

# AEROJET – A GENCORP COMPANY

• P.O. BOX 97009 • REDMOND, WA 98073-9709

## AUTOMOTIVE QUALITY ASSURANCE TERMS AND CONDITIONS

Aerojet – A GenCorp Company herein is referred to as Aerojet.

**NOTE:** Please retain this form in your file for future reference. A copy is not sent with each order. When this form is referenced on a "Request For Quotation," the words "Request for Quotation" will be substituted for "Order" and "Purchase Order" appearing herein. **General Quality Requirements shall apply to all purchase orders.** DOD Acquisition Reform has resulted in cancellation of some military specifications, and in some cases no replacements are noted. Aerojet encourages its suppliers to request approval for use of alternate specifications that replace canceled specifications. If a canceled specification lists an alternate, that alternate does not need Aerojet approval.

### **GENERAL QUALITY REQUIREMENTS (APPLY TO ALL PURCHASE ORDERS)**

#### QUALITY MANAGEMENT SYSTEM

The supplier must implement and maintain a quality management system with the obligation to have zero defect objectives, to continually improve his delivery, product quality, and quality management system. Supplier must have a documented continuous improvement process.

As a minimum, supplier must be registered to ISO 9001:2000. A valid certificate from a registered 3<sup>rd</sup> party must be present at supplier facility.

Supplier must immediately inform Aerojet of any changes to their quality management system certification status.

Aerojet Purchasing and Quality will evaluate the use of non-certified suppliers on a case-by-case basis. Evaluation will include Aerojet customer requirements, Aerojet audit results, quality performance, product type, alternatives, and the effect of the supplied product on Aerojet part quality, appearance, function, fit, and durability.

The supplier is to obligate his subcontractors to implement and maintain a comparable quality management system with the same zero defect obligations for his parts purchased and/or externally fabricated. Aerojet reserves the right to demand documented proof from the supplier that they have verified the effectiveness of his subcontractors QMS.

#### PURCHASE ORDER SUBCONTRACTING

Purchase order(s) cannot be subcontracted without the written authorization of Aerojet.

#### ADVANCED PRODUCT QUALITY PLANNING (APQP)

Suppliers shall participate in and meet APQP requirements for new parts. The major components of APQP are: a) request for quote, b) product design review, c) quality system review, d) PPAP review and e) resource review including a production trial run (run-at-rate). Suppliers may be asked to submit verifiable evidence of meeting the required automotive experience during the request for quote stage.

#### CALIBRATION SYSTEM REQUIREMENTS (Not Applicable to Distributors)

The supplier shall maintain a calibration system that complies with one of the following specifications (or an equivalent): ANSI Z540 or ISO/IEC Guide 17025. This provision shall be applicable to all inspection, test and measuring equipment supplied by Aerojet for use by supplier, as well as the supplier's own equipment. All test equipment and gauges used for calibration must be traceable to NIST standards.

Gauge R&R goal must be less than 10%. Gauge R&R of >10% must be evaluated and an action plan developed to improve the R&R to <10%.

#### ASSOCIATED MATERIALS

- AIAG (Automotive Industry Action Group), Quality Requirements QS-9000.
- International Automotive Task Force, Quality Requirements ISO/TS 16949
- AIAG Production Part Approval Process (PPAP)
- AIAG Measurement Systems Analysis (MSA)
- AIAG Quality Systems Assessment (QSA)
- AIAG Advanced Product Quality Planning and Control Plan (APQP)
- AIAG Potential Failure Mode and Effects Analysis (FMEA)
- AIAG Statistical Process Control (SPC)
- AIAG B-10 Trading Partner Labels Implementation Guideline

Note: **Copies of the Automotive Industry Action Group (AIAG) manuals are the responsibility of the supplier and may be obtained by contacting AIAG at (248) 358-3003, or online at [www.aiag.org](http://www.aiag.org). Suppliers are responsible for maintaining the latest edition of these documents.**

#### AEROJET / CUSTOMER SURVEILLANCE AT SUPPLIER'S FACILITY

Aerojet reserves the right to assign representatives, including Aerojet's customer representatives, on an itinerant or resident basis at supplier's facility or those of lower-tier suppliers for the purpose of verifying all tests and/or inspections performed as a part of the terms

and conditions of this purchase order(s). Supplier is required to provide Aerojet representatives with reasonable facilities and equipment and grant access to all operating sites, checkpoints, stores, adjoining areas, and related quality documents required to complete the audit. Appropriate restrictions will be accepted when identified by the supplier in advance of the audit to protect security of company secrets and/or confidentiality.

Aerojet will require the supplier to implement corrective action and/or action plans to improve product or processes based on the audit results, if applicable. Plan must include responsibility and due date for completion. Supplier will report the status of the plan per agreement with Aerojet.

#### NOTICE OF PREVIOUS REJECTION

The supplier's shipping paperwork for material submitted to Aerojet in response to a return to supplier (RTV) disposition on an Aerojet Rejection Report (RR) shall include items 1 and 2 and may include item 3 as required.

1. A statement identifying whether the material was replaced or reworked.
2. The Aerojet RR number.
3. If reworked, a description of the rework performed. If material is serialized, add the letter R after the serial number.

#### PACKAGING REQUIREMENTS

Packaging shall first conform to all requirements specified on drawings, specifications and the purchase order and secondly to the following:

- All material shall be wrapped, bagged, and enclosed in cartons, boxes, or other containers to the extent necessary to provide protection from hazards of contamination and physical damage encountered in general handling, shipping and storage.
- When material consists of several piece parts or is an assembly with external hardware, it shall be packaged together as a set in a unit package. No bulk packaging of piece parts or hardware is acceptable.
- Material of different part numbers or revision, or items that are re-submittals in response to Return To Supplier disposition on an Aerojet Rejection Report, shall not be mixed in a single container unless they are segregated in properly identified intermediate containers.
- The supplier must ensure identification and traceability of products supplied. This identification includes labeling of packaged products, manufacturing location and shift and possibly individual part identification, as required in the agreement. Specified identification markings shall be clear and legible and applied to all outside containers as well as to all intermediate containers or wraps, and indicate, as a minimum, the part number, purchase order number, quantity and special handling, as applicable. If the shipment consists of more than one outside container, each container shall be identified relative to the total number of containers, e.g., 1 of 3, 2 of 3, 3 of 3, etc
- Bare metal material having surface protective treatment such as plating, painting, anodizing, conversion coating, etc., shall be wrapped separately in chemically-neutral craft paper or equivalent.
- Handling, protection, or packaging shall not be accomplished using tapes that have glass beads in the tape or on the tape as a separator. This requirement shall be placed in purchase order(s) to your sub-tier suppliers.

#### TRAINING

The supplier's employees must be competent and qualified for their job function. The supplier must ensure this through appropriate internal or external training courses. A training record must be available for all employees producing a product or service for Aerojet.

#### STATISTICAL PROCESS CONTROL (SPC)

Supplier shall validate the acceptability of the product being manufactured/processed (at supplier's facility or at a sub-tier supplier's facility) on this order using statistical process control (SPC) techniques which meet the intent of the Automotive Industry Action Group (AIAG). AIAG's SPC reference manual may be used as a guideline for developing, implementing, and maintaining a process control system. As a minimum, the supplier shall retain SPC data on all characteristics identified as critical by Aerojet. SPC data being collected must demonstrate that the manufacturing process is capable of maintaining a Cpk of 1.67 or greater. At any time that the SPC charts indicate the process is "Out of Control" or the calculated Cpk value is less than 1.67, 100% inspection shall be implemented until the process can again demonstrate that it is in Control or the calculated Cpk value is again 1.67 or greater.

**The following quality assurance requirements are applicable when the clause number is specified on the face of the Purchase Order and/or subcontract document. For example: "THE FOLLOWING SPECIFIC QUALITY REQUIREMENTS APPLY TO THIS ITEM: 3A, 30".**

## **QUALITY ASSURANCE SYSTEM REQUIREMENTS**

### **[1] CONFIGURATION CHANGES**

Supplier and its sub-tier supplier(s) agree not to make any change in materials, process or design details. Particularly with regard to: (a) part number identification, (b) physical or functional interchangeability, and (c) performance without prior written approval of Buyer. Copies of the revised drawings, specifications or ATP's (Acceptance Test Procedures) shall be forwarded to Buyer. This clause shall be placed in purchase orders to sub-tier suppliers.

[2] Unassigned.

[3] Unassigned.

### **[4] PRODUCTION PART APPROVAL PROCESS (PPAP) REQUIREMENT**

The supplier is to submit for approval the manufactured first samples off the production process and tooling in the agreed amount. Inspection frequency for capable processes will be per the control plan and non-capable processes require 100 % gauging or inspection or as agreed upon with Aerojet Quality Assurance. The supplier is stating in the PPAP that the goods delivered by him are free of faults, have guaranteed characteristics and correspond to the requirements defined in the design and process records.

Evaluation, testing, inspection, and process data from sample run must be documented in the PPAP package per AIAG PPAP Manual. Copies of the AIAG PPAP manual can purchased at [www.aiag.org](http://www.aiag.org).

Supplier shall submit Control Plans 30 days prior to submitting PPAP.

The supplier must submit a new PPAP package annually and/or if any of the following occurs:

- Changes to manufacturing process/materials (also from subcontractors) defined in the process documents, specifications, and design record.
- Changes to the inspection process/equipment defined in the process documents.
- Change of Subcontractors
- Transfer of manufacturing location
- Transfer of the manufacturing equipment within the location, if and only if, the process or process steps change.

The capability of operating equipment and processes must be demonstrated. Unless otherwise stated by the OEM customer, the minimum requirement for capability is **Cpk ≥ 1.67**. If the process capability falls below 1.67 or SPC charts indicate the process is out of control, 100% inspection of the affected characteristics must be performed in accordance with Table B – Ongoing Process and Product Monitoring, page 67 of Quality System Requirements QS-9000 manual, 3<sup>rd</sup> edition.

Aerojet will impose one of the following level(s).

- A) Level 1 – To include, but not limited to: Consists of Part Submission Warrant (PSW)
- B) Level 3 – To include, but not limited to: Part Submission Warrant (PSW), Parts (to be maintained at Customer location), Drawings, Dimensional results, Product specifications, Inspection results, Laboratory results, Functional results, Appearance Approval Report, Process flow diagram, Process Control Plan, Process Failure Modes and Effects Analysis (PFMEA) Process Capability results, Capability Study, and Gage study.
- C) Level 5 – To include, but not limited to: Part Submission Warrant (PSW), Parts (to be maintained at Supplier location), Drawings, Dimensional results, Product specifications, Inspection results, Laboratory results, Functional results, Appearance Approval Report, Process flow diagram, Process Control Plan, Process Failure Modes and Effects Analysis (PFMEA) Process Capability results, Capability Study, and Gage study. Level 5 submission will be verified during Source inspection of supplier.

### **[5] THREADED METALLIC FASTENERS**

Threaded metallic fasteners must be manufactured by a source which supplier's quality assurance personnel have surveyed (method optional), or who is currently ISO 9001 registered by a registrar accredited by the National Accreditation Program of the American National Standards Institute and the ASQ Registrar Accreditation Board (RAB).

[6] Unassigned.

### **[7] REQUIREMENTS FOR CONTROL OF NON-DELIVERABLE SOFTWARE USED IN AUTOMATED MANUFACTURING OR TESTING OF DELIVERABLE HARDWARE**

Prior to its use in production of hardware, the software purchased or developed for use in automated manufacturing or testing equipment must be listed in supplier's configuration control system and controlled by assigning release and revision identification codes. Records must be kept to document software release and revision dates, and must be made available for review by Aerojet.

Number 8 through 9 unassigned.

## PROCESS REQUIREMENTS

### [10] SPECIAL PROCESSING

Special processes used on this procurement require approval or certification of process equipment, controls, procedures and personnel as indicated in applicable specifications and standards prior to the manufacture and/or processing to this purchase order. Special process shall include, but not be limited to: welding, brazing, heat treating, cleaning, plating, soldering, anodizing, chemical films and nondestructive evaluation.

- A) Supplier process procedure(s) shall be submitted for Aerojet approval. Aerojet may direct that changes be made.
- B) Supplier shall complete and submit Aerojet Form SS40809, "Special Process Certification," to Aerojet (Redmond) for review **within 30 days of acceptance of the purchase order or prior to start of parts fabrication/processing, whichever comes first.** Aerojet retains right of disapproval of sources and adequacy of certification.

### [11] AUTHORIZED AEROJET REPRESENTATIVE

An authorized Aerojet representative (manufacturing, M&P, quality engineer or quality field representative) shall be present during this process.

Number 12 and 13 are unassigned.

### [14] WELD / BRAZE/ LASER SCHEDULE

The weld, braze, or laser schedule developed for this part shall be approved by Aerojet (Redmond) prior to start of production.

Number 15 through 19 unassigned.

## CERTIFICATION AND DATA REQUIREMENTS

### [20] RECORD KEEPING

Supplier shall keep on file records reflecting that all materials and finished items were controlled and tested in accordance with and met the specifications. Such records shall be subject to Aerojet examination. Unless the record retention period is specifically modified by the purchase order, records shall be retained until the last day in December of the current year plus 10 years after production. Records shall be maintained for the retention period in a manner that prevents damage from fire, moisture, pests, or other deteriorating effect. Buyer shall be notified if conformance to this requirement cannot be certified.

Number 21 through 28 unassigned.

### [29] CERTIFICATION OF CONFORMANCE

Each shipment must be accompanied by one legible copy of a certification which states that the items were produced, processed, and/or tested, and key characteristics/critical features were monitored, as appropriate. Signature and date of a supplier representative is required. When parts are serialized, serial numbers shall appear on the certification.

- A) In accordance with applicable purchase order or subcontract requirements, include imposed drawings and/or specifications, and revision levels as specified on purchase order or subcontract on the certification.
- B) In accordance with the requirements of process specifications indicated on purchase order or subcontract. Include process specification(s) on the certification.

Number 30 and 31 are unassigned.

### [32] TRACEABILITY

- A) Materials used must be identifiable by lot number, material type, specification and applicable change letter or number, heat number, etc., and traceable to records of acceptance. Material fabricated by the supplier shall be traceable to a lot of material used. Traceability records shall be available for review by an Aerojet representative.
- B) The supplier's Certificate of Conformance (C of C) must include identification of the manufacturer and the specific production lot(s) of the material supplied. Lot identification shall be clearly titled as lot number, batch code, date code, date of manufacture, or equivalent. The supplier shall make all possible efforts to minimize the number of lot/date codes included in each shipment (if possible, one lot/date code per shipment is preferred). If more than one lot number of material is provided, it shall be packaged such that like lot numbers are grouped together. The supplier shall maintain the associated traceability documentation and make it available for Aerojet review upon request.

[33] Re-assigned to 71.

Number 34 through 49 unassigned.

## INSPECTIONS

### [50] SOURCE SURVEILLANCE/INSPECTION (INPROCESS AND FINAL)

All items covered by this purchase order are subject to source surveillance inspection by Aerojet quality representative. This may include surveillance of the supplier's product throughout fabrication and final acceptance test to verify requirements of the purchase order are adequately satisfied. The supplier is required to provide the Aerojet quality representative with reasonable facilities and equipment to accomplish this task. The Aerojet quality representative may specify mandatory Aerojet inspection points in supplier's fabrication and testing documentation. Aerojet source surveillance inspection is mandatory for final acceptance testing unless specifically waived by Aerojet quality assurance. The Aerojet buyer shall be notified a minimum of five working days (excluding weekends and holidays) in advance to schedule such inspections. Evidence of source inspection shall be included with the order.

### [51] SOURCE INSPECTION (FINAL INSPECTION)

All deliverable items covered by this purchase order require final acceptance inspection and/or test verification at the supplier's facility by an Aerojet quality representative or his delegate prior to shipment. The supplier shall make available to the Aerojet quality representative, at time of presentation of items, the supplier's inspection, manufacturing, traceability and material review records. The Aerojet buyer shall be notified a minimum of five working days (excluding weekends and holidays) in advance to schedule such inspections. Evidence of source inspection shall be included with the order.

Number 52 through 70 unassigned.

### [71] HAZARDOUS MATERIAL AND EXPLOSIVES

Suppliers shall provide Material Safety Data Sheet (MSDS) for hazardous materials with each shipment.

For Explosive materials, the following documents shall be provided:

1. Material Safety Data Sheets (MSDS)
2. Competent Authority Approval document or DOD Interim Hazardous Classification, if applicable, or;
3. Explosives in a pipe bomb (w/DOT exemption)