QA-2411 Supplier Quality Requirements

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1 General Provisions

1.1 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.

1.2 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 Firefly-Aerospace-Supplier-Code-of-Conduct.pdf (fireflyspace.com)
- Firefly's Terms of Purchase Microsoft Word - Firefly T+Cs of Purchase -2024.06 - final (fireflyspace.com)
- 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.

1.3 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.

1.4 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 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.

1.5 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)

1.6 Non-conformances.

Seller disposition of non-conforming items that are of Buyer's design are limited to scrapping of the material, elimination of the non-conformance by rework, or return to supplier. Seller shall not incorporate any non-conformance into any product, process, procedure, or data unless and until Seller has obtained written approval from Buyer. Seller's continued processing of Buyer designed material containing a non-conformance prior to disposition is at Seller's sole risk. Buyer and Buyer's customers shall have the right to refuse to accept 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.

1.7 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.

1.8 Flowdowns.

Seller's POs to sub-tier suppliers shall clearly reflect and define all processing and nondestructive testing requirements including special procedures, inspections, tests, and approval criteria as required by the PO. Seller shall assure appropriate specifications and other directives are available and used by Seller's sub-tier suppliers. Seller shall require sub-tier suppliers likewise to incorporate documents and requirements in POs to their subcontractors.

1.9 Certificates of Conformance.

Seller shall prepare and deliver a Certificate of Conformance (CoC) with shipment upon request of the Buyer. This CoC shall certify that all items provided under the PO meet all applicable requirements. The CoC shall be included with the Seller's shipper to Buyer. Specific requirements for CoCs are set forth in Part II of this document.

1.10 Source Inspection.

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

Seller shall present with each shipment, for review by Buyer's representative, the final inspection and test results, as applicable, and the CoC.

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

When modifications, repairs, or replacements occur after Seller's final inspection or test, Seller shall perform re-inspection and test of affected characteristics prior to presentation for Buyer acceptance.

1.11 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.

1.12 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.

1.13 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.

1.14 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.

1.15 Foreign Object Damage (FOD) Prevention.

Seller shall maintain a FOD Prevention Program compliant to Aerospace Standard AS9146, Foreign Object Damage (FOD) Prevention Program - Requirements for Aviation, Space and Defense Organizations.

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.

1.16 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.

1.17 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.

1.18 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.

1.19 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.

1.20 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. Seller's processes and/or formal program shall be compliant to and meet the intent of SAE AS6174, Counterfeit Material; Assuring Acquisition of Authentic and Conforming Material and/or AS5553, Counterfeit Electronic Parts; Avoidance, Detection, Mitigation, and Disposition. See QA-2467 Counterfeit Prevention 8.1.4.

1.21 Non-compliance.

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

1.22 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.

2 Specific Quality Requirements

2.1 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 (if a raw material).
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 (as applicable).

2.2 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.

2.3 FFQC3 – Proof of Traceability.

The supplier shall provide a document that shows the traceability of the parts delivered on the PO per the table 3 below:

Table 3		
Condition	**Required level of Traceability**	**Data to be submitted**
The drawing does not have a Parts List/Bill of Material or subassemblies	To the raw material used for the part	Source, lot number or equivalent, and date received
The drawing does have a Parts List/Bill of Material or sub-assemblies.	For each item on the Parts List/ Bill of Material	Source, lot number or equivalent, and date received
	For the sub-assemblies to items on the Parts List/Bill of Material	No data is required to be submitted. Data to be available on request.

2.4 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 the first part of the initial shipment.
3. Include the device / method of inspection for each feature.
4. The dimensional report shall reference either the serial numbers inspected or the sample size.
5. The dimensional report shall list the range of dimensions recorded for the parts measured when a sample is inspected.
6. If there is a current FAIR for the product being inspected, the vendor should reference the FAIR number on the dimensional report.
7. Order requires a minimum sample size inspection of 25% of the total quantity ordered on the line item this tag is applied to, rounded up to the nearest whole number. (ex. 25% of quantity 5 = 1.25, rounded up the sample size would be 2)

2.5 FFQC5 – Functional Test Results.

Summary of results of testing performed on each production unit as defined by the design authority.

2.6 FFQC6 – Shipping Certification.

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

2.7 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.

2.8 FFQC8 – Inspect All Key Characteristics.

Order requires that all pieces be inspected for 100% of Key Characteristics noted on the drawing.

2.9 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.

2.10 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 a numerical control program used to manufacture the component or translation of the program to another media that can potentially affect fit, form, or function.
        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 two years 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. At the supplier's discretion, 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 bay 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.

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

Copies of FAI approvals from relevant sub-suppliers.

2.12 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)

2.13 FFQC13 – Receiving Dimensional Inspection (Firefly Internal)

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

2.14 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.

2.15 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.

2.16 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 receiving inspector 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. If the shipment is found to have been exposed to conditions outside the acceptable handling range, the material will be considered for rejection or further testing, depending on the extent of the temperature deviation. A nonconformance report will be generated to documenting and disposition the incident.

All composite material undergoing slitting operations must be in conformance with FMS-15.

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 forty-eight (48) cumulative hours of out-time accrued**.
- Material shall be delivered with **no less than twenty-six (26) 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.

2.17 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
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

2.18 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.

2.19 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)**

2.20 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

2.21 FFQC21 - Manufacture and Inspect per REL-344

Critical propulsion component, manufacture and inspect per REL-344

3 Appendix A

Acronym or Term	Definition
AWS	American Welding Society
CoC	Certificate of Conformance
CWI	Certified Welding Inspector
FO	Foreign Objects
FOd	Foreign Object damage
FAI	First Article Inspection
FAIR	First Article Inspection Report
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

Acronym or Term	Definition
QTR	Qualification Test Record
WPS	Welding Procedure Specification