



SUPPLIER QUALITY ASSURANCE REQUIREMENTS MANUAL

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CHANGE RECORD

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INTRODUCTION

Ontic Engineering and Manufacturing UK Limited (herein referred to as Ontic UK or the company) is responsible for assuring the quality of the products we deliver to our customers. The Quality Assurance system at Ontic UK is based on the international standard, BS EN 9100:2003, which requires that we establish procedures for selecting suppliers and for the periodic review and assessment of the effectiveness of the control of purchased materials and services. It is therefore of extreme importance that we use suppliers who can consistently deliver high quality products and services.

This manual contains the contractual Quality Assurance Requirements that appear on the Ontic UK Purchase Orders. **The “General” Quality Assurance Requirements in Section 1 apply to all purchase orders. The specific Quality Assurance Requirements in Section 2 apply when referenced by code on the applicable purchase order.** Questions and comments regarding these requirements should be directed to the cognisant purchasing representative at Ontic UK.

SUPPLIER QUALITY ASSURANCE REQUIREMENTS (SQAR)

SECTION 1**GENERAL REQUIREMENTS**

The general quality requirements herein are applicable to all Ontic UK purchase orders. Purchase Order Specific or unique Quality Requirements imposed are described in detail in Section 2.

A. SUB-TIER CONTROL

The supplier shall be responsible for flow down of all the requirements and provisions of the Ontic UK purchase order applicable to the supplier's sub-contractors. Additionally, the supplier shall comply with special processor requirements when imposed.

B. FACILITY ACCESS

During the performance of this purchase order, your Quality Assurance or Inspection and Manufacturing process are subject to review, verification and analysis by Ontic UK and/or Regulatory Authority, Government or Customer representative. These rights of access are applicable to the supplier's facilities where Ontic UK products and services are processed as well as the Supplier's sub-tiers.

C. REWORKED/REPLACED MATERIAL

When returning previously rejected material to Ontic UK, the supplier shall reference the rejection notice number on the shipping document, and shall state if the items have been replaced or reworked.

D. PRODUCTION ISIR REPORT

- Compliance to requirements must be demonstrated by submitting a ISIR (Initial Standards Inspection Report) with the first lot shipment of product and with the first lot shipment of each subsequent revision. For catalogue and commercial parts, a Certificate of Conformance to all purchase order requirements is required. ISIR inspection reports must include serial numbers (when applicable), all dimensions, general notes, actual measurements, and where physical testing is required the results of the tests. ISIR parts must be identified as "ISIR" by tagging, special packaging, or other suitable means of identification. Ontic recommends suppliers adopt the BS EN 9102 format as the foundation of ISIR reporting.

Additional ISIR inspection shall be performed when:

- Either new manufacturing processes or new methods are used that could affect compliance to drawing requirements; or,
- New, reworked or transferred tooling is used; or,
- A drawing revision effects the operation(s) performed by the supplier.
- The previous ISIR date exceeds three years.
- The name or location of the supplier has changed.

E. SUPPLIER NON-CONFORMANCE APPROVAL REQUESTS (Concessionary)

Requests for any departures from drawings, specifications, or other purchase order requirements must be recorded and submitted on a concession form for consideration by Ontic UK. Material shipped on an approved concession must be

accompanied by a signed Ontic approved copy of the concession. (Note: Supplier identified non conformances demonstrate the supplier has implemented effective quality escape prevention processes, therefore, the non-conformance shall not count against the suppliers quality rating. Products accepted under a concession will be counted as accepted product under the suppliers rating).

F. NON-CONFORMING MATERIALS CORRECTIVE ACTION (REJECTION NOTICES)

Upon notification from the buyer that material furnished by the supplier is found discrepant upon receipt at Ontic, the supplier shall promptly notify the buyer, in writing, of adequate and acceptable corrective action taken to eliminate the cause of the discrepancy. The Suppliers response shall include: (a) Root Cause of Defect, (b) Corrective Action Taken, (c) Action to Prevent Recurrence, and (d) Effectivity Point of such Corrective Action. If MoD Source Inspection is a requirement on the purchase order, the supplier shall notify the MoD Representative, so that he/she may participate in the investigation and corrective action if they so desire.

G. REPAIR

Under no circumstances shall a Supplier or a Supplier's Sub-tier perform any repair procedures/operations without specific written authorisation and an approved repair procedure from Ontic UK.

H. CORROSION PROTECTION

Material subject to corrosion shall be packaged and or coated with an acceptable preservative to prevent corrosion while in transit and storage (contact your purchasing representative or Manufacturing Engineering at Ontic for appropriate preservatives.)

I. CERTIFICATION TRACEABILITY, GENERAL

All certifications shall be traceable to the material submitted and shall contain the signature and title of the authorised representative of the seller. Serial numbers shall be listed if the components are serialized. Computer generated facsimile signatures will be accepted.

J. RECORDS RETENTION

The Supplier shall maintain adequate records of all First Articles, In-process, Final Inspection and Tests. Inspection records shall indicate the nature and number of observations made the number and type of deficiencies found, the quantities approved and rejected, and the nature of corrective action taken, as appropriate. The ISIR Inspection reports shall include all drawing dimensions, general notes, and tolerance range along with actual measurement results.

This information and all supporting documentation such as raw material certifications, special processing records and certifications, manufacturing records, i.e., route sheets and/or work orders, shall be retained by the Supplier in accordance with the terms of the purchase order. When the Purchase Order is complete, such records shall be maintained and available to the buyer on request for a period of not less than ten (10) years from the closing of the purchase order unless stated otherwise on the purchase order.

K. DRAWINGS SPECIFICATIONS AND QUALITY REQUIREMENTS

The Suppliers Quality System shall assure that the latest applicable drawings, specifications, and quality requirements are compatible with current purchase order

agreements and are available and in use by the Supplier's manufacturing and inspection areas. Military Standards and Specifications utilised shall be to the latest revision in effect on the date of the purchase order, unless otherwise specified.

L. PACKAGING, HANDLING AND MARKING

In performance of the contract, the Supplier shall assure that all articles are packaged in a manner and with materials necessary to prevent deterioration, corrosion, or damage. Requirements for packaging shall consider conditions affecting the article while at the supplier's plant, transportation to destination and the expected or specified conditions at the destination. Where applicable, for Electrostatic sensitive components, the supplier shall provide sufficient packaging for articles sensitive to handling damage. During fabrication and processing, special carts, boxes, containers and transportation vehicles shall be used as necessary to prevent damage due to handling. When packaging of small parts, the use of staples is prohibited due to the potential for FOD.

Marking shall be applied as specified by the engineering drawing or specification; if the engineering drawing or specification does not define marking method, marking shall be applied as instructed by specific purchase order notation. In the absence of drawing or PO imposed marking requirements, contact your Ontic buyer or Manufacturing Engineer for instructions.

M. SHELF-LIFE MATERIAL

Unless otherwise specified on the Purchase Order, all shelf-life materials shall be delivered to Ontic with a minimum of 75% shelf life remaining. The date of manufacture and expiration dates are required to be on the certification and the packaging.

N. MERCURY FREE

The use of mercury containing materials is prohibited during the fabrication assembly, testing or any phase of manufacture of any material furnished to Ontic.

O. DELETED

P. INSPECTION SAMPLING - IN ACCORDANCE WITH ONTIC REQUIREMENTS

Unless otherwise specified in the Purchase Order and SQARs, the Supplier may use sampling procedures when tests are destructive or when quality history, inherent characteristics, statistically controlled processes or operation repeatability due to numerically controlled machines justify less than 100% inspection.

Where applicable, sampling plans shall be in accordance with BS 6001/ISO 18414, with the exception that lot acceptance will always be: "accept on zero, reject on one". Suppliers shall submit their sampling plan as part of the ISIR Inspection package for the product delivered. Sampling plans other than the above must be approved in writing by Ontic for usage on Ontic products. Ontic will not approve any sampling plan which permits lot acceptance with defectives in the population sample.

Q. CALIBRATION SYSTEM.

Suppliers shall maintain a calibration system in accordance with ISO 9001 and/or AS9100.

R. FOREIGN OBJECT PREVENTION, DETECTION AND REMOVAL.

The supplier shall maintain a FOD (Foreign Object Damage/Debris) control program assuring work is accomplished in a manner preventing foreign objects or material from entering and remaining in deliverable items. Maintenance of the work area and control of tools, parts, and material shall preclude the risk of FOD incidents. The supplier shall document and investigate all FOD incidents assuring elimination of the root cause. The Company shall have the right to perform inspection and/or audits as a method of verification that the supplier's FOD control program is functional, documented, and effective. The supplier shall identify a FOD control person responsible for implementing FOD prevention awareness and training.

Prior to closing inaccessible or obscured areas or compartments during assembly the supplier shall inspect for foreign objects/materials. Tooling, jigs, fixtures, test equipment, and handling devices shall be maintained in a state of cleanliness and repair to prevent FOD. Supplier shall provide a statement of certification that deliverable products are free of any foreign materials that could cause damage to the product or to the components/systems of which the product is a part or to which the product is attached.



SUPPLIER QUALITY ASSURANCE REQUIREMENTS (SQAR)

SECTION 2

SPECIFIC REQUIREMENTS

(REFERENCE PURCHASE ORDER CODES)

1. PROCESS APPROVALS

Special process sub-tiers such as welding, heat treating, plating, coating, non-destructive testing, etc. must be performed by Ontic, Ontic Customer, or NADCAP approved suppliers. The current approval status of processing sub-tiers must be confirmed with Ontic UK prior to performing the process. Contact your Ontic UK buyer to determine current approval status.

Sub-contract processing of product, that the suppliers were contracted to perform is prohibited by the Ontic. Suppliers shall perform all processes, with the exception of those mentioned above. All deviations to this requirement require the written approval of Ontic UK Purchasing department.

2. QUALITY ASSURANCE SYSTEM REQUIREMENTS

Supplier shall maintain a Quality Program in compliance with ISO9001 or BS EN 9100:2003 requirements based on processes performed by the supplier. Ontic Quality will detail specific element compliance based on Engineering and Quality requirements imposed for awarded product.

3. SOURCE SURVEILLANCE BY ONTIC UK

When this SQAR is imposed, the Ontic Quality Representative shall perform evaluation/acceptance of product at the supplier's facility. This will include surveillance of the products and supplier's systems, procedures, and facilities. The supplier shall furnish, at no cost, the necessary facilities and equipment, supply data, and perform tests/inspections as required by applicable drawings, specifications, or Ontic directed Inspection Instructions under surveillance of Ontic Supplier Quality Representative. The supplier is to notify Ontic Buyer, requesting source surveillance at a minimum of 48 hours in advance of desired inspection date.

The supplier must also allow access to any regulatory authority, e.g. the UK CAA.

4. SOURCE INSPECTION BY ONTIC CUSTOMER OR REGULATORY AUTHORITY.

A. MoD/Regulatory Agency/Customer Access Clause - During performance of the purchase order, your Quality Assurance or Inspection System and manufacturing process are subject to review, verification and analysis by authorised Regulatory Authority/Customer Representatives. Regulatory Authority/Customer inspection or release of products prior to shipment is not required unless you are otherwise notified. A copy of the purchase order will be furnished to your MoD/Ontic UK Customer Representative upon request.

5. METALLURGICAL FIRST ARTICLE

The supplier shall furnish evidence that all material qualification tests and inspections have been performed and results meet the applicable material specifications and drawings. Samples of physical properties test such as grain flow, case depth, spark/wire erosion, intergranular attack, case depth; etc. shall be included in the shipment when applicable.

6. ISIR REQUIREMENT

Compliance to requirements shall be verified by performance of a ISIR inspection. ISIR inspection reports shall include S/N when applicable, all drawing dimensions, general notes, and tolerance range along with actual measurement results, and where physical testing is required, the results of the tests. ISIR parts shall be identified by tagging, separately packaging them or other suitable means. If required by contract or PO, the ISIR shall be in accordance with BS EN 9102 latest revision.

7. CAST TEST BARS

The supplier shall furnish two test bars representative of each heat treat lot, poured from the same melt as the castings supplied. Test bars shall be permanently identified with the supplier's name or trademark, melt, heat treat lot number, and alloy type. The supplier shall retain the test bars for a period of not less than ten (10) years, and must be made available to Ontic UK upon request. Test bars stored at the supplier's facility shall not be destroyed without prior written approval from Ontic UK purchasing.

8. FORGING TEST BARS

A) The supplier shall furnish with each shipment of forging: two test bars produced from the same heat of material as the forging supplied. Test bars must have the same percentage of reduction as parts supplied, and shall be permanently identified with the supplier's name or trademark, material heat number, heat treat lot number and alloy identification.

B) The supplier shall comply with (A) above except that the test bars shall be retained by the forging facility for a minimum of 10 years and be made available to Ontic UK upon request. Test bars stored at the supplier's facility shall not be destroyed during the storage period without prior written approval from Ontic UK purchasing.

9. CERTIFICATE OF CONFORMANCE

A legible and reproducible copy of a Certificate of Conformance must accompany each shipment. The certificate must include the following:

- a. Supplier Name and Address
- b. Ontic UK P.O. Number and quantity shipped
- c. Part Number
- d. Drawing Revision
- e. Serial Number, if applicable
- f. Manufacturing Plan Revision (when applicable)
- g. Operation Number (when applicable)

- h. Signature and title of authorised representative
- i. Processes performed, required by engineering drawing, specification or purchase order, to include:
- j. Process
- k. Specification
- l. Process Certification Number and Ontic UK Approved Supplier(s) used for processing (when applicable)
- m. Sub-Assembly Part Number(s) with latest revision (when applicable)
- n. Sub-Assembly Process, Specification, Certification Number and Ontic UK Approved Supplier used (when applicable)
- o. Lot number, if not serialized
- p. Indication that products were manufactured from materials on which the seller has records of material conformance

The certificate of conformance must contain a statement that all inspection and tests have been performed as required by drawing, specification and/or purchase order. The certificate must list each special process that appears on the drawing such as: heat treat, non-destructive examination, and plating or coating, etc. Perishable products controlled by batch number or cure date and products controlled by heat number will have applicable controlling number on the individual certificate. Blanket statements of conformance are unacceptable, as are statements of belief rather than fact.

10. DELETED

11. DELETED

12. PHYSICAL AND CHEMICAL TEST REPORTS

Each shipment must be accompanied by a physical/chemical test report as required by the applicable material specification. The report must contain the signature and title of the authorised representative of the facility performing the tests and shall assure specification conformance.

13. FUNCTIONAL TEST CERTIFICATIONS

Each shipment must be accompanied by a legible and reproducible copy of the Suppliers Certification Identifiable with submitted material for which test reports are on file and available for examination. This certificate must contain the signature of the authorised representative and assure conformance to specified requirements.

- A. Actual tests results required.
- B. Test Certificate of Conformance required.

14. STATISTICAL PROCESS CONTROL

When imposed on the purchase order, supplier will submit (1) copy of required Statistical Process Control charts to verify control improvement and analysis of processes (i.e.; X Bar R charts, histograms, etc.). Capability analysis may be imposed by Purchase Order to demonstrate supplier's process performance.

15. PROCESS CERTIFICATION

Each shipment must be accompanied by legible and reproducible copy of a certificate containing the signature of an authorised representative for all processes used, such as heat treating, welding, surface preparation and treatment, etc. The certificate shall include the process used, the specification to which it conforms, results of any testing and the name of the sub-tier that performed them if other than the supplier. When parts are serialized, serial number must appear on the certification

16. FROZEN PROCESS

When this SQAR is imposed by purchase order, any process utilised in the production that Ontic identifies as critical must be adhered to. This includes all specified equipment, tooling, process steps and sequencing involved in the production of the completed article including any outside processing. The ISIR production piece will be submitted with the critical process description and any associated method sheets, this will be the mandated process for continued production of the products.

Any changes to any aspect of the manufacturing processes designated as critical must be submitted to Ontic and approved prior to implementation of those changes in the frozen critical process. Failure to adhere to this requirement will subject the product to material rejection. Ontic will work expeditiously to support the supplier's request for change in processes identified as critical and will provide such approval in writing noting the nature of the changes and affectivity date or S/N.

17. NON-DESTRUCTIVE TEST REPORTS

A Non-Destructive Test is to be performed 100% unless otherwise specified on the Purchase Order/Drawing. A legible and reproducible copy of actual non-destructive test results identifiable with acceptance requirements and material submitted shall accompany each shipment. These reports must contain the signature and title of the authorised representative of the agency performing the inspection and must assure conformance to specified requirements.

Fluorescent Penetrant - Magnetic Particle, Radiographic and other non-destructive evaluation processes as referenced on drawings and/or specifications shall be performed by an approved Ontic source in accordance with applicable standards.

Parts that have been accepted using FPI or Magnetic particle inspection shall be marked per the applicable non-destructive test specification. Otherwise specified, radiographic inspection of castings shall be performed after all heat-treat operations. Radiographic techniques shall be submitted to Ontic UK for prior approval if required by Purchase Order.

18. HEAT TREAT REPORT

Each shipment shall be accompanied by a legible and reproducible copy of the detailed heat treatment cycle used. Details to include: Drawing requirement, specification, date, time, temperature and quench method as applicable. Inspection reports must accompany the heat treat report. The report must contain the signature and title of the authorised representative of the agency performing the tests and inspections.

19. RUBBER COMPONENTS/RAW MATERIAL & ASSEMBLY CURE DATE

Rubber products used in assemblies shall meet the age requirements as applicable. In addition, all assemblies shall be marked with the cure date of the oldest rubber part in the assembly, as well as the date of assembly. Marking may be accomplished by decal, rubber stamp, or bag and tag.

Each package of rubber components shall be marked with date of cure part number, Purchase Order number, quantity, compound number, and manufacturer's identification (if different than part number). Date of cure on "O" rings shipped to Ontic shall be defined on the Ontic purchase order, normally within 8 quarters and shall not exceed 25% of the shelf life from date of manufacture to ship date and acceptance at Ontic.

20. RAW MATERIAL CERTIFICATION

Each shipment shall be accompanied with legible copies of the material certification as furnished by the raw material supplier or an independent test laboratory. Material certifications must agree in all respects with the raw material requirements of their applicable specifications. Unless otherwise specified, all certifications shall state the latest revision of the Specification that the material is being certified to as a minimum. The certifications shall contain a statement "We certify the listed material was used to fulfil the requirements of Ontic UK Purchase Order _____", and shall be signed by your Quality Representative.

21. MILL HEAT CONTROL/MILL CERTIFICATION

- A. Assigned serial numbers must be consecutive within a mill heat.
- B. All items covered by this Purchase Order must be from the same mill heat.
- C. Actual mills certification required.

22. SYNTHETIC RUBBER COMPONENTS HARDNESS READINGS

When required by drawing notes and/or purchase order requirements, certifications with the noted readings for Durometer or other applicable hardness reading pertaining to rubber/synthetic rubber products shall be provided for each lot of parts submitted to Ontic. Each lot shall be identified and packaged separately.

23. ELECTRICAL/ELECTRONIC ASSEMBLY & SOLDERING REQUIREMENTS

- A. All electronic assembly and soldering shall conform to the criteria established in IPC-A-610, current revision.
- B. Technicians performing work on and inspectors engaged in final acceptance of electrical/electronic products for purchase by Ontic shall be Certified Application Specialists per IPC-A-610 or J-STD-001, current revisions.
- C. All electronic assembly and soldering shall conform to the criteria established in the process standard(s)/specification(s) stated on the Ontic Purchase Order.
- D. All soldering must be done in accordance with the Engineering drawing, including the usage of tin/lead solders. No deviation from specified solder is permitted

24. WELDING/BRAZING REQUIREMENTS

All welding/brazing shall conform to the criteria established in the specification or workmanship standard noted on the applicable engineering drawing or Ontic Purchase Order. Certification to the imposed specification shall be provided with each order supplied.

25. DELETED