



December 1, 2021

Dear HSC Suppliers & Service Providers -

I'd like to personally "thank you" for your commitment to reading, understanding and ensuring your company's compliance with HSC's Supplier Quality Manual. Hemlock Semiconductor Operations LLC's ("HSC") understands the critical role our material and services suppliers serve to the success of our business as well as to our downstream customer's success.

HSC is a committed, reliable and proven supplier of hyper-pure polysilicon for the electronic and solar power industries, enabling customers to produce high-tech electronics and solar panels. This HSC Supplier Quality Manual is based on our customers' expectations with alignment to HSC's commitment to quality, regulatory, product, process and customer requirements.

It is the goal of the HSC Procurement team, and our employees, to develop collaborative relationships with our suppliers built on strong communication, mutual trust and collaborative work. The performance of our suppliers is critical to supporting our strategic business initiatives, controlling and managing risk, being cost competitive and driving continuous improvement in our supply chain.

The HSC Supplier Quality Manual aims to clearly communicate our expectations of the suppliers we do business with and to set a clear foundation for the mutual success of our companies. If you have any questions or need clarification on any items included in the HSC Supplier Quality Manual, please don't hesitate to reach out to us to discuss.

Thank you...

A handwritten signature in blue ink that reads "Lynn D. Gruber".

Lynn D. Gruber, C.P.M.

Procurement Manager

Hemlock Semiconductor Operations LLC

Hemlock Semiconductor Operations LLC

HSC Supplier Quality Manual

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COMPANY OVERVIEW

Our Company:

Hemlock Semiconductor Operations LLC ("HSC") is an U.S. producer of high purity polysilicon located in Hemlock, MI. HSC was formerly part of Dow Corning Corporation who held majority ownership from its inception in 1961 through May of 2016. Today, HSC's ownership includes two world-leading applied science and technology companies including Corning, Inc., with a majority 80.5% ownership position and Shin-Etsu Handotai with a 19.5% minority ownership position.

Our Products:

Polysilicon - We're a leading producer of hyper-pure polysilicon who provides this highly critical material for the electronics and solar energy industries. Our ultra-high purity polysilicon is further processed by our customers into ingots and wafers which eventually become solar cells as well as the building blocks for all manufactured electronic devices, such as computers, smartphones and Artificial Intelligence (AI).

Chlorosilanes - Ultra-high purity semiconductor-grade dichlorosilane (H_2SiCl_2) and trichlorosilane (HSiCl_3) are produced in the polysilicon manufacturing process. These materials are captured and separated as part of the manufacturing process and sold to customers.

Our Values:

People - We are respectful of others, treating them fairly and honestly. We work hard and we take advantage of coaching and development to continuously improve. We care about each other and our community and we aim to have our work have a positive effect in the world. We have fun together recognizing and appreciating others and our diverse perspectives.

Safety - We demonstrate a total commitment to safety in all we do because we care for our employees, our families, our neighbors and the people in the communities where we live and work. We hold one another accountable for taking actions to ensure that our facilities run smoothly and safely.

Quality - We demand continuous improvement in our processes, products and services. We learn from experience, embrace change and take pride in our work. We add value for our customers through our reliability, sustainability and support.

Productivity - We are proud to produce high-purity polysilicon, which energizes and connects our world. We utilize innovative, safe, efficient, sustainable and cost-effective manufacturing and operations processes.

GENERAL EXPECTATIONS

Purchasing Practices

We will make purchase decisions based solely on the best interest of HSC. Suppliers will be awarded business based on product or service alignment to our business need, competitive price, delivery performance and a focus on quality.

Control of Sub Suppliers

It is our expectation that suppliers will pass along any specific HSC requirements on to their sub-suppliers where applicable. HSC's direct suppliers are responsible to ensure that any materials provided meet HSC's defined requirements even if supplied through a secondary supplier.

Business Partner Information

HSC will protect sensitive business partner information just as carefully as our own and we ask the same in return from our suppliers. Only individuals with a business need to know should have access to such information.

Non-Disclosure Agreements (NDA)

HSC requires non-disclosure agreements to protect both HSC and our suppliers if proprietary information is to be exchanged as part of the relationship. The non-disclosure agreement must be in place and have the appropriate language stated within the agreement prior to the exchange of such confidential information. The confidentiality agreement does not serve as a contract between both parties for other purposes and does not substitute for agreements such as a purchase agreement, consulting agreement, joint development agreement or technology agreement. A separate confidentiality agreement is not required if prior to the exchange of information, HSC and our supplier have or will have entered into another form of agreement (e.g., a purchase agreement) which contains approved confidentiality language.

Corporate Social Responsibility (CSR)

HSC is committed to ensuring compliance to both our Employee and Supplier Code of Conduct documents which relate to labor practices, ethics, environmental, health and safety. In addition, HSC certifies that its products are free from any restricted materials and that all metals utilized in our products are not sourced from conflict mines. HSC is committed to following all applicable local, state and federal laws in conducting our business and expect the same from our suppliers. HSC is committed to ensuring the highest standards of social responsibility wherever our materials are made, and we insist that our suppliers provide safe working conditions, treat workers with dignity and respect, prohibit human trafficking and slavery (including the use of forced or child labor), promote ethical behavior, use environmentally responsible manufacturing processes and follow principles similar to those in our Code of Conduct. Suppliers are expected to provide a safe and healthy workplace for their employees, including appropriate controls, training, work procedures and personal protection equipment. On-site service providers will adhere to all HSC site rules, policies and procedures while working on site at HSC.

Environmental

Managing the goods and services we use in a safe and environmentally responsible manner is critical. Suppliers are expected to collaborate with HSC on the implementation of environmental, health and safety practices relating to the products and services, including handling, storage, use, disposal, recycling, waste minimization and waste management. All chemical materials must undergo an HSC internal review and a Safety Data Sheet (SDS) must be filed with HSC prior to purchase. Suppliers will abide by the Hemlock Semiconductor Supplier Code of Conduct, available on Hemlock's website, and will manage its business consistent with the principles of the Responsible Care® initiative of the American Chemistry Council or a similarly comprehensive health, safety and environmental program.

Delivery Requirements

HSC requires suppliers to strive for 100% On Time Delivery (OTD) performance utilizing FIFO methodology. HSC will monitor the supplier's delivery performance and may request corrective actions when appropriate. Suppliers should take the necessary actions to avoid premium freight charges. In the event that premium freight will be charged to HSC and cannot be avoided, the supplier shall contact HSC and receive approval prior to shipment. Failure to comply may result in premium freight charges debited to the supplier's account.

Quality Systems

IATF Sanctioned Interpretations requires at a minimum an ISO 9001:2015 certification. If supplier is not ISO 9001:2015 or IATF16949:2016 certified other options to approve the supplier will be used. These options for non-certified suppliers are:

1. A gap audit conducted to the IATF16949 MAQMSR guidelines. Non-certified suppliers will be required to be audited every 2 years at a minimum until certified to ISO9001:2015 or IATF16949:2016.
2. Special approval letter sent to HSC Customers that are affected, which includes the results of the MAQMSR conducted. HSC can only do business with non-certified suppliers that are Customer approved.

HSC expects suppliers to develop an internal QMS, and preferably registered to industry standards like ISO 9001:2015/ IATF 16949:2016. ISO 9001:2015 certification must include the IAF accreditation mark. Suppliers that aren't registered to a standard shall have a quality management system (QMS) that is aligned to ISO 9001:2015 or have a 3-year plan to move toward certification. Use of Process FMEA (Failure Modes and Effects Analysis) and other core tools is recommended. HSC shall be afforded the right to evaluate and monitor the supplier's quality system as needed. Suppliers must be prepared to provide the copy of the latest valid certification. Suppliers are required to notify HSC immediately, in the case of ISO 9001:2015 or IATF 16949:2016 certification loss or suspension.

Additionally:

1. HSC strongly encourages the use of Statistical Process Control and the investigation of out-of-control points.
2. Suppliers should have traceability of materials, marked on packaging, and traceable to production.
3. Calibrations shall be traceable to a national standard
4. Suppliers shall have documented process for verifying that all parts, materials, services are conformant to HSC specifications prior to shipment.
 - A. Appropriate measurement and test equipment should be available
 - B. Records of inspections and measurements shall be maintained
5. External laboratories providing analytical services for HSC should be accredited to ISO/IEC 17025 or should have a 3-year plan in place for certification.

Right of Entry

HSC, regulatory authorities and our customers shall be afforded the right to verify at the supplier's premises that the supplier's material, services or product conforms to specified requirements. This includes all facilities involved in the order and all applicable records. Verification shall not absolve the supplier of the responsibility to provide acceptable material, services or product, nor shall it preclude subsequent rejection by HSC.

Business Continuity Plans

All suppliers are expected to develop a documented business continuity plan that enables the supplier to continue to perform critical functions and/or provide services in the event of an unexpected interruption. These plans should be verified through business continuity assessment and includes the following requirements:

- All critical suppliers shall develop/document contingency plans and provide to HSC upon request.
- These plans shall be periodically tested and evidence of testing shall be available.
- HSC requires immediate notification when contingency events occur.
- HSC requires notification when unplanned events such as fire, flooding, natural disaster, cyberattack/IT disruption or other situation that can impact quality, delivery or availability.

SUPPLIER PLANNING & SELECTION

Supplier Selection

The supplier selection process begins when our engineering teams, manufacturing operations team or other function has a requirement for a new material / service or are looking for alternate sources of supply for existing materials, services or products. The Category Managers will work with requestors to review the current supply base and determine if there are any current suppliers that can meet our business needs. Our goal is to direct new business to our current suppliers. If the Category Manager determines that our current supply base does not have the capability to meet our needs a new supplier will be selected. The Category Managers have the ultimate responsibility and final decision in selecting suppliers. There are several factors that may be evaluated in the selection process including:

- Does the supplier have the technical, physical, and financial resources to meet our business needs?
- Is the supplier's total cost competitive when considering transportation, duty, etc.?
- Is the supplier able to regularly meet our delivery / capacity requirements?
- Does the supplier hold current ISO 9001 or IATF 16949 certifications?
- Is the supplier aligned to following our Supplier Code of Conduct?
- Is the supplier aligned to our corporate sustainability initiatives?
- Does the supplier agree to support value-added service programs and initiatives?

HSC personnel will either visit the supplier's manufacturing site to perform an on-site assessment or ask the supplier to perform a self-assessment. If the supplier is evaluated and it is determined that the supplier meets HSC's needs, the supplier will be asked to provide material to begin the material, services, or product qualification process.

SUPPLIER IMPLEMENTATION

Qualification Requirements - The supplier qualification process can include different levels of qualification that may include a Category Manager capability and market assessment, a lab evaluation of material, process trials, customer acceptance, etc., prior to final qualification.

Qualification may be required in the following situations:

- Qualification initiated by HSC:
 - A new material, service or product supplier.
 - A new material, service or product not previously supplied to HSC.
 - A material, service or product modified by an engineering change.
 - A material, service or product needing to be requalified.

- Qualification Due to a Change Proposed by the Supplier:
 - Any change in the manufacturing operations or procedures which may impact the quality, or consistency of the material supplied to HSC including any of the following:
 - A change in a quality conformance procedure.
 - A change in the site of manufacture or use of new tooling.
 - A source change for a key raw material.
 - A change in raw material composition.
 - A change to handling, packaging or storage methods.

Supplier Change Notification

HSC provides hyper-pure Polycrystalline Silicon that is used in Semiconductor and Solar markets which can be very sensitive to elements that act as impurities. Particularly, HSC focuses on Phosphorus, Boron, Copper, Nickel, Iron, Chromium, Sodium and Zinc. The amounts that can cause quality issues for our customers are in sub parts per billion. It is important for suppliers to help HSC understand their process, maintenance, and cleaning so that risks can be identified. Changes in a supplier's process can impact HSC's product and customers in unforeseen ways. Suppliers must notify HSC when there are changes to the production / inspection process, a change in formulation and in most cases, HSC should be given an opportunity to review the change prior to implementation. For changes to product formulations, HSC requires a minimum of 90 days, but preferred 6 months, notification.

Product End of Life Notification

Material suppliers shall provide notice of product discontinuance to HSC allowing a minimum of six months from the notice to place final orders and 12 months from the notice for final shipments. If documented in the material specification, notice of product discontinuance will be 12 months for placing final orders and 24 months from the notice for final shipments.

Evaluation and Qualification Sample Shipment

Qualification samples shall be clearly identified on outer packaging / shipping containers nearby or next to the product labels. It is important to categorize and segregate these samples as non-production materials for evaluation only.

Material, Service or Product Verification

HSC's quality personnel will work with suppliers to implement one of the following methods of verification for materials deemed critical to quality:

- Receipt and evaluation of statistical data provided by the supplier.
- Confirmation of C of C or C of A as per customer requirement.
- Second- or third-party assessments of supplier sites.
- Receiving inspection and/or testing.
- Part evaluation by an accredited laboratory.

Suppliers are expected to provide statistical data and/or allow assessments at their facilities.

Specification Distribution and Acceptance

Suppliers must stay current with applicable material, service or product specification revisions by referencing the information listed on the purchase order to the supplier that references the material / specification number and revision if applicable. Suppliers will be notified of any new specifications and a request for supplier approval via signature will be made by HSC.

Corrective and Preventative Action

HSC ultimate quality goal is to have zero quality issues with suppliers. In the case of quality incident, the supplier may be asked by the Category Manager to provide a corrective action document that includes applicable details on containment, root cause analysis, corrective action, effectiveness verification and prevention of recurrence.

Non-Conforming Product, Service or Material Control

HSC reserves the right to not accept material which does not conform to specified requirements. The material may be cause for complete rejection and return to the supplier for credit or replacement, as mutually agreed. Occasionally, however, a supplier may wish to submit variant material, service, or product for consideration. To avoid rejection upon receipt, a request for temporary waiver from specification shall be submitted to HSC prior to shipment. This request will be evaluated, and only after a written approval from HSC, the material, service, or product can be shipped to HSC. Lack of response from HSC does NOT constitute acceptance of the nonconforming material, service, or product.

Process Control

The supplier must have a documented process for planning and implementing production activities. Production must occur under controlled conditions using documented and revision-controlled procedures, instructions, and reference material, as requested by the latest release of ISO9001 and IATF16949.

Inspection & Testing

The supplier must have a documented process to verify that all requirements for HSC products have been met prior to shipment. Appropriate measurement and test equipment must be available, and record of inspection must be maintained. Should supplier subcontract to another party for measurement, supplier must ensure the subcontractor is in accordance with these requirements and provide documentation to HSC.

Certificate of Conformance (C of C) / Certificate of Analysis (C of A)

The supplier may be asked to issue a C of C or C of A for each lot, run or batch of material, service or product shipped to HSC stating conformance to the requirements as stipulated in the PO, detail specifications and this document. The C of C elements may appear on a traveler or other documentation accompanying a shipment, but must satisfy the following minimum requirements:

- Manufacturer's name and address.
- HSC's name and address.
- Material identification
- Lot / date code(s)
- Statement certifying product conformance and traceability
- PO number, specification number and drawing number, if applicable.

Statistical Process Control

Suppliers should be actively pursuing the use of SPC throughout their processes. Suppliers may be asked to send applicable statistical reports to HSC for further review and analysis by our quality personnel.

Calibration

Calibration of equipment used in the manufacturing or testing of product for HSC shall be in accordance with ANSI/ISO/IEC 17025 or ANSI/NCSL Z540.3 or another national traceable standard. Should supplier subcontract to another party to perform the calibration, supplier must ensure the subcontractor is in accordance with same requirements and provide documentation to HSC.

Measurement Assessment Analysis

Before a measurement system can be used to verify an assessment on an HSC product, it must demonstrate required detection capability. The supplier should repeat gage R & R studies when warranted by measurement system change and have a systematic method to improve gage system.

Document Control

The supplier must have a documented process to ensure that quality system documents, design specifications, and other product related documents are controlled and have revision history. Controlled documents must be reviewed by appropriate personnel and approved prior to their release and use by personnel.

Control of Records

Quality records shall be maintained in a manner, so they remain legible and retrievable upon request. As a default, without product specific requirements, the supplier shall keep the quality records for a minimum of 8 years unless otherwise specified. These records shall also include inspections, tests, material review decisions, product/process/equipment qualifications, C of A's and C of C's. The supplier must retain quality records for provided products and each component or materials within those products.

Identification & Traceability

The supplier is required to ensure the traceability of the materials or products that it supplies. The traceability code shall be put on each of the packing boxes for every lot that is delivered. The supplier must be able to perform manufacturing lot identification and traceability for any material or component used in the supplied product. The supplier must ensure that in the event an error is discovered, it will be possible to identify and isolate the defective materials or products and therefore limit the quantities and period affected by the problem, including personnel contribution to product or service conformity and product safety (if applicable).

Training

The supplier must have a documented process defining qualification and training and maintain records for all personnel. Training and certification activities must be planned, carried out, and documented, including personnel contribution to product or service conformity and product safety (if applicable). Training and awareness of organizational ethics and general policies shall also be conducted.

SUPPLIER MEASUREMENT

Business Reviews

Category Managers and Manufacturing Operations will schedule periodic business reviews with certain suppliers for the purpose of reviewing the following items such as:

- Supplier Performance
- Progress toward established goals.
- Assignment and review of action items
- Expectations
- Technical issues.
- Cost reduction opportunities.
- Market conditions.
- Future demand planning.
- New products and technologies.
- Additional business opportunities.
- Financial performance.
- Corrective actions.
- Quality system improvements.

These business reviews are essential in forming and maintaining a strong relationship with our preferred suppliers. Both the supplier and HSC can communicate each other's goals and identify opportunities for improvement.

Quality System Assessments

Supplier assessments (sometime call audits) are used as a systematic and independent examination to determine whether a supplier's quality system meets the quality standard requirements. These assessments are also used to develop ISO9001:2015 certified suppliers to automotive standards and other applicable HSC customer requirements.

Performance Ratings

HSC utilizes a performance rating system that measures suppliers in the areas of quality, on time delivery and cost. The supplier's performance is tracked on a quarterly basis and is periodically reviewed to ensure that suppliers are meeting the needs of HSC.

Ratings will be communicated to a supplier using a standard scorecard approach after review by the Category Managers. Missed targets may result in an issued corrective action.

SUPPLIER IMPROVEMENT

Supplier Goal Setting

The periodic business reviews will also be used as an opportunity to identify goals and opportunities for improvement. The Category Managers will evaluate the overall performance of the supplier and identify potential opportunities for improvement or specific goal. HSC will schedule a meeting with the supplier to review and both parties will work together to develop and agree upon an action plan. This process ensures a working relationship between both parties and helps the supplier understand how they can improve their performance.

Customer Special Requirements

The following are Customer Special Requirements for HSC:

- Six-month notification prior to product material changes with twelve months of material availability.
- Specific attention to the following elements in your process, maintenance activities, cleaning, etc., based on their critical nature to our customer's product performance:
 - Phosphorus, Boron, Copper, Nickel, Iron, Chromium, Sodium and Zinc.

HSC Supplier Quality Manual Acknowledgement of Receipt

We would ask that you please sign and return this page as an ***acknowledgement of receipt and understanding*** of the terms outlined in HSC Supplier Quality Manual. We ask for this acknowledgement to be ***returned within 2 weeks*** of receipt. If this HSC Supplier Quality Manual Acknowledgement of Receipt is not received within this time period, HSC will consider this as acceptance of this manual. We appreciate your support.

Signature: _____

Printed Name: _____

Title / Function: _____

Date: _____