

Micron Supplier Requirements Standard (SRS)

Previously SQRD

1.0 Purpose and Scope:

This standard describes the minimum quality, business process, manufacturing, compliance, and documentation requirements for Suppliers (as defined below) supplying Micron Technology, Inc. and its subsidiaries (“**Micron**”) with procured goods or services. Terms not defined within this document shall have the meanings ascribed to them in Section 13.0 or the applicable Agreement.

The purpose of this Supplier Requirement Standard (“**SRS**”) is to specify Micron’s requirements for its suppliers and to define those relevant Customer Specific Requirements (“**CSR**”) to Suppliers supporting Micron’s business. Micron receives CSRs from our customers and extends them accordingly to those Suppliers impacted in our supply chain. These requirements extend across Micron’s value chain processes, including: supplier qualification, product development, and production manufacturing. Unique requirements in support of markets such as Automotive are called out separately.

This standard and its content shall apply to all potential and incumbent Suppliers who are in the process of qualifying to prove or currently providing procured goods and services, including subcontracting services to Micron. This standard applies to all external direct material/service Suppliers, including sub-tier, special process Suppliers when identified and approved by Micron. This standard applies to indirect material/service Suppliers as determined by Micron.

- In the event of any inconsistency between this standard and any commercial Agreement (including any purchase order) or Statement of Work (“**SOW**”), the terms in the Agreement or SOW shall have priority. For any documents that are incorporated by reference into this standard, in the event of an inconsistency, this standard shall have priority.
- If this standard contemplates future writings between the parties to establish the specifics of a quality program for a Product or set of Products, that later writing, if agreed upon by the involved parties, shall have precedence over this standard. If any definitions herein are also defined in the Agreement or SOW, the definition(s) contained in the Agreement or SOW shall have priority. Any agreed to exceptions to this standard will be set forth in an equivalent Supplier Requirements Standard or other commercial document.

2.0 Responsibilities:

- If a Supplier has any questions or concerns regarding the content of this Supplier Requirements Standard, they should contact their respective Global Category Supplier Manager within Micron’s Global Procurement Department.
- Suppliers are responsible for adhering to the SRS requirements. Failure to meet these requirements may result in the loss of existing and/or future Micron business, in addition to other remedies as agreed upon by the parties in applicable agreements.
- Suppliers are expected to comply with documented material/technical specific requirements.

- Suppliers are responsible for notifying their respective Micron Procurement Supplier Manager immediately for any potential Safety/Quality/Supply Chain issue.

3.0 General:

3.1 Exceptions

Any agreed upon exceptions to this standard shall be captured within an equivalent Supplier Requirements Standard or other commercial document/agreement.

3.2 Confidentiality

Any information requested by or from a Supplier that references content within this document and is applicable to any Supplier's facilities, plans, procedures, and processes shall be deemed to be non-confidential unless it is specifically agreed upon by Micron and its Supplier(s) to execute a Non-Disclosure Agreement ("**NDA**") for such requested information or access.

4.0 Sourcing Risk and Compliance

Micron expects all suppliers to demonstrate commitment and conformance to the requirements outlined under the Supplier Responsibility section of the [Micron Supplier Expectations](#) website. Sourcing Risk and Compliance assessments and requested training courses to be completed by a Supplier will be facilitated by Micron or on behalf of Micron through a 3rd party service provider. Additional to what is stated in Micron's Supplier Expectations, this SRS provides further description of the requirements within the following sections:

- 4.1 Code of Conduct
- 4.2 Conflict Minerals
- 9.4 Product Content

4.1 Code of Conduct:

At Micron we conduct our business with integrity and in strict compliance with the law. Not only is it the right thing to do, but it makes good business sense. By acting with integrity, we earn the trust of our customers, shareholders, coworkers, regulators, suppliers and the communities in which we live and work.

Our Code of Business Conduct and Ethics is a key resource in our commitment to compliance and ethics. Today's laws and standards of business conduct are complex. The Code explains in a practical, easy-to-understand way many of the basic rules that apply to our business and supplier relations.

For more information regarding Micron's Code of Business Conduct and Ethics, visit <https://www.micron.com/about/our-commitment/governance/ethics>.

Micron's core business philosophy is to conduct business with uncompromising integrity and professionalism. In August 2008, Micron joined the Electronics Industry Citizenship Coalition ("**EICC**"), now known as the Responsible Business Alliance ("**RBA**"). The RBA is comprised of leading electronics industry companies that have joined together to promote responsible working conditions, ethical business practices, and environmental stewardship globally throughout the electronics industry supply chain. RBA members adhere to a common RBA Code of Conduct, which addresses supply chain performance expectations for labor, health and safety, environmental practices, ethics and management systems.

We believe that our Suppliers' compliance with the RBA code supports this philosophy. Micron and its subsidiaries expect Suppliers to comply with the RBA code regardless of local business practices or social customs, and as may be requested by Micron, to demonstrate adherence to those codes.

For more information on the RBA and to view the RBA Code of Conduct, visit <http://www.responsiblebusiness.org>.

4.2 Responsible Mineral Policy

In support of global responsible sourcing, Micron is committed to ensuring that conflict minerals* used in the manufacture of its Products do not directly or indirectly fund violence or human rights abuses in the Democratic Republic of the Congo or adjoining countries.

Micron requires its Suppliers to source conflict minerals from smelters validated (or on the path to validation) as compliant with conflict-free sourcing standards like the Conflict Free Smelter Program. Micron also executes due diligence on the source and chain of custody of conflict minerals in its supply chain in conformance with the Organization for Economic Cooperation and Development ("**OECD**") Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas [OECD Due Diligence Guidance](#), encourages Suppliers to adopt responsible sourcing practices, and collaborates with industry stakeholders through the Responsible Mineral Initiative. To further transparency in the conflict mineral supply chain, Micron publicly reports the results of its due diligence annually and shares its due diligence results directly with its customers.

To learn more about Conflict Free Sourcing Initiative efforts to achieve a Democratic Republic of Congo Conflict Free supply chain and the Conflict Free Sourcing Program visit: <http://www.conflictreesourcing.org/>.

*Conflict minerals are those minerals regulated by Section 1502 of the Dodd-Frank Wall Street Reform and Consumer Protection Act. They include columbite-tantalite, also known as coltan (and its derivative tantalum); cassiterite (and its derivative tin); wolframite (and its derivative tungsten); and gold.

4.3 Responsible Mineral Requirements

To help Micron achieve its conflict mineral policy objectives, Micron requires Suppliers to comply with its conflict mineral programs. Supplier compliance includes:

- Providing complete, updated Conflict Minerals Reporting Templates ("**CMRT**"), as requested. CMRTs must disclose the source of conflict minerals that may be present in Products sold by Supplier to Micron—including the identification of the smelters from which the conflict minerals originated;
- Updating CMRTs within two (2) weeks of any smelter or refiner changes within the entire supply chain. Such changes may include adding a new smelter, removal of a smelter, or when a smelter changes on the Responsible Material Initiative ("**RMI**") list.
- Adopting a conflict mineral or responsible mineral policy dedicated to the goal of achieving a conflict-free supply chain;
- Participating in and facilitating audits of Supplier's facilities, conflict mineral policies, conflict mineral procedures and associated records;
- Adopting contractual provisions in Supplier's supply chain agreements that direct successive upstream suppliers to adopt conflict mineral policies and complete necessary conflict mineral diligence surveys.

4.4 Supply Chain Risk Management

4.4.1 As part of Micron's Supply Chain, Micron requires Suppliers to have Business Continuity processes and plans for the manufacturing locations to enable continuity of supply. Considering the complexity of the supply chain, Micron uses risk intelligences and analytics to effectively and efficiently respond to disruptive events that occur around the globe. To support Micron, a Supplier can be requested by either Micron or on behalf of Micron by a 3rd party service provider. It is Micron's expectation that the supplier responds to the inquiry in a timely and accurate manner.

4.4.2 These requests may include:

- Collecting basic information about a Supplier's supply chain resiliency using Supply Chain Mapping, which includes data-points such as manufacturing locations, emergency contacts, recovery time objectives, and locations of critical sub-tier suppliers.
- Collecting and evaluating Business Continuity Process ("**BCP**") data* on Micron's suppliers.

**These may pertain to contingency plans for continuity of supply in the event of any of the following: key equipment failures; interruption from externally provided products, processes, and services; recurring natural disasters; fire; utility interruptions; labor shortages; or infrastructure disruptions.*

- Suppliers responding and providing timely incident updates, impact assessments, and/or digital coordination between supply chain partners during disruptive events.

5.0 Supplier Quality:

5.1 Quality Management Expectations

5.1.1 All Suppliers are expected to have an established Quality Management System ("**QMS**") to ensure that documented quality business processes, controls, and systems are in place to prevent out of control or non-conforming Product from reaching Micron, as defined within this standard or any other supporting Agreement. It is expected that a Supplier's executive management have the responsibility for reviewing the QMS at defined intervals sufficiently to ensure its effectiveness.

5.1.2 As part of the QMS, Suppliers shall provide to Micron a Key Contact List and a current Quality Organization structure upon request. Suppliers shall promptly notify Micron of any changes to the Key Contact List or the Quality Organization.

5.2 Quality Policy

Suppliers shall have a documented quality system manual that supports their manufacturing processes and provides references to all quality related processes, controls and systems. This quality system manual should include process or product qualification plans for any product being provided to Micron.

5.3 Quality Records and Documentation

Micron Suppliers shall have established procedures for collecting, storing, maintaining and disposing any quality related documents or records. These records may include raw process data, qualification data, statistical data, test or inspection data that supports quality requirements for goods or services procured by Micron. Quality record retention will be retained for the length of time that the product is active for production & service requirement, plus one calendar year unless otherwise specified and agreed upon between Micron and the Supplier. Upon mutual agreement, Micron may require Suppliers to adopt additional procedures or practices regarding management of quality requirements.

5.4 Quality Methodologies (concepts or techniques)

To ensure continuous improvement of quality, Suppliers shall use appropriate methodologies or processes during all phases of Product life (i.e. conception, design, qualification, production, testing, and inspection, etc.). Examples may include, but are not limited to, the following or as otherwise agreed between Micron and the Supplier:

- Failure Modes and Effects Analysis (“*FMEA*”) and Quality Control Plan;
- Statistical tools for each process during quality planning;
- Technical risk assessment
- Gage, repeatability, and reliability studies;
- Design of Experiment activities;
- Root Cause Analysis or other problem-solving methods;
- Maverick Product Elimination (“*MPE*”) / Zero Defect program.

5.5 Quality Reporting

As agreed upon with Micron, Suppliers shall provide quality reports on a periodic or as needed basis. Such reporting may include, but is not limited to key metrics, measurements, goals, or continuous improvement results.

5.6 Supplier Quality Control Requirements

- 5.6.1 Micron requires Suppliers to have proper monitoring & control at all areas (Incoming, In-process & Outgoing) and implement acceptable statistical methodology deployment. It is part of Micron’s expectation that suppliers provide Statistical Process Control (“*SPC*”) data for any Product or material provided to Micron as defined/requested.
- 5.6.1.1 As requested by Micron, Suppliers shall provide monthly SPC reports for specified products, unless agreed upon otherwise. This data shall include calculated Cp and Cpk for all parameters for which the calculations apply. The calculation methodology should be aligned with Micron’s and AIAG SPC requirements. For non-critical Supplier categories, Micron determines the required frequency based upon a review of risk and performance.
- 5.6.1.2 Micron’s expectations are that Suppliers will be able to provide SPC data demonstrating control of their manufacturing processes.

- 5.6.1.3 Suppliers shall maintain documentation to identify all work-in-process (“**WIP**”) including the referenced Specification for each WIP item. Suppliers shall have controls in place to prevent the possibility of down-level (down-graded) and/or returned parts from being mixed with good stock. Unless otherwise agreed to by the parties, the First In, First Out (“**FIFO**”) inventory control methodology shall be used.
- 5.6.2 Certificates of Analysis (“**CoA**”) or Certificates of Conformance (“**CoC**”)
- 5.6.2.1 Materials or items that require actual composition reporting will be specified in Micron Material Product Specifications or other Quality specifications applicable for the various departments or process areas within Micron (i.e. Front-End Materials, Back-End Materials, Mod/SSD, etc.). When required, each lot or batch in a shipment must be analyzed by the Supplier for (at least the minimum) the parameters outlined in the agreed upon Micron Material Product Specifications or other Quality specifications.
- 5.6.2.2 Supplier shall provide a CoA or CoC, as required, to Micron prior to, or at time of, receipt of the Product by Micron from Supplier. Electronic CoA or CoC data will be provided a minimum of 24 hours prior to shipment to Micron. The CoA or CoC must be sent via the Micron defined method, submission via the eCOA/eSupplier systems are the preferred methods.
- 5.6.3 Ship-To-Control and Statistical-Process-Control
- 5.6.3.1 Micron utilizes a Ship-To-Control (“**STC**”) process for manufacturing related “**direct materials**” or “**critical materials**”. Suppliers will be requested to participate in applying the principles of Ship-To-Control to products or raw materials procured by Micron.
- 5.6.3.2 Micron-approved statistical methodologies shall be utilized for implementation of the Ship-To-Control process.
- 5.6.3.3 Upon the initiation of an Agreement, the Supplier and Micron will review and agree on the “**STC CL**” and “**STN CL**” for each material or product.
- “**STC CL**”: Ship-to-Control Control Limit. Materials shall not be shipped to Micron if any “Control” parameter is Out of Control (OOC) without a written waiver issued by the appropriate Micron Supplier Quality or IQC representative.
 - “**STN CL**”: Ship-to-Notify Control Limit. Material can be shipped to Micron following pre-notification and approval by the appropriate Supplier Quality or IQC representative.
- 5.6.3.4 Suppliers shall track and will be asked to provide SPC data on all measured elements on a pre-defined frequency (no longer than a quarterly basis). STC/SPC data and control limit reviews shall occur on a yearly basis, at a minimum, but Micron and/or the Supplier may request a review for additions or reduction in STC/SPC parameters based on a process change or significant shift in the data.
- 5.6.3.5 Unless agreed upon jointly, all measured parameters require analysis which will produce actual values until a target limit has been established by Micron and the Supplier.

5.6.3.6 Periodic STC and SPC data review of parameters shall include calculated Cp and Cpk values for any parameter captured in a Product or Material Specification. All defined key/control parameters shall meet a minimum Cpk @ 1.33 and Cpk @ 1.67 for Automotive and critical Direct Materials. For parameters that do not meet these required Cpk values, then improvement plans are required.

5.6.3.7 All certified analysis will be done from the shipping container or as close to the end of the production line as possible depending on the material or product.

5.6.4 Maverick Product Elimination

Micron's expectation is that all Suppliers have systematic controls in place to detect and prevent shipment of maverick material or product. Micron recommends referencing JESD50C for a definition of maverick product. No maverick product can be shipped to Micron or Micron Subcontractors without prior approval or authorization from Micron.

5.7 Non-conforming Material

5.7.1 It is an expectation of Micron, that all Suppliers have documented and established processes for identifying, containing, and disposing of non-conforming direct materials. This is intended to prevent non-conforming material or product from reaching and impacting Micron. Micron expects cooperation from its Suppliers in providing lot numbers, batch numbers, manufacturing dates, expiration dates or any other pertinent information to help ensure the segregation of suspect or non-conforming materials.

5.7.2 Direct materials or products received at any Micron site which are non-conforming to the requirements contained in a Micron Material Product Specification or other Quality specification, will be rejected by Micron. Micron, as the customer, may issue a Supplier Quality Notification ("**SQN**"). Please refer to Section **Error! Reference source not found.** for the details of this process.

5.7.2.1 If non-conforming material or product is identified at any Micron location or Micron's customer location, the Supplier will be contacted by Micron for disposition. Micron disposition activities, unless agreed upon elsewhere, may include, but are not limited to, the following.

- Micron certifies stock at the Supplier's expense.
- Supplier hires an independent source for certification or sorting of stock at Micron location.
- Supplier sends a representative to Micron's location to certify stock.
- Supplier authorizes material to be scrapped or returned to Supplier location at the Supplier's expense.

5.7.2.2 Costs incurred by Micron that are attributed to poor Supplier Product quality may be charged back to the Supplier, as agreed upon by the parties in an applicable agreement.

5.7.3 Micron utilizes various business processes and methods for identifying, monitoring, and addressing non-conforming Product. The following are examples of the processes or methods that may be used at Micron locations to identify or detect non-conforming Product:

- Material Review Board (“**MRB**”)
- Key Material Group (“**KMG**”)
- Incoming Quality Control (“**IQC**”)
- In-process SPC
- MPE
- SQN
- Testing and Inspection

5.8 Defective Products

Supplier’s responsibilities for defective or non-conforming Products and Micron’s remedies for defective Products shall be specified in an Agreement or as defined in the applicable Terms and Conditions of Purchase.

5.9 On-Site Support

Where defect levels exceed the committed quality specifications or rates, and upon Micron’s request, the Supplier shall provide on-site support to perform sorting, failure analysis, and corrective action reporting. This on-site support shall be continuous until the defect level of the products in question is determined to be within the committed quality rates for a sustained period as determined by Micron. Where mutually agreed to by Micron and the Supplier, continuous On-Site Support will be provided by the Supplier at Micron’s or Micron’s authorized third party’s location(s) to perform sorting, failure analysis, and corrective action reporting. Specific requirements will be identified in the Agreement, SOW, or as otherwise mutually agreed to in writing.

5.10 Traceability

Suppliers shall have a documented process and/or procedure established that provides identification and traceability on goods or services provided to Micron. Micron’s expectation is that Suppliers can trace material from incoming raw materials through to outgoing capturing production tooling and processing information. If agreed upon, it would be expected that both forward and backward traceability be captured, through serialization, symbolization, or some other appropriate method.

5.10.1 Unless otherwise agreed upon by Micron, full identification information is required on the product label.

5.10.2 Each product, manufacturing lot or batch shall be identified with a unique identifier.

5.10.3 This identifier shall have complete traceability through the supplier manufacturing process, for materials, and equipment.

- 5.10.4 Each Supplier shall maintain a record of all materials used in the manufacture of each product and maintain documentation as evidence of conformance to the specifications. The documentation must be maintained for the length of time that the product is active for production & service requirement, plus one calendar year from the date of manufacture or the date of the material's shipment to Micron.
- 5.10.5 For products and materials identified by Micron as Automotive, the Supplier quality record retention requirement shall be 15 + 1 years.

5.11 Product Qualification/Approval

All products and materials supplied to Micron must be manufactured or produced using an approved production process plan unless otherwise captured through an approved and documented Agreement with Micron.

- 5.11.1 Following initial qualification of a direct material by a Supplier, a final qualification package should be documented utilizing the Automotive Industry Action Group's ("**AIAG**") Production Part Approval Process ("**PPAP**"). Any changes made to such records as referenced in Section 10 of this SRS, may require re-qualification unless otherwise agreed upon.
- 5.11.2 Suppliers of direct materials, capital equipment and outsourced manufacturing must maintain a minimum of ISO 9001:2015 certification for their applicable manufacturing sites. See [Section 9.2](#) for specific requirements.
- 5.11.3 New Suppliers must complete the applicable registration and qualification process prior to supplying products to Micron.
- 5.11.4 For identified supplied materials, a PPAP will be documented and submitted by supplier to Micron as the process of record for qualification.
- 5.11.5 Suppliers shall ensure that PPAP documentation and sample submissions are in accordance with the requirements of the latest edition of PPAP Manual. Suppliers shall only submit PPAP packages upon qualification completion and production release. Each Supplier is responsible for meeting all requirements before submission to Micron, including obtaining Micron approvals for any change requests.
- 5.11.6 Supplier submission of a non-conforming or late PPAP package will be recorded as a Supplier performance failure and could affect the Supplier's performance scorecard rating. Micron will determine the level of PPAP submission and any special requirements, if applicable.
- 5.11.7 When applicable, Suppliers shall include in the PPAP submission the Engineering Specification ("**ES**") test plan and the ES test results. An approved/accredited laboratory shall conduct the ES tests.

6.0 Supplier and Sub-Supplier Management

6.1 Supplier Selection/Qualification

At Micron, Supplier selection/qualification decisions are based on an established team approach involving key stakeholders which play a strategic role in the Supplier selection process. This team approach is strengthened through Micron's collaboration with Suppliers to achieve technical advancement.

6.2 Sourcing Assessment

All new potential suppliers, at a minimum, shall be required to complete a Level 1 Pre-assessment as part of the registration and onboarding process. Micron requires key Suppliers who impact the manufacturing process to complete a more thorough Level 2 Supplier Assessment in addition to the basic Level 1 Pre-assessment. These assessments are revisited periodically to ensure standards of quality and compliance are maintained.

6.2.1 Micron Supplier Compliance Assessment (SCA)

6.2.2 Micron's Level 1 Assessment covers the following subject areas:

6.2.2.1 General Information and Ethics

6.2.2.2 Financial

6.2.2.3 Quality

6.2.2.4 Supply Chain

6.2.3 Micron's Level 2 Assessment covers the following subject areas:

6.2.3.1 Internal Quality

6.2.3.2 Document Control

6.2.3.3 Change Management

6.2.3.4 Capacity Management

6.2.3.5 Inventory Control

6.2.3.6 Supply Chain Management and Incoming Material Control

6.2.3.7 Sourcing Compliance Assessment

6.2.3.8 Business Continuity Planning

6.2.3.9 Product Design Development

6.2.3.10 Continuous Improvements/Costs

6.2.3.11 Software Design and Development

6.2.3.12 Calibration (as applicable)

* NOTE: RBA members can substitute the RBA Self-Assessment Questionnaire (“**SAQ**”) with the Level 2 assessment

6.2.4 Supplier Assessment activities are driven through Global Procurement with the collaboration and involvement between site Procurement teams and other stakeholder groups according to a global process.

6.2.5 Part of the Supplier assessments include BCP, Supply Chain visibility, sourcing compliance, and quality to determine a Supplier’s overall risk profile.

6.2.6 Micron utilizes a Supplier Segmentation process to periodically review and classify Supplier criticality and management plans. Segmentation provides input to decision making for both incumbent and potential new Suppliers to Micron. The Supplier Segmentation process assesses these main criteria to weigh and rank Supplier viability and analyze risk

6.2.6.1 Business relationship

6.2.6.2 Supplier performance

6.2.6.3 Criticality of product or service to Micron business

6.2.6.4 Supplier quality

6.2.6.5 Supply chain and business continuity

6.2.6.6 Overall risk

6.2.7 At Micron’s discretion and with the agreement of both parties, Suppliers with a high-risk profile shall participate in audits, additional assessments and potential development plans to ensure the ongoing partnership between Micron and the Supplier remains sustainable and compliant.

6.3 Criteria for Supplier Selection

6.3.1 Suppliers of materials, equipment and services affecting production material are required to certify their quality management system to ISO 9001:2015 requirement at a minimum. Suppliers shall also comply with Micron specific requirements as defined in the SRS.

6.3.2 Suppliers shall notify Micron immediately of the loss or suspension of the required certification(s). Loss of certification will potentially have a significant impact on business with Micron.

6.3.3 All Suppliers shall, at minimum, maintain and update their certification status once per year. Suppliers shall immediately communicate any change in certification or status to their respective Global Category Supplier Manager. Suppliers are to provide or upload a copy of their quality & other pertinent certifications in the assigned Micron system. Failure to provide the latest certification may result in losing qualification status with Micron.

6.3.4 Embedded control software developed by a Supplier and delivered to Micron as a primary work product or a product delivered to Micron which contains embedded control software shall satisfy IATF 16949 Software Assessment requirements and integrity. In such cases, Micron requires that:

- Suppliers produce evidence of self-assessment,
- Suppliers agree to be audited by Micron upon request,
- Upon Micron request, a third-party assessment will be conducted.

If the Supplier does not meet the above requirements at the start of an awarded project, an improvement program must be established to meet Micron requirements before start of serial production.

6.3.5 Suppliers shall have email, Internet and browser access at a minimum for e-Business capability. This is required to participate in Micron's web-based applications and communications. These include but are not limited to:

- Supplier Quality Notification (SQN)
- Supplier Change Management System ("**SCM**")
- Supplier On-boarding System
- Micron Global Supplier Quality Requirement Database
- Supplier e-Data Transmission (i.e. eSupplier, Certification, Qualification Status, etc.)

6.3.6 Vendor Registration – new Suppliers to Micron shall:

6.3.6.1 Meet all commercial and financial requirements of the relevant Micron product line.

6.3.6.2 Complete all required Supplier On-boarding assessments, surveys, training, and/or / questionnaires

6.3.7 Upon completion of qualification, identified Suppliers shall have prepared evidence of the PPAP completion and acceptance by Micron. Suppliers shall ensure that any PPAP documentation and sample submissions are in accordance with the Micron defined PPAP element list. Any sub-tier PPAP documentation or properties that influence a designated characteristic must also include, at a minimum, Material Certification (including bulk material(s), where applicable), PFMEA, MSA study, Control Plan, and Capability Study. PPAP packages submitted by Suppliers will be used as a Process of Record ("**POR**") for Micron. The established PORs must not change without prior, written agreement and approval from Micron. Those changes may include but are not limited to:

- Changes to outside or sub-tier suppliers, manufacturing sites
- Addition, deletion, or changes of capital equipment
- Addition, deletion, or changes of metrology tooling and / or gages
- Changes to manufacturing methodology

- Changes to internal secondary processing
 - All PPAP changes shall be submitted through Micron's Supplier Change Management System (SCM). Refer to Micron's Supplier Change Management Policy for details. See **Section 10.0** for specific requirements
- 6.3.8 Suppliers are responsible for meeting applicable PPAP requirements. Supplier submission of a non-conforming or late PPAP package will be recorded as a Supplier performance failure and could affect the Supplier's performance rating.

6.4 Sub-Tier Supplier Management

- 6.4.1 All Suppliers shall have a documented and established Supplier management program or process that describes the methodologies for managing their suppliers or sub-contractors (a "**Sub-Tier Supplier**").

These methods could include, but are not limited to:

- Sub-Supplier selection
- technology
- background
- production/manufacturing capabilities
- scorecards or performance evaluations
- qualification management
- continuous improvement activities
- conflict minerals
- social and environmental compliance
- financial analysis
- quality system requirements
- cost competitiveness

- 6.4.2 To ensure that high-risk sub-tier suppliers are not introduced into the materials or services that are being provided to Micron, this process should also include appropriate risk assessment activities, including, but not limited to:

- Sub-Supplier audit,
- Sub-Supplier performance evaluations,
- process control capabilities.

Note: The AIAG CQI-19 Sub-Tier Supplier Management Process Guideline can be used as a reference.

- 6.4.3 All Micron Suppliers shall have the capability to manage their suppliers including PPAP submission, supplier performance, APQP disciplines and periodic auditing. Micron, may request to audit the critical processes of sub-tier suppliers, as mutually agreed, to assure that proper controls are in place throughout the entire supply

stream. Suppliers to Micron shall ensure they audit and manage critical processes such as heat treating and plating and when directed, use the required format. Special process audits are to follow the AIAG CQI-9 (Heat Treat System Assessment), CQI-11 (Plating System Assessment), CQI-12 (Coating System Assessment), CQI-15 (Welding System Assessment) and CQI-17 (Soldering System Assessment) requirements. These sub-tier supplier certifications and /or self-assessments must be maintained and shared with Micron upon request. Action plans to address gaps are to be tracked and shared when required.

- 6.4.4 Sub-tier Suppliers have a tremendous impact on the quality of the final component. Whether they provide materials, services or sub-components their influence is so profound that it is critical for each of Micron's Suppliers to communicate all of Micron requirements to their Suppliers and have a supplier performance monitoring plan in place to ensure compliance. This system shall include a function that tracks and reports the quality and delivery performance of their sub-tier supply base. Suppliers may be requested to demonstrate the effective management of sub-tier Suppliers through documented corrective actions and verification activities.

6.5 Supplier Quality Notification

Suppliers are expected to adhere to Micron's Supplier Quality Notification ("**SQN**") process as it pertains to non-conformance to material specifications, equipment specifications, software/hardware specifications, delivery, environmental, health and safety guidelines. This process follows the standard [8-D approach](#), which covers containment, root cause, corrective action, preventative action, and close-out activities. An instructional tutorial, that explains the Micron expectations, is available upon request.

6.5.1 Micron's Supplier Corrective Action Request Criteria

- A HIGH severity SQN represents a Product or Supplier dependent non-conformity with a direct impact to ramp or production such as an immediate material shortage, systemic failure to perform, equipment down situation or a safety issue.
- A MEDIUM severity SQN is applied to a corrective action request when a Supplier fails to meet contractual or pre-established expectations for the support of goods and services that do not result in an immediate impact to ramp or production.
- A LOW severity SQN is used to document individual incidents but does not require a root cause analysis or formal corrective action plan from the Supplier. Multiple or systemic low severity incidents can result in escalation to a medium or high severity SQN. A Low severity request will typically be automatically closed and documented for future reference. Micron may choose to initiate a Global 8D ("**G8D**" or "**8-D**") response from the Supplier for documentation purposes.

6.5.2 Micron requires its Suppliers to adhere to all sections of the G8D. It is expected that Supplier responses be communicated back to Micron within the timelines depicted in the table below:

Supplier Response Timelines		
G8D Steps	High	Med
Detection - D0	24 hours	24 hours
D0-D3 (containment)	3 days	3 days
D0-D4	5 days	7 days
D0-D5	7 days	14 days
D0-D8	14 days	60 days

6.5.3 Micron expects its Suppliers to have an established process for addressing non-conformity issues with its Sub-Tier Suppliers. At a minimum, this process should utilize the 8-Discipline methodology which is used for performing and communicating containment, root cause analysis, corrective and preventative action measures.

6.6 Supplier Performance

6.6.1 A globally managed Supplier’s performance is evaluated on a periodic cadence based on several metrics and Key Performance Indicators (“**KPIs**”), as determined by Global Procurement. Site-managed Suppliers are evaluated based on similar metrics and KPIs as determined by the Site Procurement team.

6.6.2 Supplier performance evaluations consist of the following metrics:

- Cost
- Delivery & Support
- Flexibility & Ease of Doing Business
- Partnership and Innovation
- Quality
- Risk and Compliance
- Safety

6.7 Continual Improvement Program

A Supplier may be asked to participate in Continuous Improvement Programs (“**CIP**”) that are intended for developing improvement plans. These activities may be included in post Supplier performance evaluation activities, post on-site audit findings, standard Corrective Action / Preventive Action (“**CAPA**”) plans or may be initiated as a separate activity.

6.8 Supplier Audits/Visits

6.8.1 Supplier audits and visits are conducted by Micron and are based on various criteria, as identified and determined through the Micron Supplier Segmentation and other Risk Assessment processes.

- 6.8.2 On occasion, as dictated by need, Micron customers or a 3rd party auditor may participate in an on-site audit led by Micron.
- 6.8.3 On-site Supplier audits are led by Global Quality through collaboration and involvement of Global Procurement and technical stakeholders. Supplier risk assessments and performance-based data are utilized as the foundation for Supplier audits. Below are examples of the minimum criteria that may be used to trigger an audit or commercial visit.
- Major change in ownership
 - Increase in business
 - History of quality or performance issues
 - Change in manufacturing location
 - Compliance and Ethics
 - Supplier Management activity
 - High risk assessments
 - High social responsibility risk
 - Quality systems validation
 - New Supplier
 - New material or Product
 - Customer Request or requirements

7.0 Calibration Requirements

7.1 Calibration

Suppliers shall have established procedures and processes for ensuring proper calibration of all manufacturing, inspection or analytical equipment.

- 7.1.1 This requirement shall include maintenance of calibration records, calibration labels, and calibration frequencies.
- 7.1.2 Suppliers are expected to ensure that any third-party calibration activities are managed appropriately in accordance with the ISO 17025 standards.
- 7.1.3 All calibration or lab service Suppliers to Micron shall be ISO 17025 accredited, unless a waiver has been formally granted and documented by an appropriate Micron stakeholder (typically, a procurement agent).
- 7.1.4 Suppliers who are not accredited to ISO 17025, may be asked to provide supporting documentation as evidence for meeting or exceeding the intent of ISO 17025 requirements.

7.2 Testing and Correlation

The Supplier's standards and testing procedures must be made available to Micron upon request and if requested, may be correlated with Micron's own testing methods and procedures.

- 7.2.1 The Supplier is required to maintain all test equipment according to a recognized certification and calibration (i.e. ISO17025) program.
- 7.2.2 The Supplier is responsible to ensure that test equipment and methods meet applicable measurement sensitivity requirements.

8.0 Commercial Requirements

8.1 Quotations

Potential Suppliers of goods or services to be provided to Micron may be contacted with a request for a quote by Procurement. Quotations that are submitted will be evaluated upon receipt. It is an expectation that all Micron Suppliers meet all criteria within this standard, as applicable, to be considered for acceptance.

8.2 Premium Freight

- 8.2.1 Premium freight incidents are tracked internally within Micron as a method of measuring cost impact, as well as overall supply chain health.
- 8.2.2 It is expected, when applicable, that any incident of premium freight be submitted to Micron for review. This submittal should at a minimum include a detailed explanation of the incurred cost or expense.

8.3 Delivery, Packaging, and Labeling

- 8.3.1 It is expected that all Suppliers meet a 100% On-Time Delivery performance, unless otherwise agreed upon.
- 8.3.2 Suppliers are expected to meet the terms and conditions for ensuring that all Products delivered to Micron are adequately packaged and labeled, as agreed upon with the Micron buyer.

- 8.3.2.1 Suppliers are responsible for ensuring that products are sufficiently protected from damage during transit and delivery to Micron. This requires shipping products that are adequately packed for shipment. Care should be taken to minimize the potential for damage to product during transit. Such methods as wrapping smaller packages together on a pallet, optimizing packaging materials, and carton packing methods should be considered. It is recommended that packaging be able to protect the product from a 4-foot drop for 5 different drop conditions: flat on top, flat on bottom, flat on longest side, flat on shortest side, and on a corner.

9.0 Regulatory, Compatibility and Standard Compliance Requirements

9.1 General Compliance Requirements

- 9.1.1 Suppliers providing goods or services to Micron shall satisfy applicable current legal and other industry requirements regarding human health, safety, ethics, and environmental protection.
- 9.1.2 Supplier shall provide information, disclosures and certifications reasonably requested by Micron to assure Micron's compliance with such legal requirements.

9.2 ISO and IATF requirements

- 9.2.1 Suppliers to Micron shall achieve conformity to ISO 9001:2015 or latest revision as a minimum requirement.
- 9.2.2 Suppliers and sub-suppliers who are identified as special process (i.e. Automotive) product or service providers are required to adhere to the specific requirements as set forth in the IATF 16949.
- 9.2.3 Micron expects all eligible direct material and outsourced Front-End and Back-End Suppliers to comply to IATF16949 requirements or have a plan to achieve conformity to IATF16949 per the guidelines called out in the Minimum Automotive Quality Management System Requirements ("**MAQMSR**").
- 9.2.4 Unless otherwise authorized by Micron a QMS certified to ISO 9001 is the initial minimum acceptable level of development. Based on current performance and the potential risk to the Micron, the objective is to move suppliers through the following QMS development progression:

- 9.2.4.1 Current certification to ISO 9001 through third-party audits; unless otherwise specified by Micron, suppliers shall demonstrate conformity to ISO 9001 by maintaining a third-party certification issued by a certification body bearing the accreditation mark of a recognized IAF MLA (International Accreditation Forum Multilateral Recognition Arrangement) member and where the accreditation body's main scope includes management system certification to ISO/IEC 17021;
- 9.2.4.2 Current certification to ISO 9001 with compliance to other customer-defined QMS requirements (such as Minimum Automotive Quality Management System Requirements for Sub-Tier Suppliers [MAQMSR] or equivalent) through second-party audits;
- 9.2.4.3 Current certification to ISO 9001 with compliance to IATF 16949 through second-party audits;
- 9.2.4.4 Current certification to IATF 16949 through third-party audits (valid third-party certification of the supplier to IATF 16949 by an IATF-recognized certification body).

9.3 General Compatibility Requirements

- 9.3.1 Supplier shall provide information, disclosures and certifications requested by Micron to assure all products, chemical substances present in the Products, and constituents thereof are compatible with all Micron facilities, tools, equipment and processes.
- 9.3.2 Such information shall include full disclosure of the exact identity (CAS#) of all materials, chemical substances and constituents present in any product or material provided by Supplier to Micron.
- 9.3.3 Supplier shall disclose all chemical components to Micron chemical management/compliance and safety departments that have the potential to harm any end user or adversely affect Micron facilities, tools, equipment and processes.
- 9.3.4 Supplier shall also disclose and provide any known existing data regarding product and chemical safety to Micron chemical management/compliance and safety departments.

9.4 Product Content Compliance

- 9.4.1 The following sections are focused on ensuring compliant content of products supplied to Micron and finished Micron products.
- 9.4.2 Product content refers to the substances, chemicals, or materials present in a supplied product and/or finished Micron products.
- 9.4.3 Products supplied to Micron must conform to all applicable product content legal requirements and Micron requirements.

- 9.4.3.1 Supplier's products must comply with all requirements set forth in Micron's Product Content Specification document, and amendments thereto. A copy of this document is available in the Registered Supplier section on www.micron.com or upon request.
- 9.4.3.2 Suppliers shall provide 100% of chemical substance data (CAS#), information, disclosures, and certifications to support Micron's reporting and regulatory requirements, which may be in addition to local regulatory requirements for Chemical Substance Law.
- 9.4.3.3 Micron requires 100% disclosure to ensure personnel health and safety analysis.
- 9.4.3.4 Supplier products shall comply, at a minimum, with Chemical Substance Laws applicable to the products in the location of manufacture and in every other country and/or jurisdiction where the products may be sold, distributed, transported, stored, used, recycled, and/or disposed (including where the products are incorporated in a Micron product). Chemical Substance Laws refers to laws, regulations, orders, directives and policies applicable to the chemical substance content, composition and recyclability of products in any jurisdiction around the world, including but not limited to: The Restriction of Hazardous Substances Directive ("**RoHS**"), the Toxic Substances Control Act ("**TSCA**"), the Registration, Evaluation, Authorization and Restriction of Chemicals ("**REACH**") and their equivalents ("**Chemical Substance Laws**").
- 9.4.3.5 Supplier must monitor and understand existing and emerging Chemical Substance Laws to ensure that the products are and remain compliant. Supplier shall provide Micron prompt, written notice of any limitation on Micron's use, storage, distribution, transport, import, export, sale, recycling, and/or disposal of any products arising under Chemical Substance Laws, including limitations that arise during the expected life of the products, or within ten (10) years of Supplier's final sale of the product to Micron, whichever is later.
- 9.4.3.6 Supplier shall provide Micron proof of compliance with all Chemical Substance Laws and Micron product content requirements, upon request. Proof of compliance includes but is not limited to: written certifications executed by Supplier verifying compliance, documentation and information relating to the composition and content of the products and/or testing documentation. At initial qualification and/or upon request by the Micron Product Compliance team or other Micron representative, suppliers shall provide an FMD ("**Full Material Declaration**") for all homogenous substances making up a specific product. Notification to Micron (through SCM) of any material composition changes shall be made prior to implementation. Suppliers shall annually provide 3rd party ICP (inductively couple plasma) test reports for all homogenous substances listed in the FMD Bill of Materials ("**BOM**"). Micron may utilize a 3rd party managed service provider to collect documentation. Supplier is required to support these requests within a reasonable timeframe.

- 9.4.4 Supplier shall act as the importer of record for all products sold and delivered to Micron, unless otherwise agreed upon by the parties in an applicable agreement.

9.5 RoHS and Halogen Free Testing requirements

- 9.5.1 Suppliers shall provide to Micron chemical analysis reports from a third-party certification unit with ISO/IEC 17025 Laboratory Quality Certification for the RoHS and Halogen substances upon request.
- 9.5.2 If you have questions on any Micron Product compliance related topic please, please contact a Product Compliance stakeholder at GSCC_Product_Compliance@micron.com.

10.0 Supplier Change Management

10.1 Supplier Change Notification Requirements

- 10.1.1 Suppliers shall have documented processes and/or systems implemented for managing internal change as well as managing change notifications from their Sub-Suppliers.
- 10.1.2 Unless otherwise agreed upon, Suppliers are required to notify and obtain approval from Micron, utilizing the Supplier Change Management (“**SCM**”) process prior to any changes being implemented to procured goods or services being supplied to Micron, as referenced in Micron’s [Supplier Change Management Policy](#) available in the Registered Supplier section on www.micron.com.
- 10.1.3 Alternative requirements of notification or approval of changes may be captured in mutually agreed upon specifications. Micron reserves the right to reject any change that requires approval, as detailed in the SCM policy.
- 10.1.4 For any changes that fall outside the Supplier Change Management Policy, it is expected that the Supplier use reasonable efforts to notify Micron of any change(s).
- 10.1.5 If there are any questions regarding Supplier Change Management, please contact: CP_SQEG@micron.com or SCN_Admin@micron.com.

11.0 Document Control and Retention

11.1 Document Maintenance

Suppliers are required to maintain:

- PPAP packages
- Annual layout and validation records
- Tooling records
- Traceability records
- Engineering records

- Purchase contracts and
- Amendments

11.2 Retention Period

- 11.2.1 The length of time that the part (or part family) is active for production and service requirements plus one calendar year or a minimum of 15 years whichever is longer, unless otherwise specified by Micron. Corrective Action records and Quality performance records, such as control charts, inspection and test results are to be retained for 10 years.
- 11.2.2 The above time periods are considered “minimum”. All retention times shall meet or exceed the above requirements and any governmental requirements.

11.3 Receipt and Exception Management

- 11.3.1 Suppliers shall reply with acknowledgement of receipt to the Micron document owner or identified document center representative in terms of receiving within 2 working days.
- 11.3.2 Requested exceptions should be received by Micron for consideration with reasoning for the request and a gap analysis within 5 working days.
- 11.3.3 A record of any exception granted by Micron will be kept by the supplier for the length of time that the part is active for production and service requirements plus one calendar year or a minimum of 15 years whichever is longer.

12.0 Training

12.1 Personnel Training

Suppliers are expected to provide periodic training to all personnel that are involved with the manufacturing, inspection, test, and quality assurance of any goods produced for or services provided to Micron. Training material for above personnel must be documented and maintained through a formal document control process (i.e. periodic document review, change approval and review workflow).

12.2 Certification

Suppliers are expected to maintain certification and de-certification procedures and records for all personnel involved with the manufacturing of goods or services being procured by Micron. These procedures should include periodic re-certification activities where applicable.

13.0 Definitions

- **“Agreement”** shall mean any agreement executed by the parties or the purchase order and any accompanying documents governing Micron’s purchase(s) from Supplier.
- **“Backend”** is a reference to those processes contained with the assembly, test, and packaging areas of manufacturing.
- **“Cp”** measures the process capability with respect to its specification using Upper Specification Limit (USL) and Lower Specification Limit (LSL).
- **“Cpk”** a measure of process capability. Measures the process variation with respect to its sample mean, which is also considered to be the process mean.
- **“Direct Materials”** is material that is consumed as part of the production process and becomes part of the product. Also includes those outside services that apply directly to the product such as plating or assembly which is then returned to Micron before becoming a saleable product. (Examples: Wafers, Lead-frames, Molding Compound, Packaging)
- **“External direct material/service suppliers”** are suppliers to Micron who provide direct material or manufacturing services that directly result in a finished product which is shipped on behalf of Micron Technology, Inc.
- **“Frontend”** also known or referred to as the Fab, is a reference to those process contained in the wafer fabrication areas of manufacturing.
- **“Indirect Materials”** Material used to support business operation, equipment operation or the production process, but not as a component of the production process. (Examples: Quartz, Trays, Gloves, paper)
- **“Indirect material/service suppliers”** are suppliers to Micron who provide indirect material or manufacturing services to Micron that do not directly result in a finished product which is shipped on behalf of Micron Technology, Inc.
- **“Materials Specification Document”** shall mean the document that defines standard requirements mutually agreed upon by the parties as applicable to the procurement of materials or services. These may be commonly referenced as material/technical specific requirements.
- **“Maverick Product”** is defined in EIA/JESD 50 as atypical product exhibiting anomalistic characteristics which cause higher than normal level of failure in the end user application.
- **“Non-conforming Product”** is defined as any deviation from baseline process of record (POR). *In addition*, it can be considered 1) Predicted or observed defectiveness which does not meet the

set quality and reliability requirement(s); 2) Material that does not meet the product data sheet specification or customer requirements; or 3) Material which is questionable when it could potentially become discrepant anywhere in the supply line.

- **“Out of Control Product”** shall mean a condition within a process where the variations among the observed or recorded data values cannot be attributed to random variation.
- **“Products”** means the goods and/or services described in the applicable sale/purchase Agreement between Supplier and Micron.
- **“Specifications”** shall mean the document or set of documents that are mutually agreed by the parties that describe the products and all associated requirements for the products. This may also be referenced as technical specific requirements.

14.0 Acronyms

- **“APQP”**: Advanced Product Quality Planning. A structure activity which plans, tracks and reports the development of a process to manufacture a component/material/assembly to meet customer requirements
- **“AIAG”**: Automotive Industry Action Group.
- **“BOM”**: Bill of Materials
- **“CAPA”**: Corrective Action / Preventive Action
- **“CFSI”**: Conflict Free Sourcing Initiative
- **“CIP”**: Continuous Improvement Program
- **“CMRT”**: Conflict Minerals Reporting Template
- **“CoA”**: Certificate of Analysis
- **“CoC”**: Certificate of Conformance
- **“ES”**: Engineering Specification
- **“FMD”**: Full Material Declaration
- **“FMEA”**: Failure Modes and Effects Analysis
- **“G8D”**: Global 8D (**“8-Discipline”**)
- **“IATF”**: International Automotive Task Force
- **“ICP”**: Inductively Couple Plasma
- **“IQC”**: Incoming Quality Control
- **“KMG”**: Key Material Group
- **“KPI”**: Key Performance Indicator
- **“MAQMSR”**: Minimum Automotive Quality Management System Requirements
- **“MCT”**: Materials Central Team
- **“MPE”**: Maverick Product Elimination
- **“MRB”**: Material Review Board
- **“NDA”**: Non-disclosure agreement
- **“OCT”**: Operations Central Team
- **“OOC”**: Out of Control
- **“PCN”**: Process Change Notification

- **“PFMEA”**: Process Failure Modes Effects Analysis. A team process that identifies and controls potential failures before the product goes into production
- **“POR”**: Process of Record
- **“QMS”**: Quality Management System
- **“REACH”**: Registration, Evaluation, Authorization, and Restriction of Chemicals
- **“RBA”**: Responsible Business Alliance (formerly EICC)
- **“RMI”**: Responsible Minerals Initiative
- **“RoHS”**: Restriction of Hazardous Substances
- **“SCM”**: Supplier Change Management
- **“SPC”**: Statistical Process Control
- **“SQN”**: Supplier Quality Notification
- **“SRS”**: Supplier Requirements Standard
- **“STC”**: Ship-to-Control
- **“SVHC”**: Substances of Very High Concern
- **“TSCA”**: Toxic Substances Control Act
- **“WIP”**: Work-in-Process.
- **“PPAP”**: Production Part Approval Process. A defined process for the validation of new materials and subsequent process changes.

15.0 Reference Material

NOTE: Any reference material that is considered or specified as Micron specific may be available upon request, through Micron’s Global Procurement department at CP_SQEG@micron.com.

- AIAG Core Tools (FMEA, SPC, PPAP, APQP, and MSA)
- AIAG CQI-9, Heat Treat System Assessment
- AIAG CQI-11, Plating System Assessment
- AIAG CQI-12, Coating System Assessment
- AIAG CQI-15, Welding System Assessment
- AIAG CQI-17, Soldering System Assessment
- AIAG CQI-19, Sub-Tier Supplier Management Process Guideline
- CFSI Responsible Mineral Sourcing Initiative
- Global Quality PPAP Business Rules Standard
- IATF 16949:2016 QMS—Particular requirements for the application of ISO 9001:2015 for automotive production and relevant service part organizations.
- ISO 9001:2015 QMS Requirements
- ISO 17025 General requirements for the competence of testing and calibration laboratories
- ISO 14001 Environmental Management Systems Requirements
- JEDEC JESD50C, MPE
- JEDEC J-STD-046

- Micron Global Procurement Supplier Performance Evaluation Process
- Micron Quality Manual
- Micron Product Content Specification (includes the Supplier Assessment Form, or Controllable Substances Form)
- Micron Supplier/Subcontractor Chemical Substance and Material Specification
- [Micron Supplier Introduction to SQN](#)
- [Micron Supplier Change Management Policy](#)
- Minimum Automotive Quality Management System Requirements
- [Responsible Business Alliance](#)
- OSHAS 18001 Occupational Health and Safety Management Systems Requirements
- Ship to Control Standard