- ESD safe handling – where applicable

o) Root Cause and Corrective Action

The Supplier shall take prompt action for containment and to correct assignable conditions which have resulted or could result in the submission of nonconforming material to Surmotech.

When it is determined that the supplier is responsible for the nonconformance of material, the supplier shall respond to Surmotech request for a supplier's corrective action.

p) Process Controls

Process control procedures shall be an integral part of the inspection system when such inspections are a part of the specification or the contract. The Supplier shall notify Surmotech of changes in product and/or process definition and where required, obtain Surmotech approval. Statistical Process Control (SPC) is the preferred method of validating these areas.

q) Electrostatic Control Plan (ESD) and Moisture Sensitive Components (MSL)

When product is considered to be susceptible to electrostatic damage, the Supplier must take necessary precautions to ensure static sensitive items or repair services to static sensitive items are protected from electrostatic discharge events. Additionally, the supplier shall have an ESD Control Program Plan and artifacts available for review. It is recommended the ESD Control Program Plan follow the guidelines of ANSI ESD S20 20-(current revision), titled "ESD Control Handbook for Protection of Parts, Assemblies and Equipment's" and shall include procedures, personnel training, records and calibration of ESDS testing equipment. The supplier's ESDS program, including the procedures, is subject to Surmotech customer review throughout the period of this contract. The supplier is responsible for ensuring that product is manufactured, tested, identified and handled in accordance with ANSI ESD S20 20-2014.

Where original manufacturer's specification denotes that a component is susceptible to damage via exposure to moisture, the guidelines identified in J-STD-033 Handling, Packing, Shipping and Use of Moisture/Reflow Sensitive Surface Mount Devices shall apply.

r) Affirmative Action, Local/State/Federal Regulations

If applicable, this contractor and subcontractor shall abide by the requirements of 41 CFR 60-1.4(a), 60-300.5(a) and 60-741(a). These regulations prohibit discrimination against qualified individuals based on their status as protected veterans or individuals with disabilities, and prohibit discrimination against all individuals based on their race, color, religion, sex or national origin. Moreover, these regulations require that covered prime contractors and subcontractors take affirmative action to employ and advance in employment individuals without regard to race, color, religion, sex, national origin, protected veteran status or disability.

Additionally, Surmotech suppliers are responsible to follow all local, state and federal regulations governing their respective business models.

s) End of Life Notification (EOL) / Obsolescence

It is the supplier's responsibility to monitor the life cycle status and availability of parts and/or materials through the duration of the contract. Parts/material determined to be unavailable or identified as "unavailable for new designs" shall be reported to the Surmotech buyer. EOL notification must be submitted to Surmotech year prior to the last time ship date with a minimum of 6 months for order placement.

The written notification must include:

- EOL part number
- EOL part name
- Reason for part discontinuation
- Last time buy date
- Last ship date
- Equivalent/alternate product if available

t) RoHS Exemption

When required by the PS, product(s) supplied under this PO must be compliant to the Restriction of Hazardous Substance (RoHS) Directive.

PO's specifically requesting non-ROHS complaint components/processes must be processed without material substitution.

u) No Substitutions

Surmotech supplied material is provided for this PO. No substitutions allowed.

v) Supplier Awareness

Supplier must ensure that persons in their organization and their suppliers are aware of:

- their contribution to product or service conformity;
- their contribution to product safety;
- the importance of ethical behavior.

w) Counterfeit Parts Prevention

For purposes of this clause, "**Genuine Work**" consists of those parts delivered under this Contract that are the lowest level of separately identifiable items (e.g. articles, components, goods and assemblies). "Counterfeit Work" means Work that is or contains items misrepresented as having been designed and/or produced under an approved system or other acceptable method. The term also includes approved Work that has reached a design life limit or has been damaged beyond possible repair, but is altered and misrepresented as acceptable. Supplier agrees and shall ensure that Counterfeit Work is not delivered to Surmotech. All parts delivered and/or used in the manufacture of deliverable products shall be from the Original Component Manufacturer (OCM)/ Original Equipment Manufacturer (OEM) or their franchised distributor. Parts shall not be used or reclaimed and misrepresented as new. Parts shall not be acquired from independent distributors or brokers unless customer authorization is obtained. (See SQR 17) Supplier shall immediately notify Surmotech with the pertinent facts if the supplier becomes aware or suspects that it has furnished Counterfeit Work. The supplier must have a certification from the OCM/ OEM, and that certification shall be delivered with each lot/ shipment. In the event that Work delivered under this Contract constitutes or includes Counterfeit Work, the Supplier shall, at its expense, promptly replace such Counterfeit Work with Genuine Work conforming to the requirements of this Contract. The Supplier shall also be liable for all costs relating to the removal and replacement of Counterfeit Work, including without limitation, costs of removing Counterfeit Work, of reinserting replacement Genuine Work and of any testing necessitated by the reinstallation of Genuine Work after Counterfeit Work has been exchanged. This clause applies in addition to any quality provision, specification, statement of work or other provision included in this Contract addressing the authenticity of Work. To the effect that such provisions conflict with this clause, this clause prevails. The supplier shall have a counterfeit detection process that is similar to, and meets the intent of, SAE standard AS5553, Counterfeit Electronic Parts, Avoidance, Detection, Mitigation, and Disposition. Suppliers of higher level assemblies shall flow this requirement down to all their sub-tier

suppliers to prevent the inadvertent use of counterfeit parts and materials. The Electronic Components Association (ECA) link may be used to determine authorized sources. <http://www.eciaauthorized.com/>

The Seller shall participate in the Government Industry Data Exchange Program (GIDEP) monitoring and acting on GIDEP reports which affect product delivered to the Buyer. When suspect or confirmed counterfeit item(s) associated with this purchase order are discovered the Seller shall issue a GIDEP report and shall ensure suspect counterfeit items are not delivered to Surmotech.

Distributors must certify that; for obsolete (Out of Production) items, materials and/or parts furnished to Surmotech are from sources that:

- Were approved at the time of item manufacture (drawing-based items), and
- Can validate the authenticity of the item, based on part number and/or manufacturer's identification marking (MIL spec. items)

Otherwise, the Distributor shall notify the Surmotech Buyer prior to acceptance of the Purchase Order, so a decision can be made on the purchase.

x) Safety Data Sheet (SDS)

As applicable for chemicals, solvents, expense materials, etc., the supplier shall furnish an SDS with the first shipment. If the material and/or the SDS have been revised, the supplier must furnish a revised SDS with the next shipment. If a material does not require an SDS per OSHA 29 C.F.R 1910.1200 Hazard Communication one need not be provided.

SSQR 2: Printed Circuit Board Requirements

Surmotech requires approval of all panel arrays before production. Please contact Tori Parry at tparry@surmotech.com or Hailey Hill at hhill@surmotech.com and copy appropriate buyer (as noted on the PS) with any board or step & repeat approvals / issues.

Surmotech requires the following tests / reports for circuit board shipments:

- Certificate of Conformance (required every shipment)
- Electrical Test Certificate (required every shipment)
- Final Product Inspection Report (required every shipment)
- Micro-Section Analysis Report w/Physical Cross Section Sample (required every shipment)
- Ionic Contamination Test Report
- Surface Finish XRF Test Report
- Solder Sample

SSQR 3: Requirements for Test Specimens

A test specimen (e.g. production method, number, storage conditions) shall be submitted for design approval, inspection, investigating or auditing. The PO will describe the test specimen requirements

SSQR 4: Solder Analysis

A copy of the supplier or manufacturer's test report containing process temperature data and chemical analysis data must be supplied with each lot.

SSQR 5: Manufacturer/Distributor C of C and Traceability

Certificate of Conformance (C of C) from original manufacturer is required. The C of C must contain the following information:

- Manufacturer's name, cage code number and/or address, and part number, or if applicable
- Distributor/service provider name, cage code, and/or address, and part number
- The original country where part was manufactured

Seller must certify that all materials and/or parts furnished to satisfy the requirements of this Purchase Order are from original equipment manufacturers, authorized franchised distributors for the items, or subcontractors to whom the requirements of this attachment are made applicable.

Distributors must identify material and maintain traceability to Manufacturer's part number, lot number, and date code of all electronic and electrical parts, raw material and mechanical machined parts, semiconductor devices, integrated circuits, and passive electrical components

SSQR 6: AS9102 First Article Inspection

Supplier shall perform a complete first article inspection to applicable drawings, specifications, technical instructions, processing tooling, inspection and test equipment in accordance with the guidelines below to assure the product is compliant with the requirements of this purchase order.

FAI applies to one piece from the first production run, unless otherwise set forth in this purchase order through written waiver by quality assurance.

Supplier is responsible for determining the method of performing FAI and shall use a form that contains all required information as specified in SAE AS9102.

The FAI requirement, once invoked, shall continue to apply even after initial compliance. Any or all of the following events requires re-accomplishment of a full, or a delta / partial FAI for affected characteristics: (note: if none of the following conditions are applicable at the time of product delivery, first article inspection is not required.)

- A change in the design affecting form, fit, or function of the part
- A change in manufacturing source(s), processes, assembly line, inspection method(s), location, tooling, or materials
- A change in numerical control program or translation to another media
- A natural or man-made occurrence which may adversely affect the manufacturing process
- All repeat builds on production parts when more than two years has elapsed (or as otherwise directed in the purchase order) since the last production item was produced
- When required as part of corrective action for a part number with repetitive rejection history

Supplier shall segregate and identify the FAI unit in a separate container when delivering to Surmotech. The FAI report is to accompany the FAI unit.

Supplier shall assure that discrepancies and non-conformances, if any, discovered during the FAI are documented and dispositioned by the appropriate material review board (MRB). (Suppliers MRB for supplier designed and Surmotech customer MRB for Surmotech/Customer Design) First Article reports for items controlled by CAD files as referenced in the item drawing shall record all dimensions listed on the drawing. A CAD file dimension not listed on the drawing is only to be documented in the inspection report when its respective tolerance is called out on the drawing.

SSQR 7: Surmotech Source Inspection

Surmotech Source Inspection is required for all products and services supplied on this purchase order prior to any shipments.

Supplier shall have completed all necessary processing and inspections, and must assure readiness for source inspection in advance of notification to Surmotech.

The supplier shall provide no less than forty-eight (48) hours advance notice to the Surmotech Representative to permit scheduling of source inspection.

The supplier shall furnish, at no cost to Surmotech, acceptable facilities and equipment. All associated documentation, including drawings, a copy of the purchase order, test procedures, production records and test records, must be made available to Surmotech during source inspection activities.

Evidence of the completed Surmotech source inspection shall accompany each shipment where Surmotech source inspection was performed.

In the event that Surmotech waives this source inspection requirement, Surmotech will provide this waiver in writing. A copy of such waiver shall accompany the applicable shipments.

SSQR 8: Special Process Control Requirements

A Special Manufacturing Process is a process where it is not possible to assure, by typical verification techniques, that product integrity is achieved by the process. The Seller shall certify that these processes such as but not limited to plating, painting, radiography, welding, heat-treating, cleaning, electroplating, anodizing, chemical films, etc. were performed in accordance with specification requirements. The certificate shall identify the products processed, the Procurement Agent's Purchase Order number, and the applicable specifications (including revision letters or numbers) to which the processes conform and the date and the name of the agency that performed the process if other than the Seller.

Personnel performing special processes such as soldering, wire-wrap, crimping, lugging, and welding will require certification in accordance with commercially accepted standards.

REVISION HISTORY

Revision	Date	Description	Changed By
A	09/29/18	Created Procedure	M. Campoli
B	05/31/19	Added Supplier Awareness requirement to SSQR 1, modified Records requirement for supplier to offer to Surmotech before disposal, updated MSDS to SDS, formatting changes	W. Richardson
C	10/27/2020	Removed Jeff Myers name and added Tori Parry and Hailey Hill	M. Campoli