

## **SUPPLIER PRODUCT ASSURANCE CLAUSES FOR PURCHASED PARTS**

COM DEV Purchase Orders (PO) may contain Product Assurance Clauses to inform Suppliers of specific Quality requirements, which are part of a Purchase Order and its associated documents.

These requirements are identified by various clause numbers referenced on the Purchase Order. These clauses are detailed below.

Failure by a Supplier to comply with the indicated clause requirements will result in REJECTION of the purchased material when received by COM DEV.

### Clause 1A - **CERTIFICATE OF COMPLIANCE (C of C) for fully traceable EEE components**

Supplier shall provide a certification with each shipment to attest that the parts conform to the PO requirements.

Certification must contain the following:

- Purchase Order number
- COMDEV Part number as identified in the Contract/Purchase Order
- Revision level of COM DEV specification or drawing where applicable
- Original Manufacturer's lot number, date code and/or Serial Numbers, and QPL part number
- Name and address of original manufacturer location or certificate of origin or cage code
- Quantity and unit of measurement (each, box, case etc.)
- Signature of an official of the company, and date.
- All exceptions/deviations from contract/PO requirements

### Clause 1B - **CERTIFICATE OF COMPLIANCE (C of C) for fully traceable hardware**

Supplier shall furnish with each shipment a C of C that shall attest that the materials, parts and/or processes supplied are in compliance with the requirements and specifications of the PO. The Certificate shall contain:

- Supplier Name and address,
- COM DEV's purchase order number,
- COM DEV part number, part revision and/or drawing revision,
- part name and manufactures part number (if applicable)

- the supplied items' traceability references such as serial numbers, batch/mill number, lot/dates codes, analysis/test reports.
- All exceptions, deviations, outstanding processes shall be identified.
- Signed and dated by the supplier's responsible quality representative as evidence that the deliverable product conforms to stated requirements.

Clause 1C - **CERTIFICATE OF COMPLIANCE (C of C)**

Shipments made against this purchase order shall contain a Certificate of Compliance by the Supplier's authorized quality assurance representative verifying that all requirements have been met per the Purchase Order. Exceptions shall be indicated.

Clause 2 - **COM DEV CHANGE AUTHORITY**

The Supplier shall not incorporate into the hardware supplied against this Purchase Order any change in material, processes or specification without written authorization from COM DEV.

In the event that a mold & insert, or stamp & die are used to manufacture hardware, COM DEV shall be notified when these tools are changed or replaced.

Clause 3 - **RAW MATERIAL DOCUMENTATION REQUIREMENTS**

- a) Each shipment of metallic or non-metallic raw material must be accompanied by the manufacturers' mill inspection/test report for the raw material containing:
- 1) Name & Location of the raw material manufacturer or mill.
  - 2) Material identification by specification number and material condition.
  - 3) Manufacturer or mill lot identification number of the raw material.
  - 4) Actual chemical and physical test results as specified in the applicable material specifications.

**Distributor's Certificate of Conformance required to supplement mill test report(s).**

b) Each shipment of finished or semi-finished goods manufactured from metallic or non-metallic raw material must be accompanied by a certificate from the Supplier containing:

- 1) Name & location of the raw material manufacturer.
- 2) Material identification by specification number.
- 3) Manufacturer or mill lot or batch number of the raw material.

**OR**

If the Material is supplied by COM DEV, reference COM DEV's material batch number and/or attach a copy of the shipping notice for raw material from COM DEV with a note "Raw material provided by COM DEV" on the C of C or inspection report.

The certificate shall be signed by the supplier's responsible quality representative as evidence that the deliverable product conforms to stated requirements.

c) A raw material test coupon from the same batch of material used for the supplied goods must be provided with each shipment.

The Test Coupon must be cut at the beginning of the process and identified with the material batch/heat lot number using hand engraver or equivalent. The coupon will be placed in a bag with a label containing PO number, PO line item, and Part Number and will meet the following requirements:

- 1" x 1" x 1/8" min, for bar and plate material
- .500" dia. X 1/8" min, for round stock material

Clause 5A - **SOURCE INSPECTION**

When specified on the PO, COM DEV source inspection is required prior to shipment from the Supplier's plant. The Supplier shall notify COM DEV at least five (5) working days in advance of the date the material will be ready for inspection.

Supplier's conformance to COM DEV requirements shall be verified by COM DEV and shall be performed at the Supplier's facility prior to shipment.

Source inspection shall not constitute product acceptance, nor shall it relieve the supplier of any liability for full compliance with all requirements of the purchase order.

After COM DEV source inspection, any rework or test of the item(s), including any unscheduled or unauthorized entry, such as removal of a panel, cover or enclosure shall void the source inspection and Supplier shall request COM DEV to repeat the applicable source inspection steps(s).

Clause 5B - **PRE-CAP INSPECTION ON EEE PARTS**

When specified on the PO, COM DEV pre-cap inspection is required prior to shipment from the Supplier's plant. The Supplier shall notify COM DEV at least five (5) working days in advance of the date when part is ready for inspection.

Inspection points shall be required where visual inspection access to hardware may be obscured by the next assembly task. These inspection points shall be inserted into the Supplier's shop planning or routing documents upon review by COMDEV project and quality representatives. This planning shall have no subsequent alteration by the Supplier without first obtaining approval from the COM DEV Pre-cap Inspector liaison, and subsequent approval of planning changes post-revision.

Clause 6 - **FIRST ARTICLE INSPECTION (FAI)**

The supplier is required to perform a FAI in accordance to AS9102, Aerospace Standard for "Aerospace First Article Inspection Requirement" on the first production run of the part prior to shipment. Once the FAI is successfully completed, the supplier shall not change his manufacturing process without prior approval from COM DEV. The supplier shall document the inspection results of each requirement (features, characteristics, notes) identified on the drawing and specifications. A copy of the FAI report shall be forwarded with the first shipment.

The supplier is required to use the COM DEV FAI forms (including cover page) which conform to AS9102 Rev. A.

Forms shall be completed in accordance with detailed instructions outlined in the Suppliers Quality Assurance Manual.

**These forms and the Manual are available on the COM DEV website under Supplier to Canada sub-section Reference Documents.**

Clause 8 - **AGE/TEMPERATURE SENSITIVE MATERIAL**

Manufactured date, shelf-life and expiration date is required with each lot provided. Material received with more than 25% of its shelf life expired shall be rejected on receipt at COM DEV.

Each delivery of material supplied for this purchase order shall consist of a single batch/lot of material, i.e. mixed batches/lots of material are not allowed.

If the product is temperature sensitive, "Temperature Sensitive Material" must be identified on the shipping container along with the temperature storage range.

The supplier shall perform such verification testing to demonstrate that the product supplied under the purchase order, complies with the requirements of the applicable specification and/or ASTM. The supplier's deliverable test data/report shall comprise of read and record data (as specified by specification) for chemical, physical or mechanical properties, including where applicable functional and electrical testing with analysis and/or inspection attributes. The test results shall be traceable to the material through the lot/batch or data code and shall accompany each shipment to be delivered.

Clause 10 - **CLEANING PROCEDURE REQUIREMENTS FOR MACHINED COMPONENTS**

All coolants and lubricants shall be cleaned from hardware immediately after machining operations are complete. The item shall be free of manufacturing debris (i.e. swarf). The supplier shall have a written procedure (controlled document) that describes the cleaning process.

The procedures shall include as a minimum cleaning steps, times, temperatures, and specific process steps, such as:

- Type of cleaning – spray, immersion, wipe, ultrasonic, etc...
- Equipment used, and setting if applicable.
- Solutions – chemical name, dilution, temperatures.
- Maintenance of baths – solution changeover, quality of water, etc...

- Type of drying – air, blow, oven.
- Handling and packaging after cleaning.

Clause 11 - **SEVEN YEAR RECORDS RETENTION**

The Supplier shall retain on file for a period of at least 7 years (after the acceptance and the final payment for such product from COM DEV) all traceability, Quality and Test records of the material provided on this Purchase Order.

These records must be kept in a secured location. Archived documents shall be stored in the protective environment to prevent deterioration, and secured to ensure applicable provisions of the Contract / Purchase Order, such as ITAR requirements.

**Coupons produced to validate processes, for example: adhesive mixing, chemical coatings, painting or plating, are considered as quality records. All coupons shall be retained for a period of 7 years.**

In the event that coupons and their related documentation cannot be retained by the supplier, COM DEV shall be notified to co-ordinate delivery of the coupons with the hardware for storage by COM DEV for the 7 year retention period. COM DEV's responsibility will be solely limited to the storage of the coupons and data as supplied by the Supplier.

Clause 12 - **ELECTROSTATIC DISCHARGE (ESD) PROTECTION PROGRAM AND PACKAGING**

For ESD Sensitive Parts, the Supplier shall document and implement an ESD Control Program in accordance with ANSI/ESD S20.20. Parts must be properly packaged and identified as required in ANSI/ESD S20.20, or MIL-STD-1686. All parts shall be placed in conductive or static-dissipative packages, tubes, carriers, conductive bags, etc., for shipment. The packaging must be clearly labeled to indicate that it contains electrostatic sensitive parts and the level of sensitivity, if it is below 100 volts. Electrical parts that may be used or shipped in conjunction with ESD sensitive parts shall be treated as ESD sensitive.

For Non-ESD Sensitive parts, i.e. components that are not sensitive to voltage conditions up to 16,000V (HBM – Ref. MIL-STD-1686), the above precautions are deemed not applicable.

Clause 13 - **DELIVERABLE TEST REPORTS /DATA**

The Supplier shall perform such verification testing to demonstrate that the product supplied under the purchase order, complies with the requirements of the applicable specification and/or ASTM. The supplier's deliverable test data/report shall comprise of read and record data (as specified by specification) for chemical, physical or mechanical properties, including where applicable functional and electrical testing with analysis and/or inspection attributes. The test results shall be traceable to the material through the lot/batch or data code and shall accompany each shipment to be delivered. This is not applicable for approved QPL EEE components.

Clause 14 - **AUTHORITY TO SHIP**

The supplier shall provide all documents required to be shipped with the hardware for review BEFORE shipment of the hardware. Once reviewed by COM DEV Supplier Quality, authorization to ship will be granted by the COM DEV buyer.

Clause 16 - **ISO-9001 QUALITY SYSTEM/COM DEV SUPPLIER QUALITY MANUAL**

The quality system used by the supplier shall be compliant with the requirements of ISO 9001:2008, Quality Management System - Requirements OR A SYSTEM APPROVED BY COM DEV. Compliance and maintenance of the system will, at the discretion of COM DEV product assurance, be demonstrated by audits performed by COM DEV, or a COM DEV approved registration body.

\_\_\_\_\_ The COM DEV Supplier Quality Assurance Requirements manual (MAN/COM/1002 which is available on the supplier website) applies to all Suppliers providing COM DEV with materials, products, processing, and related services, and when applicable, to Supplier sub-tier sources.

Clause 20 - **TRACEABILITY SYSTEM**

In performance of this Purchase Order, the Supplier must maintain a full traceability system on all materials, parts and processes used to complete this order. The

Supplier must provide with each shipment item material traceability back to the manufacturers Batch/Lot/Date code or serial number.

Clause 21 - **MATERIAL SAFETY DATA SHEETS**

The Supplier must provide a current Material Safety Data Sheet (MSDS) in accordance with the Workplace Hazardous Material Information System (WHMIS) requirements. The MSDS must have been reviewed in the last three years to be considered current.

All items shipped on this order must have a WHMIS label in accordance with WHMIS legislature.

Clause 22 - **DELIVERABLE INSPECTION REPORTS**

a) **INSPECTION REPORTS**

When used, sampling inspection may be used provided the supplier has demonstrated the process meets 4 sigma level for characteristics with a tolerances of +/- .0005" or greater, or, 3 sigma level for characteristics with a tolerance of less than +/- .0005".

Functional gauges may be used provided statistical control is achieved, and, is approved by COM DEV.

All internal threads must be checked using thread plug Go / NOGO gauges.

The Supplier shall submit with each shipment a copy of the final inspection report for the lot, including part number, characteristics/parameters, quantity accepted/rejected and the signature or stamp of the suppliers inspection representative. For all numerical characteristics/parameters an exact data will be recorded and for all attribute characteristics/parameters a checkmark or "OK" is to be recorded. Unless otherwise specified through the PO, the final report will indicate the data for the First Off (F/O) and the Last Off (L/O) at minimum.

The inspection report shall be attached to a duplicate copy of the packing slip or invoice and placed inside an envelope marked "Inspection Report".



b) PROCESS CAPABILITY ANALYSIS

A statistical evaluation of the supplier's processes may be required to demonstrate process capability and to reduce the need for 100% inspection.

This evaluation will be done as part of this production order. The parts for this capability evaluation will need to be machined in one set-up process without interruption and/or tool compensation for a minimum of 30 pieces. The inspection report of the Critical features will be reported to one more decimal place than the tolerances on the drawing. The following criteria shall be used to evaluate the process capability.

- i. Data points must be within Normal distribution.
- ii. Minimum capability index Cpk / Ppk must be greater or equal to:
  - a. **1.33 or 4 Sigma quality** level for tolerances =, or > +/- 0.0005"
  - b. **1.00, or 3 Sigma quality** level for tolerances < +/- 0.0005"

The inspection data shall be submitted in a soft copy format that can be directly transferred to an analysis program.

The result of SPC Capability Study shall be discussed with supplier to improve quality and make process adjustments.

Subsequent Process Capability Analysis shall be at COM DEV's discretion, based on the quality performance of the supplier.

c) 100% INSPECTION REQUIREMENT

As a result of a previous shipment of non-conforming hardware, the supplier is required to conduct a 100% inspection on the characteristics identified and communicated via COM DEV's QNs / IDR. Specifics may be requested from the COM DEV SQE.

d) CRITICAL DIMENSIONS AND TOLERANCES

Key Characteristics are assigned on the drawing with the symbol "Δ", will require 100% of inspection and need to be reported as actual (measured) data. The actual data of key characteristics must be inspected with appropriate measuring instruments with the accuracy of 5 to 10 times better than is required on the drawing wherever possible when

available technology permits. Inspected actual data need to be recorded to one more decimal place than is specified on the drawing (e.g. for dia. .1785" +.0000/-.0003", read out to be on fifth decimal places, i.e. .xxxxx).

Key characteristics need to be inspected using appropriate measuring method (e.g. cylindricity, ovality, concentricity, run out to be inspected on a roundness instrument rather than on (CMM).

Once the supplier demonstrates repeatable process capability on the critical features above the 4 Sigma process, or  $C_p > 1.33$  and  $C_{pk} > 0.83$  (1.5 Sigma drift), COM DEV will consider to reduce 100% of inspection with the sampling method, described in the item a) of this clause.

Clause 23 - **IN-PROCESS SOURCE INSPECTION**

The supplier's manufacturing plan must include a COM DEV Mandatory Inspection Point (MIP) as defined by PO.

The supplier must notify COM DEV's buyer at least 72 hours prior to the need for MIP.

MIP inspection shall not constitute product acceptance, nor shall it relieve the supplier of any liability for full compliance with all the requirements of the PO.

Clause 25 - **DPA RESPONSIBILITY**

Components purchased on this PO may undergo Destructive Physical Analysis performed by COM DEV or COM DEV approved test facility. The manufacturer/distributor is liable for quality of these components until satisfactory DPA results are on file with COM DEV.

Clause 29 - **CLEANLINESS AND PACKAGING REQUIREMENT**

The item shall be clean and free of manufacturing materials (i.e. lubricants) and debris (i.e. swarf). The cleaning process and materials shall not have detrimental impact on the item. The requirements of QCI-G-03 shall be met.

If not covered by specific instructions, all materials must be protected against corrosion, contamination, deterioration or other spoilage during transit. All materials must be packaged with suitable protection so as to prevent damage through handling, in transit, and during storage prior to usage. Packaging will be in accordance with “best commercial practice” unless otherwise stated.

Machined parts shall be wrapped individually to prevent damage from contact with each other. The part may be wrapped in bubble wrap (preferred), foam, thick tissue paper, 5 mill zip lock plastic bags. It may be placed in individual small containers, such as plastic cups. Cardboard cannot be used as individual wrap. Screws / washers nuts & bolts do not need to be individually wrapped

All semi-conductors, resistors and capacitors must be delivered in a tape and reel packaging. For traceability purposes, there will be no mixing of different date codes in a single reel. No loose parts will be accepted by COM DEV.

Moisture sensitive devices must be vacuum-sealed in ESD protective packaging with desiccant. The sealed package must be labeled per IPC/JEDEC J-STD-033. The supplier must identify the moisture sensitivity level, the time to mount the component, and the sealing date.

Clause 30 - **EEE Single Lot / Date Code**

The full quantity of date code controlled EEE parts, provided under this Purchase Order must have a single lot-date code. The Supplier will obtain the written approval of COM DEV’s purchasing representative prior to shipping goods that do not meet this single lot/date code requirement.

The date code must be less than forty-eight (48) months at time of shipment to COM DEV.

In the event that the COM DEV’s purchasing representative provides said authorization to ship mixed lot/date codes, the Supplier shall provide a copy of the written authorization with the shipping document.

When mixed lot/date codes are authorized, the shipping document shall list individual lot/date codes and quantity. Multiple lot/date codes shall not be

commingled. In addition, the individual part containers shall be marked with the quantity and lot/date code.

Clause 32 - **PART FAMILY QUALIFICATION**

The supplier's Manufacturing and Inspection process must be qualified prior to delivering production hardware. COM DEV's machining qualification program is based on critical families of parts.

**The qualification process is described in CWI 7.4.002.04, "Approval of the Supplier's Manufacturing and Inspection Plan". In summary, the supplier is required to:**

- **Prepare and submit a Manufacturing and Inspection plan for approval.**
- **Prepare and submit special procedures for approval.**
- **Prepare and submit a detail inspection report of all qualification pieces using the SAE AS9102 form.**

Hard and soft copies of CMM data will be made available when requested as will material certification with a MILL test report, and any process certification.

Once completed and approved, the supplier's manufacturing & inspection control plan will be reference on future production orders and will be required to manufacture and inspect production hardware to the plan. **Changes to the plan will not be implemented without prior approval from COM DEV.**

Clause 33 - **APPROVED MANUFACTURING AND INSPECTION PLAN**

Parts made from this order shall be Manufactured and Inspected per the manufacturing and inspection plan identified in the body of this order, and as directed in CWI 7.4.002.04.

Clause 34 - **COM DEV SUPPLIED FINISH**

Finishes referenced on the drawing or source control document (for example, painting, plating, anodizing, chemcoating, or cleaning) shall be performed at COM DEV.

The item will be shipped with a note on the C of C stating “COM DEV to supply finish”.

Clause 35 - **PROHIBITED MATERIALS**

All constructions and finishes containing pure cadmium or pure zinc are prohibited.

In addition, constructions and finishes containing pure tin are prohibited unless they contain a minimum of 3 weight percent alloying element(s) (i.e. lead, silver, etc.). Solder coated finishes applied over pure tin surfaces are not acceptable unless approved by the COM DEV.

RoHS compliant parts shall be clearly identified.

Clause 36 - **MACHINING WORKMANSHIP STANDARD / NON CONVENTIONAL MACHINING PRACTICES**

Requirements of Machining Workmanship Standard (QCI-G-03) is applicable to all goods delivered on this Purchase Order.

EDM Sink – when used, the affected surface must be microblasted to remove EDM deposits. The micro blast process shall be provided to COM DEV for review prior to use.