


Work Instructions	 LTC LEADING TECHNOLOGY COMPOSITES INC.
WI-08-0029	REVISION: B

Supplier Quality Purchase Order Requirements

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Title Quality Engineer

Effective Date _____ 01/02/18 _____

Department Head Approval(s) _____ See original for signatures _____

Quality Assurance Manager _____ See original for signatures _____

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1. Revisions

- 1.1. An electronic “read only” copy of this document is available in the “Controlled Documents” folder on the “everyone” server. To review or print copies, follow the file path identified in the footer section of this page. Once printed, the revision of this document must be verified before use against the on-line “Controlled Documents Log.” If this copy is not current destroy it.

- 1.2. Paper versions of this document, containing original approval signatures, are located in the Controlled Documents Library. Revisions or New Releases must be routed to Quality Assurance for incorporation into the Document Control System. For a complete list of all controlled documents, and their current revision level, refer to the “Controlled Documents Log” in the “Controlled Documents” folder on the “everyone” server.

Revision Letter	Date Revised	Description of Revision
A	02/15/2021	Changed NADCAP to Nadcap in Q02 Janice Stoltman Quality Manager
Revision Approved by		_____
B	02/21/2022	Changed the Sec. 4, first paragraph to state “All of the Quality Notes listed in section 5 apply to each line item being procured unless excluded on the purchase order. Janice Stoltman Quality Systems Manager
Revision Approved by		_____
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2. Scope:

This document shall contain the customer requirements that must be flowed down to the supplier.

3. Reference documents:

PRF001 Terms and Conditions
Purchase Order (System Generated)

4. Supplier Quality Requirements

Quality Requirements shall be flowed down to suppliers through this document. All of the Quality Notes listed in section 5 apply to each line item being procured unless excluded on the purchase order.

Suppliers providing product or service are evaluated and rated on a quarterly and annual average basis. When supplier ratings become a red condition; a formal corrective action is issued along with a letter stating the required and current ratings.

Ratings are based on the following criteria:

Quality requirements:

96 to 100 percent	Acceptable (green)
70 to 95 percent	Caution (yellow) no formal C/A required
69 Or below	Unacceptable (red) C/A required

On-time delivery requirements:

96 to 100 percent	Acceptable (green)
70 to 95.9 percent	Caution (yellow) no formal C/A required
69 Or below	Unacceptable (red) C/A required

5. Quality Notes (Q Notes)

The Quality System of subcontractors is surveyed by Quality Assurance to determine extent of control, scope of approval and Quality System flow down required for subcontractors. This survey may be accomplished on the subcontractor’s premises by the Company or contracted inspectors, by survey form completed by the subcontractor, by telephone survey, or any other method that adequately collects the required information.

Suppliers who fail to return the LTC Supplier Survey within the allotted ten (10) days (as identified on the Survey instructions) will receive two (2) reminders at thirty (30) and sixty (60) days. After the second notice, the Supplier will be placed on suspension; that Suppliers' products received after that time will not be received in, but placed on MRB 'Hold'.

After sixty (60) days, the Supplier will require re-approval, and after ninety (90) days the Supplier will have their status revised to "Inactive". Reversal will require re-certification.

Q 01 Quality Management Systems –

AS9100 Suppliers: The supplier will as a minimum maintain and implement a documented quality management system, available in the English language that is certified to AS9100 and/or ISO9001 (AS9120 is acceptable for distributors; ISO 17025 is acceptable for material test and calibration laboratories). This system is subject to review by LTC Quality Management.

Less than AS9100 Suppliers – Suppliers who do not maintain a quality system certified to AS9100 and/or ISO9001 must maintain documented procedures, available in the English language, that address the following:

- Identification and Traceability
- Control of Nonconforming Material
- Control of Customer Property
- Process Control
- Measurement and Monitoring of Product
- Training
- Preservation of Product
- Control of Quality Records
- Internal Audit
- Contract / Purchase Order Review
- Counterfeit Parts Control
- DPD/MBD Procedure (when applicable)

Additionally, the supplier shall promptly notify LTC of any changes in the management representative with assigned responsibility and authority for the quality system.

Q 02 Nadcap

Supplier must be Nadcap approved as applicable for the processes being performed. Nadcap approval is required for the following processes:

- Heat Treating (AC 7102)
- Welding (AC 7110)
- Chemical Processing (AC 7108)

- Non-Destructive Testing (AC 7114)
- Surface Enhancement (AC 7117)
- Composites (AC 7118)
- Material Testing (AC 7101)
- Measurement and Inspection (AC7130)

Q 03 Digital Product Definition and Model Based Definition

Suppliers utilizing LTC supplied Digital Product Definition (DPD) for the purposes of manufacturing and/or inspection of product must have a written DPD/MBD procedure and approval from LTC.

Q 04 Certifications

A certificate of conformance shall accompany each shipment and include a statement that the product provided meets the controlling engineering and purchase order requirements. The certificate of conformity shall also include raw material traceability (i.e. manufacturing lot number, heat lot number). For primer and paint processes, the average coating thickness will be documented on the certificate of conformance.

Distributors of hardware or raw material are required to include copies of the original manufacturer certifications, including certified physical and metallurgical test reports where required by controlling specification.

Special process certificates of conformance shall also be included with the supplier certificate of conformance.

Q 05 Shelf Life

The manufacturing and applicable expiration dates must be noted on each individual container and / or certification.

Q 06 First Article

Supplier shall perform First Article Inspection in accordance with AS9102 on all supplied product. AS9102 forms are available from LTC upon request. First Article Inspection reports are to be supplied prior to production shipment in electronic format to the following email address: quality@ltc-ltc.com. **Note that manufacturing of product cannot commence until First Article Inspection has been approved by LTC.**

Q 07 Pre-production First Part Approval (if noted on Purchase Order)

The supplier shall submit the first part to LTC for inspection verification prior to commencement of manufacturing.

Q 08 Frozen Planning – (If noted on Purchase Order)

Upon acceptance of the first article, the supplier shall make no changes to the method of manufacture, equipment used, materials, or processes which may affect interchangeability, function, dimensions, performance, or finishes. All changes must be approved in writing by LTC Engineering and Quality prior to implementation.

Q 09 **Manufacturing Facility Location**

Supplier is required to notify LTC of changes in manufacturing facility location. Upon review of the proposed changes, LTC may require additional information and/or approval prior to implementation.

Q 10 **Right of Entry**

LTC and/or LTC's customer or government representatives will have the right to survey facilities and review all processes, subcontractors, contracted parts, procedures and records.

Q 11 **Parts identification**

In addition to drawing requirements, all parts 'purchased complete' must be, at a minimum, identified with the part number, manufacture date and manufacturer's production order/lot number. The manner and location of this identification shall be agreed upon with LTC Engineering and/or LTC Quality. All supplied lots are to be segregated.

Q 12 **Subcontracting**

Supplier is authorized to subcontract special processes (as defined and controlled by LTC customer specifications) outside of supplier's capabilities. All other subcontracting requires written consent from LTC Purchasing and approval by LTC Quality Assurance. Supplier shall flow down to Subcontractors any/all applicable requirements in the purchasing documents, including key characteristics, where required.

Note: The supplier is required to obtain written approval from LTC prior to any subcontracting outside of the United States.

Q 13 **Inspection**

Supplier shall perform 100% for in-process and final inspection.

When indicated on the purchase order, the supplier is required to comply with the following.

- **In-Process Inspection** – The supplier will contact the LTC Buyer and hold the product for in-process inspection by LTC Quality. The specific inspection point in the process will be specified on the purchase order.
- **Source inspection** – The supplier must contact the LTC Buyer prior to all shipments to LTC to arrange for LTC Quality to perform final inspection.
- **Statistical Process Control** – Statistical process control is required and shall be implemented as defined on the purchase order.

Q 14 **Material Review**

Supplier shall provide written notification to LTC within one (1) business day when a nonconformance is determined to exist, or is suspected to exist, on product already delivered to LTC under any order. When the following is known, written notification shall include:

- Affected process(es) or product number(s) and name(s)
- Description of the nonconforming condition and the affected engineering requirement (i.e., what it is and what it should be)
- LTC purchase order/line item/release, manufacturer lot number, quantities, and dates shipped to LTC.
- Outside Services nonconforming parts are to be tagged with a description of nonconforming condition.
- The Supplier shall not use dispositions of use-as-is or repair on nonconforming product.

Q 15 **Quality Records**

Suppliers shall maintain quality records, including material traceability, throughout all stages of manufacturing. No quality records shall be destroyed without the written consent of LTC Quality.

Q 16 **Protection of Product against Contamination or Damage**

The Supplier shall be responsible for ensuring that items provided under the Contract/Purchase Order are packaged in such a manner that the dimensional integrity is preserved, contamination and corrosion are prevented, and no physical damage occurs. Packaging, when specified, shall be in accordance with the drawing, appropriate ASTM, MIL, or other applicable customer specified requirement and prevents damage, deterioration, substitution or loss in transit. The Supplier shall label the exterior of the package to ensure adequate identification of precautions needed to ensure the integrity of the product being shipped. The Supplier must specify the handling and shipping methods that ensure proper and on-time delivery without damage to the product. The Supplier shall ensure that special labeling requirements shall also be listed in the appropriate shipping documents and on each package.

Q 17 **Revision Control**

Unless otherwise specified, latest revision applies on all engineering and specifications used in product manufacture. Engineering technical data will be provided by the LTC Buyer. All engineering technical data that is provided by LTC is the property of the customer and must be returned at the completion of the purchase order(s).

Q 18 **ITAR Requirement** – IMPORTANT/CONFIDENTIAL

This PO (and any drawings and/or attachments accompanying it) may contain confidential information, including information protected by United States Government. The information is intended only for the use of the intended recipient(s). Delivery of this PO to

anyone other than the intended recipient(s) is not intended to waive any privilege or otherwise detract from the confidentiality of the PO. If you are not the intended recipient, or if this PO has been addressed to you in error, do not read, disclose, reproduce, distribute, disseminate or otherwise use this information, rather, please promptly notify the sender by phone or e-mail, and then destroy all copies of the PO and its attachments, if any.

Q 19 Excess Inventory

The Supplier shall strictly control all inventory of customer proprietary product that is in excess of contract quantity in order to prevent product from being sold or provided to any third party without prior written authorization from LTC. LTC supplied materials shall be returned upon completion of the purchase order.

Q 20 Competence

The Supplier shall ensure:

- the necessary competence of person(s) doing work under its control that affects the performance and effectiveness of the quality management system;
- that these persons are competent on the basis of appropriate education, training, or experience;
- where applicable, takes actions to acquire the necessary competence, and evaluates the effectiveness of the actions taken;
- retains appropriate documented information as evidence of competence.

Q 21 Supplier Rating

LTC maintains a Supplier Rating System to track Suppliers' compliance to the requirements of a purchase order. Any non-compliance with purchase order requirements (including delivery dates and material deficiencies) will affect your rating and possibly your approval status. It is important that you respond to any non-conformance reports or corrective action requests by the specified due date. Failure to do so may affect your approval status or may result in disapproval and permanent exclusion from new business.

Q 22 Distributors

The Technical and Quality requirements of the purchase order apply to both you and the manufacturer of the material. As the direct Supplier to LTC and the representative of the manufacturer, it is your responsibility to assure that these requirements are satisfied.

Q 23 Counterfeit Parts

As of January 1, 2018 Suppliers shall put into place a documented program to avoid, detect, mitigate and disposition counterfeit parts and materials. Suppliers should utilize and reference SAE standard AS6174 for guidance. Suppliers shall also flow down counterfeit parts programs requirements to their sub-tiers, especially but not limited to:

- Electronic parts suppliers
- Raw material suppliers
- Distributors

Q 24 Suppliers must ensure that persons / employees are aware of:

- their contribution to product or service conformity
- their contribution to product safety, and
- the importance of ethical behavior

Q 25 Foreign Object Damage Control Program (FOD)

The supplier shall establish, document and maintain a program to control and eliminate FOD and/or contamination during the Supplier's manufacturing, assembly, test, inspection, packaging and shipping operations. When applicable, the Supplier's FOD control program shall include controls to preclude FOD or contamination at the Supplier's sub-tier sources. The following basic elements shall be included in the Supplier's FOD control program.

- FOD prevention training
- Manufacturing planning consideration for FOD prevention
- Work sequencing
- Cleanliness of work area
- Control of tools, personal items, fasteners, scrap, etc.
- Protection from FOD during handling, packaging and shipping
- Periodic (At least annually) evaluation of the FOD control program for effectiveness

6. Customer Specific Quality Notes

Q 26 Boeing Supplier Additional Requirements

Digital Product Definition – Suppliers utilizing LTC supplied Digital Product Definition (DPD) for the purposes of manufacturing and/or inspection of Boeing product must hold written approval from SAC for compliance to Boeing D6-51991.

Tooling – Suppliers utilizing Boeing owned tooling are required to comply with D33200, Boeing Suppliers' Tooling Document.

Approved Process Sources (D1-4426)- The Supplier is required to maintain compliance with this document as may be revised from time to time. This document defines the approved sources for special processing, composite raw materials, composite products, aircraft bearings, designated fasteners, and metallic raw materials. All manufacturing and inspection processes which are controlled by D1-4426 shall be performed only by the sources specified in the document.

Approved Standards Sources (D-590) – The Supplier is required to procure standards from approved manufacturers as listed in Boeing Document D-590 as applicable. Distributors may be used as allowed.

Production Certificate - This procurement is under Boeing's Federal Aviation Administration (FAA) issued Production Certificate 700 quality system supplier control program. THE SELLER WILL PLACE THE FOLLOWING STATEMENT ON ALL SHIPPING DOCUMENTS:

“Seller hereby acknowledges that the parts and /or materials being shipped under this order are intended for use under Boeing's Federal Aviation Administration (FAA) issued Production Certificate 700.”

Boeing requires that the provisions/requirements set forth above be included in Sellers direct supply contracts as well as the obligation that they be flowed to the applicable sub-tier supply chain. (Reference Boeing Purchase Order note Q31)

FAA-Parts Manufacturer Approval (PMA) - Unless explicit direction is given to the contrary, no articles (or constituent parts thereof) ordered in support of Boeing programs shall contain any FAA-PMA markings. The articles shall not be certified under an FAA-PMA approval and the accompanying paperwork (i.e. shippers, etc) shall not contain any FAA-PMA markings.