



Supplier Quality Manual



SQM-001 Rev. B

**Cage Code
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3390 Farmtrail Road ■ York, PA 17406 ■ Phone 717-854-0005 ■ Fax 717-854-0045



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0.0 Revision, Change, & Approval History					
Rev.	Date	Change Description	QA	Approvals Purchasing	GM
A	07/31/18	Original	<i>DJG</i>	<i>WWB</i>	<i>GEC</i>
B	04/20/21	<ul style="list-style-type: none"> ·Updated logo and replaced “Tekgard, Inc.” with “Tekgard, a Division of Advanced Cooling Technologies, Inc.” ·renumbered Section 4.0 – 25.0 from Rev. A to Sections 5.0 – 26.0 for Rev. B ·added Section 4.0: “Applicable Documents / References” ·Section 5.0: alphabetized and added definitions of “Chain Traceability” and “Traceability” ·Section 6.0: corrected “AS9102” to “AS9100” ·Section 7.0: added “and flow downs” to 2nd paragraph ·Section 11.0: changed “should” and “must” to “shall” ·Section 16.0: added reference to Specialty Metals DFARS 252.225-7009, added “Certificate of Conformance & Traceability (CoCT)”, added clause on refusing shipment without CofC ·Section 17.0: added new section “Certificates of Conformance & Traceability (CofCT) ·Section 18.0: added “and associated drawings” in addition to PO ·Section 27.0: updated Supplier acknowledgement and removed Supplier Acknowledgement Form 	<i>DJG</i>	<i>WWB</i>	<i>MK</i>

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Supplier Quality Manual

1.0 Introduction

This Supplier Quality Manual (SQM) is intended to inform suppliers to Tekgard, a Division of Advanced Cooling Technologies, Inc., of Tekgard’s minimum Quality requirements and expectations for Suppliers of materials, products, and services to Tekgard.

Tekgard is committed to providing our customers and interested parties with on-time, reliable, dependable equipment, services, and technical support which consistently meet or exceed our customers’ requirements and expectations.

This commitment to our customers, as well as our adherence to the requirements of ISO 9001 as our fundamental quality management system standard, drives the requirements and expectations for our suppliers herein described.

2.0 Scope

This Supplier Quality Manual (SQM) applies to all current and new suppliers who provide purchased materials, products, and services to Tekgard, as well as prospective suppliers.

This SQM document defines basic quality systems and procedures as well as specific terms, conditions, and requirements, including supplier restrictions and quality system requirements applicable when materials, products, and services are provided to Tekgard. This SQM describes the *minimum* requirements and processes that are requirements of Tekgard’s purchase orders (POs) and sub-contracts.

The supplier is responsible for delivering quality purchased parts and services, on-time, which conform to the requirements of:

1. The Customer Drawing
2. The Purchase Order
3. Specified Standards
4. Tekgard Terms & Conditions
5. Applicable Flow Downs

3.0 Supplier Expectations

Tekgard works with approved suppliers who deliver the best in quality, value, and service at a competitive cost. In order to achieve our goals and meet our commitment to our customers, we expect the same commitment from our suppliers.

These expectations include:

- ZERO Quality Defects
- 100% On-Time Delivery
- No Disruptions to Tekgard Assembly Lines
- Timely Responsiveness to Issues

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4.0 Applicable Documents / References

- Tekgard Documents
 - o Tekgard Purchase Order(s)
 - o Tekgard Drawing(s) referenced on PO(s)
- Government Documents
 - o DFAR 252.225-7008 “Restriction on Acquisition of Specialty Metals”
 - o DFAR 252.225-7009 “Restriction on Acquisition of Certain Articles Containing Specialty Metals”
- Standards & Specifications
 - o AS5553: “Counterfeit Electronic parts; Avoidance, Detection, Mitigation, and Disposition”
 - o AS9100: “Quality Systems – Aerospace – Model for Quality Assurance in Design, Development, Production, Installation and Servicing”
 - o AS9102: “Aerospace First Article Inspection Requirement”
 - o GEIA-STD-0005-1: “Performance Standard Aerospace and High Performance Electronic Systems Containing Lead-free Solder”
 - o GEIA-STD-0005-2: “Standard for Mitigating the Effects of Tin Whiskers in Aerospace and High Performance Electronic Systems”
 - o ISO 9001: “Quality management systems – Requirements”
 - o NAS 412: “Foreign Object Damage (FOD) Prevention Guidance Document”

5.0 Terms, Definitions, & Acronyms

Buyer	Shall mean Tekgard via its authorized procurement representative.
Chain Traceability	The history of procurement of raw materials and parts to machining, distribution, and sales can be traced forward or backward. This allow monitoring of where items have come from as well as to where they have been delivered
COTS (Commercial-Off-the-Shelf)	A part or assembly (electrical or mechanical) or soft good/consumable that is commercially available to the public through a catalog or other public sales venue, <u>with NO modification prior to delivery.</u>
FAI (First Article Inspection)	Intended to provide objective evidence that all engineering, design, and specification requirements are correctly understood, accounted for, verified, and recorded. Intended to ensure processes will produce an item in conformance and in compliance to the applicable PO, drawing, and specification requirements.
Purchase Order (PO):	The commercial document issued by a buyer to a seller, indicating types, quantities, and agreed prices for materials, products, and services; including but not limited to COTS, MOTS, Build-to-Print, and Special Process(es).

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Quality Management System (QMS)	The business system consisting of all parts and components of an organization dealing with quality processes and products. The management structure, including procedures, processes, resources, and responsibilities to effectively achieve the quality and objectives of an organization in order to satisfy customer needs and expectations.
Raw Material	Materials or metals used in manufacture of Build-to-Print and not covered under COTS. Includes but not limited to: - Metal plates, bars, extrusions, rods, etc. - Non-metallic goods that are not an end item (e.g., plastics, phenolic)
Special Process(es)	Manufacturing processes than cannot be verified by normal inspection means and require specific training/certification of personnel/facilities in accordance with specification requirements. A process where some aspects of the required quality cannot be assured by subsequent inspection of the processed material alone and when an operation may affect material properties, mechanical properties, and/or material toughness. Includes but not limited to: - Welding, heat treat, forming, non-destructive testing, etc. - Finishing operations (e.g., painting, plating, anodizing, chemical conversion coatings)
Supplier or Seller:	The entity to whom the Tekgard PO is awarded; including but not limited to manufacturers, distributors, brokers, designers, and other service providers; performing the work or supplying the contract items specified by the PO.
Traceability	The ability to track and record trace necessary information such as manufacturers, suppliers, and distributors throughout all processes from procurement of raw materials and parts to machining, assembly, distribution, and sales to ensure that histories can be traced.

6.0 Quality Management System Requirements

Suppliers shall implement and maintain a Quality Management System (QMS) which complies with ISO 9001, AS9100, or have a QMS which has been evaluated and approved by Tekgard.

As a division of Advanced Cooling Technologies, Inc., Tekgard is an ISO 9001-certified company, and as such adheres to the requirements of ISO 9001 as its fundamental QMS standard. Suppliers with current ISO 9001, or a recognized equivalent (AS9100), will be preferred potential suppliers. Suppliers that DO NOT have an ISO 9001, or AS9100, compliant QMS should be working toward that goal.

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Initial and subsequent periodic review of supplier’s QMS may be performed at the discretion of Tekgard. Objective evidence of supplier’s compliance, either by submittal of requested evidence and surveys, or evidence of third-party accreditation, may be acceptable but does not preclude the use of on-site evaluations or other review methods.

Supplier shall notify Tekgard should any major changes occur in key personnel, organizational structure, or manufacturing processes which affect the QMS and/or any major findings during a registrar’s periodic audit within 7 business days. Corrective and preventive actions taken in response to such findings may be required to be provided as well.

7.0 Quality Flow Down to Sub-Tier Sellers

Tekgard shall flow down applicable specifications, requirements, and quality notes on the PO and relevant engineering drawings.

The Supplier’s QMS shall assure all relevant PO and drawing requirements are flowed down to their sub-tier Suppliers. The Supplier’s sub-tier Suppliers are responsible to comply with the same specifications, requirements, and flow downs as specified on the PO and engineering drawings.

8.0 Tekgard Approved Supplier List

Tekgard maintains an Approved Supplier Listing. Suppliers are selected from this list on the basis of their ability to meet Tekgard quality and delivery requirements.

For consideration for inclusion on this list, a prospective supplier will complete a Vendor Quality Audit Form and response to a request for quote. Upon satisfactory review, which may include an on-site audit and inspection, additional documentation review, or further actions by the supplier or Tekgard, a PO may be issued. At delivery, the purchased item or service will be inspected for compliance and conformance to the PO requirements and specifications. Should the delivery pass inspection, the supplier shall be added to the Approved Supplier List.

The Approved Supplier List shall also describe any suppliers who have been removed from the list. No purchases shall be allowed from these sources unless reinstated onto the Approved Supplier List.

9.0 No Changes without Approval

Except for first time purchases, items provided under a PO shall be identical in form, fit, and function to product previously approved by Tekgard.

No changes or substitutions in materials, processes, procedures, design, software, or reduction in inspection/test level shall be made without prior approval and authorization by Tekgard.

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10.0 Source Inspection

Tekgard and its Customer(s) reserve the right to inspect any or all work included in the PO at the Supplier's plant or the Supplier's sub-tier Suppliers' plants in fulfillment of the PO or contract.

Tekgard and its customer shall have right of access to QMS documentation, product, all applicable records, and all facilities involved in the fulfillment of the PO or contract.

11.0 Supplier Inspection Requirements

Suppliers are fully responsible for the quality of their products and services and shall not rely on Tekgard's incoming inspection. The Supplier is responsible for performing or having performed all inspections and tests necessary to ensure and substantiate that items and services provided under the PO conform, meet, and comply with all PO requirements, including any applicable technical requirements for specified manufacturers' parts.

The supplier shall have adequate gages and test equipment to control product quality and support analytical problem solving.

All gages and measuring equipment (including fixtures) shall be periodically inspected and calibrated at established intervals. Each gage shall be uniquely identified, and records are to be maintained. Calibration shall be in accordance with recognized industry standards and traceable to the National Institute of Standards and Technology (NIST).

The supplier shall only tender to Tekgard items and services which have been inspected and been found by the supplier to be in conformity with all PO requirements.

The supplier shall prepare and maintain records evidencing all inspections and their outcome. The supplier shall also maintain copies of certifications for all sub-contracted special processes.

12.0 First Article Inspection (FAI)

When so specified and requested by the PO, and for those items therein specified, the supplier shall perform a First Article Inspection (FAI) on a representative item from the first production run of a new part when changes occur which invalidate the original results, or at the request of Tekgard.

For Tekgard or customer-controlled drawings and specifications:

- The supplier and/or sub-tier shall perform FAI in accordance with Aerospace Standard AS9102.

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- The supplier shall perform a delta or partial FAI for a lapse in production of 2 years or more.

For manufacturing drawings managed by the supplier or its sub-tier suppliers:

- The supplier shall implement production process verification to ensure the production process produces products that meet the specified requirements.

The supplier shall retain documented information on the results of the production process verification and shall maintain such FAI data for five (5) years after the completion of the PO.

13.0 Non-Conforming Material

Tekgard expects its suppliers to strive towards zero defects but realizes that quality issues may arise from time to time. It is critical that the supplier effectively responds and reacts to quality concerns.

The supplier shall maintain a documented system for controlling non-conforming material. Non-conforming material must be identified, documented, evaluated, segregated, and dispositioned to prevent unintended use, release, or installation. The supplier must immediately notify Tekgard should it be discovered that non-conforming material has been shipped. Such notification shall include the Tekgard part number, quantity, shipping date, lot identification, and any other information which will assist Tekgard in locating and containing the material.

Tekgard performs incoming and on-the-line inspection of all purchased items and services. This does not negate the necessity and responsibility of the supplier to send material which conforms to all requirements and specifications of the PO. For Appearance Items, those visible to the customer, items which have or contain such features as burrs, chips, dents, scratches, color variance, discoloration, cracks, porosity, and other similar conditions, may be considered non-conforming as well. Suppliers are fully responsible for the quality of their products and services and shall not rely on Tekgard’s incoming inspection. In the event that non-conforming material is present in shipments received at Tekgard, a Non-Conforming Product (NCP) notification will be issued to the supplier. The supplier is responsible to assist in evaluating and correcting the issue. At the discretion of Tekgard, a Corrective Action Request (CAR) may also be issued. The same also applies for purchased items which are found to be defective in fielded units. Nonconforming product may be identified during receiving, inspection, manufacturing, reliability testing, warranty analysis, or through customer notification.

Costs for administering NCPs and CARs, as well as associated costs (e.g., rework, labor, schedule delay, overtime) may be passed on to the supplier (see Section 15.0 – Cost of Poor Quality). An NCP may be issued without associated costs for corrective action if issued for documentation purposes only.

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14.0 Corrective Action Requirements

Tekgard will notify its suppliers of problems regarding quality, delivery, packaging, and services in writing via an NCP form. Depending on the severity and impact of the non-conformance, or for multiple NCPs issued, a CAR shall be issued. CARs may also be issued for non-responsiveness to NCPs, late deliveries, or any other violation of PO or contract terms.

Suppliers are required to submit an initial response and implement containment actions within 24 hours of notification. The response should include at a minimum:

- Use of the CAR form supplied by Tekgard or an equivalent 8D format
- The problem description and magnitude
- All personnel assigned to resolve the concerns
- Containment actions taken or in-process (sorting on-site at Tekgard by the supplier, RMA, and replacement with properly identified, certified material to meet production needs)
- Containment of all in-transit material
- Interim corrective actions taken to ensure in-process material is conforming

Following initial response and containment, the supplier shall work to identify the root cause of the non-conformance and make changes in product or process to prevent recurrence. The root cause analysis shall be documented. Any changes to product or process must be communicated to and approved by Tekgard prior to implementation.

The response and completion of the CAR shall be submitted to Tekgard within 30 days of the initial CAR request unless the initial CAR request specifies differently. The report should include all documentation of problem solving tools used such as 5 Whys, Fishbone Diagram, DOE, and pareto analysis.

Corrective actions must focus on addressing root cause by improving the manufacturing process and supplier’s systems. Root cause focused on inspection failures, operator error, or other types of blame are unacceptable and should be avoided.

In the event a supplier is unable to respond within the allotted time, the supplier shall submit a request for extension which includes the reason for the request and the estimated completion date.

Tekgard reserves the right to conduct on-site corrective action verification at the supplier’s and its sub-tier supplier’s facilities if deemed so necessary to assess the effectiveness of implemented corrective actions.

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15.0 Cost of Poor Quality

An administrative fee may be assessed to the supplier to capture Tekgard’s cost for managing supplier non-conforming material. A Return Material Authorization number or supplier equivalent will be requested from the supplier for debit authorization for on-site scrap, rework, sort, or return of non-conforming product. The issued NCP will detail the initial costs, and Tekgard may invoice against the NCP in order to recover associated costs.

Cost Recovery Event	Associated Cost Charged to Supplier
Non-Conforming Product (NCP) issued	A minimum fixed cost of \$100 USD per occurrence
Sorting	Actual labor cost incurred
Expedited freight	The difference between expedited freight and standard freight charges
Incorrect carrier was utilized	The difference between specified and utilized carrier freight charges
Rework and/or scrap	Actual labor and material costs incurred
Late deliveries resulting in the following:	
• Plant shutdown	Actual costs incurred
• Plant rescheduling	Actual costs incurred
• Overtime	Actual costs incurred
Non-conforming material resulting in line speed reduction	Actual costs incurred
Increased inspection	Actual costs incurred
Return freight for rejected product	Actual shipping cost incurred
Tekgard customer warranty claim(s) due to failure of supplier’s product	Warranty expenses incurred by Tekgard

16.0 Certificates of Conformance

The supplier shall include a Certificate of Conformance with each shipment against a PO as required. This document shall state that the supplied item(s) comply with all of the requirements of the PO and associated documents, and shall at a minimum certify and contain the following information, as applicable to the purchased item:

- Supplier’s name and address
- Tekgard PO number
- Original equipment manufacturer’s name (if not the same as supplier)

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- Manufacturing country of origin
- Part number of item
 - Should a Tekgard part number not be specified on the PO, the supplier’s part number shall be used.
 - Should a supplier’s part number not be specified on the PO, the material’s descriptor shall be used.
- Drawing revision (as specified on PO) to which the goods were manufactured
- Serial number(s), date code(s), or batch/lot number(s), as applicable of product shipped
- Statement attesting that the goods and services conform to all PO/contract requirements, associated drawings, referenced standards, and function product specifications
- Supplier’s authorized signature and date, including position held/job title.
Electronic signatures are acceptable

Additionally, as requested, or applicable to the purchased item, product, or service, include:

- Material content
- Melt Certificates
- Mechanical properties
- Physical properties
- Chemical properties/characteristics
- Electrical properties
- Finish
- Special processes (as defined in Section 5.0)
- NDT inspections
- Test and inspection
- Traceability and Compliance to DFARS 252.225-7009 “Restriction on Acquisition of Certain Articles Containing Specialty Metals” including supporting documentation

Additionally, if so stated or flowed down on the PO, additional certificates may be required such as:

- Certificate of Analysis (CoA): Document provided by raw material provider stating material and actual chemical and physical test results for any raw material ordered or for the material used to manufacture the supplied product(s)
- Certificate of Conformance and Traceability (CoCT): Document that must be furnished at the time of delivery for each item noted on the Purchase Order. CoCT must provide traceability from Original Manufacturer and all Distributors/Suppliers the articles passed through to delivery to Tekgard. Individual CofC’s from each Seller of the articles are acceptable as long as

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lineage is traceable and unbroken. Articles delivered with gaps in lineage will not be accepted.

- Certificate of Test: Document certifying all required testing was completed and acceptance criteria were met with test data provided.

Shipments received without Certificates of Conformity may not be accepted.

17.0 Certificates of Conformance & Traceability (CofCT)

The supplier shall include a Certificate of Conformance & Traceability (CofCT) with each shipment against a PO as required by the PO or flow downs.

The CofCT shall provide traceability from the Original Manufacturer and all Distributors/Suppliers the articles passed through to delivery to Tekgard.

Individual CofC's from each Seller of the articles are acceptable as long as lineage is traceable and unbroken.

Articles delivered with gaps in lineage will not be accepted.

Acceptable documentation should include:

Manufacturer's Documentation

- Manufacturer's Name & Address
- Manufacturer Part Number
- Lot/Date/Serial coding if applicable
- Inspection date of latest re-inspection date
- Quantity of Devices in shipment from Manufacturer
- Signature and date of transaction

Distributor's Documentation

- Distributor's Name & Address
- Name & Address of Customer (i.e. Tekgard)
- Part Number
- Tekgard PO Number
- Quantity of Devices in shipment
- Latest re-inspection date, if applicable
- Certification that this shipment is a part of the shipment covered by the Manufacturer's documentation
- Signature and Date of transaction

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18.0 Certifications for Processes & Personnel

Supplier shall submit evidence that processes and personnel are certified in accordance with any and all imposed specifications and requirements of the PO and associated drawings. This is a critical requirement where Special Processes are specified or required, as defined in Section 5.0.

Unless specified otherwise, such evidence shall be supplied with the initial shipment, and thereafter at a maximum interval of twelve (12) months.

The supplier shall retain a copy of such evidence on file for five (5) years after the completion of the applicable PO.

19.0 Records: Control & Retention

The supplier shall maintain a documented procedure for record creation, change, completion, and control of records in accordance with the applicable QMS standard.

The supplier shall retain all product, process control, and quality records for a minimum of five (5) years, unless a longer time is stated on the PO.

Records should be sufficient to provide objective evidence of conformance to PO requirements and ascertain the quality level of the products and services provided. This includes, but is not limited to, any manufacturing, inspection, and test records, as well as certificates and shipping documents created or procured during the course of procurement, manufacturing, testing, processing, inspecting, preserving, packaging, and shipping. These records shall be available to Tekgard upon request within three (3) business days and at no additional cost.

20.0 Part Obsolescence

The supplier shall notify Tekgard in writing if any material, items, or provided service procured on a PO is, or will be, obsolete or approaching end of life. Such notification shall be provided at the time of acknowledgment of the PO or Request for Quote.

21.0 Foreign Object Debris/Damage (FOD)

The supplier shall establish and maintain an effective Foreign Object Debris/Damage (FOD) Prevention Program to reduce FOD using NAS412 as a guideline. The program shall be proportional to the sensitivity of the design of the product(s) to FOD, as well as to the FOD-generating potential of the manufacturing methods.

Materials supplier per the PO shall be manufactured in an environment free of FOD. The material(s) and product(s) supplied to Tekgard shall be free of foreign objects.

FOD prevention also applies to packaging. There shall be no foreign objects received in packaging and packaging containers, to include but not limited to: staples for closure of

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the unit, foam peanuts used for cushioning, and Styrofoam™ used for cushioning. In general, no packaging material shall be used which will leave any residue from the packaging material on the parts as a result of packaging or unpackaging the product(s).

22.0 Prohibition of Pure Tin (Lead Free Mitigation)

This section applies to COTS (electrical components), Modified COTS, and Build-to-Print Electrical Detail/Assemblies.

The use of pure tin plated finished is strictly PROHIBITED. Lead-free tin finishes and solders are not acceptable. Any tin plating or tin solder processes shall contain NO LESS than three (3) percent LEAD (Pb) composition, unless specifically authorized in writing by Tekgard.

In the event that the PO specifies the use of a pure tin finish, the supplier shall have a lead-free control plan in accordance with GEIA-STD-0005-1 and GEIA-STD-0005-2 Level 2B minimum. The lead-free control plan must be submitted and approved in writing by Tekgard.

23.0 Counterfeit Material Avoidance Process

Supplier should establish and maintain a counterfeit prevention and control plan, using SAE AS5553 as a guide, to ensure that counterfeit work is not delivered to Tekgard. The purpose shall be to document a robust, risk-based process to prevent delivery of, and to control, counterfeit or suspected counterfeit parts and/or materials.

If the supplier and its lower-tier subcontractors are eligible and allowed access, the supplier is required to be a member of the Government/Industry Data Exchange Program (GIDEP).

The supplier shall immediately notify Tekgard if the supplier becomes aware of, or suspects, that items delivered to Tekgard are or contain suspected or confirmed counterfeit items.

The supplier shall purchase material directly from the Original Equipment Manufacturer (OEM), Original Component Manufacturer (OCM), or their authorized distributors.

Only new and authentic materials are to be used in products delivered to Tekgard.

24.0 Labeling, Packaging, & Shipping

Suppliers are responsible for the necessary labeling requirements to ensure and maximize effective traceability.

Individual part packaging shall be marked with the appropriate part numbers from the PO, to include Tekgard part number, revision level, manufacturer part number.

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Shipping documents and product labeling shall provide for clear identification and traceability of the contents, including PO number, part numbers, revisions, and serial numbers.

The supplier shall provide adequate facilities and instructions for labeling, handling, packaging, and shipping in order to protect products and prevent damage during storage and transit.

Unless otherwise specified on the PO:

- Unmated electrical connectors shall be protected at all times. Those with contacts or sockets shall have protective caps or other suitable packaging and be free of foreign objects.
- All openings (e.g., hydraulic tubes, electrical connections, tubing, piping) must be adequately protected by closures to prevent contamination (FOD) or damage.
- All items must be packaged so as to prevent damage from handling or shipping (nicks, dings, scratches, etc.).

25.0 Special Processes

Suppliers who provide Tekgard with special process services or products that have been manufactured using special processes, as defined in Section 5.0, are required to have those processes validated and approved by Tekgard, unless otherwise specified by contractual/PO flow down.

A processor’s validation and approval may be determined based on; the Tekgard review and verification of current NADCAP or other third-party accreditation, process verification reports for special processes, product and process audits, and any audit required by the unique process specification requirements. NADCAP accreditation is the preferred method for validation. Any costs associated with NADCAP or other third-party accreditations for special processes are to be borne by the supplier (processor).

This requirement also applies to sub-tier Suppliers with internal special process capabilities.

26.0 Standards and Specifications

It is the responsibility of the Supplier to ensure the acquisition, possession, and internal distribution of the most recent and up-to-date revisions of all specifications and industry standards (AS, ANSI/AWS, FED, ISO, MIL, SAE, etc.) which may be called out on the Tekgard PO or associated engineering documentation and drawing notes. Any costs associated are to be borne by the supplier.

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Supplier Quality Manual

27.0 Supplier Acknowledgment

Acceptance and acknowledgement by the Supplier of the PO issued by Tekgard shall indicate Supplier acknowledgement to abide by the:

- Terms & Conditions listed by Tekgard
- Flows Downs explicitly flowed down on the PO
- responsibilities and obligations contained within the Supplier Quality Manual SQM-001

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