Rosen Aviation Supplier Quality Assurance Requirements

1. Purpose

This document establishes the Quality Assurance Requirements for all Rosen Suppliers. This document is applicable to all Rosen Aviation Purchase Orders (POs). In addition to the requirements listed in this document the supplier shall comply with the requirements listed in Rosen's Terms and Conditions (T&Cs) document.

2. Quality System Requirements

It is preferred that suppliers implement and maintain a Quality Management System that is certified and/or compliant to the ISO 9000/AS9100 standard.

3. Conflict Minerals Compliance

When applicable, supplier must have policy and or traceability process in place to determine whether its products contain tin, tantalum, tungsten or gold ("3TG") originating from the DRC (Democratic Republic of Congo) and adjoining countries.

4. Right of entry

Rosen reserves the right to perform a review with the supplier of Rosen's PO and deliverable product requirements. When necessary the Federal Aviation Administration (FAA) or other applicable Civil Aviation Authorities (CAAs) reserve the right to inspect applicable raw, in-process, or finished material at supplier's facility, with a minimum verbal or written notice of 24 hours.

5. Special Process Requirements

A special process is any process where the resulting output cannot be verified by subsequent monitoring or measurement, such as (but not limited to) plating/coating, welding, optical bonding and metal 3D printing. When a special process is listed in a Rosen drawing the supplier is required to ensure the processing source for these requirements, including those performed by the supplier, meet the listed applicable standard. Rosen reserves the right to verify compliance to any special process listed in a Rosen drawing.

6. Control of Nonconformances

Nonconforming material must be identified, documented, evaluated, segregated and dispositioned per supplier procedures. Only material that complies with the specified requirements shall be shipped to Rosen Aviation. Disposition of "use as is" for Rosen design required written authorization from Rosen's Engineering. Any reworked parts must be inspected and tested prior to shipment.

7. Identification and Traceability

Records for articles shall indicate part number, revision level, lot number and serial numbers as applicable. When Serial Numbers are applied, the supplier shall have a process in place to prevent the creation of duplicate serial numbers per part number.

8. Counterfeit Parts Prevention

As applicable, suppliers shall have a program in place that prevents the delivery of counterfeit parts and material to Rosen. All parts material and subassemblies (electrical, mechanical, raw material) included in the product delivered to Rosen shall be procured directly from the Original Equipment Manufacturer (OEM) or from the OEM authorized distributor. The supplier is responsible for flow down of this requirement to lover level suppliers and for compliance verification. Further guidance in on counterfeit part prevention can be found in SAE documents AS5553 (Electronics) and AS6174 (material)

9. Delivery Documentation

Delivery documentation shall be provided to for each part, product, component, material delivered according to the following list:

1. Certificate of Conformance required for all shipments referencing Purchaser Order, Part Number and quantity.
2. Test Reports as required
3. Material Certification for all raw material (material called out in a Rosen drawing, such as, but not limited to, Delrin, Aluminum, Stainless Steel or Rubber.
4. For articles that have been returned to the supplier for nonconformities, the articles shall be returned to Rosen with a tear-down report describing findings and rework performed.

10. Hazardous Material

Hazardous Material must be supplied with Safety Data Sheets (SDS) for each shipment.

11. Shelf Life Limited Parts

As required by PO/Quality Code, materials with limited shelf life i.e. (epoxy, paint, adhesives, etc.) shall reflect the date of manufacture, Lot number, and applicable specification on the container. The time lapse between cure or manufacturing date and date of scheduled receipt by the buyer under the purchase order shall not exceed 1/4 of the material's shelf life without prior written waiver of the buyer as to each shipment.

12. First Article Inspection (FAI)

First Article Inspections shall be performed per the requirements of SAE AS9102. First Article Inspection reports shall be submitted to Rosen for the first shipment of a new part number of subsequent revision if required by Purchase Orders. Supplier FAI forms may be used if previously authorized by Rosen.

A delta FAI is required when changes to form fit or function are affected. A delta FAI is also required when changes to process are affected.

13. Record Retention

Suppliers shall maintain quality records within their quality system. Parts records shall be retained for a minimum of 10 years including traceable/serialized part records. Electronic media shall be backed up to preventive document loss. After the retention period, these records may be disposed of in such a manner not affecting the confidentiality/non-disclosure agreement. Records shall be maintained in such a manner so as to prevent loss or deterioration of records as well as being readily retrievable.

14. Notice of Escapes (NOE)

Suppliers are required to notify Rosen within 48 hours of detection any nonconformance that exist or that it may exist on product that has been previously shipped to Rosen. The notification must include the following information:

- Affected part numbers, affected process
- A description of the nonconformance and the affected requirements
- Quantities, dates, lots and applicable purchase order numbers
- Root Cause and Corrective actions (if known)

15. Calibration

Monitoring and measuring devices used for product acceptance must be calibrated and traceable to National Institute of Standards and Technology (NIST) standards.

16. Foreign Object Damage (FOD)

The supplier shall maintain a FOD program to enable FOD prevention and detection. The program must meet industry standards and should be in accordance to the type of product provided. Delivered products must be free of foreign material.

17. Statistical Techniques

Suppliers are responsible for understanding and reducing variation of processes. Suppliers are encouraged to maintain process controls and understanding the use of statistical process control tools.

18. Supplier Control

Suppliers shall provide complete flow down of all purchase order and customer requirements to their sub-tier suppliers, to ensure conformity of manufacturing, inspection, testing and documentation requirements including key characteristics supporting the processes where required.
This includes but not limited to quality, ESD control, FOD prevention, purchase order or special requirements to their sub-tier suppliers.

19. Handling, Packing and Preservation

It is the suppliers' responsibility to ensure that the packaging is adequate to protect the components from damage during transportation handling and storage. Packaging containers shall be appropriate to the size, weight and fragility of the products being packed.

20. Electrostatic Discharge protection

Static sensitive devices or Static sensitive technology must be properly handled, packaged, and labeled in accordance with ANSI/ESD S20.20.

21. Changes in Process and Materials

Supplier shall not change any process and/or material that will affect fit, form or function without prior approval from the buyer. Product, which has been subjected to customer and/or regulatory specified qualification procedure to qualify the product or to permit the supplier to become a qualified source for the product the supplier, shall not change any process, material used to qualify without the prior notification and approval by the buyer, customer and/or regulatory agency as appropriate.

22. Supplier's Performance

Supplier shall maintain Quality and On Time Delivery metrics that demonstrate a positive trend. Suppliers falling below 97% Quality and On Time Delivery for 3 consecutive months are expected to issue Corrective Action to improve performance.

Rosen Aviation Quality Codes for Suppliers

Q01 Certificate of Conformance required with each shipment. Quality Assurance & Control Records used to substantiate conformance must be maintained for a minimum of 10 years.

Q02 Age sensitive material requires marking with date of manufacture. Additionally, material must have at least 75% of its useful life remaining at the date of receipt at Rosen.

Q03 Supplier guarantees the right of access to their facilities, quality related records, and quality related data, to the FAA, other applicable CAA's and Rosen. Quality Assurance & Control Records used to substantiate conformance must be maintained for a minimum of 10 years.

Q04 Electrostatic Sensitive parts shall be manufactured, handled, and packaged in accordance with industry ESD standards where applicable.

Q05 Material Certification required with each shipment.

Q06 First Article Inspection Report is required with first shipment from initial production run or initial run to new revision of design documentation. First Article Inspection acceptance is to be determined using Rosen design documentation.

Q07 Special process providers shall keep available for review the following data:

- **Report of process parameter controls (temperature, pressure, concentration, pH, hardness, conductivity, etc.) according to the limits and frequency specified in the specifications;**
- **Calibration standards list (including calibration reference procedures and calibration frequency);**
- **List of qualified personnel; evidence of their qualification (training, knowledge, experience, skills);**
- **Qualified materials list used in the process**

Q08 Quality Control Records are needed per the Key Characteristics worksheet. Control Records used to demonstrate process performance must be maintained for a minimum of 10 years.

***NOTE:** *Quality codes cannot be drastically updated or deleted; if no longer applicable, they are to be stricken through, dated, and acknowledged as such.*

REVISION HISTORY

Revision	Date	Sections Changed	Description of Change	Change Authority
A	10/05/17	N/A	Initial release	DC 17-0055
B	04/09/18	22	Add Q08 "Quality Control Records is needed per the Quality Control Plan file. The Control Records used to demonstrate process performance must be maintained for a minimum of 10 years."	DC 18-0036
C	07/31/18	2, 3, 5, 7 8, 9, 11, 12, 14, 15, 21 and Q08	Section 2 – preferred Section 3 – where applicable Section 5 – definition of special process and removed NADCAP preference Section 7 – removed first sentence, added per part number at end Section 8 – As applicable, typo corrected Section 9 – clarified raw material and provided examples Section 11 – as required by PO/Quality Code Section 12 – clarification Section 14 – changed 24 to 48 Section 15 – per NIST standards Section 21 – affect not effect Q08 – changed QCP to Key Characteristics	DC 18-0072
D	10/24/19	9	Add requirement for Tear-Down report for RMA'd material returning to Rosen	DC 19-0098