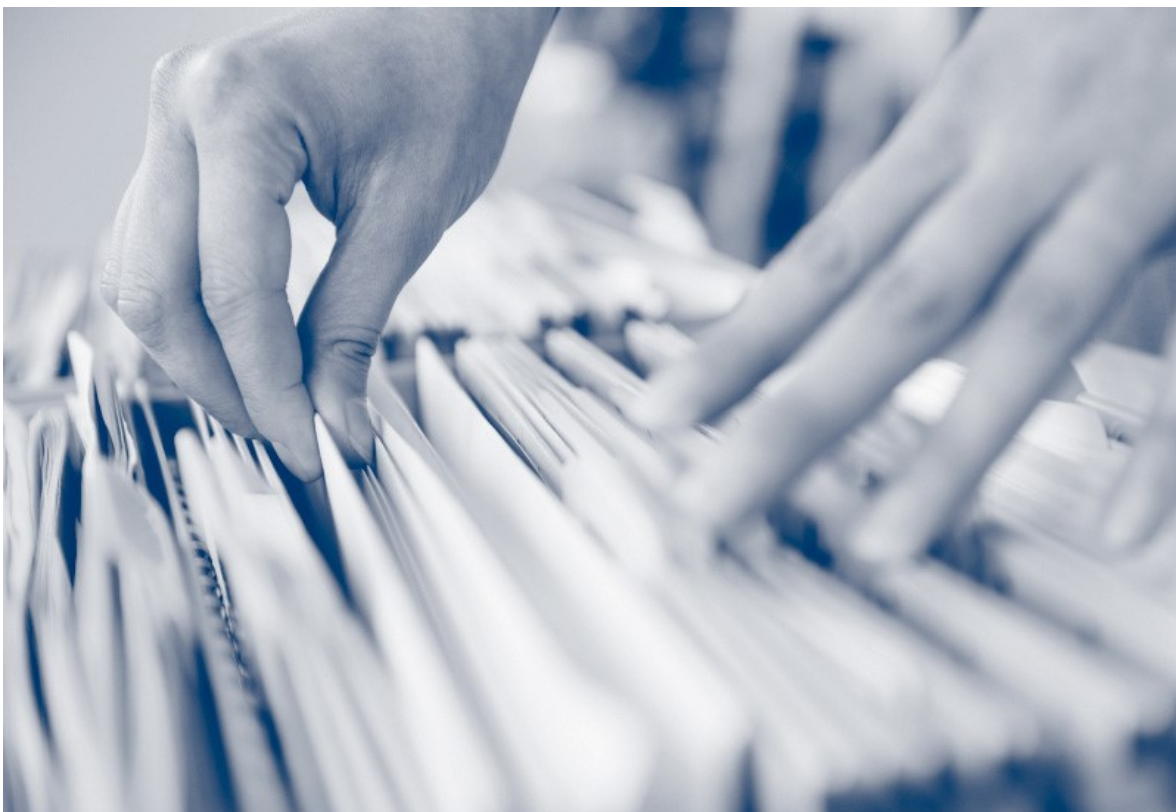


# SUPPLIER MANUAL

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**Issue date: 17/02/2020**

**Document reference: CSQA001 – v7**

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## 1. COSWORTH SUPPLIER QUALITY MANUAL OVERVIEW

For COSWORTH to achieve its goals as set out in the Quality Policy, and those of our customers, we require all business and supply chain partners to strive to the same high standards of Quality, Delivery and Cost. For this, COSWORTH has a robust Supplier management system that ensures all suppliers to COSWORTH are working in a way that will best meet the requirements of COSWORTH and most importantly its downstream customers.

The purpose of this Supplier Quality Manual (SQM) is to convey the requirements COSWORTH stipulates of its suppliers of Products or Services and of the controls and processes around that supply. These requirements are in addition to any communicated via Purchase Order, Supply Contract, Technical Drawings, those flowed down through customer specific requirements or any other form of written communication.

It sets out the requirements of a supplier's Quality Management System, it's Product introduction process and its production management system.

For APQP and PPAP forms, it is not stipulated that a supplier will use COSWORTH formats, but formats will be supplied if requested and referred to in this manual. Where a supplier chooses to use their own document formats, they must achieve the minimum requirements set out in this manual.

## 2. SUPPLIER SELECTION, APPROVAL AND REVIEW

### **Supplier Approval Process.**

COSWORTH will assess and approve all suppliers prior to the issuance of a purchase order. All Suppliers must be approved by COSWORTH, regardless of approvals by customers or other entities.

### **2.1 Minimum Requirements**

The minimum quality requirement for suppliers of products and services to COSWORTH shall be Quality Management System (QMS) certification to ISO9001 by a UKAS (or national recognised equivalent) accredited certification body. This requirement guarantees the supplier has put in place a consistent QMS able to satisfy our basic needs. Suppliers that provide products and services that are used in projects for aviation applications may require to be certified to AS9100 or equivalent. If AS9100 certification is required, this will be stated in the COSWORTH Request for Quotation (RFQ) and Contract / Purchase Order (PO)

## **2.2 Exceptions**

Requirement exceptions for suppliers that do not meet the minimum quality certification shall be authorised based on:

- a) The supplier is mandated by our customer.
- b) The supplier is the manufacturer of a single sourced product mandated by our customer.
- c) The supplier is the only distributor of a product mandated by our customer.
- d) The supplier provides products or services that have no direct or indirect effect on the products and services we provide our customer.
- e) Supplier can demonstrate that they will meet and maintain our quality requirements

## **2.3 Supporting Documentation**

Documents required to complete the supplier approval process are:

- a) New Vendor Requisition form 0145
- b) QMS certification.
- c) Quality manual - if the Supplier maintains a Quality Manual, COSWORTH may request to review a copy.

## **2.4 Special Measures**

Where the above criteria and exceptions cannot be met, depending on the product, its application, value and criticality, special authorisation may be granted where evidence of compliance can be provided.

## **2.5 Site Visits and Supplier Audits**

Where appropriate, suppliers shall be subject to on-site audit and / or site visit by the COSWORTH Supplier Quality Engineer. In some instances, COSWORTH will be unable to raise a purchase order until supplier approval has been granted. Scheduled verification audits, site visits and business to business meetings shall be supported when required.

## **2.6 Access to Supplier**

The Supplier shall provide COSWORTH'S Supplier Quality Engineer:

- a) The right of access to facilities where the contracted activities are being performed.
- b) Information pertaining to the fulfilment of contracted requirements.
- c) Unrestricted opportunity to evaluate Supplier compliance to this manual.
- d) Unrestricted opportunity to evaluate Supplier nominated sub-tier supplier compliance with this manual. The Supplier will be informed before such evaluation takes place.
- e) Unrestricted opportunity to conduct verification of product conformity with the contract requirements.

- f) Required assistance for evaluation, verification, validation, testing, inspection or release of the product to contract requirements.
- g) Accommodation and facilities for performing COSWORTH Quality Assurance.
- h) The necessary equipment available for reasonable use for performing Quality Assurance.
- i) Supplier and/or External Providers personnel for operation of such equipment as required.
- j) Access to information and communication facilities.
- k) The necessary Supplier documentation to confirm product conformance to specification.
- l) Copies of necessary documents, including those on electronic media

## 3. QUALITY SYSTEM REQUIREMENTS

### 3.1 Quality Management System and its Process.

The Supplier shall establish, document, implement, assess and improve an effective Quality Management System (QMS) which includes the requirements of relevant international standards as necessary to satisfy the contract requirements.

- 3.1.1 COSWORTH'S Supplier Quality Engineer reserves the right to verify through audit that the Supplier's QMS does fully meet the requirements of both this manual, or the quality requirements as dictated by the Purchase Order. The Supplier's documented scope of their system, records from internal audit, self-assessments and other objective evidence that this system is compliant with the contract requirements and is effective, shall be readily available to the COSWORTH Supplier Quality Engineer.
- 3.1.2 In instances where the COSWORTH Supplier Quality Engineer identifies that the QMS does not fully meet the requirements of this manual or those dictated by the PO, the Supplier shall make proposals for corrective actions and revisions within an agreed timescale.

### 3.2 Quality Plan

In the absence of a recognized 3rd Party Certificate the Supplier may be requested to submit an acceptable Quality Plan (QP) which addresses the contractual requirements to the COSWORTH Supplier Quality Engineer in a mutually agreed timescale. This must be accepted by the COSWORTH Supplier Quality Engineer prior to the start of as stated in the contract or purchase order. The QP shall be a clearly identified discrete document or part of another document that is prepared under the contract.

3.3.1 The Quality Plan shall:

- a) Describe and document the Quality Management System requirements "contract-specific" necessary to satisfy the contract requirements (referring, where applicable, to the "company-wide" Quality Management System);
- b) Describe and document the planning of the product realisation in terms of quality requirements for the product, needed resources, required control activities (verification, validation, monitoring, inspection and/or testing), and acceptance criteria. This shall include specific arrangements and communication requirements where work is to be conducted at locations external to the Suppliers' premises;
- c) Document and maintain traceability of requirements from the planning process by including a requirement and solution compliance matrix, justifying fulfilment of all contractual requirements (making reference where applicable).

COSWORTH'S Supplier Quality Engineer reserves the right to reject the Supplier's Quality Plan should it be found to not meet the requirements specified in the contract.

The Supplier is required to promptly notify COSWORTH Buyer or COSWORTH Supplier Quality Engineer of any substantive changes to the Supplier's Quality Management System or personnel.

## 4. GENERAL REQUIREMENTS

The following set of general quality requirements applies to all Suppliers.

### 4.1 Compliance to Contractual Requirements

Upon accepting a COSWORTH contract, the Supplier is responsible for compliance to all contract requirements (including but not limited to engineering drawings, specifications and purchase order). All documents, drawings and specifications, regardless of origin, are applicable to the Supplier when specified in the contract or documents referenced in the contract and are required to be used at all levels of the supply chain.

- 4.1.1 The Supplier, as the recipient of the Contract/Purchase Order (PO), is responsible for meeting all requirements stipulated in the Contract/PO. Neither audit, surveillance, inspection or tests made by COSWORTH, representatives of COSWORTH or its customer(s), at Supplier's facilities, at any sub-tier facilities, or upon receipt at COSWORTH, relieves the Supplier of the responsibility to supply acceptable products or services that conform

to all contract requirements; nor does it preclude subsequent rejection by COSWORTH or its customers.

#### **4.2 Control of Sub-Tier Suppliers**

The Supplier, as the recipient of the contract, is responsible for meeting all requirements, including work performed by the Supplier's sub-tier (or special processing) Suppliers.

- 4.2.1 The Supplier shall ensure the sub-tier supplier is qualified and/or approved to perform the work being subcontracted. (COSWORTH recommends all sub-tiered suppliers be identified and information provided to the COSWORTH buyer at time of quote).
- 4.2.2 When the Supplier uses sub-tier suppliers to perform work on products and/or services scheduled for delivery to COSWORTH, the Supplier shall flow down to its sub-tier suppliers, all of the applicable technical and quality requirements contained in the COSWORTH contract / PO and within this Supplier Quality Manual.

#### **4.3 Control and Release of Cosworth Supplied Documents**

Documents supplied by COSWORTH to the Supplier are solely for the purpose of doing business with COSWORTH. Proprietary documents may be supplied to the Supplier in hard copy, electronic or other media.

- 4.3.1 The Supplier is responsible for controlling and maintaining such documents to preclude improper use, loss, damage, alteration and/or deterioration. Unless authorised by COSWORTH in writing, the Supplier may not transmit or supply any COSWORTH owned documents, or copies of such documents, to anyone outside the Supplier's business organization except to a sub-tier source used by the Supplier for performance of work on the COSWORTH contract.
- 4.3.2 The Supplier shall return to COSWORTH, or purge electronic copies of, all proprietary documents within 12 months of the last delivery of products or services on the contract. COSWORTH may request the Supplier to supply objective evidence or certification that proprietary documents have been purged. The Supplier shall flow down this requirement to all sub-tier sources, when such sources will be in receipt of COSWORTH proprietary documents during performance of work for the Supplier.

#### **4.4 Business Continuity**

The Supplier should have a business continuity plan which would allow for the safeguarding, storage and recovery of data relating to the COSWORTH contract, (including, but not limited to, engineering drawings and

electronic media). This plan should also make provision for the protection of physical assets required to deliver the COSWORTH contract (including, but not limited to, Production equipment and tooling). This plan should also contain contingency plans to satisfy COSWORTH requirements in the event of significant utility interruptions, labour shortages, equipment failure and field returns.

## 5. PRODUCT QUALIFICATION

Suppliers shall supply conforming product and services on time in full including, where required, all documentation and certification specified on the Purchase Order, supplied drawing or COSWORTH supplied standard.

### 5.1 First Article Inspection (FAI)

For all parts manufactured or modified to a Cosworth controlled or Cosworth customer controlled drawing, a First Article Inspection Report (FAIR) will be completed by the supplier to verify the manufacturing process using a representative item from the first manufacturing run of a part or assembly. In the case of queries over specific product FAIR requirements please consult your COSWORTH Supplier Quality Engineer.

- 5.1.1 The purpose of the FAIR is to verify that the production processes, production documentation and tooling are capable of producing product that meet requirements. This process shall be repeated when changes occur that invalidate the original results (this will include transfer of work to another site, drawing changes, process changes etc.) or following a break in manufacture, greater than 6 months.
- 5.1.2 The FAIRs shall include all certification indicating conformity of materials, special processes, calibration, testing and personnel training qualification where applicable.

### 5.2 Production Part Approval Process (PPAP).

Cosworth may require a supplier to complete and submit a PPAP prior to delivery of production parts. The default PPAP requirement, where defined by the RFQ or Purchase Order, shall be level 3 as defined within the COSWORTH APQP and PPAP workbook. Specific PPAP expectations and timing, including any exclusions will be communicated via the COSWORTH Supplier Quality Engineer who will also be able to answer any supplier questions raised.



The “Cosworth APQP & PPAP Workbook” contains all the required forms, however, the supplier may use their own format provided their outputs match those of the COSWORTH example documents

The elements of PPAP specified for submission could contain (but are not limited to):

- Design Record
- Engineering Change Documentation
- Customer Engineering Approval
- Design FMEA
- Process Flow Diagram
- Process FMEA
- Control Plan
- Measurement Systems Analysis
- Dimensional Results
- Material, Performance Test Results
- Initial Process Study
- Qualified Laboratory Documentation
- Appearance Approval Report
- Sample Production Parts
- Master Sample
- Records of Compliance with Customer Specific Requirements
- Part Submission Warrant
- Checking Aids, Fixtures, Testing Asset register
- Bulk Material Requirements

### **5.3 Certificate of Conformity.**

The supplier may be required to supply a Certificate of Conformity. In order for this to provide COSWORTH and its customers the protection required, the Certificate of Conformity will be on supplier company letterhead, signed by a representative of the supplier's organisation and contain the following information as a minimum:

- Supplier company name
- Manufacturing location / address
- Cosworth Purchase order number
- Cosworth part number and revision level
- Part name / description matching Cosworth PO
- Quantity of parts supplied
- Supplier Batch traceability
- All applicable raw material and special process certification with traceability to supplier batch information identifiable.
- Details of any concessions approved by Cosworth prior to supply, including concession number
- Statement of conformity (acceptable examples below)

- Supplier contact information - as minimum name and job title of signatory

Examples of acceptable statements of conformity:

*"This is to certify that all contractual requirements have been met in the manufacture of these parts"*

*"It has been proven that these items and all associated test / inspection data conform to applicable drawing requirements and associated specifications"*

## 6. PROCESS CONTROL

This section defines the basic requirements for Suppliers to control their manufacturing processes.

### 6.1 Special Characteristics (SC)

The Supplier shall demonstrate conformity to those special characteristics designated by COSWORTH through means of documentation and appropriate control methods. In addition to any special characteristics identified by COSWORTH, the Supplier shall also review, identify, document, and control other product and process characteristics that are key to achieving quality. Features designated as SC require inspection data traceable to individual parts or lots / batches to be available for review upon request.

**NOTE:** A reduction in inspection frequency from 100% on COSWORTH defined SC's will only be allowed through the submission of capability data demonstrating statistical capability to a level agreed by COSWORTH.

### 6.2 Preventive Maintenance

The Supplier should identify key process equipment and provide resources for machine/equipment maintenance activities and develop an effective planned total preventive maintenance system.

### 6.3 Shelf-Life Control

With each delivery of materials or products that have a limited or specified shelf life, the Supplier shall furnish data that shows (a) the cure or manufacture date, (b) expiration date or shelf life, (c) lot or batch number, and when applicable any special handling or storage requirements. Unless otherwise specified by contract, for all shelf life limited materials or products delivered to COSWORTH, the remaining shelf life shall be a minimum of 75% of the total shelf life for the material.

**6.4 Raw Material Lot / Batch Control**

Where the Supplier elects to use more than one lot / batch of raw material, the Supplier shall ensure, document and supply positive traceability of each individual product to the raw material certification/test report that represents the raw material from which each of the products were manufactured.

- 6.4.1 Traceability shall be provided by identifying the raw material heat, lot, batch or melt number from the certification/test report on the product and/or on packaging (when used), or the products segregated and identified.

**6.5 Cosworth Supplied Material**

The Supplier shall ensure procedures are in place to properly identify and control all COSWORTH supplied materials.

- 6.5.1 Tooling/fixtures owned and supplied by COSWORTH must be tagged or otherwise identified as being COSWORTH owned property.
- 6.5.2 Material supplied by COSWORTH must be controlled, identified and segregated from other Supplier material. Unless otherwise specified by the COSWORTH buyer, Suppliers must account for 100% of consigned material.

**6.6 Automated Processes**

If computers, software, or other automated methods are used as part of the production or verification process, the supplier shall validate the computer software for its intended use.

- 6.6.1 The validation process shall create a validation protocol (describing the planned activities) and a validation report (documenting the outcome of the planned activities). All software changes shall be similarly validated prior to use.
- 6.6.2 The Supplier shall keep records of these activities and make them available to COSWORTH upon Request.

## 7. CHANGE CONTROL

In the case of products supplied under approved PPAP and parts supplied for aerospace use (as designated in the RFQ /PO), suppliers shall not make changes to their processes, location, facilities, equipment, material, product design (or any change which may affect product design or function) without written approval from the COSWORTH Supplier Quality Engineer. Such changes may be required for:

- Correction of a discrepancy on a previously submitted part;
- Product modified by an engineering change to design records, specifications, or materials; or
- Any planned changes by the Supplier to the design, process, or manufacturing location, such as:
  - a) Use of other material than was used in previously approved part or product.
  - b) Production from new, additional, replacement or modified tools, dies, molds, patterns, etc.
  - c) Production following upgrade or rearrangement of existing tooling or equipment.
  - d) Production from tooling and equipment transferred to a different plant site or from an additional plant.
  - e) Change of sub-tier Supplier for parts, non-equivalent materials, or services (e.g. heat treating, plating, etc.)
  - f) Product produced after tooling has been inactive for production for 6 months or more.
  - g) Change to test/inspection method – new technique (no effect on acceptance criteria).
  - h) For bulk materials: new source of raw material from new or existing Supplier, or change in product appearance attributes, etc.
  - i) Use of any non-conventional manufacturing methods such as electro-discharge machining (EDM), electro-chemical machining (ECM), laser or abrasive water jet metal cutting, flame spray coatings, etc.
  - j) Change, modification or up issue of design where supplier is design responsible.

Special processes controlled through COSWORTH specification sheets (STs) must be carried out in strict accordance with the ST requirements. Should a supplier wish to request to work outside of ST requirements, a full Engineering justification must be presented to COSWORTH Supplier Quality Engineer and approved by COSWORTH Engineering before any such changes can be implemented. As such, it is recommended that any ST requirements called

out on COSWORTH Engineering drawings are thoroughly reviewed prior to contract acceptance.

## 8. CONTROL OF NONCONFORMING PRODUCT

Suppliers shall maintain a documented process which specifies how nonconforming product is identified, quarantined, and reacted to.

### 8.1 Supplied Nonconformance

For nonconforming products supplied to COSWORTH, including those that reach a COSWORTH's customer, the Supplier must endeavour to implement containment and corrective actions in as short a time as possible and is liable for all costs to correct the nonconformance

8.1.1 COSWORTH will inform the supplier of non-conforming product that is highlighted at any stage of COSWORTH's process flow including, but not limited to, goods inwards inspection, manufacturing or assembly use, engine testing and subsequent use in service.

8.1.2 COSWORTH will formally notify the supplier of a non-conformance by issuing a FRABIS report. COSWORTH Supplier Quality Engineer will determine if a full 8D report is required from the Supplier in response to the non-conformance and communicate this requirement directly to the Supplier. When raised, the Supplier will address the following through the 8D:

- Problem statement
- Containment Action across the full supply chain
- Root Cause Analysis
- Identification and implementation of Corrective Action
- Definition and implementation of Preventive action

8.1.3 8D reports shall be processed to the following timescales by the supplier:

- Supplier has 48 hours to acknowledge receipt and respond with the outcome of containment action (up to and including D3).
- Supplier has 21 calendar days to respond with a detailed corrective action (up to and including D5).
- Supplier has 28 calendar days to respond with the 8D completed in full (up to and including D8).
- Supplier will submit on or before the agreed verification date, evidence of the implemented corrective/preventive action. This evidence will allow the COSWORTH Supplier Quality Assurance Engineer to close the FRABIS non-conformance report.

- 8.1.4 Records of supplied non-conforming product are retained by COSWORTH and taken into account by COSWORTH during supplier evaluation exercises.

**8.2 Supplier Request for Nonconformance – Deviation/Concession**

A Supplier shall not knowingly ship product that deviates from the drawing, specification limits, or design intent without prior written authorisation from COSWORTH. If such a condition exists, the Supplier may submit a request to the COSWORTH Supplier Quality Engineer, in writing, to allow shipment of the product under a written nonconformance concession. This must include the proposed corrective action to eliminate the cause and prevent recurrence.

It is the responsibility of the Supplier to submit written request for concession using the Cosworth Concession form 0390 to the COSWORTH Supplier Quality Engineer, no later than 48 hours before the delivery due date. It remains the responsibility of the supplier to ensure product is delivered on time to the purchase order schedule regardless of the outcome of any submitted concession request.

- 8.2.1 The cost of shipping, inspection, and testing to determine the potential acceptability of product subject to a concession request will be charged to the Supplier. COSWORTH's approval of a deviation/concession is specific to the products for which it has been submitted and approved and shall not to be construed as a permanent engineering change.
- 8.2.2 The Supplier must begin work immediately on corrective action. In all cases, the Supplier shall fully contain all product suspected of being nonconforming. In addition, nonconforming product may be returned to the Supplier at Supplier expense, or the Supplier may be required to sort any suspect product already shipped to COSWORTH or be charged back for the cost of sorting by COSWORTH.
- 8.2.3 Any parts shipped to COSWORTH that have been approved for deviation/concession shall be clearly identified as such externally on the box, container, or other packaging and on shipping documentation. Inside of each box shall contain a copy of the approved deviation/concession document.
- 8.2.4 Product accepted under concession will be recorded as such at COSWORTH goods receiving inspection. These records are retained and taken into account by COSWORTH during supplier evaluation exercises.

### **8.3 Control of Reworked Product**

Rework or repair is defined as additional operations that are not part of the PPAP approved production process flow, which is undertaken to bring product into full compliance with applicable drawings and specifications.

- 8.3.1 Instructions for rework, including re-inspection requirements, shall be approved by COSWORTH's Supplier Quality Engineer prior to the Supplier performing the rework. All rework shall be documented via a concession and must be accepted by COSWORTH Supplier Quality Engineer prior to product being shipped to COSWORTH, in line with the requirements detailed in Clause 8.3 above.

## **9. PACKAGING, LABELLING, DELIVERY & RECORD RETENTION**

Preservation, packaging, labelling, and shipping methods must comply with common industry practices and COSWORTH requirements specified on the contract.

### **9.1 Preservation**

The Supplier shall preserve the product during internal processing, storage, delivery to the intended destination and preservation at Cosworth in its original delivered packaging for a period of no greater than 12 months.

- 9.1.1 In order to detect deterioration, the condition of product in stock should be assessed at appropriate planned intervals.
- 9.1.2 The Supplier should use an inventory management system to optimise inventory turns over time and should assure stock rotation, such as "first-in-first-out" (FIFO).

### **9.2 Packaging**

The Supplier must adequately plan for packaging designed to prevent product contamination, deterioration or loss and to eliminate shipping damage.

- 9.2.1 Suppliers should, where possible, provide expendable packaging or returnable containers, where appropriate, that provide for sufficient density and protection from any likely damage that may occur.
- 9.2.2 Expendable materials and packaging must meet local and national standards for safe disposal and/or recycling.

**9.3 Labelling**

At a minimum, the label shall contain the COSWORTH part number, revision, and lot / batch control number. COSWORTH may provide the Supplier with additional labelling specifications.

- 9.3.1 The use of approved industry standard labelling and bar-coding shall be in accordance with any contractually agreed packaging specification.

**9.4 Delivery**

The Supplier should systematically inform COSWORTH of any delay in delivering product and provide a new shipment date. The Supplier is responsible for additional transport costs due to delays.

**9.5 Record Retention**

Suppliers shall retain records relating to processing, testing, calibration, manufacture, supply, traceability, measurement and certification for a minimum of 7 years unless otherwise stated by contract. The Supplier shall be capable of retrieving and delivering required records to COSWORTH within forty-eight hours from time of request.