1. SCOPE

This document establishes the Quality Assurance requirements for suppliers performing work pursuant to ACE purchase orders.

The requirements of this document are contractually binding on the supplier accepting an Advanced Chemical Etching Limited (ACE) purchase order that references this procedure. If the purchase order defines requirements different from those quoted in this document, the purchase order requirements shall prevail.

Authorised ACE representatives, its customers and other authorities shall be allowed access to the supplier's premises at mutually agreed times to carry out surveillance of the supplier's quality system and product verification when necessary

2. INTRODUCTION

The document is based on AS9100 & BS ISO9001 and includes the requirements of both, regulatory authorities and customers of ACE.

3. SUPPLIER DEFINITIONS

The term "Supplier" used throughout this document refers to any company accepting a purchase order from ACE for the supply of products or services.
All suppliers are classified based on their approvals, scope of approval and the type of product they supply to ACE. These classifications are for ACE use only and are used to determine surveillance

4. QUALITY MANAGEMENT SYSTEM

4.1 APPROVAL

All suppliers must be approved by ACE but may also be registered by third party approval to national or international standards. The level of approval required is dependent on the supplier classification. Supplier approval and reassessment is based on a review of the supplier's capabilities, performance and quality system. This may include:

- Supplier questionnaire.
- Site assessment / audit Including desk top audit
- Data taken from ERP system (Quality, OTD & Price)

ACE approval of a supplier means that the said supplier satisfies the requirements of this document and / or the requirements at the time of assessment

4.2 SURVEILLANCE

ACE will perform scheduled assessments of suppliers which will include Quality Systems / Approvals and performance. The frequency of these assessments may vary depending upon the supplier's classification and also on:

- The Approvals held by the supplier.
- Supplier performance.
- The frequency of orders placed on the supplier.

4.3 MONITORING OF DELIVERIES

Suppliers are totally responsible for ensuring that 100% defect free goods are delivered within the agreed timescales. ACE monitors the quality level of successive batches from individual suppliers. Based on performance, the intensity of "On Receipt" inspection may be adjusted accordingly. When a delivery fails to comply with order requirements ACE will review the situation with the supplier and with appropriate ACE representatives to determine the cause and agree remedial action as necessary. Products from suppliers may be subject to Receipt Inspection, or where applicable, Source Inspection. You will make sure that the goods will be of satisfactory quality, comprise genuine, new materials (which are not used, refurbished, reconditioned, remanufactured, counterfeit or of such age as to impair usefulness or safety) and be fit for any purpose notified by us to you;

4.4 SUPPLIER PERFORMANCE

Supplier performance on delivery and quality is continually monitored. Suppliers falling into an unsatisfactory rating will be advised that immediate improvement is required. Failure to improve their rating may result in risk-based restrictions being placed on the supplier or removal from the Register of Approved Suppliers.

4.5 QUALITY SYSTEM

The supplier shall ensure that Quality System procedures are readily available to ACE, our customers and/or regulatory authorities.

4.6 DOCUMENT CONTROL

The supplier will be responsible for maintaining their copies of all ACE customer drawings and specifications, which are applicable to the purchase order or part(s) under supply or manufacture. Issue status for these documents shall be verified against the Purchase Order and any obsolete documents destroyed on behalf of ACE. The supplier will be responsible for obtaining and maintaining the latest copies of National /International / Proprietary / Military / Defence standards as applicable.

4.7 QUALITY RECORDS

Records may be in the form of media such as hard copy or electronic data. Records will cover the entire manufacturing process e.g. raw material to despatch. Essential records must be retained for a minimum of thirty (30) years, Essential records are those that provide evidence of the quality or airworthiness of the product and include material certificates, certificates of conformity, manufacturing/assembly documentation and any records associated with design and certification. All other Quality records will be retained for minimum ten (10) years. The supplier shall refer to ACE Quality Assurance for disposal instructions of any Quality records. In the event of a supplier being disapproved, all Quality records applicable to ACE must be surrendered to ACE. Note: The use of correction fluid is strictly prohibited on all quality records.

5. MANAGEMENT RESPONSIBILITY

5.1 The supplier shall define the functions of personnel who manage the organisation and show relationships of these positions on an organisation chart. The supplier's Quality representative shall have the organisational freedom to report quality matters.

5.2 The supplier shall formally advise ACE Quality Department of any Organisational or Policy changes which directly or indirectly affects:

- The Suppliers Quality Management System
- Change of Ownership.
- Change of premises.
- Change of process

5.3 If at any time the supplier should lose their Third-Party approvals, they must immediately inform ACE quality department.

5.4 Where applicable, a detailed Quality Plan specifying the controls to be implemented, activities and milestones must be provided. The system shall incorporate where necessary the requirements of this document.

6. RESOURCE MANAGEMENT

6.1 PROVISION OF RESOURCES

By the acceptance of an order from ACE the supplier is confirming that adequate resources to complete the order are available, and that these resources can meet the technical and commercial requirements of the order. The supplier must notify ACE within 48hrs of receipt of the order, if after suitable risk assessment the supplier identifies that they are unable to meet either the technical or commercial requirements of the order

6.2 HUMAN RESOURCES

The supplier shall establish and maintain individual training for all personnel.

6.3 INFRASTRUCTURE AND WORK ENVIRONMENT

The supplier shall provide a suitable area where inspection can be carried out. This area shall be kept at a level of cleanliness appropriate to the task and will be illuminated to a suitable lighting level (at least 1000 lux is recommended).

7. PRODUCT REALISATION

7.1 CONTRACT REVIEW

Personnel having the relevant knowledge and experience must undertake contract reviews. The supplier shall ensure that its requirements and obligations are managed, directed and controlled at an appropriate level. No departure from the purchase order is allowed unless agreed by order amendment. Verbal instructions, which change any aspect of the purchase order, must not be accepted no matter from whom they originate. The supplier must ensure that the relevant documentation is to the correct issue.

7.2 PURCHASING

Suppliers may only use lower tier sources with national or internationally recognised approvals unless it can be clearly demonstrated that there are control mechanisms in place to adequately maintain an approved supplier list. In the event that there is doubt surrounding such approval or when ACE believes it is necessary to specify a particular lower tier source, then only lower tier sources approved by ACE may be used. Once a source has been selected and a First Article Inspection Report (FAIR) submitted, the source of supply shall not be changed without prior approval from the ACE. Components supplied without prior agreement will be considered as non-conforming. All purchased material must be obtained from an approved source and must comply with all conditions of release.

8. PRODUCTION AND SERVICE PROVISION

8.1 GENERAL

Documentation shall be compiled by authorised personnel to give a comprehensive and clear method of manufacture, assembly, and inspection for all stages of the process. This should define:

- Sequence of operations.
- Details of operations / special tools / relevant standards.
- Issue status of the documentation.

Accountability for all product during manufacture (e.g., parts quantities, split orders, non-conforming product) Environmental facilities shall be established and maintained to a documented standard where applicable.

Note: - Suppliers shall comply with REACH & RoHS legislation and aid ACE by providing relevant information where required

8.2 SPECIAL PROCESSES

Those processes which modify or change the inherent physical, chemical, electrical or metallurgical properties of a component, or non-conventional methods which remove or deposit material on a component during or after fabrication which cannot be fully evaluated by non-destructive means, or those used to maintain process control such as non-destructive testing are considered Special Processes. Where required by contract, NADCAP sub-tiers only shall be used for special processing. In special circumstances special process houses that are not NADCAP approved may be used if agreed in advance by the ACE Quality Department and, if required by contract, our customer. For special processes where the specification requires testing of the components, a test piece made of similar material shall be provided to the special process supplier. The supplier shall validate the process using the test piece and evidence of this test is required on the C of C or route card. Suppliers must ensure techniques and facilities for special processes are controlled and must retain records of conformance checks. In all cases it is necessary for a Data Card to be completed and submitted for approval. All stages of heat treatment shall be planned and fully defined. All heat treatment operations shall quote times, temperatures etc. NDT inspection shall only be carried out by Level II and Level III approved personnel in accordance with the sub-contractor’s written practice for training, qualification and certification. Level II and Level III inspectors shall be certified in accordance with

the practices which have been compiled according to the requirements of MIL.STD.410 and are consistent with the UK National Scheme for Personnel Certification in NDT (PCN) scheme. The Level Terms & Conditions Purchasing / Supplier Quality Requirements D401 individual employed shall have been duly certified by the American Society of Non-Destructive Testing or by an equivalent scheme which meets with approval of and the CAA. Once a First Article Inspection Report has been approved the source or method of any special process or NDT shall not be altered without ACE prior approval.

8.3 PRODUCT IDENTIFICATION AND TRACEABILITY

The supplier shall ensure that the product is identified and associated manufacturing records are annotated for all stages of manufacture. All products are released with formal identification. Products need to be traceable back through the appropriate manufacturing stages including lower tier sub-contracting. This includes assembly parts, raw material and electronic components.

8.4 ACE SUPPLIED EQUIPMENT

All equipment used in the manufacture of parts for ACE including measuring equipment, jigs, fixtures and tooling shall be traceable, calibrated and maintained in a satisfactory manner. It is the Suppliers responsibility to ensure that all gauges, jigs, and fixtures of ACE origin, whilst in the Suppliers custody, are clearly identified as ACE property and are properly preserved and maintained to prevent deterioration and damage.

8.5 QUALITY AND INSPECTION

The Products shall be of the best available design, of the best quality, material and workmanship, be without fault and will comply with all relevant specifications, packaging requirements, applicable work instructions and legislation and directives taken at the latest issue, supplement or amendment, unless otherwise stated. All Products may be inspected and tested by ACE, its authorised agent or third party, its customers and higher tier contractors, on notice at all times and places. To facilitate inspection or testing, or for other reasons, such as, but not limited to auditing on the Supplier's premises, or the Supplier's subcontractor's premises, the Supplier shall provide, without additional charge, all reasonable facilities and assistance for such inspections and tests. In its internal inspection and testing of the Products, the Supplier shall, if required by ACE, use an inspection system accepted by ACE in writing. All inspection records relating to the Products shall be available to ACE during the performance of the Order, and for such longer periods as may be specified. Final inspection and acceptance by ACE shall be at the delivery destination unless otherwise specified in the Order. Such inspection shall be in accordance with ACE customary established inspection procedures in place at the delivery destination of the Products. If rejection of a shipment would result from normal inspection level under such procedures, ACE may, at its option, conduct an above-normal level of inspection, up to 100% inspection, and charge the Supplier the reasonable costs thereof. No inspection (including source inspection), tests, approval (including design approval), or acceptance of the Products shall relieve the Supplier from responsibility for any defects, including latent defects, in the Products, the Supplier's warranty obligations or other failures to meet the requirements of the Order. If the Products are defective or otherwise not in conformity with the requirements of the Order, ACE may, by written notice to the Supplier, at its discretion

- Reject such Products (part or the whole of the Order) and return them to the Supplier at the risk and cost of the Supplier and obtain the refund all payments made by ACE,
- Accept such Products at a fair and reasonable reduction in price,
- Reject such Products (the whole or part of the Order), return them to the Supplier at the risk and cost of the Supplier and require the delivery of replacements (deliveries of replacements shall be accompanied by a written notice specifying that such Products are replacements),
- Replace or carry out any work necessary to make the Products comply with the Order and charge the Supplier the cost thereof (including any incidental costs), or
- Terminate the Order. Rights granted to ACE under this clause are in addition to any other rights or remedies provided elsewhere in the Order or under law. In the event that it is impractical to return the rejected Products to the Supplier, ACE may require the Supplier to carry out the necessary re-design, repair, modification or replacement as appropriate at the Supplier's expense where the Products are located. ACE will suspend payment of any invoice relating to Products not in conformity with the Order.

8.6 INSPECTION AND TEST STATUS

The supplier shall establish and maintain written procedures to identify the products conformance or non-conformance throughout the manufacturing process with regard to inspection and test status. All parts are required to be visually inspected to the appropriate drawing to ensure they are free of damage or deterioration. Damage with nicks or scratches are unacceptable if they exceed the surface finish requirement. All products inspected and released must be identified by an inspection stamp, signature or number, which identifies the individual inspector. Stamps shall be issued to suitably qualified personnel; stamp use shall be restricted to the person to whom it was issued. The supplier shall maintain records of stamp holders, scope of authority and issue/withdrawal dates. This shall also include periodic checks to assure availability and legibility of stamps.

9. HANDLING. STORAGE, PACKAGING, PRESERVATION & DELIVERY

9.1 HANDLING / STORAGE

Products are to be protected to prevent contamination, corrosion and metal to metal contact shall be avoided at all times where practicable. All supplier production and packaging areas shall be kept clean on a regular basis; this will include all floors / ceilings / ventilation ducts that shall be cleaned on a regular basis and precautions taken to prevent the risk of gross contamination. All racks / cupboards / shelves / cabinets / workbenches are to be cleaned on a regular basis so they are free of any debris. All dedicated packaging is to be cleaned on a regular basis to remove the risk of contamination. When appropriate, gloves shall be used on material susceptible to stains, corrosion or contamination. All incoming material and products must be held in a quarantine area until proof of compliance is established. Acceptable materials must be held in a secure area and be identified to provide traceability. Materials used for aerospace applications must be physically segregated from commercial material. The area shall be secure and limited life materials issued on a First in, First out basis. Suppliers shall maintain a system to ensure limited life materials are controlled to ensure “out of life” materials are not used from storage.

9.2 PACKAGING / PRESERVATION

The supplier shall ensure that all supplies to ACE are adequately packed to prevent damage, deterioration, corrosion and other risk during transit, and are accompanied by the correct form of release documentation. All rubber items must be packed in accordance with the appropriate specifications. Limited life products shall have their expiry dates identified. Software packaging shall be defined and documented. Where possible a corrosion protective substance shall be applied to corrosion sensitive components that are to be supplied in an untreated / unplated condition. These parts shall be placed in sealed plastic bags and packaged as above. A product data and health and safety sheet shall be submitted to ACE Quality Department for all substances used. The use of solid wood packaging materials is prohibited on all supplies from Asian countries. Plywood and corrugated cardboard is however acceptable. Every effort should be made to ensure supplies for delivery are packaged using materials suitable for recycling.

9.3 DELIVERY

For deliveries which require Special Storage Conditions, e.g. refrigeration / cold storage / Electro Static Sensitive Devices (ES SD’s), these conditions shall be clearly labelled on all faces of the packaging, and on all incoming documentation. Where temperature sensitive materials are supplied, details of time at ambient shall be recorded and supplied with the material. Any hazardous materials must comply with the relevant COSHH requirement. Any parts supplied in response to an order requesting FAIR must be suitably labelled and accompanied by copies of the FAIR and all supporting documentation. Any part returned to the supplier must not be re- submitted to ACE without reference being made to the previous rejection.

9.4 CONTROL OF MONITORING AND MEASURING DEVICES

The supplier shall not use or allow the use of any inspection, measuring or test equipment that is not calibrated. The calibration must be traceable by certification to the equipment manufacturer or laboratories holding UKAS accreditation for the equipment they are calibrating. Laboratories outside the UK must hold an equivalent approval. A calibration system, techniques, and calibration intervals must be defined in written procedures based on the requirements of ISO 10012-1. If measuring or test equipment is found to be “significantly out of tolerance” (more than 25% of the product tolerance) and has been used to inspect product, which has been shipped, then the supplier shall notify ACE Quality Department immediately.

10. MEASUREMENT, ANALYSIS AND IMPROVEMENT (INCLUDING INSPECTION, TESTING & RELEASE)

10.1 GENERAL

The supplier shall establish and maintain written inspection / test procedures and records, which provide objective evidence that the product has passed all defined inspection and test.

10.2 RAW MATERIAL

The supplier must ensure that all certification is received and is fully traceable. The supplier must ensure that the chemical and mechanical properties on the certification are as per the material specification. Each piece of raw material must be physically identified with a traceable number. Where there is a requirement by ACE customers for a third-party analysis of chemical & material properties of raw material, appropriate notice will be given to the supplier by ACE.

10.3 TEST PIECES

Test pieces must be identified, be retained as a quality record and must provide traceability to the part, material and manufacturing source/process.

10.4 FIRST ARTICLE INSPECTION

When requested by a purchase order or when parts have not been manufactured in the last eighteen (18) months then a FAIR will be completed and must accompany any delivery. FAIR reports shall be generated in accordance with the AS9102 requirements.

Unless otherwise agreed a FAIR will comprise of:

AS9102 Form 1 – Part Number Accountability.
AS9102 Form 2 – Product Accountability – Raw material, Specifications, Special Process(es) and Functional Testing.
AS9102 Form 3 – Characteristic Accountability, Verification and Compatibility Evaluation.
Balloon drawing as AS/EN 9102 showing the correlation of each dimension Form 3.
All documents/release certificates to allow full traceability of raw material.
Traceability appertaining to any sub-tier operations including data cards for any special processes carried out.
Routings
Raw material test piece
Note - Products must not be reworked to satisfy FAIR requirements. When non-conforming parts are found the FAIR must be repeated on the next four (4) consecutive batches on the characteristic(s) that deviated. Failure to comply may necessitate corrective action.

Note - ACE will not accept delivery of parts that are not covered by a current FAIR.

10.5 SOURCE INSPECTION

Source Inspection may be applied at the discretion of the Quality Department ACE

10.6 RELEASE REQUIREMENTS

A uniquely referenced Release Certificate, as appropriate to the conditions quoted in the purchase order, must accompany all consignments and the name of the supplier must be readily identifiable. The Release Certificate shall include the following essential information where relevant: The purchase order number, part number and full description of the supplied product. The modification state or issue number of drawings and / or specification against which the supplied product has been produced / manufactured and the quantities consigned. In the case of raw material, the specification numbers, heat-treated condition, batch or cast number and full details of chemical analysis and physical properties. For parts produced from materials supplied by ACE, the specification number, material batch number, and the ACE release certificate number. The condition of material or parts where these have been subjected to any form of special processing, heat treatment, or are released as incomplete to specification or drawing. The cure date for glue or coating ‘Lifed’ materials.

The reference number of any production permits or concessions granted by ACE

A uniquely approved signature and the date of release.

Details of any subcontract operations including - sub-contractor name, release note number and description of process/operation performed. Where applicable raw material supplier. Terms & Conditions Purchasing / Supplier Quality Requirements D401.
An indication of the Quality Management System Approval held by the supplier and covering the release (i.e. AS9100, AS9120, ISO9001, etc.). If no third-party certification is held, the release certificate must indicate that it is made under ACE approval.

10.7 STATISTICAL TECHNIQUES
Statistical sampling plans are not permitted unless authorisation has been given by ACE quality department.

10.8 CONTROL OF NON-CONFORMING PRODUCT
It is ACE policy not to accept non-conforming product unless formally agreed in advance. Product dispositioned for scrap shall be positively controlled and where appropriate, conspicuously and permanently marked, until physically rendered unusable at the recycling centre.

10.9 CORRECTIVE AND PREVENTIVE ACTION
Corrective action shall cover the actions taken on non-conforming items, stores stock and work in progress, together with the actions taken to prevent recurrence on future deliveries. The supplier shall establish and maintain written procedures on the above. These procedures shall identify the personnel responsible for controlling the corrective action cycle to ensure timely implementation. These procedures shall implement and record changes resulting from corrective action. Records shall be maintained to identify problems and trends with root cause and any necessary corrective action taken.

10.10 REJECTIONS AFTER DELIVERY
Should a non-conforming product be discovered after delivery to ACE, which has not been previously covered by a Production Permit or Concession, the Supplier shall be notified by means of a Non-conformance Report. On receipt of the above, the Supplier shall ensure that action is taken to prevent the delivery of further non-conforming products and inform ACE, in writing, the corrective action to be implemented by the Supplier to prevent re-occurrence. The supplier shall complete the Root Cause, Corrective & Preventative Action sections of the Non-conformance Report and return it to ACE within twenty (20) working days, Supplier's response will be subject to Quality Assurance review and if found unsatisfactory could result in further action. Failure of suppliers to respond to the Non-conformance Report will be taken into account during supplier assessments and may result in withdrawal of supplier's ACE approval.

11. ETHICAL BEHAVIOUR
Suppliers will have systems and procedures in place to ensure the highest standards of behaviour and ethics when dealing with any product/ service relating to the company.

12. PREVENTION OF COUNTERFEIT PARTS / METAL
Suppliers will have systems in place to prevent the shipping of counterfeit/unapproved product to the company.