



Crescent Systems, Inc.
1155 E. Collins Blvd., STE #100
Richardson, TX 75081
T: 972.437.0400

Quality Clause as specified on Purchase Order

Quality Assurance Clauses – The following Quality Requirements define the responsibilities of the supplier to ensure conformance to CSI’s purchase order (PO) requirements. All the following requirements are applicable to all POs unless specified otherwise on purchasing documentation. Failure to comply with CSI’s supplier quality requirements may result in product rejection and directly affect the supplier’s quality rating.

For Commercial Off The Shelf (COTS) suppliers, the following QA codes, at minimum, apply to all purchase orders (POs) unless otherwise stated on the PO: QA1, QA3, QA5, QA9, QA10, QA12, QA13 & QA15. Any additional requirements will be communicated to the supplier at the time of purchase.

QA1 – ORDER ACKNOWLEDGEMENT

SUPPLIER SHALL REVIEW ALL PO REQUIREMENTS AND IF ANY TERMS OR CONDITIONS ARE DISPUTED THEY MUST CONTACT CSI WITHIN 48 HOURS FOR CLARIFICATION.

QA2 - QUALITY SYSTEM REQUIREMENTS

CSI PREFERS ITS SUPPLIERS TO MAINTAIN A FORMAL QMS COMPLIANT OR REGISTERED TO ONE OF THE FOLLOWING STANDARDS, BASED ON THEIR BUSINESS AND TYPE OF PRODUCT OR SERVICE:

- A) AS9100 PREFERRED
- B) ISO 9001 PREFERRED
- C) AS9003 (FOR SMALL BUILD/MACHINE TO PRINT ORGANIZATIONS) PREFERRED
- D) AS9120 (FOR DISTRIBUTORS) PREFERRED
- E) FAA REPAIR STATION CERTIFICATE (FOR OUTSOURCED MAINTENANCE PROVIDERS (OMP’S)
- F) NADCAP (FOR SPECIAL PROCESSES) PREFERRED

SPECIAL PROCESS REQUIREMENTS ARE AS FOLLOWS:

SUPPLIERS OF “SPECIAL PROCESS” SERVICES OR PRODUCTS ARE REQUIRED TO HAVE THOSE SPECIAL PROCESSES VALIDATED AND APPROVED BY CSI. NADCAP ACCREDITATION OR EQUIVALENT FOR SPECIAL PROCESSES MAY BE USED IN-LIEU OF CSI VALIDATION AND APPROVAL PROCESS. PROCESS CERTIFICATIONS ARE REQUIRED FOR ALL SUPPLIERS PERFORMING SPECIAL PROCESSING AND SHALL STATE THAT THE PROCESS HAS BEEN PERFORMED TO THE DRAWING REQUIREMENTS. CSI CONSIDERS THE FOLLOWING PROCESS CATEGORIES AS SPECIAL PROCESSES:

- NON-DESTRUCTIVE TESTING
- HEAT TREATING
- MATERIAL TESTING LABORATORIES
- CHEMICAL PROCESSES
- NON-CONVENTIONAL MACHINING AND SURFACE ENHANCEMENTS
- WELDING
- COMPOSITES
- POWDER COAT PAINT
- ANODIZE

THE SUPPLIER MUST NOTIFY CSI OF ALL SUB-TIER SPECIAL PROCESS SUPPLIERS USED TO PRODUCE CSI PRODUCTS. ANY SPECIAL PROCESS THAT IS TRANSFERRED REQUIRES SPECIFIC PRIOR APPROVAL BY CSI AND MAY BE SUBJECT TO FURTHER VERIFICATION AND VALIDATION BY ONE OF THE FOLLOWING METHODS:

- CSI CONDUCTS AN ON- SITE SURVEILLANCE OF THE SPECIAL PROCESS SUPPLIER
- CSI APPROVES THE SUPPLIER’S APPROVAL PROCESS FOR SPECIAL PROCESS SUPPLIERS



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- CUSTOMER OR REGULATORY SURVEILLANCES CONDUCTED ON THE SPECIAL PROCESS SUPPLIER
 - SPECIAL PROCESS SUPPLIER IS NADCAP CERTIFIED OR EQUIVALENT

BUYER RESERVES THE RIGHT TO CONDUCT SURVEILLANCE AT SELLER'S FACILITY TO DETERMINE THAT SELLER'S QUALITY SYSTEM MEETS THE REQUIREMENTS OF THIS CLAUSE.

IN ADDITION, CSI REQUIRES ITS SUPPLIER TO HAVE A CALIBRATION SYSTEM THAT IS COMPLIANT, AT MINIMUM, TO ANSI Z-540 OR ISO 10012.

QA3 – COMPETENCE, TRAINING AND AWARENESS

THE SUPPLIER SHALL ENSURE PERSONNEL PERFORMING WORK AFFECTING THE CONFORMITY TO PRODUCT REQUIREMENTS HAVE THE NECESSARY COMPETENCE/TRAINING. SUPPLIER SHALL MAINTAIN APPROPRIATE RECORDS OF EDUCATION, TRAINING, SKILLS AND EXPERIENCE OF SUCH PERSONNEL.

SUPPLIER SHALL ENSURE THAT ALL PERSONNEL ARE AWARE OF:

- THEIR CONTRIBUTION TO PRODUCT OR SERVICE CONFORMITY;
- THEIR CONTRIBUTION TO PRODUCT SAFETY;
- THE IMPORTANCE OF ETHICAL BEHAVIOR.

QA4 - CERTIFICATE OF CONFORMANCE

THE SUPPLIER SHALL SUBMIT WITH EACH SHIPMENT THE FOLLOWING: (1) A CERTIFICATE OF CONFORMANCE STATING THAT THE ITEMS FURNISHED TO CSI ARE IN CONFORMANCE TO THE PO AND DESIGN DATA REQUIREMENTS APPLICABLE TO THE ITEMS BEING DELIVERED, AND (2) A COPY OF THE MANUFACTURER'S C OF C WHERE APPLICABLE. ANY RECOGNIZED AEROSPACE, MILITARY AND/OR INDUSTRY STANDARD, WHEN IMPOSED BY THE DRAWING, SPECIFICATION OR PO, MUST BE SPECIFICALLY STATED AND FORM A PART OF THE CERTIFICATION. PROCESS CERTIFICATIONS ARE REQUIRED FOR ALL SUPPLIERS PERFORMING SPECIAL PROCESSING AND SHALL STATE THAT THE PROCESS HAS BEEN PERFORMED TO THE DRAWING REQUIREMENTS.

PARTS WITHOUT CORRECT DOCUMENTATION ARE SUBJECT TO REJECTION. ALL CERTIFICATIONS MUST SHOW THE PART NUMBER, QUANTITY, PROCESS BEING PERFORMED, SPECIFICATIONS, REVISION NUMBER, THE CERTIFYING SIGNATURE AND A LEGIBLY PRINTED NAME AND TITLE OF THE PERSON SIGNING THE CERTIFICATION. THE SUPPLIER SHALL NOTIFY CSI PRIOR TO SHIPMENT IF A SPECIFICATION HAS BEEN REPLACED, SUSPENDED OR UPDATED. THE SUPPLIER SHALL LIST THE SPECIFICATION AS SHOWN ON THE DRAWING AND THE REPLACEMENT SPECS WITH THEIR CURRENT REVISION.

FOR DISTRIBUTORS AND WAREHOUSES, THESE REQUIREMENTS APPLY WITHOUT EXCEPTION, AND INCLUDE TRACEABILITY AND FLOW DOWN OF REQUIREMENTS ON ALL PURCHASED PRODUCTS TO THE SOURCES OF MANUFACTURE AND THEIR RELATED ACCEPTANCE DOCUMENTS. IN ADDITION, MATERIAL FROM DIFFERENT MANUFACTURING SOURCES SHALL BE STORED IN A MANNER SUCH THAT THE MATERIAL DOES NOT BECOME INTERMIXED AND THE MANUFACTURING SOURCE AND MATERIAL IDENTITY IS MAINTAINED AT ALL TIMES.

A SIGNATURE ON THE CERTIFICATE / DOCUMENT IS A STATEMENT THAT ALL PO REQUIREMENTS WERE MET IN FULL, INCLUDING ALL REQUIRED SUB-TIER FLOW DOWNS, WHEN APPLICABLE.

QA5 – NON-CONFORMING MATERIAL & LATENT DEFECT NOTIFICATION

THE SUPPLIER SHALL NOT SHIP OR MAKE ANY UNAUTHORIZED REPAIRS TO PRODUCT WITH THE INTENT OF DELIVERING MATERIAL THAT DOES NOT FULLY MEET PO OR PRODUCT SPECIFICATION REQUIREMENTS. THE SUPPLIER SHALL NOTIFY CSI OF POTENTIAL NONCONFORMANCES PRIOR TO SHIPMENT. SHIPPING NONCONFORMING MATERIAL WITHOUT WRITTEN PRIOR APPROVAL MAY DISQUALIFY SUPPLIER FROM ADDITIONAL PROCUREMENT OR FUTURE ORDERS.



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QA6 – CORRECTIVE ACTION REQUEST (CAR)

SUPPLIER IS REQUIRED TO RESPOND TO CSI'S CORRECTIVE ACTION REQUEST (CAR) WHEN NONCONFORMING MATERIAL HAS BEEN DETERMINED. THE SUPPLIER SHALL PROVIDE A WRITTEN RESPONSE BY THE REQUESTED RESPONSE DATE NOTED ON THE CAR DESCRIBING THE ROOT CAUSE OF THE PROBLEM AND THE ACTION(S) TAKEN TO PREVENT THE PROBLEM FROM REOCCURRING. CSI RESERVES THE RIGHT TO VERIFY THE EFFECTIVENESS OF THE ACTION(S) TAKEN TO MITIGATE THE PROBLEM(S), WHICH MAY INCLUDE ONSITE VERIFICATION AT THE SUPPLIER OR SUB-TIER SUPPLIER'S FACILITIES.

QA7 – CONFIGURATION MANAGEMENT/REVISION CONTROL

SUPPLIER SHALL NOT MAKE ANY CHANGES TO THE PROCESSES OR MATERIAL SPECIFIED UNDER THE PO. SUPPLIER SHALL NOTIFY CSI PRIOR TO ANY PROPOSED CHANGES TO SUPPLIER CONTROL DESIGN, PARTS, MATERIALS, CHANGES OF SUPPLIERS, FABRICATION METHODS, OR PROCESSES THAT MAY AFFECT FUNCTION, INTERCHANGEABILITY OR RELIABILITY OF HARDWARE DELIVERED TO CSI.

QA8 – SUPPLIER'S PURCHASE ORDERS

SUPPLIER IS RESPONSIBLE FOR ENSURING SUBCONTRACTED WORK SHALL CLEARLY DESCRIBE THE PRODUCT ORDERED AND MUST INVOKE THE APPLICABLE REQUIREMENTS FROM CSI AND OUR CUSTOMERS. SUB-TIER SPECIAL PROCESS AND CALIBRATION SERVICE SUPPLIERS SHALL BE COMPLIANT TO THE REQUIREMENTS OF SECTION QA2.

QA9 – QUALITY RECORDS RETENTION

ALL QUALITY RECORDS ARE TO BE LEGIBLE, REPRODUCIBLE, AND IDENTIFIABLE TO THE PURCHASE ORDER. QUALITY RECORDS ARE TO BE STORED AND MAINTAINED IN SUCH A WAY THAT THEY ARE READILY RETRIEVABLE IN FACILITIES THAT PROVIDE A SUITABLE ENVIRONMENT TO MINIMIZE DETERIORATION OR DAMAGE AND TO PREVENT LOSS. THIS APPLIES TO OUR SUPPLIERS AND ANY SUB-TIER SUPPLIERS. RETENTION PERIOD FOR QUALITY RECORDS IS 10 YEARS FROM THE TIME OF FINAL PO PAYMENT, UNLESS OTHERWISE SPECIFIED. CSI, OUR CUSTOMERS, GOVERNMENT OR REGULATORY AGENCY REPRESENTATIVES SHALL HAVE ACCESS TO REVIEW QUALITY RECORDS AS THEY PERTAIN TO SPECIFIC ORDERS.

QA10 – BUYER RIGHT OF ACCESS AND SURVEILLANCE

CSI RESERVES THE RIGHT TO REVIEW CONTROL METHODS AND INSPECT MATERIAL SUPPLIED TO CSI AT THE SUPPLIER'S FACILITY AND AT ANY SUB-TIER FACILITY. ACCESS RIGHTS SHALL BE EXTENDED TO OUR CUSTOMERS AND GOVERNMENT OR REGULATORY AGENCY REPRESENTATIVES. CHANGES TO SUPPLIERS OR MANUFACTURING LOCATION MAY REQUIRE CSI ASSESSMENT AND ACKNOWLEDGEMENT.

QA11 – FIRST ARTICLE INSPECTION (FAI)

IF SPECIFIED ON THE PURCHASE ORDER, FAIS SHALL BE CONDUCTED PER AS9102 ON HARDWARE FROM THE 1ST QUALIFICATION OR PRODUCTION RUN OF ALL NEW PRODUCTS. WHEN DOCUMENTING THE FAI, THE SELLER MAY USE THE FORMS CONTAINED WITHIN AS9102 OR THEIR EQUIVALENT, SO LONG AS THE FORMS CONTAIN ALL THE INFORMATION REQUIRED BY AS9102. THE SUPPLIER, INCLUDING THOSE THAT ARE CERTIFIED, SHALL INCLUDE THE FAI REPORT WITH THE PRODUCT SHIPMENT.

EXCEPTIONS AND ADDITIONAL REQUIREMENTS: FAI IS NOT REQUIRED FOR DELIVERABLE SOFTWARE OR COTS PRODUCTS (E.G., STANDARD FASTENERS, SHIMS, BEARINGS, ELECTRONIC PIECE PARTS, PAINTS, ADHESIVES, ETC.).

ADDITIONAL FAI REQUIREMENTS FOR PCBs ARE AS FOLLOW:

IF SPECIFIED ON THE PURCHASE ORDER, TEST COUPONS/MICRO-SECTIONS, SOLDERABILITY SAMPLES, MICRO-SECTION LAB REPORTS AND ELECTRICAL TEST AND INSPECTION REPORTS SHALL ACCOMPANY THE FAI REPORT AND BE KEPT ON FILE FOR SUBSEQUENT LOTS. NOTE: THE SUPPLIER IS RESPONSIBLE FOR ENSURING THAT EACH ELECTRONIC COMPONENT IS COMPLIANT TO THE CURRENT MATERIAL DECLARATION SHOWN ON THE CSI BILL OF MATERIAL FOR THAT COMPONENT.



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PRINTED CIRCUIT BOARDS: PCB SHALL MEET ALL REQUIREMENTS ON THE PO AND DRAWING, AND SHALL BE FABRICATED PER IPC-6011, 6012 AND/OR 6013, OF A TYPE AND PERFORMANCE CLASS SPECIFIED ON THE DRAWING. THE BOARD, IT'S TESTING AND TEST SAMPLES MUST MEET ALL REQUIREMENTS OF IPC-A-600, CLASS 2 OR 3, AS APPROPRIATE.

- ADDITIONAL SHIPPING DOCUMENTS: THE SUPPLIER SHALL PROVIDE CSI THE FOLLOWING DATA FOR EACH LOT OF PCBs.

ELECTRICAL TEST FAILURE PRINT OUTS WITH SPECIFIC DEFECTS (I.E. INTERNAL OR EXTERNAL OPENS OR SHORTS);

PHOTO IMAGE OF ONE RANDOMLY SELECTED, UNSTRESSED MICRO-SECTION AND ONE THERMALLY STRESSED (TS) MICRO-SECTION FOR EACH DATE CODE LOT. MICRO-SECTIONS SHALL BE FABRICATED FROM THE IPC-2221 AB COUPONS THAT UTILIZE THE SMALLEST PLATED HOLE AND ASSOCIATED PAD. THE ACTUAL MICRO-SECTIONS SHALL BE RETAINED BY THE SUPPLIER.

BUILD-TO-PRINT ASSEMBLIES: THE COMPLETED FAI REPORT SHALL INCLUDE FAIS FOR THE ASSEMBLY, SUBASSEMBLIES, AND DETAIL PARTS, THE FUNCTIONAL TEST RESULTS, IF APPLICABLE, AND VERIFICATION OF ASSEMBLY AND TEST OPERATIONS AND TOOLING, WHICH IS NOT REQUIRED WITH PRODUCT SHIPMENT, BUT SHOULD BE MAINTAINED AS A QUALITY RECORD.

PRODUCTS MADE TO A CSI SOURCE/SPECIFICATION CONTROL DRAWING (SCD): THE FAI SHALL ADDRESS ALL SCD REQUIREMENTS AND INCLUDE THE SAME CONSTITUENT FAIS DEFINED FOR BUILD-TO-PRINT ASSEMBLIES. THE SUPPLIER SHALL MAINTAIN THE CONSTITUENT FAIS AT ITS FACILITY AS QUALITY RECORDS.

DELTA FAI: A FULL OR PARTIAL FAI SHALL BE PERFORMED FOR AFFECTED CHARACTERISTICS, FOR THE FOLLOWING EVENTS:

- A) CHANGE IN THE DESIGN AFFECTING FIT, FORM OR FUNCTION OF THE PART.
- B) CHANGE IN MANUFACTURING SOURCE, LOCATION, PROCESS, INSPECTION METHOD, TOOLING OR MATERIALS THAT CAN POTENTIALLY AFFECT FIT, FORM OR FUNCTION.
- C) CHANGE IN NUMERICAL CONTROL PROGRAM OR TRANSLATION TO ANOTHER MEDIA THAT CAN POTENTIALLY AFFECT FIT, FORM OR FUNCTION.
- D) NATURAL OR MAN-MADE EVENT THAT MAY ADVERSELY AFFECT THE MANUFACTURING PROCESS.
- E) LAPSE IN PRODUCTION OF TWO YEARS OR AS SPECIFIED BY THE CUSTOMER.

QA12 – COUNTERFEIT ELECTRONIC PARTS

THE SUPPLIER SHALL MEET THE REQUIREMENTS OF AS5553 COUNTERFEIT ELECTRONIC PARTS AVOIDANCE, DETECTION, MITIGATION AND DISPOSITION.

PRIOR TO ITEMS BEING PROCURED FROM SOURCES OTHER THAN ORIGINAL EQUIPMENT MANUFACTURER, ORIGINAL COMPONENT MANUFACTURER, OR THEIR AUTHORIZED DISTRIBUTORS WRITTEN APPROVAL SHALL BE REQUESTED AND PROVIDED BY CSI. THESE ITEMS SHALL INCLUDE UNIQUE TRACEABILITY IDENTIFIERS (I.E. DATE CODE / LOT CODE, SERIAL NUMBERS).

QA13 – RELOCATION/TRANSFER OF WORK

THE SUPPLIER SHALL NOTIFY CSI OF CHANGES TO PROCESSES, PRODUCTS, OR SERVICES, INCLUDING CHANGES OF THEIR EXTERNAL PROVIDERS OR LOCATION OF MANUFACTURE, AND OBTAIN APPROVAL FROM CSI. IN THE EVENT OF A RELOCATION/TRANSFER OF WORK, REQUALIFICATION OF PROCESSES MAY BE REQUIRED.



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QA14 – FOREIGN OBJECT DEBRIS/DAMAGE (FOD)

THE SUPPLIER SHALL MAINTAIN A FOD PREVENTION PROGRAM APPROPRIATE TO THE COMMODITY PROVIDED TO CSI. THIS PROGRAM SHALL BE COMPLIANT TO AS9146 OR EQUIVALENT.

- MASKING – THE SUPPLIER’S FOD PREVENTION PROGRAM SHALL INCLUDE OPERATIONS DESIGNED TO VERIFY REMOVAL AND ACCOUNTABILITY OF ALL ITEMS AND MATERIALS USED FOR MASKING (E.G. TAPE, CAP, OR OTHER MASKING MATERIAL).
- SHIPIPING – THE SUPPLIER’S FOD PREVENTION PROGRAM SHALL INCLUDE FOD PREVENTIVE PRACTICES FOR PACKAGING. THE SUPPLIER SHALL ENSURE THAT THERE ARE NO FOREIGN OBJECTS SHIPPED IN PACKAGING AND PACKAGING CONTAINERS.

QA15 – CALIBRATION SYSTEM, MEASURING AND TEST EQUIPMENT (M&TE)

THE SUPPLIER SHALL PROVIDE AND MAINTAIN M&TE NECESSARY TO ASSURE THAT PRODUCT(S) CONFORM TO THE TECHNICAL REQUIREMENTS. M&TE EQUIPMENT SHALL BE CALIBRATED AGAINST MEASUREMENT STANDARDS TRACEABLE TO INTERNATIONAL OR NATIONAL MEASUREMENT STANDARDS (I.E. ISO 17025, ANSI NCSL Z540 OR ISO 10012). WHEN NO SUCH STANDARDS EXIST, THE BASIS USED FOR CALIBRATION OR VERIFICATION SHALL BE RETAINED AS DOCUMENTED INFORMATION. THE SUPPLIER SHALL MAINTAIN A REGISTER OF THE M&TE EQUIPMENT. THE REGISTER SHALL INCLUDE THE EQUIPMENT TYPE, UNIQUE IDENTIFICATION, LOCATION, AND THE CALIBRATION OR VERIFICATION METHOD, FREQUENCY, AND ACCEPTANCE CRITERIA. THE SUPPLIER SHALL ESTABLISH A PROCESS WITH THE CAPABILITY OF RECALLING PRODUCT(S) IF/WHEN M&TE USED TO VERIFY THE PRODUCT(S) IS FOUND TO BE OUT OF TOLERANCE.

M&TE CAN INCLUDE, BUT ARE NOT LIMITED TO: TORQUE WRENCHES, CALIPERS, MICROMETERS, MULTIMETERS, GO/NO-GO GAGES, DEPTH GAGES, CRIMPERS, TEST HARDWARE, TEST SOFTWARE, AUTOMATED TEST EQUIPMENT, AND PLOTTERS USED TO PRODUCE VERIFICATION DATA.

END OF DOCUMENT

REVISION #	DESCRIPTION OF CHANGE	DATE
-	INITIAL RELEASE	10/5/2016
A	ADDED FAI REQUIREMENTS	2/15/2017
B	CLARIFIED SPECIAL PROCESSES AND THE APPROVAL OF SPECIAL SUPPLIERS AND SUB-TIERS.	7/6/2017
C	ADDED REQUIREMENTS TO QA3, ADDED QA13, QA14, QA15	7/18/2018
D	CHANGED ADDRESS IN HEADER	7/15/2021