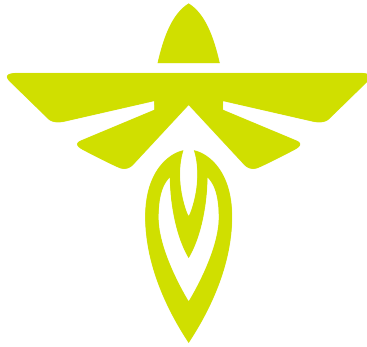




F I R E F L Y
A E R O S P A C E

QA-2411 Supplier Quality Requirements

Document Number: **QA-2411**

Revision: J

Release Date: Aug 31, 2026

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Published on 08/31/2026.

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1 Scope

This document established the quality requirements applicable to the procurement of products and services provided to the Buyer. These clauses define the minimum quality management, inspection, testing, documentation, traceability, and regulatory requirements that suppliers shall satisfy when specified by the Purchase Order. The requirements listed in this document apply to all flight hardware, as well as non-flight hardware that has been identified as critical need via the application of Firefly Quality Clauses. The Supplier is responsible for ensuring that all applicable requirements are effectively communicated and flowed down throughout their supply chain.

The Supplier is responsible for understanding, implementing, and complying with all applicable Quality Clauses identified in the Purchase Order. The Supplier shall ensure these requirements are communicated to and implemented by its personnel and applicable sub-tier suppliers, maintain objective evidence of compliance, and provide such evidence to the Buyer upon request. Compliance with these requirements does not relieve the Supplier of the responsibility to deliver products and services that fully conform to all contractual requirements.

The Buyer (Firefly) is responsible for identifying the applicable Quality Clauses on the Purchase Order or contract and for communicating any customer-specific or regulatory requirements necessary for the Supplier to fulfill the order. The Buyer is also responsible for ensuring that flight hardware is being procured through the usage of the Approved Vendors List (AVL) as defined by the Enterprise Resource Planning (ERP) system.

This document is primarily intended for use by the Supplier Quality, Supply Chain, and Receiving Inspection functions. These groups use the document to communicate, implement, and verify supplier quality expectations, ensuring purchased materials and services meet applicable quality requirements and organizational standards.

2 General Provisions

2.1 Definitions.

The terms "Buyer," "Seller," and "PO" have the means set forth on the Firefly Aerospace Terms and Conditions of Purchase ("Terms of Purchase"). Capitalized terms used but not defined herein shall have the meanings ascribed thereto in the Terms of Purchase.

2.2 Return Authorization.

If product or services deviates from the conditions agreed upon by the Buyer and Seller, including but not limited to;

- Firefly's Supplier Code of Conduct - Supplier Code of Conduct
- Firefly's Terms of Purchase - Terms and Conditions of Purchase
- The products and services agreed upon in the Purchase Order
- The following requirements in this document

Firefly has the right to return nonconforming product and services to be issued replacement, refund or credit at cost to the Seller.

2.3 Acceptable Quality System.

Seller shall provide and maintain a quality system acceptable to Buyer and Buyer's customers for the Goods and Services covered by the PO.

2.4 Access.

Seller shall provide Buyer and Buyer's customers access to any areas where work is being or is scheduled to be performed under the PO.

Buyer and buyer's third-party designees shall have the right to perform in-process inspection, audits, and system surveillance at Seller's and Seller's sub-tier supplier's facilities as part of the verification of conformance to the requirements of the PO. Buyer shall have the right to utilize sample inspection methods for acceptance of product. If the sample is unacceptable, Buyer shall have the right to return all or part of the lot for credit or replacement.

2.5 Performance.

Firefly measures supplier performance based on

1. On-time delivery based on Purchase Order due date (Reference QA-2431 for Target Values)
2. Quality performance based on defective parts (Reference QA-2431 for Target Values)

(Internal reference QA-2431 Control of External Providers 8.4)

2.6 Non-conformances.

For non-conforming items of Buyer's design, Seller's disposition options are limited to scrapping the material, eliminating the non-conformance through rework, or returning it to the supplier. Seller shall not incorporate any non-conformance into any product, process, procedure, or data without first obtaining written approval from Buyer. If Seller continues processing Buyer-designed material containing a non-conformance prior to disposition, Seller does so at their sole risk. Buyer and Buyer's customers retain the right to refuse any non-conformances.

Seller shall implement, and maintain a system that provides for identification, documentation, segregation, and disposition of nonconforming material and shall assure effective and positive corrective action is taken to prevent, minimize or eliminate non-conformances.

Upon return of nonconforming material by Buyer, Seller shall assess the identified non-conformance, complete a Supplier Evaluation Document and forward to Buyer within 10 working days of receipt of material.

2.7 Government-Industry Data Exchange Program (GIDEP) Membership.

If Seller is eligible for GIDEP membership, Seller is required to be a member of GIDEP. Seller shall implement a process for reviewing and evaluating problems identified in GIDEP alerts.

2.8 Flowdowns.

Seller's POs to sub-tier suppliers shall clearly reflect and define all processing and nondestructive testing requirements including but not limited to, special procedures, inspections, tests, and acceptance criteria as required by the PO and applicable quality clauses. Seller shall ensure all specifications and other requirements are available and applied by Seller's sub-tier suppliers. Seller shall require sub-tier suppliers likewise to incorporate documents and requirements in POs to their subcontractors.

2.9 Source Inspection.

When Buyer Source Inspection is required, Seller shall comply with the following:

Seller shall present all required documentation for each shipment for review by the buyer and/or the buyer's representative.

Seller shall obtain evidence of Buyer representative's source inspection approval. If Government Source Inspection (GSI) is specified on the PO, Seller shall obtain evidence of Government acceptance prior to shipment.

When modifications, reworks, or replacements occur after Seller's final inspection or acceptance tests, Seller shall perform re-inspection and test of affected characteristics prior to initiating a new request for source inspection for Buyer acceptance.

2.10 Buyer-Specified Materials.

Seller shall establish and maintain controls to prevent the use of materials from unapproved sources when Buyer-Approved sources (e.g., Engineering Materials and Approved Products) are required by the PO.

2.11 Qualified Parts List.

The Seller shall only use drawing or specification defined components, adhesives, finishes, brazing/welding materials. These materials are to be purchased only from qualified Sellers that are identified from drawing or specification as "approved" sellers.

2.12 Current Specifications.

It is the Seller's responsibility to verify that all necessary product and material specifications of Buyer in use at the Seller facility are the most current release, unless otherwise specified in the PO. This shall include but not be limited to, Industry Standards, Government Specifications, and the Company provided drawings and/or data.

2.13 Calibration.

Seller shall maintain a system for calibration and maintenance of tools, jigs, inspection and test equipment that is compliant with an industry-recognized standard (e.g., ISO 17025, ISO 10012-1, ANSI Z540). Tools and equipment must be calibrated to a NIST traceable standard.

2.14 Foreign Object Damage (FOD) Prevention.

Seller shall maintain a FOD Prevention Program to reduce potential for hardware contamination.

Whenever or wherever Foreign Object Debris (FOD) can be entrapped or Foreign Objects (FO) can migrate, Seller shall ensure that applicable FOD prevention requirements are flowed down to Seller's subcontractors at every tier.

Prior to closing inaccessible or obscured areas and compartments during assembly, Seller shall inspect for FO/materials and ensure no protective devices (e.g., bags, caps, covers, plugs) remain embedded. Seller shall ensure tooling, jigs, fixtures and test or handling equipment are maintained in a state of cleanliness and repair sufficient to prevent FOD.

By delivering Items to Buyer, Seller shall be deemed to have certified to Buyer that such Items and packaging are free from any FO, FOD, and FOD.

2.15 Record Keeping.

Seller shall maintain complete records of all manufacturing, inspection, and test. Records shall be made available to Buyer and Buyer's customers during the performance of the PO and at least ten (10) years after completion of the PO and for such longer periods, if any, as may be specified elsewhere in the PO.

Reference Firefly Terms & Conditions. Upon request by Buyer, records shall be forward to Buyer at no additional cost within 30 days of request.

2.16 Document Review.

Seller shall submit to Buyer all relevant and required inspection and test data for the products and services ordered prior to shipment if required by applicable quality clause in Part II of this document. Reference Firefly Terms & Conditions.

2.17 Change Notification.

Seller shall report to Buyer procurement personnel any changes in the Seller's process or product definition that could affect the form, fit, or function of the deliverable service or product. This includes but is not limited to ANY changes/substitutions in Seller's process or product definition that could/would affect the quality, conformance and/or performance of the services, process and/or product to be delivered or performed, as the case may be. Any deviation in process or product definition by Seller requires Buyer approval prior to implementation of the changes. Reference Firefly Terms & Conditions.

2.18 Material Packaging.

In addition to the requirements of Section 5 of the Terms of Purchase, material shall be packaged in a manner to prevent damage or deterioration. Unless otherwise specified, best commercial/industry practice is acceptable for use. The supplier is responsible to ensure the product will be shipped and arrive at Firefly Aerospace in an acceptable condition. Reference Firefly Terms & Conditions.

2.19 Counterfeit Parts/Materials Prevention and Control.

In addition to the requirements of Section 10 of the Terms of Purchase, Seller shall ensure through processes and/or a formal program against Seller's receipt of, entering into inventory, use in manufacturing, and sale and delivery of counterfeit parts/materials to Buyer. Supplier shall maintain a documented Counterfeit Prevention Plan. This plan must include procurement controls ensuring parts are obtained from original manufacturers or authorized distributors, training programs for procurement and inspection personnel, test methodologies to detect counterfeit parts, and procedures for quarantine and reporting of suspect or confirmed counterfeit parts. Supplier shall provide evidence of compliance upon request and flow down these requirements to all sub-tier suppliers.

See QA-2467 Counterfeit Prevention 8.1.4.

2.20 Non-compliance.

Failure to meet the requirements of this document will be construed as a material breach of Firefly Terms & Conditions.

2.21 Shelf Life

For materials with a limited shelf life, usable life must be clearly documented and at least 75% of life must remain upon receipt of product by Firefly Aerospace unless approved by Buyer.

3 Specific Quality Requirements

3.1 FFQC1 - Certificate of Conformance.

A Certificate of Conformance (CoC) shall be submitted with each shipment. The CoC shall include the following at minimum:

1. Supplier name and address.
2. PO number.
3. Part name (Buyer, Manufacturer, or Distributor).
4. Part number (if applicable) (Buyer, Manufacturer, or Distributor).
5. Supplier part number (if applicable).
6. If applicable, drawing revision letter or number.
7. Specification. (if applicable).
8. Date of manufacture.
9. Batch/lot number.
10. Expiration date and shelf life (for materials impacted by shelf life).
11. Serial number(s) (if applicable).
12. The raw material manufacturer's batch/lot number.

13. Statement that the product meets all Buyer requirements noted or referenced in the PO.
14. Name and title of responsible person, along with the responsible person's signature or stamp.
15. Grain direction as specified on the Drawing, PO or other communication (if applicable).

3.2 FFQC2 – Material and Process Certifications. The following certifications shall be included with the shipment if applicable.

1. Material Certification. Document with chemical/physical test results that demonstrate compliance with the applicable raw material specification requirement. A copy is required for all purchased raw material.
2. Process Certification. Document that certifies that a chemical/physical process meets Buyer requirements. A copy is required whenever a process is performed that changes a material's chemical or physical properties.

3.3 FFQC3 – Proof of Traceability.

The Supplier shall provide a Certificate of Conformance (CoC) for any hardware installed on the delivered hardware. This CoC must be from the manufacturer of the installed hardware to ensure that full material traceability is maintained. The Supplier shall maintain objective evidence supporting the certification and make such records available to the Buyer upon request. Electronic Certificates of Conformance are acceptable unless otherwise specified by the Buyer. This must include:

- Source
- Lot Number/Batch Number or Equivalent
- Date Received

3.4 FFQC4 – Dimensional Inspection Results.

1. Shows results of inspections for all critical characteristics, critical dimensions, nonreference dimensions, and notes on the drawing.
2. Gather and submit data for all inspected parts as required by the applicable sampling plan.
3. Include the measurement device/method of inspection for each measurement taken, with corresponding equipment unique identifier (ex. Serial Number).
4. The dimensional inspection report shall identify inspected parts by either (1) serial number for serialized parts, or (2) sample number for lot-tracked parts. When multiple parts are inspected, each part shall be individually identified (e.g., Sample 1, 2, 3, etc.) with corresponding dimensional measurements recorded for all inspected features on each part.
5. If there is a current First Article Inspection Report (FAIR) for the product being inspected, the vendor should reference the FAIR number on the dimensional inspection report.
6. Order requires a minimum sample size inspection based on the size of the lot quantity. Please reference the chart below which specifies the sample size as a function of the lot size.

7. If any measurements taken on a sample from the lot are found to be nonconforming (out of tolerance), the entire lot must be inspected. All nonconforming parts shall be segregated and handled per appropriate procedures, either reworked and reinspected, or submitted to Firefly for disposition.
8. Supplier shall provide a balloon/bubble drawing identifying all inspected dimensions that corresponds to the dimensional inspection report, with balloon numbers matching the inspection data points

Lot Size	2 - 8	9 - 15	16 - 25	26 - 50	51 - 90	91-150	151 - 280	281 - 500	501 - 1200
AQL2.5 Sample Size	2	3	5	8	13	20	32	50	80

3.5 FFQC5 – Functional Test Results.

Summary of results of testing performed on each production unit as defined by the design authority and/or controlling drawing. Each tested unit shall have a unique actual result reported for each required test, with the test parameters and acceptance limits reported for each test.

3.6 FFQC6 – Shipping Certification.

Required if product is shipped to the Buyer in an environmentally controlled storage unit.

3.7 FFQC7 – Industry Certifications Required.

1. Design / Production – AS/EN/JISQ 9100
2. Stockists and Distributors – AS/EN/JISQ 9120
3. Raw Material manufacturers to material specifications – AS/EN/JISQ 9100
4. Inspection and Testing ISO/IEC 17025 or AC 7004
5. Testing and calibration laboratories ISO/IEC 17025
6. Special Processors – NADCAP / NUCAAP is acceptable for Firefly Aerospace designed class C, B, A hardware.

3.8 FFQC8 – Inspect All Key Characteristics.

Order requires that all units be inspected for 100% of Key Characteristics noted on the drawing, with a measurement reported for each unit for each key characteristic. If key characteristics are not fully defined on the drawing, this QC shall be used to require 100% inspection for all dimensions with a tolerance less than or equal to .001"

3.9 FFQC9 – Validation Test Results.

1. Summary of results for all tests specified by Buyer Engineering
2. Name of test, passing criteria, date of test(s), number of parts tested, and results.

3.10 FFQC10 – First Article Inspection Reports.

1. The supplier shall submit a First Article Inspection Report (FAIR) in accordance with the current revision of AS9102 when the first shipment is made of the part, subsequent orders shall resubmit the current FAI so long as the criteria in 2.10.5.e and 2.10.6 are not met.
2. The first submittal must be a Full FAIR as defined in paragraph 5 below.
3. Subsequent FAIRs may be Partial Fairs as defined in paragraph 6 below.
4. The products that are physically verified must be from the same production run as the remainder of product being verified by that FAIR. Excess products remaining from a previous production run must not be used.
5. A full FAIR submittal package must include:
 - a. AS9102 Form 1 – A list of the applicable part numbers and sub-assemblies.
 - b. AS9102 Form 2 – A list of raw materials, specifications and special processes.
 - c. AS9102 Form 3 – A list of the required design features including the tolerances and drawing notes as well as the actual measurement results.
 - d. A ballooned drawing identifying each of the features on form 3.
 - e. A new full FAIR is required when any of the following occur:
 - i. A change in the location of manufacture.
 - ii. A significant change in method of manufacture that can affect fit, form, or function. This includes, but is not limited to, changes in a CNC program, changes in tooling, changes in fixturing, changes in manufacturing process, introduction of new equipment or automation, or similar.
 - iii. A natural or man-made event, which may adversely affect the manufacturing process. Example a flood, fire or earthquake.
 - iv. A lapse in production for one year or more. This lapse is measured from the completion of the last production operation to the actual restart of production.
6. Partial FAIRs
 - a. A partial FAIR does not address all the features of a part. It only addresses features that have changed or need to be verified since the last approved FAIR.
 - b. A partial FAIR may be used to document those changes.
 - c. Conditions where a partial FAIR may be submitted include:
 - i. The revision number or letter has changed.
 - ii. When required as part of implementation of a corrective action.
 - iii. A change in manufacturing source(s), process(es), tooling or materials that can potentially affect fit, form, or function.
 - iv. If multiple revisions to a drawing are being verified, they may be submitted on one partial FAIR that combines the changes of each revision.
 - d. A partial FAIR may be based on another partial FAIR.
 - e. No more than 2 partial FAIRs may be done before a full Fair is done.



- f. A partial FAIR may be used to address a rejection on a FAIR submittal. In that situation, only the features that were rejected need to be addressed.

3.11 FFQC11 – Evidence of Sub-Supplier Approved FAI Packages.

Copies of FAI approvals from relevant sub-suppliers.

3.12 FFQC12 – Proof of Calibration Status.

Calibration documentation must be traceable to NIST-standards.

Shows equipment calibration including:

1. Model Number
2. Serial Number
3. Calibrating Agent or Service
4. As Left Condition
5. Date of Calibration
6. Calibration Point(s)
7. Calibration Conditions
8. Calibration Standard(s) Traceability Number(s)

3.13 FFQC13 – Receiving Dimensional Inspection (Firefly Internal)

Receiving dimensional inspection is required by Firefly Aerospace QA upon delivery prior to goods receipt.

3.14 FFQC14 – Passivation / Anodize / Heat Treat Inspection (Firefly Internal)

Receiving inspection is required to verify that documentation from FFQC2 meets the process required by the drawing, spec or PO, to be done by Firefly Aerospace QA upon delivery prior to goods receipt.

3.15 FFQC15 – Tubing Cleaning and Packaging (REL-86)

See *REL-86 Tubing Cleaning and Packaging Specification* for cleaning, verification, and packaging requirements. Reference part blueprint for commodity, then Table II for cleaning class requirement. Reach out to Buyer with any questions or concerns.

3.16 FFQC16 - Temperature Sensitive Material

A temperature monitoring device must be placed within the shipment to continuously record the internal temperature during transit. This device must:

- Be capable of recording temperature at regular intervals.
- Have sufficient battery life to cover the entire duration of transit.
- Be pre-calibrated to ensure accuracy within appropriate tolerance.

Upon receipt of the temperature-sensitive material, Firefly Aerospace shall retrieve the temperature monitoring device, then download and review the recorded temperature data to verify that the material was maintained within the required temperature range during transit.

Shelf Life and Out-Time Requirements for Composite Material

All material supplied under this award shall comply with the shelf life and out-time requirements specified herein.

- Material shall be shipped with **no less than seventy-five percent (75%) of its total shelf life remaining** at the time of shipment. For clarity, this requires that the material be shipped **no later than ninety (90) days from the Date of Manufacture (DOM) of the parent prepreg material**.
- At the time of shipment, material shall have **no more than seventy-two (72) cumulative hours of out-time accrued**.
- Material shall be delivered with **no less than twenty-six (25) days of remaining allowable out-time**.
- All certifications for this material **must be sent digitally prior to shipment**.

Failure to meet any of the above requirements shall constitute nonconforming material and may be subject to rejection.

3.17 FFQC17 - Tubing Surface Quality

The tubing inner surface shall conform to the following acceptable conditions:

Defect	Description	Acceptable Condition?
Discoloration	Small (under 0.016"), infrequently occurring (under 5 instances per assembly) of lighter or darker areas compared to the parent material color	Yes
Scratches	Light surface roughness less than .004" in depth and without any raised material present	Yes
Rust	Corrosion or foreign debris that looks like rust in appearance and texture	No
Inclusion	An apparent foreign object that has been drawn into the parent material • Defect must be <0.011" in it's largest dimension • Defect must not occur at a rate higher than 1/ft of tubing or 15/20' stick of raw material - whichever is lower	Yes - with limitations

Defect	Description	Acceptable Condition?
Pitting	Non-sharp edge indentations in the parent material	No
Gouge	Sharp edge indentation into the parent material usually with the presence of raised material at one end of the gouge	No

3.18 FFQC18 - Spacecraft Receiving Inspection (Firefly Internal)

Receiving inspection required to verify parts meet engineering specifications for the incoming products. Parts with cleanliness requirements should be inspected inside verified cleanroom. All parts must be completely free from FOD, burrs, and all surfaces with roughness specifications are visually free from defects such as scratches, gouges, and imperfections.

3.19 FFQC19 - NDE-AWS D17.1

Qualification of NDE Personnel - Nondestructive examination personnel shall be qualified in accordance with NAS 410 **(Copy of certificate with NDE methods in compliance with NAS410 required)**

Visual Weld Inspectors - All personnel performing visual weld inspections shall be certified by AWS/CWI or SNT-TC-1A **(Copy of AWS/CWI or VT certificate per SNT-TC-1A required)**

Vision Test - Visual weld inspectors shall be administered a vision acuity test at minimum once every two years **(Copy of visual exam required)**

3.20 FFQC20 - Welding-AWS D17.1

PQR/WPS/QTR required per process, material, thickness and position **(copy of each is required)**

Welders and welding operators shall be administered a color perception test and Near vision acuity shall be 20/30 or better, at minimum once every two years **(copy of visual exam required)**

All PQR's shall be in compliance per D17.1 2017 section 5.4

3.21 FFQC21 - Manufacture and Inspect per REL-344

Critical propulsion component, manufacture and inspect per REL-344

4 Reference Documentation

Document Number	Document Title
QA-2431	Control of External Providers 8.4
QA-2467	Counterfeit Prevention 8.1.4
REL-86	Firefly Tubing Cleaning and Packaging Specification
REL-344	Propulsion Components Damage Specification
Firefly Terms & Conditions	Firefly Terms & Conditions
Supplier Code of Conduct	Supplier Code of Conduct

5 Appendix A

Acronym or Term	Definition
AVL	Approved Vendors List
AWS	American Welding Society
CoC	Certificate of Conformance
CWI	Certified Welding Inspector
ERP	Enterprise Resource Planning
FO	Foreign Objects
FOd	Foreign Object damage
FAI	First Article Inspection
FAIR	First Article Inspection Report

Acronym or Term	Definition
FOD	Foreign Object Debris
GIDEP	Government-Industry Data Exchange Program
GSI	Government Source Inspection
MRB	Material Review Board
NAS	National Aerospace Standard
NDE	Nondestructive Examination
PO	Purchase Order
PQR	Procedure Qualification Report
QA	Quality Assurance
QTR	Qualification Test Record
WPS	Welding Procedure Specification