

**AEROSPACE PROCEDURE**

**FOR**

**SUPPLIER QUALITY REQUIREMENTS**

THESE COMMODITIES, TECHNOLOGY OR SOFTWARE IF EXPORTED FROM THE UNITED STATES MUST BE IN ACCORDANCE WITH THE EXPORT ADMINISTRATION REGULATIONS. DIVERSION CONTRARY TO U.S. LAW IS PROHIBITED.

## **1.0 PURPOSE**

To define and clarify Kavlico specific quality requirements in addition to the requirements of AS9100

## **2.0 SCOPE**

This procedure applies to all purchase orders for materials, components, services, and outside processes that are incorporated into the final product.

## **3.0 REFERENCE DOCUMENTS**

- AS9100 - Aerospace Standard, Quality Management Systems — Aerospace Requirements
- AS9102 - First Article Inspection Report, or equivalent as allowed by AS9102
- AS9103 – Variation Management of Key Characteristics
- AF019 First Article Inspection Form
- AF037 - Kavlico Supplier Information Request
- AF065 - Supplier Corrective Action Request
- AF184 - Supplier Self-Survey
- AF229 – Supplier First Article Inspection Report Standard
- AF 310 - Supplier Shipping Checklist
- AP0410 - Aerospace Procedure for Receiving Inspection
- AP0413 - Aerospace Procedure for Control of Nonconforming Product
- WI017 KSIR Process Instruction
- WI018 – Supplier Survey Review Instruction
- WI070 Supplier Corrective Action Instruction
- WI604 - New Supplier Addition/ Existing Supplier Information Update

#### **4.0 KAVLICO SUPPLIER QUALITY REQUIREMENTS**

The Supplier Quality Standard defines Kavlico's quality requirements and on-time delivery expectations. It provides a system for purchase order flow-down to suppliers to ensure compliance with all contract and/or customer requirements. Kavlico's goal is for supplier compliance with AS9100, FAA, and other customer and government requirements.

#### **5.0 RESPONSIBILITIES**

All suppliers providing materials, components, and outside processes directly to Kavlico must be on Kavlico's Approved Supplier List (ASL). The development and maintenance of the ASL is the responsibility of the Kavlico Supplier Quality Engineer (SQE) and Purchasing Supervisor.

Suppliers are required to complete and submit a self-survey form AF184 or equivalent to Kavlico upon request.

It is mandatory that the supplier notify Kavlico of any change in upper management or change to the certification status.

Suppliers are required to comply with the purchase order, drawing/specification requirements, the requirements of this document, and to assume responsibility for the quality and delivery of their products and services. These requirements are to be flowed down to all sub-tier suppliers.

Kavlico Corporation retains the right to debit costs for sorting, rework, and administrative associated with non-conforming materials.

The Kavlico Purchasing Department is responsible for helping suppliers understand these quality requirements and coordinating the efforts of suppliers and Kavlico organizations (Engineering, Quality, Production, etc.) to comply with customer requirements.

The SQE is responsible for providing technical assistance to suppliers to help them understand the quality requirements.

The Kavlico Purchasing Department and the SQE will monitor and report suppliers' quality performance and on-time delivery performance. The SQE will issue, track and monitor quality responses to Supplier Corrective Action Requests (SCAR). Purchasing will issue, track and monitor OTD responses to Supplier performance improvement action plans.

## 6.0 QUALITY SYSTEMS

Suppliers are expected to develop and continuously improve the effectiveness of their quality and manufacturing systems. AS9100 is the preferred quality system requirement with compliance as the goal. Third party registration is preferred, but not required.

Suppliers are required to have a training and certification process.

All suppliers that provide special processes for Kavlico products shall be certified by the National Aerospace and Defense Contractors Accreditation Program (NADCAP). These special processes are: Coatings, chemical processing, heat treating, non-destructive testing, non-conventional machining, surface enhancement and welding. The only exception to this requirement is if Kavlico is directed by its customer to use a supplier that may not have NADCAP certification or if the customer contract does not require NADCAP approved processors. In either case the exception to NADCAP certification will be noted on the Kavlico Purchase Order

Measurement Equipment Calibration – all certifications, test measurements, and product acceptance shall be made with equipment which has been calibrated in full compliance with ANSI/NCSL Z540.

Software Control Requirements – non-deliverable software that is used for product inspection and/or manufacture (NC machines, automated test systems) shall be controlled by the supplier to ensure that software development, testing, documentation, and revisions are adequately controlled and maintained.

Control of Kavlico Supplied Material – upon receipt, the supplier shall inspect for identification and defect of materials. Any materials that are damaged or unsuitable for use shall be documented and reported to the buyer within three working days of receipt using the KSIR format AF037.

Limited Shelf Life Materials – the supplier shall identify all materials and articles that have definite characteristics of quality degradation with age or environment. The supplier shall affix this information directly on the material container or article. This identification shall indicate the date useful life was initiated (manufacturing date) and the date or cycle at which the useful life will be expended (expiration date). When environment is a factor, the identification shall include the storage conditions (i.e., temperature, humidity, etc.) required to achieve the stated life. When the supplier is manufacturing or procuring (distributor) to a Kavlico material specification, the useful shelf life remaining shall be equal to or greater than the minimum shelf life specified in the applicable specification.

Electro Static Discharge Sensitive (ESDS) Materials – the following requirements apply to materials, devices, or assemblies identified by Kavlico drawing or P.O. as ESDS and capable of being degraded, damaged, or destroyed by electrostatic charges or discharges.

- Manufacturers – all items shall be preserved, packaged, and packed in such a manner as to prevent exposure to electrostatic charges or discharges.
- Distributors – packaging shall be compliant to JEDEC 108, EIA 625, or ANSI/ESDS 20.20 requirements. Parts shall be clearly marked or labeled to indicate that the contents are subjected to damage or degradation by electrostatic discharge.
- All Suppliers - when required, maintain a documented system for the control and handling of ESDS materials.

Additional or unique quality system requirements that may be applicable will be specified on the Kavlico Purchase Order and or print.

## **6.1 CONFORMANCE TO KAVLICO REQUIREMENTS**

Suppliers are expected to fully comply with all requirements contained in Kavlico Purchase Orders, referenced drawings, specifications and procedures. Any questions, suggestions or clarification regarding requirements must be resolved before production parts are produced. It is the suppliers' responsibility to insist that any changes requested or required must be made by Kavlico purchasing with a purchase order change notice. In no case will Kavlico Corporation accept verbal or other informal agreements.

All parts shipped to Kavlico shall comply with these requirements. When suppliers suspect the presence of non-conforming parts or conditions, they are expected to remove or correct all non-conforming parts or conditions before shipment to Kavlico.

Suppliers are expected to comply with all drawing(s) specified in Kavlico Purchase Orders, including Kavlico drawings, OEM customer drawings, etc. Contact the Kavlico Buyer with questions, concerns or to request drawings.

All materials used for Kavlico must be DFARS compliant unless otherwise specified by the purchase order.

Suppliers must maintain some type of FOD prevention. Any foreign objects found within shipment will be cause for the entire lot to be rejected.

Suppliers inspection acceptance criteria must use a C=0 sampling plan. Any lots failing inspection must be 100% sorted before shipment to

Kavlico. Supplier should open an RCCA for the discrepant condition internally.

An AS9102 must be provided for a first time build or any other requirements pertaining to the AS9102 and AF229. This is also true for outside processors; a partial AS9102 must be completed for the work done at the processor's location. This requirement does not have to be indicated on the purchase order it is understood.

Key Characteristics requirements are indicated in AF229.

Dimensions indicated with a star are required to be 100% inspected. Supplier shall indicate conformance to this requirement on their C of C. Supplier shall maintain records per section 6.2.1.

### **6.1.1 CERTIFICATE OF CONFORMANCE (COC)**

Each shipment must be supplied with a Certificate of Conformance that the materials or parts furnished under the Purchase Order were produced in conformance with the requirements of the Purchase Order. Certificate of Conformance (C of C) stating that materials and processes supplied under the P.O. shall be or have been controlled and inspected in accordance with the P.O. and that they meet the specified requirements, specifications, and drawings. Process and test/services suppliers must reference all part, test and process specifications on the P.O., or include certifications from any sub-tier suppliers for the processes they accomplished. Raw material suppliers must reference the specification with revision/amendment and actual chemical/physical properties including lot traceability to the melt (lot, heat, melt number, production date or item serial number).

### **6.1.2 KAVLICO DRAWINGS AND CHANGE CONTROL**

Suppliers are expected to have possession of the Kavlico drawing and revision level specified in the purchase order before commencing with the work. They are also to have the current revision of all documents referenced by the Kavlico Purchase Order and lower level documents referenced within.

Current revisions of Kavlico specifications can be found on:

<https://www.sensata.com/kavlico-supplier-documentation-and-information>

Log in information will be provided on the PO.

At the time of PO acceptance, the revision level of the Kavlico specification found on Kavlico website will apply. For blanket

PO's, the revision level at the time of the acceptance of the blanket will apply.

Suppliers are expected to implement revision changes as specified in the Kavlico Purchase Order or change notices. All changes must be in writing and authorized by the buyer. Verbal requests or instructions are not acceptable.

The supplier shall notify Kavlico of changes in product and/or process, changes of suppliers, changes of manufacturing facility and where required, obtain organizational approval. If any of these changes occur refer to the AS9102 requirements.

## 6.2 TRACEABILITY

For each lot of custom products delivered to Kavlico Corporation, the Supplier shall provide positive documented traceability of each individual product to the material certification/test report that represents the raw material used to manufacture the products. In addition, traceability of manufacturing, assembly and special processes (such as brazing, heat treating, NDT, plating) must be supplied. Furthermore, the Supplier shall provide documented linkage between the raw material lots, manufacturing/assembly processes, and special outside processes.

Heat/lot identification on the physical part required by applicable specifications, such as for castings and forgings is acceptable for traceability purposes provided it is clearly marked and not obliterated by subsequent operations.

Supplier must keep different manufacturing and/or processing lots segregated in different boxes, bags or containers within a shipment.

For each shipment of standard catalog hardware as defined in SAE AS9102 the supplier shall provide a manufacturers lot number or unique reference number linked to a certificate of conformance. Any part submitted to Kavlico from a distributor must have the OEM certification available. The Certificate of Conformance must be included. This is true for any electrical or hardware product. If a product is purchased from an OEM and subsequent operations are completed with the product. The OEM certification must be available upon request.

Supplier must keep different lot numbers/reference numbers segregated in different boxes, bags or containers within a shipment (do not co-mingle the different numbers). In addition, each bag or container must identify the part number, revision, purchase order number and lot number or reference number (job or work order number).

The supplier must establish and utilize a documented traceability process to support these requirements.

If a Supplier continues to have issues submitting the correct paperwork with the product, they will be instructed by Supplier Quality to use a Shipping Checklist (AF310) This Shipping Checklist will have to be submitted with every shipment and signed by the person putting the paperwork together. If there are still issues with the paperwork after the implementation of the checklist the supplier will be SCAR'd for each nonconformance.

### **6.2.1 RECORD RETENTION**

Suppliers are expected to store and retain records in such a way that they are readily retrievable for evaluation by Kavlico in facilities that provide a suitable environment to prevent damage or deterioration and to prevent loss. The following records shall be maintained and available for review for a minimum of 10 years or as specified on the Kavlico Purchase Order:

- Shipment records (i.e., invoices, certificates of conformance, material certifications, process certifications)
- Purchased material test results and certifications
- Quality performance records (e.g., control charts, inspection and test results)
- First Article reports
- Tooling records
- Purchase Orders and amendments
- Internal quality system audits and management review
- Supplier SCARs or meeting communication records

### **6.3 FIRST ARTICLE INSPECTION REPORT (FAIR)**

Custom Product - The FAIR process is used to demonstrate the adequacy of supplier, manufacturing, inspection processes and to ensure that all design and specification requirements have been understood, accounted for, verified and documented.



First articles shall be documented as required by AS9102 on the First Article Inspection form. The first article package shall include as a minimum:

- a. Completed form AF019 (or equivalent as allowed by AS9102).
- b. Representative part(s), or assembly, if applicable. Part(s) shall be identified as First Article part(s).
- c. "Ballooned" drawing with all characteristics (including notes) numbered to match the characteristic numbers on the first article form.
- d. Certifications for all material, processes, and hardware.
- e. For additional Kavlico requirements regarding AS9102 see AF229

Standard Catalog Hardware - as defined in SAE AS9102 – a certificate of conformance to the catalog item or established industry or national specification is required. Any modifications made to standard catalog items are considered custom and must be accompanied by an AS9102 and relevant certifications.

Special Processing - NADCAP accreditation and a certificate of conformance to the required specification is required.

Standard Processing - a certificate of conformance to the required specification is required.

Raw material - a certificate of conformance and material certification per the drawing requirements is required.

An AS9102 FAIR is required to be performed and submitted to Kavlico by the supplier under the following circumstances:

- a. The part is made to a drawing over which Kavlico has design control and the supplier has not previously manufactured this part for Kavlico.
- b. If more than two (2) years have lapsed since the supplier last manufactured the part for Kavlico.

- c. A change to the Kavlico drawing has occurred which affects the configuration of the part. Only the part features affected by the change require a first article evaluation.
- d. A significant process change has occurred which could affect part form, fit, or function.
- e. A major process change, change in facility, lapse of third-party registration, or for any change in materials used in manufacturing or processing Kavlico parts.

Form AF229 (Supplier First Article Inspection Report Standard) will be used to inform suppliers of Kavlico specific requirements for completion of an AS 9102 FAIR.

Key Characteristics- Any feature called out on the print as a Key Characteristics must be process controlled per AS9103 and follow the Kavlico specific inspection requirements in AF229.

## **6.4 PACKAGING**

The choice of packaging can have a significant effect on part quality. Suppliers are to use appropriate packaging, considering the various transport methods and routes that may be employed. The objective is to ensure that all parts arrive at the point of usage without damage or deterioration and that the parts can be transported, stored, unpackaged and used efficiently.

Special or unique packaging requirements shall be included in the Kavlico Purchase Order.

### **6.4.1 SPECIAL PACKAGING REQUIREMENTS FOR FOREIGN SUPPLIERS**

Marking of Origin - supplier should mark every article of foreign origin imported into United States with the country of origin label at the time of importation. The merchandise must be marked in a conspicuous place as legibly and permanently as the nature of the product will permit it.

Packing List – supplier agrees to comply with the U.S. CBP requirements and include packing list for all goods to be imported into U.S.A. Packing list should have detail description of part number, description of the parts, value in US Dollars, weight or measures/quantity and country of origin of the merchandise being imported.

## **7.0 COMMUNICATION AND TEAMWORK**

Kavlico looks to suppliers as the experts in their products and services. Suppliers are

expected to participate in the early stages of new product development and throughout the life of the part, suggesting ways to improve customer satisfaction and part manufacturability.

Suppliers are expected to deliver parts 100% on time and compliant with Kavlico drawing requirements. Suppliers are also expected to work with Kavlico Production Teams and support departments (Engineering, Planning, Purchasing, Quality, etc.) to understand and meet their needs.

Suppliers must allow right-of-access to Kavlico representatives, Kavlico's customers, or regulatory agencies. This includes the right to review quality records, perform in-process inspection and/or source inspection of parts contracted by Kavlico at the suppliers' premises to ensure conformance to specified requirements.

When source inspection is required, the supplier shall notify the buyer at least forty-eight (48) hours in advance of the product/materials being ready for inspection. At the time of source inspection, the supplier shall furnish:

- A copy of the latest revision of the P.O.
- Complete manufacturing inspection records, including AS9102 documentation if applicable.
- All applicable drawings, specifications, and standards
- Facilities, including equipment and personnel qualified to demonstrate conformance of the product/materials to P.O. and/or drawing requirements.

## 7.1 AUDITS

Kavlico Quality representative(s) performed audits are reviews and examinations of the Suppliers' records and activities which assess the adequacy of system controls, compliance with established policies and operational procedures, and may recommend necessary changes in controls, policies, or procedures.

The Suppliers, upon request by Kavlico SQE, must complete and return a self-assessment questionnaire (AF184) or equivalent prior to the Quality System audit.

Kavlico audit team may conduct Quality System and Process Audits at product launch and periodically thereafter at the Supplier.

## 7.2 KAVLICO SUPPLIER INFORMATION REQUEST (KSIR)

Occasionally a supplier may need to request temporary, one-time deviation from the drawing requirements. Suppliers are expected to submit a KSIR (AF037) to the Kavlico Buyer prior to shipping parts.

Supplier must reference issued KSIR # on the C of C or AS9102 FAIR as applicable.

Only written KSIR's with all required Kavlico signatures can authorize a supplier to ship non-conforming parts to Kavlico. Verbal authorizations will not be accepted. Shipping non-conforming parts to Kavlico without an approved KSIR accompanying the shipment will result in a rejection of the parts and a negative impact on the supplier's performance rating.

A KSIR may also be used for notification of quality escape. In the case of a notification of escape the supplier and buyer do not need to follow WI017. A supplier can use their own form as long as notifications are made. Supplier quality will forward to the appropriate quality engineer.

## 8.0 SUPPLIER PERFORMANCE

Supplier performance will be evaluated for all suppliers, who can affect product quality, in the three performance areas.

### **Supplier Performance:**

Quality performance will be measured by comparing the actual product or service received versus the purchase order requirements. The Supplier performance goal is 100%. Quality performance will be measured by a supplier's contribution to rejections during an established time period. Purchased products and outside process will be measured separately. On time delivery performance, will be measured by calculating the percentage of lots received on time. Both on time delivery and quality performance will be measured at a minimum, quarterly basis.

A Pareto will be made for the top contribution to rejections and OTD failures for the review period. The suppliers with the highest contribution will be sent a notification of the types of rejections or late deliveries issued. It is the up to the discretion of the SQE and Purchasing manager to decide if the supplier will be second sourced, issued a SCAR, or be reviewed for disqualification. Actions taken from the OTD and Quality Performance reviews will be documented and saved as part of the quarterly review. Any SCARs generated as part of the review will be issued using form AF065 (or equivalent).

SCARs may be issued at any time at the discretion of the Supplier Quality Engineer over and above the requirements per WI070.

Additional scorecards will be issued at the discretion of the Purchasing or Supplier Quality Engineer based on contributing factors such as change in the supplier performance (negative/positive).

### **8.1 SCAR Response:**

Suppliers are required to supply materials that conform to Kavlico purchase order requirements. Upon determining that materials are not in conformance with Kavlico purchase order requirements, a SCAR is issued to the applicable supplier for each occurrence at the discretion of the SQE. Suppliers are expected to respond to SCAR's using form (AF065) or equivalent.

## **9.0 FAA Repair Station Suppliers**

### **9.1 Supplier Addition:**

(Reference AP0406 and FAA Repair Station Manual FAA001). Suppliers are added based on needs of the Repair Station. At the time of new supplier addition, the Repair Station will assess whether or not the scope of work will include safety critical processes. If safety critical work will be contracted to the supplier, confirmation of their drug and alcohol program will be required before they are added to the Repair Station ASL (AF260) for FAA approval. It is the responsibility of the Kavlico Supplier Quality Engineer to obtain evidence of a drug and alcohol program for safety critical processes or if there is a change to the scope of work.

### **9.2 Use of sub-tiers**

Suppliers doing work for the FAA Repair Station shall not subcontract. It is the responsibility of the Repair Station to identify the repair work order (WR router) as an FAA Repair. It is the responsibility of the Buyer to ensure that all required information is included to identify a purchase order as a FAA Repair P.O.

FAA Suppliers must complete form AF184 regardless of their certification status in order to meet CASE requirements.

## **10.0 Subcontract of work**

EX classified parts will not be subcontracted.