

# SQM001 - Supplier Quality Manual Rev A

## 1. Purpose

- 1.1. The Purpose of this document is to define supplier requirements and expectations of doing business with Titan Fittings.

## 2. Scope

- 2.1. This procedure applies to all purchase orders issued by Titan Fittings. **Section 4** of this document applies as general requirements and pertain to all Purchase Orders regardless of scope of work. Where applicable additional Quality Clauses are defined in **Section 5** of this document. These Quality Clauses are required when invoked on Purchase Orders. Where there is a conflict between this document and the Purchase Order the latter will take precedence. These requirements will be flowed to all sub tier suppliers.

## 3. Definitions

- |      |             |                                      |
|------|-------------|--------------------------------------|
| 3.1. | <b>CofC</b> | Certificate of Conformance           |
| 3.2. | <b>CofA</b> | Certificate of Acceptance            |
| 3.3. | <b>CofT</b> | Certificate of Test                  |
| 3.4. | <b>WIP</b>  | Work in Progress                     |
| 3.5. | <b>FAI</b>  | First Article Inspection             |
| 3.6. | <b>CPK</b>  | Short Term Capability                |
| 3.7. | <b>PPK</b>  | Long Term Capability                 |
| 3.8. | <b>APQP</b> | Advanced Production Quality Planning |
| 3.9. | <b>PPAP</b> | Production Part Approval Process     |

## 4. General Requirements

### 4.1. Quality Requirements

- 4.1.1. The core quality requirement is for all features to comply to specifications 100% for all parts produced and shipped. If the process is not capable of meeting 100% yield it is Titan Fittings's expectation that suppliers pursue measurable continuous quality and delivery improvements.
- 4.1.2. Suppliers shall comply with all contractual requirements, (including but not necessarily limited to Long Term Contract and general purchase order provisions agreed between the parties), for notification and approval of changes in design, material, manufacturing location, manufacturing equipment, production processes, and any other process related to the Goods in place as of the purchase order issuance date.
- 4.1.3. Suppliers will retain all quality records including inspection reports, FAIs, Work orders and other supporting evidence of conformity for a period of no less than 7 years unless otherwise stated

### 4.2. Right of Access

- 4.2.1. Suppliers will permit access to Titan Fittings and its representatives, including our customers and vendors, to the extent necessary to perform services and verification/validation activity. Where sub tier suppliers are used the right of access will be extended to the entire sub tier supply chain. It is the supplier's responsibility to communicate these rights to their supply chain.

### 4.3. Changes in Process, Design, Quality System, Facilities, Management or Ownership

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4.3.1. Suppliers shall immediately notify Titan Fittings of any; changes in quality leadership, scope, name, or address of Quality Management System registrations, or controlled processes certification status, including suspensions or disapprovals. Suppliers shall also notify the above parties in the event of complete company closure.

## **4.4. Configuration Management**

4.4.1. The Supplier shall ensure that the current configuration of all drawings, specifications, and instructions required by the Contract / Purchase Order, as well as authorized changes, are used for manufacturing, inspecting, and testing.

## **4.5. Source of Supply**

4.5.1. When the source of supply is specified on a drawing or specification invoked by purchase order in any manner, only those sources of supply shall be used. The use of any alternate sources not specifically listed on the drawing or its associated specs/databases is prohibited unless otherwise specified by specific requirements flowed on the Purchase Order.

## **4.6. Certifications – General**

4.6.1. The Supplier is responsible for maintaining and supplying accurate and legible certification documentation as objective evidence of meeting drawing, specification, technical data, or purchase order requirements

## **4.7. On Time Delivery**

4.7.1. The supplier is responsible for maintaining acceptable on time delivery performance. Typically, minimum acceptable performance is an average of 99% on time.  
4.7.2. Suppliers will notify Titan Fittings if issues arise that risk on time delivery as soon as reasonably possible even if actual delays are uncertain.

## **4.8. Confidentiality**

4.8.1. Suppliers will maintain confidentiality regarding all aspects of business conducted between the supplier and Titan Fittings in accordance with this document and any applicable non-Disclosure agreements.  
4.8.2. At times it may be necessary to share certain information for the purposes of supplying products or services to satisfy Purchase Order agreements. In this event the supplier shall request written authorization prior to sharing proprietary or otherwise confidential information.

## **4.9. Non-conforming product**

**4.9.1.** Non-conformities discovered by the supplier will be contained and segregated from conforming product. If the nonconformity risks, the ability to meet on time delivery the supplier shall notify Titan Fittings as soon as reasonably possible even if actual delays are uncertain.

4.9.1.1. Containment applies to any known or potentially affected product that is either in **WIP**, Inventory, in transit or that has been delivered to Titan Fittings

4.9.1.2. Non-conformities discovered post-delivery will be credited, replaced, or canceled at the determination of Titan Fittings

4.9.2. Disposition of Non-conforming material will be subject to the following criteria

4.9.2.1. Scrap – Determination can be made by the supplier

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4.9.2.2. Rework – Determination can be made by the supplier and records of the Rework Instructions must be maintained

4.9.2.3. Repair – Suppliers require concession and approval prior to performing any repair. The approval must be in writing.

4.9.2.4. Use As Is – Suppliers must acquire approval from Titan Fittings to allow Use As Is. This approval must be in writing

4.9.3. Records of nonconformity must be maintained by the supplier. Records must include the Defect being rejected, the requirement that was not satisfied, the date the defect was identified, the disposition of the defect and approval to carry out the disposition. These records must be made available to Titan Fittings upon request.

4.9.4. Return of Scrap will be determined by Titan Fittings. Where return is not required the supplier may scrap on site.

## **4.10. Communication**

4.10.1. Communication will flow through appropriate channels and should be directed through Titan Fittings. Suppliers will not engage customers or other suppliers of Titan Fittings to discuss products flowed down on Purchase Orders unless directed to do so by Titan Fittings.

## **4.11. Corrective Action**

4.11.1. Titan Fittings may request that corrective action be implemented to address known defects, trends in performance or risks. In this even the supplier will perform an investigation in to the root cause of the cited issue and ensure that corrective action is implemented to address the system that is at the core of the finding. The supplier will retain records of the corrective action and the root cause analysis. Upon request the supplier will provide Titan Fittings with copies of the retained records.

## **4.12. Workmanship Standard**

4.12.1. Product will be manufactured to meet good standard workmanship. This includes ensuring that all product is uniform in appearance, and is indistinguishable; Lot to Lot, Part to Part, and Order to Order. Were it is not feasible to ensure that uniformity is maintained, agreements between the supplier and Titan Fittings must be made in writing prior to delivery. Workmanship standards also include ensuring that product is delivered without sharp edges or defects that may be injurious to the user.

## **4.13. Awareness**

4.13.1. Suppliers will ensure that all persons performing work for Titan Fittings will understand their contribution to product safety, their contribution to the product and service conformity including risks associated with nonconformity or noncompliance. The supplier will also ensure that persons involved with work related to any Titan Fittings purchase order if performed ethically and the importance of ethical behavior is understood by the supplier and sub tier.

## **4.14. Competence**

4.14.1. Suppliers will ensure that work is performed by persons with reasonable competence necessary to effectively perform the required work. Competence can be determined by a

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combination of experience, training, certification or testing. Where special processes are invoked the supplier will ensure that only adequately certified personnel perform tasks within the scope of the special process.

## 4.15. Approved suppliers

4.15.1. Suppliers will ensure that all sub tier suppliers of material or service throughout their supply chains are approved and maintained. When specific sources of supply are mandatory the supplier will be notified.

## 4.16. Flow down

4.16.1. Suppliers will ensure that appropriate requirements are flowed down while respecting all regulatory requirements and proprietary information.

## 4.17. Test specimens or samples

4.17.1. When required these types of samples will be required to be delivered or retained by the supplier. The samples must represent the actual processes used to produce the production being qualified.

## 5. Quality Clauses

### 5.1. 001 - Certifications – Specific

5.1.1. Suppliers will supply all applicable *CofCs*, *CofAs*, *CofTs* as appropriate to the products that they supply whether they are manufactured in house or sourced through their supply chains.

### 5.2. 002 - Special Processes

5.2.1. Special processes include any process that cannot have its output (product) verified through direct measurement. Where this clause is invoked the supplier shall document the procedure used to perform special processes. Upon request the supplier shall make these procedures available to Titan Fittings. If the special process is outsourced by the supplier, the requirements must be flowed in accordance with *section 4.7* of this document and the source must be approved by Titan Fittings.

### 5.3. 003 - First Article Inspection

5.3.1. The Supplier holding the Purchase Order is responsible for assuring completion of the First Article Inspection Report (FAIR) per AS9102 for all design characteristics generated by the supplier or their sub-tiers. The *FAI* requirement applies to each bill of material or parts list item with a part number that is invoked in the product design, including lower level detailed drawings identified on top-level assembly drawing(s), and each cavity or tool serial number for products whose dimensions are controlled by the tool. FAIRs may be required on Customer or Supplier Drawings if specified on the Purchase Order.

### 5.4. 004 - Limited Shelf Life

5.4.1. Items manufactured that have limited shelf life will be delivered with at least 80% of their remaining shelf life. These items can include but are not limited to; Solvents, Glues and adhesives, paint and other coatings, certain plastics, rubbers, cements, and any other product that expires with age.

### 5.5. 005 - Source Inspection

5.5.1. When this clause is invoked the supplier will permit Titan Fittings or a designee of Titan Fittings to inspect product on site at the supplier's facility. The supplier will be responsible to; host the source inspection, provide adequate inspection space including appropriate

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lighting and inspection equipment, cooperate with the inspection and provide records as evidence to claims of conformity.

## 5.6. 006 - Part Marking

5.6.1. Product that has marking requirements invoked shall be marked using permanent indelible ink either by tagging, bagging or directly on their surface. When direct marking is applied the marking shall be in an inconspicuous location unless directed by the design drawing. Markings shall be legible from a distance of at least 18 inches under normal lighting conditions with corrected vision of 20/20

## 5.7. 007 - Material Samples Required

5.7.1. Samples may be requested by Titan Fittings for the purpose of qualifying product/processes or as evidence of capability. Where samples are requested the supplier shall provide samples that represent the processes to be used at full rate production. If processes representative of full rate production cannot be provided Titan Fittings must agree that the samples will be suitable for their needs prior to delivery.

## 5.8. 008 - Process Control

5.8.1. When invoked this clause requires that suppliers maintain processes under statistical control. Statistical control is monitored until **CPK/PPK** for non-critical characteristics is determined to be at 1.33 or higher and critical characteristics are at 1.67 or higher. The supplier will retain records of capability studies to be made available to Titan Fittings upon request. Lapse in production of more than two years will require re-assessment of process capability.

## 5.9. 009 - F.O.D.

5.9.1. The supplier shall ensure that Foreign Objects and subsequent Foreign Object Damage (FOD) is eliminated from all parts prior to shipment. All suppliers must maintain a FOD free environment during machining, manufacturing, assembly, maintenance, inspection, storage, packaging and shipping. Potential FOD includes but is not limited to burrs, chips, dirt, corrosion and contamination resulting from the manufacturing, assembly, maintenance, processing, cleaning, storage and subsequent packaging of parts. Suppliers are responsible for flow down of these requirements to their sub-tier suppliers to ensure FOD free products. For additional information regarding FOD prevention, refer to National Aerospace Standard AS9146, "Foreign Object Damage / Foreign Object Debris (FOD) Prevention". The AS9146 document may be used as a baseline FOD prevention resource.

## 5.10. 010 - **APQP/PPAP**

5.10.1. **APQP** requirements apply to any part number being made for the first time by a supplier. The requirement shall continue to apply during ongoing production. Where a purchase order holder subcontracts some/all of the manufacture of an item, the PO holder shall be responsible for the compliance of their sub tier(s) to the requirements of this clause. Purchase order holder (supplier) shall comply with AS9145 -requirements for advanced product quality planning and production part approval process **APQP/PPAP** activity shall begin immediately upon receipt of a purchase order for a part number being made for the first time by the supplier. Items/documents/approvals defined within **APQP** requirements shall be completed in accordance with the schedules provided in applicable **APQP** program documents. Unless otherwise specified, all **PPAP** submissions shall require level 3

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compliance. The **PPAP** will be approved by Titan Fittings after the supplier demonstrates the ability to produce conforming hardware while incorporating the **APQP** tools. Supplier shall maintain records of compliance to **APQP/PPAP** requirements.

## **5.11. 011 - Delegation of inspection Authority**

5.11.1. When invoked Titan Fittings hereby delegates to the supplier the authority to perform in-process inspections and final acceptance inspection for the product described by part number in the purchase order. The supplier shall maintain inspection records and make them available upon request. Supplier shall not delegate inspection authority to sub-tier suppliers. Suppliers with this delegation authority are subject to customer surveillance. This is a special application clause and is not intended to be utilized in place of Source Inspection requirements as imposed in **clause 005**.

## **5.12. 012 - Inspection Sampling**

5.12.1. Inspection Sampling shall be performed in accordance with the requirements of MIL-STD-105 where C=0.

## **5.13. 013 - Manufacturing Plan**

5.13.1. The Supplier shall develop a Manufacturing Plan that defines the manufacturing processes to be employed in the manufacture of the part/assembly. The Supplier is encouraged to maximize the use of current documentation techniques. The Manufacturing Plan shall include the following as a minimum:

- 1) Processing Sequence including a brief description of each main processing step.
- 2) Equipment to be used at each step (e.g. Mill).
- 3) Any subcontracted procurements including the identification of sub-tier suppliers (e.g. parts, processes, etc.).

## **5.14. 014 - Outsourcing**

5.14.1. The Supplier shall notify Titan Fittings, and request written approval prior to outsourcing a process, part, assembly, or end item.

## **5.15. 015 - Component Traceability**

5.15.1. The Supplier of any component assembly shall be able to, upon request, provide a list of all material utilized in the creation of said assembly. Material requiring this work order to lot/date code level traceability includes electrical components, the active and passive parts and items in the schematic. It does not include non-critical parts such as hardware and other mechanical parts. The system must account for any/all components that require replacement past initial installation. The traceability must be maintained throughout the manufacturing process from work order launch to shipping to Titan Fittings. In addition to the component traceability, the supplier shall, upon request, provide all necessary processing history for the assembly in question. This shall include process name, date and time, location, and operator ID of the personnel performing the function.

## **5.16. 016 - Quality Management System Requirements**

5.16.1. Suppliers must maintain compliance with the quality management system determined by Titan Fittings. And will be flowed down by citing this clause and level on Purchase Orders. These standards are determined as one of the following categories

- 1) Controlled by Titan Fittings flow down only.
- 2) Compliant to ISO9001
- 3) Certified ISO9001

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- 4) Compliant to AS9100
- 5) Certified AS9100

**6. Reference Documents**

- 6.1. MIL-STD-105
- 6.2. AS9145
- 6.3. AS9102
- 6.4. AS9146
- 6.5. AS9100
- 6.6. ISO9001
- 6.7. AS5553

**7. Revision History**

Rev	Created By	Reviewed By	Description of Changes	Date
A	Dereck W	Dereck Williams	New procedure	11/29/2023