



including subsidiaries of Mexico and Canada

Supplier Quality Manual

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Corporate Quality Statement

Quality plays a vital role in SCHOTT Gemtron's future. Our commitment to quality is for continuing involvement and market leadership. We will assist our customers in product development to achieve top quality while enabling us to fully comply with the customer's needs and expectations.

Each employee is expected to work to achieve SCHOTT Gemtron's quality objectives. Our formula for success: people, education, training, and continual improvement to maximize satisfaction of all interested parties.

SCHOTT Gemtron's long-term success is extremely dependent on our suppliers and/or subcontractors. All must have a similar philosophy to survive in the global market.

Approvals

Director of Quality

Bill Long

Director of Purchasing

Bill Mitchell

Date: April 7, 2011

Date: April 7, 2011

Table of Contents

1.0	<u>Purpose</u>	<u>Page 4</u>
2.0	<u>Scope</u>	<u>Page 4</u>
3.0	<u>Quality System Requirements</u>	<u>Page 4</u>
4.0	<u>Critical Supplier List (CSL)</u>	<u>Page 4</u>
	4.1 <u>Critical Supplier Qualification</u>	
5.0	<u>Supplier Assessments</u>	<u>Page 5</u>
6.0	<u>Advance Product Quality Planning</u>	<u>Page 6</u>
7.0	<u>Production Part Approval Process</u>	<u>Page 6</u>
8.0	<u>Temporary Deviation</u>	<u>Page 7</u>
9.0	<u>Process Changes</u>	<u>Page 7</u>
10.0	<u>Engineering Change</u>	<u>Page 8</u>
11.0	<u>Problem Resolution</u>	<u>Page 8</u>
	11.1 <u>SCAR Process</u>	
	11.2 <u>Problem Solving Expectations</u>	
	11.3 <u>Containment</u>	
	11.4 <u>Supplier Assistance</u>	
	11.5 <u>Supplier Quality Meetings</u>	
	11.6 <u>Cost Recovery</u>	
12.0	<u>Delivery Requirements</u>	<u>Page 10</u>
13.0	<u>Packaging</u>	<u>Page 11</u>
	13.1 <u>Product Identification</u>	
	13.2 <u>Packaging</u>	
	<u>Appendix A</u>	<u>Page 12</u>
	<u>Part Submission Warrant</u>	
	<u>Appendix B</u>	<u>Page 13</u>
	<u>SCHOTT Gemtron Charge-back Policy</u>	

Supplier Quality Manual

1. Purpose

The purpose of this manual is to communicate SCHOTT Gemtron's quality requirements and expectations to suppliers. It is the intent of SCHOTT Gemtron to conduct business with suppliers who are capable of supplying parts/materials/processes and services consistent with specifications and with the defined delivery schedules. This manual is intended to convey to suppliers a basic understanding of requirements regarding management, communication, and reporting.

2. Scope

The contents of this manual apply to all SCHOTT Gemtron suppliers of production material and/or services.

3.0 Quality System Requirements

SCHOTT Gemtron encourages suppliers to develop and maintain quality systems that provide continuous improvement and emphasize defect prevention while minimizing variation.

SCHOTT Gemtron does not require suppliers to be ISO 9000 certified. However, suppliers are strongly encouraged to have a system based on ISO 9000 (to current revision) as the basis for their quality system.

4.0 Critical Supplier List (CSL)

Production parts/materials/processes and services will only be purchased from suppliers on the SCHOTT Gemtron Critical Supplier list. SCHOTT Gemtron evaluates and selects suppliers based on their ability to supply product/services in accordance with specified requirements.

4.1 Critical Supplier Qualification

SCHOTT Gemtron may require suppliers to sign a NDA (SCHOTT Gemtron Non-Disclosure Agreement).

SCHOTT Gemtron may require a valid certificate of insurance for general liability and product liability. The minimum amount required is one million US dollars (\$1,000,000) per occurrence and three million US dollars (\$3,000,000) aggregate.

To supply SCHOTT Gemtron on an on-going basis, it is necessary for some suppliers to be added to the Critical Supplier List. Quality, service, and price are large contributors in our decision. In addition, the following factors may be taken into account:

• Management Capability	• Technical Capability
• Manufacturing Capability	• Quality Program Effectiveness
• Labor-management Relations	• Past Performance
• Financial Strength	• Ethics

There are three categories for the CSL:

A = Approved
P = Probationary
D = Disqualified

Suppliers are Probationary when they first begin supply of goods or services, supply on a trial basis **or** they are established suppliers who have violated the qualification criteria previously outlined.

A supplier (or specific item) may be Disqualified and removed from the Critical Supplier List if issues continue or are not resolved.

To be reinstated in the Approved category to the Critical Supplier List, the supplier must implement corrective actions for the root cause of their deficiency and demonstrate preventive actions are effective in preventing recurrence. An implementation plan must be provided to SCHOTT Gemtron for approval. Once SCHOTT Gemtron is satisfied the requirements can be met, the supplier will be returned to an Approved status.

5.0 Supplier Assessments

SCHOTT Gemtron utilizes a Supplier Quality Rating. Suppliers are rated for PPM, Supplier Corrective Action Requests, and Delivery performance. Ratings are reported quarterly.

SCHOTT Gemtron may conduct Quality System audits at suppliers' facilities that do not have ISO 9000 certification. Prior to an on-site audit, a Self Assessment will be requested using the SCHOTT Gemtron Quality System Audit form. The goal of the audit is to understand and qualify the supplier's quality system, capability, and identify continuous improvement opportunities. Objective evidence substantiating Self Assessment scores is required.

Potential new suppliers not certified to ISO 9000 will be audited as part of the SCHOTT Gemtron sourcing process. This may be done through a Self Assessment. Suppliers may be audited on-site at any time if there are ongoing quality problems.

Tool or manufacturing moves to a different manufacturing facility may require a Quality System audit of the new facility. Suppliers are prohibited from moving tools and/or manufacturing without prior notification and approval from SCHOTT Gemtron.

Suppliers who are requested to do a Self Assessment should return the questionnaire within 10 business days of receipt and prior to SCHOTT Gemtron conducting an on-site

audit. Following an audit SCHOTT Gemtron will respond with findings and any needed corrective actions on part of the supplier. Results of the audit will be used in sourcing decisions.

6.0 Advanced Product Quality Planning (APQP)

Suppliers selected by SCHOTT Gemtron may be required to fulfill APQP activities. APQP is designed to communicate product quality expectations and verify that suppliers have adequate processes in place to assure smooth start-ups. When required, SCHOTT Gemtron will review APQP requirements with suppliers in advance.

SCHOTT Gemtron will determine which elements of APQP are required and determine timeline for completion. SCHOTT Gemtron will assist suppliers unfamiliar with APQP.

Suppliers may be required to run Production Trials (Pilot Runs) prior to mass production in order to determine the capability of their processes to meet required production rate and quality levels. Should supplier trials prove unsuccessful, corrective actions must be implemented and successful Production Trials completed prior to start of mass production.

7.0 Production Part Approval Process (PPAP)

Suppliers and/or subcontractors may be required to participate in a Production Part Approval Process (PPAP). PPAP parts are manufactured at the production site utilizing production tooling, gauging, process, material, operators, environment and process setting. PPAP approval is often part of the final approval process for SCHOTT Gemtron with our customer.

The Following may be required for PPAP submission:

1. SCHOTT Gemtron Warrant Form
 - See Appendix A
2. Appearance Approval Report
3. Sample Parts
4. Dimensional Results
5. Drawing(s)
 - Part drawing along with referenced specifications
 - Each dimension and note must be numbered and correspond to the capability analysis
6. Capability Studies

7. Control Plan
8. FMEA, PFMEA
9. Gage R&R
10. Process Flow Chart

Material Certifications

- Suppliers may be required to provide evidence of compliance to material specifications
- Suppliers may be required to provide evidence of RoHS compliance
- Each PPAP submission must be accompanied by a certification report or letter, on company letterhead signed by an authorized official, stating the compliance status of material specifications.
- Each PPAP submission must be accompanied by a certification report or letter, on company letterhead signed by an authorized official, stating the PPM levels of RoHS restricted substances. Additional information may be required based on SCHOTT Gemtron customers' materials of concern (MOC) list.

Should any dimension or test result fail to meet specifications, the supplier shall correct the problem prior to shipment. If time does not permit correction, the supplier shall contact SCHOTT Gemtron to determine the required course of action.

8.0 Temporary Deviation

In the event supplier manufactures product that does not conform to SCHOTT Gemtron specifications, and lead-time does not allow permanent corrective action due to SCHOTT Gemtron's production requirements, a temporary deviation request must be submitted to SCHOTT Gemtron and approved prior to shipping non-conforming material.

SCHOTT Gemtron will base deviation approval on aesthetic impact, form, fit and function.

Deviation requests must include details of the nonconformance and the number of parts affected. Samples of the defect may be necessary to make a final decision.

In the event the deviated material adds cost to SCHOTT Gemtron, the supplier will be required to bear all costs.

9.0 Process Changes

Process changes must be submitted and approved if any of the following occur.

- Change in the manufacturing process and/or tooling
- A new or different tool or added cavity to a tool.
- Manufacturing location change.
- Sub-supplier change.

- Change in composition previously certified

Supplier will be held strictly accountable for unauthorized changes.

10.0 Engineering Change

Should a supplier wish to make an engineering change affecting or related to a previously approved part or material, SCHOTT Gemtron shall be notified in advance and approve the change.

11.0 Problem Resolution

11.1 SCAR Process:

In the event nonconforming material is found by SCHOTT Gemtron, a Supplier Corrective Action Request (SCAR) may be issued. Nonconforming material can be found during incoming inspection, audit, processing/assembly or warranty returns.

Supplier will be given 10 business days to respond to SCARs.

When SCHOTT Gemtron incurs cost associated with excessive scrap, production downtime due to defects, delivery, packaging, sort, rework, etc, these costs may be passed on to the supplier per the SCHOTT Gemtron Supplier Charge-back Policy (see Appendix B).

At the request of the SCHOTT Gemtron Quality Manager, a Return Material Authorization (RMA) must be provided for material that is defective or considered suspect. Accumulated rejects will be disposed of immediately unless previous arrangements have been made by supplier.

SCHOTT Gemtron reserves the right to sort suspect material to avoid shutdown and/or reduced output of its production lines.

When a SCAR is issued, containment must occur within 24 hours of notification of defective parts. Suppliers must:

- Implement containment and communicate such containment steps to the SCHOTT Gemtron Quality Manager.
- Identify short term corrective actions

Within 10 business days of notification of defects suppliers must:

- Define and verify Root Cause of defect
- Determine and Implement permanent corrective actions for Root Cause
- Verify and Validate permanent corrective actions

- Appeal the rejection when the supplier disagrees with SCHOTT Gemtron's decision

In the event of appeal (of a rejection by SCHOTT Gemtron):

- Appeal must be documented to SCHOTT Gemtron within 10 business days of SCAR issue date.
- Appeal must be resolved / closed within 20 business days of SCAR issue date.
- SCHOTT Gemtron reserves the right to accept or reject supplier appeal.

SCHOTT Gemtron will review the final SCAR response and provide the supplier with a decision on closure. SCAR responses will be Accepted, Conditionally Accepted or Rejected. Resubmission of the SCAR response with discrepancy corrected is required within 5 days.

11.2 Problem Solving Expectations

When SCHOTT Gemtron issues a SCAR to a supplier, they are required to submit a formal response. SCAR responses must be in the format supplied by SCHOTT Gemtron and include the following:

- Description of the problem
- Root Cause analysis
- Corrective and Preventive Actions
- Responsibility for Corrective Actions
- Milestone schedule of the corrective and preventive actions
- Interim disposition of the product

Approval or closure of a SCAR will be at the discretion of the SCHOTT Gemtron Quality Manager.

11.3 Containment

Suppliers are responsible for developing a process to prevent shipment of defective materials to SCHOTT Gemtron. Suppliers must include at minimum elements of the following process of containment.

11.3.1 Controlled Containment:

Suppliers may be placed on Controlled Containment resulting from receipt of defective material. Should this happen, suppliers will be required to take the following immediate actions:

- 100% certify parts for all shipments to SCHOTT Gemtron.
- Mark certified parts containers as defined by SCHOTT Gemtron.
- Ship certified parts to replace suspect parts in-transit and/or in SCHOTT Gemtron inventory.
- Collect sort data and report via email or fax the findings (daily) to SCHOTT Gemtron.

Suppliers will be released from Controlled Containment once the SCAR response has been approved.

11.4 Supplier Assistance

SCHOTT Gemtron may provide assistance to suppliers as needed to meet performance levels and specifications set by SCHOTT Gemtron. SCHOTT Gemtron will assist in:

- Resolution of critical issues
- Assist suppliers with improvement activities
- Work with potential suppliers to improve capabilities
- Conduct certain training as needed

11.5 Supplier Quality Meetings

Poor performing suppliers may be required to attend Quality meetings at SCHOTT Gemtron when their performance drops below acceptable levels.

The purpose of the Quality meeting will be supplier presentation for containment and corrective actions to improve their performance. Suppliers may be called to attend Quality meetings for:

- Repetitive Issues
- Lack of Responsiveness
- Severe quality rejections
- Delivery problems

Suppliers will be notified of a meeting when the specific issue warrants. The supplier will be required to have attendees from **Production Management and Quality Management**. Other personnel may also be required to attend.

11.6 Cost Recovery

SCHOTT Gemtron manufacturing and quality systems are no longer designed to “inspect” supplier’s materials. We expect material to conform to all applicable specifications (i.e. SCHOTT Gemtron material specifications as well as agency requirements.)

Suppliers will be responsible for all costs associated with the effect of shipping defective materials to SCHOTT Gemtron. Costs may include, but are not limited to:

- Administrative
- Sorting of suspect material
- Rework
- Customer Charges
- Premium Freight
- Production Downtime
- Third party containment
- Scrap
- Surcharges
- Overtime
- Laboratory Testing
- Travel

Where random defects are received and processed through the SCHOTT Gemtron manufacturing plant, these random defects (accumulations) will be charged back to the supplier at the value at which we would have sold the part / piece.

Upon notification of the intent to debit, suppliers will have 10 days to appeal the charges. If there is no response from the supplier SCHOTT Gemtron will consider the lack of response as acceptance of the charges.

12.0 Delivery Requirements

Suppliers are required to achieve 100% on time delivery. If a supplier will be unable to deliver product by the required due date, it is the supplier's responsibility to immediately notify SCHOTT Gemtron.

Notification to SCHOTT Gemtron must occur anytime suspect material has been shipped. Suppliers are to notify SCHOTT Gemtron Purchasing and the SCHOTT Gemtron Quality Managers.

13.0 Packaging Requirements

13.1 Product Identification

Every effort will be made to accommodate the supplier's product identification methods. When this is not possible, the method required will be determined in the SCHOTT Gemtron quotation process.

13.2 Packaging

Packaging will be appropriate for the product or material being supplied to SCHOTT Gemtron to assure safe handling, be environmentally friendly, and assure quality of the material. All purchased packaging supplied to SCHOTT Gemtron must be Toxics in Packaging certified (www.toxicsinpackaging.org). Special requirements will be communicated in the SCHOTT Gemtron quotation process.

APPENDIX B

Supplier Charge-back Policy

Purpose:

To identify conditions and actions to be taken to recover nonconforming material costs of SCHOTT Gemtron as a result of defective material received from a supplier. When non-conforming material costs are incurred, such as scrap, production line down-time resulting from defects, packaging, sorting, rework, etc, a charge-back may be initiated against the responsible supplier.

Inputs:

- Quality Reject Form
- Supplier Corrective Action Request (SCAR)
- Detailed Charges

Outputs:

- SCAR with detailed charges attached sent to supplier with 10 business days to appeal before deductions are taken. (Issue date is the day the SCAR is emailed.)
- Debit Memo

General Guidelines:

- SCAR shall be issued within 2 business days of occurrence / date material is found to be defective
- All charges shall be initiated by the responsible SCHOTT Gemtron Quality Department through issuance of a SCAR to the supplier
- Supplier is provided 10 business days to respond or appeal
- Detailed charges shall be attached to the SCAR submittal
- Detailed charges shall include prorated energy surcharges and freight charges (if applicable)
- Down-time charges shall be levied based on the standard plant-wide cost per labor / OH hour
- Sort and/or rework will be initiated by SCHOTT Gemtron without supplier permission when it is necessary to meet production requirements, otherwise the supplier will be given the option to scrap the material, have it returned at supplier's expense, or authorize sort / rework charges
- Sort and/or rework charges shall be based on the standard plant-wide cost per labor / OH hour for the number of employees used
- Non-conforming material (scrap) passing through the line shall be charged at finished part cost including any applicable energy and freight surcharge
- Non-conforming material not entering the SCHOTT Gemtron production line shall be charged at material cost including any applicable energy and freight surcharge
- Appeals related to charges must be included on the Down-Time / Sort / Rework Charge-back Form and returned to SCHOTT Gemtron within 10 business days of the SCAR receipt
- Appeals shall be resolved within **20** business days of original issue date
- The plant Controller is responsible for taking the charge-back by deduction from invoice or issuing Debit Memo
- Per occurrence, charges \$5,000 or less require Plant Manager, Plant Quality Manager, and Plant Purchasing Manager (or Buyer of the material in question) signatures
- Per occurrence, charges exceeding \$5,000 require the corporate Director of Purchasing and Director of Quality signatures in addition to the above

Revision Log

<u>Date</u>	<u>Section</u>	<u>Change</u>
April 7, 2011:	5.0.....	(1) Remove "Suppliers are rated for PPM performance." Add "Suppliers are rated for PPM, Supplier Corrective Action Requests, and Delivery performance. Ratings are reported quarterly."
	7.0.....	(1) Add "FMEA" to Item #8
	11.6.....	(1) Add "SCHOTT Gemtron's manufacturing and quality systems are no longer designed to "inspect" supplier's materials. We expect material to conform to all applicable specifications (i.e. SCHOTT Gemtron material specifications as well as agency requirements.)" (2) Add "Where random defects are received and processed through the SCHOTT Gemtron manufacturing plant, these random defects (accumulations) will be charged back to the supplier at the value at which we would have sold the part / piece."