

LIT-10010 Lithos Supplier Quality Manual



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1. Purpose

To outline Lithos quality requirements for suppliers of externally procured products and services.

2. Scope

This document applies to all purchase orders for development and production hardware and purchase orders for services provided on development and product hardware. If the purchase order references LIT-10010, then this document applies.

3. Responsibility

Suppliers to Lithos are responsible for compliance to the Supplier Quality Requirements included in this document as flowed down through purchase orders. Lithos Head of Supply Chain and Head of Quality are jointly responsible to ensure the enforcement of requirements outlined within this document.

4. Supplier Quality Approval

An assessment of the supplier's manufacturing capabilities and quality management system must be conducted prior to issuing any Purchase Orders. This assessment can be conducted by one or more of the below options:

1. On-site assessment conducted at supplier's facility
2. Supplier self-assessment per [LIT-10014 Supplier Self Assessment](#)
3. Desktop/Virtual Audit

All assessments shall be completed by a Lithos Supplier Quality Engineer (SQE) or authorized delegate.



5. Quality Requirements

The following quality requirements apply to all Lithos suppliers and are applicable to all Lithos POs:

5.1. Quality Management System

Suppliers shall maintain a quality system in compliance with AS9100, ISO 9001, or equivalent. Compliance to the standard shall be evidenced by a current third-party certification. Copies of certification shall be furnished whenever renewed or changed. In the absence of a certified Quality Management System, a Lithos Supplier Quality Engineer (SQE) can perform an onsite assessment to determine supplier approval.

5.2 Flow Down of Requirements

Suppliers shall flow down to sub-tier suppliers the applicable requirements outlined in this Supplier Quality Manual, drawings, specifications, and the purchase order.

5.3 Right of Entry

Lithos reserves the right to assign representatives, including Lithos's customers, on an itinerant or resident basis at the supplier's facility or any sub-tier suppliers for any purpose including verifying all tests and/or inspections.

5.4 Control of Critical Characteristics

All critical characteristics shall be verified (via inspection/measurement) on 100% of parts. Critical characteristics are denoted by an oval on the drawing and governed by [LIT-10011 Identification and Control of Critical Characteristics](#).

Supplier shall maintain records of critical characteristics inspections/measurements with appropriate levels of part/PO traceability.

5.5 Design Changes

Suppliers are not authorized to change the design, or Bill of Materials (BOM) of a product. If the supplier deems a change to the design or BOM necessary, they must request a design change via a Supplier Deviation Request per Section 5.10.

5.6 Product Obsolescence

The supplier shall notify Lithos of any planned material or component obsolescence prior to the acceptance of any Purchase Order. In addition, the supplier shall notify Lithos of any plans to obsolete material on any and all existing orders with a minimum of 6 months notice to facilitate, where applicable, an option for last time buy.

5.7 Record Retention

The supplier shall retain quality records for seven (7) years after their last shipment was received, unless otherwise specified on the Lithos PO. Quality records are defined as those records used in the processing, test, and inspection or product, and/or services provide to Lithos by suppliers and their sub-tiers.



5.8 Shelf Life

All shelf-life limited materials or products delivered to Lithos shall have a minimum remaining shelf life of six months or 75% of the total shelf life, whichever is longer, from the Date of Shipment.

5.9 Counterfeit Part Prevention

Suppliers shall have a counterfeit prevention/detection program in accordance with the requirements listed below:

1. The supplier shall represent that they are either an Original Equipment/Component Manufacturer (OEM/OCM) or and OEM/OCM authorized distributor.
2. The supplier shall ensure that only new and authentic materials are used in products delivered to Lithos. The supplier may only purchase parts from original equipment manufacturers (OEM), authorized distributors, or approved aftermarket manufacturers.

Any product that is not provided by these sources will not be accepted by Lithos, unless prior approval is obtained in writing.

Supplier shall agree and ensure that counterfeit materials are not delivered to Lithos. The supplier shall notify Lithos immediately if they become aware or suspect that it has shipped counterfeit product to Lithos. In the event the counterfeit product has been supplied to Lithos, the supplier shall, at its own expense, replace the product with genuine approved parts or materials conforming to the requirements. The supplier shall maintain a counterfeit parts prevention and control plan to prevent the delivery of counterfeit parts to Lithos.

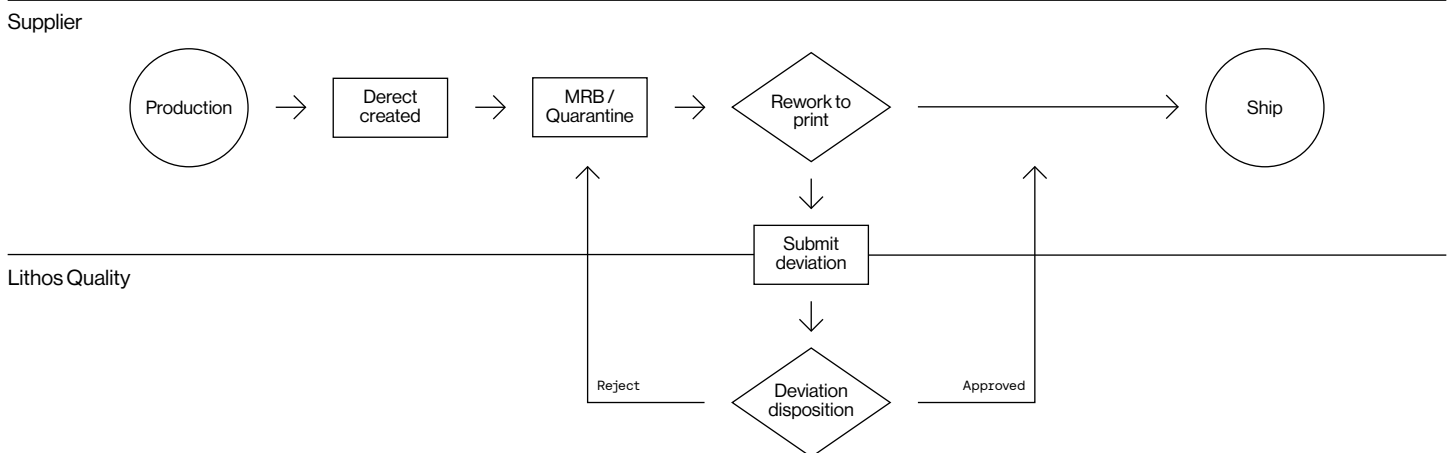
Electronics manufacturers shall reference SAE AS5553 and distributors of electronic parts shall reference SAE AS6081 for guidance.

5.10 Nonconforming Material

Supplier shall not ship any non-conforming product or perform any unauthorized repairs without Lithos written approval. Approval is provided via the Supplier Nonconforming Material process outlined below.

Lithos reserves the right to reject or return any non-conforming product that is not approved via this process.

Supplier MRB Process Flow



The supplier shall report to Lithos the failure of any Lithos required test, including acceptance test (e.g., functional test, leak test, vibration test, burst test, etc.). Hardware experiencing a test failure shall be maintained in its same condition pending authorization from Lithos for any investigation activity (i.e., do not disassemble, do not retest). The following notification schedule applies:

- Within 24 hours: an email summary of the test failure and status of affected hardware
- Within 5 days: a preliminary written report
- Within 30 days (goal): A final written failure analysis report identifying failure cause and action(s) taken to prevent recurrence

If supplier detects a non-conformance following shipment, they shall immediately notify Lithos of the non-conformance via submission of a Supplier Deviation Request (SDR).

[LIT-10012 Supplier Deviation Request \(SDR\)](#) shall be submitted to supplierquality@lithosenergy.com along with Lithos quality and supply chain contacts. If Lithos disposition is for work (e.g. rework, repair) to be completed at the supplier prior to shipment, evidence of completion of that work must also be submitted to supplierquality@lithosenergy.com in order to receive an authorization to ship.

The written authorization to ship, provided via the approved [LIT-10012 Supplier Deviation Request \(SDR\)](#), must be printed and included in the package prior to shipment. Lithos reserves the right to reject non-conforming product that is shipped to Lithos without this written authorization. The subject material must be clearly identified in the shipment.

5.11 Supplier Corrective Action Request (SCAR)

Suppliers shall perform root cause analysis and implement corrective actions when a Supplier Corrective Action Request (SCAR) is issued by Lithos quality. Suppliers shall use form [LIT-10013 Supplier Corrective Action Request \(SCAR\)](#) (or equivalent root cause analysis form) to communicate root cause analysis and corrective actions back to the Lithos Supplier Quality Engineer (SQE).

Suppliers are expected to confirm receipt of the SCAR within 24 hours.

For minor issues, Lithos will communicate relevant information via email. The supplier is expected to acknowledge receipt, perform root cause analysis and implement corresponding corrective actions. A report back to the Lithos SQE is not mandatory in this case.

5.12 Packaging Requirements

Packaging shall conform to the requirements specified on the applicable drawings, specifications, or purchase order. Hardware shall be packaged in a manner that will prevent damage and preclude moisture, foreign matter or contamination damage, and be properly maintained during handling, storage, and transportation. Packaging/containers shall be appropriately identified to show electrostatic protection. Humidity indicator cards shall be used for components shipped in ESD packaging, anything greater than 10% will result in rejection of the shipment.

5.13 Foreign Object Damage Prevention Program

Suppliers shall maintain a FOD Prevention Program (Foreign Object Damage) to ensure parts are clean and free from contamination.



5.14 Calibration

Suppliers shall maintain a calibration system that complies with ISO/IEC 17025. All test equipment and gages used for calibration must be traceable to a national or international standard.

5.15 Printed Circuit Boards Assemblies and Electronic Devices

All printed circuit boards and assemblies shall meet the requirements specified in IPC-6011, Class 3.

5.16 Wire Harnesses

All wire harnesses shall meet the requirements specified in IPC/WHMA-A-620, Class 2.

5.17 Conflict Minerals

Supplier product shall comply with Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act regarding the sourcing of tantalum, tin, tungsten and gold from certain mines within the Democratic Republic of Congo (DRC) or other adjoining countries defined in the Act.

6 Quality PO Clauses

Quality PO Clauses are invoked by the inclusion of one or more of the designators below (e.g. "Q01", "Q02") onto the Purchase Order line.

When any of these clauses are cited on the purchase order, physical copies of each form must be provided with the shipment.

Forms shall also be sent via email to supplierquality@lithosenergy.com prior to shipment. The email subject line shall reference the purchase order number and line.

[Failure to include the required Quality PO Clause documentation in the physical package and/or via email is grounds for Lithos to reject the shipment.](#)

Q01 Certificate of Conformance

A Certificate of Conformance shall be provided for each shipment and Purchase Order line. The certificate shall include, at a minimum:

- Part number and revision
- Supplier Name and address
- Part Description/Name
- Supplier Part Number (if applicable)
- Material Condition and Specification number (Raw Material Only)
- Lithos Purchase Order number and line number
- Lot/Batch number



- Serial number(s) (if applicable)
- Quantity
- Country of Origin
- If Supplier is the manufacturer, then indicate the country where Supplier is manufacturing the goods. If Supplier is a distributor, then indicate the country where the acquired goods are manufactured.
- Manufacturing date
- Shelf Life and Expiration date (if applicable)
- Statement of conformance to Lithos drawing and/or specification signed by quality representative or delegate

Q02 Dimensional Data

When this requirement is cited, supplier shall provide dimensional data per AS9102 Form 3 (or equivalent) for each shipment and Purchase Order line. The dimensional data must be for 100% of characteristics or notes designated as critical on the drawing, and for every part in the shipment.

Q03 First Article Inspection Report (FAIR)

When this requirement is cited, supplier shall perform a First Article Inspection per AS9102B (or equivalent) and furnish the First Article Inspection Report (FAIR) to Lithos Supplier Quality. The part used to perform the First Article Inspection shall be identified using a temporary method (i.e. label, removable ink, bag and tag). If a FAIR has already been provided to Lithos for the same part number and revision on a previous shipment, then this requirement is waived. A delta FAIR will be required for all subsequent revisions.

Q04 Test Data

When this requirement is cited, supplier shall provide a record of test results demonstrating compliance to drawing notes/ specifications.

Q05 Source Inspection

Source Inspection by a Lithos Supplier Quality Engineer (SQE) is required at the supplier's facility. The supplier shall provide all test reports, inspection records, facilities, and equipment necessary to perform the appropriate inspection of product. The Lithos Supplier Quality Engineer (SQE) and Supply Chain Manager (SCM) shall be notified at least 5 business days in advance of performing acceptance test or intent to ship.

Q06 Calibration Certification

A calibration report shall be furnished to Lithos for each calibration performed and at a minimum include:

- identification of the unit being calibrated
- identification of the calibration source traceable to NIST
- Date of calibration
- Notification of out-of-tolerance conditions
- Certification that calibrations were performed in accordance with either ISO 10012, or ISO/IEC 17025 (latest revisions)



Q07 Special Process Certification

A certification is required with a statement certifying conformance to each special process (i.e. welding, plating, passivation, painting soldering, heat treating, chemical films, anodizing, etc.) performed on the materials to the specification(s) listed on the Lithos PO and/or drawing.

The signature of an authorized agent of the company performing each special process including the agent's title must appear on the certification. It also must include the Lithos PO number, part number and revision level, serial numbers (if applicable), lot number (if applicable), and quantity shipped.

Suppliers and/or sub-tier suppliers performing special processes for Lithos must be certified by the relevant certifying organization (e.g. Nadcap). The supplier's Certificate of Conformity shall include the industry specification under which the special process was performed, in compliance with the drawing/PO requirement.

Q08 Non-Destructive Inspection/Evaluation (NDI/NDE)

NDI/NDE reports, images (if applicable), and scan data (if applicable), shall be provided for 100% of the parts specified on the PO.

Q09 Material Test Report

The supplier shall furnish a Material Test Report (MTR) from the material manufacturer attesting that the material(s) meet all of Lithos requirements.

MTR Requirements:

1. The MTR shall include the name of the manufacturer, material specification, and size.
2. Chemical composition analysis and mechanical properties test results shall be included.
3. Material heat lot number shall be included.

Q10 First Article Verification

For first article runs (new design or revision), a QTY (1) must go through Lithos First Article Verification process and be approved by Lithos prior to manufacturing any additional units.

Q11 Advanced Product Quality Planning (APQP) and Production Part Approval Process (PPAP)

Compliance with ISO9001 / AS9100 *Requirements for APQP (Advanced Product Quality Planning and Production Part Approval Process)*, is required.



Artifacts

Production Part Approval Process (PPAP) Element	APQP Phase	Section References
Design Records	2	3.9
Design Risk Analysis* (e.g., DFMEA)	2	3.10; 4.4.2; 4.4.4
Process Flow Diagram	3	4.5.2; 4.5.3
Process Failure Mode and Effects Analysis (PFMEA)	3	3.11; 4.5.2; 4.5.4
Control Plan	3/4	3.3; 4.5.2, 4.5.6; 4.5.7; 4.6.2; Appendix C
Measurement System Analysis** (MSA)	4	3.14; 4.6.2; 4.6.3
Initial Process Capability Studies	4	3.20; 4.6.2; 4.6.5
Packaging, Preservation, and Labeling Approvals	3	4.5.2; 4.5.8
First Article Inspection Report (FAIR)	4	4.6.3; 4.6.4
Customer PPAP Requirements	4	4.6.7
PPAP Approval Form (or equivalent)	4	5.3.2; Appendix D

* Design Risk Analysis is not a required element for “build to print” product. If the product is “build to specification”, Supplier is responsible to provide a DFMEA per element 2.

** MSA to be performed for all Critical Characteristics identified in the Control Plan

Supplier is encouraged to use the templates in the International Aerospace Quality Group (IAQG) - Supply Chain Management Handbook (SCMH). <https://scmh.iaqg.org/plan-manage/#1612365454613-62320ec6-52d7>



Approval

Supplier shall make all required PPAP artifacts available to Lithos SQE or Supply Chain Manager upon request.

Lithos reserves the right to conduct surveillance on Supplier's Quality Management System compliance and PPAP artifacts. Lithos also reserves the right to require PPAP artifact submittal and approval. When Lithos engagement is required, Supplier will be notified in writing by Lithos SQE or Supply Chain Manager. Supplier shall coordinate and schedule APQP activity with the Lithos Supplier Quality Engineer (SQE) prior to the start of related procurement, manufacturing and/or processing. In these instances, Supplier shall have written approval of PPAP artifacts from Lithos for all required contract line items prior to first part shipment, unless otherwise directed in writing by Lithos Management.

Supplier can obtain a copy of AS9145 Aerospace Standard for APQP/PPAP from the following source: SAE International (formally known as Society of Automotive Engineers), AS9145 Aerospace Series – Requirements for Advanced Product Quality Planning and Production Part Approval Process.

Supplier can obtain a copy of APQP/PPAP Checklists and Templates from the following source: International Aerospace Quality Group (IAQG), Supply Chain Management Handbook (SCMH)

7. Revision History

Date	Revision Letter	Change Description	Changes Made By
17 Oct 2023		Initial Release	Angelo Menotti





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