Clarios Supplier Quality Requirements

5th Edition

Any procedure changes within this manual will result in an update of the complete manual revision date and number.

This manual is a controlled document. No changes or revisions to be made unless submitted by Clarios Supplier Quality.

Copies of this manual may be obtained by notifying Clarios Supplier Quality.

Supplier Quality Manual may be viewed on www.Clarios.com
Suppliers' link

Rev 5, 2019

CLARIOS

Purpose

The purpose of this document is to communicate the supplier quality expectations of Clarios. The quality of supplied direct parts, material, services, tooling and equipment, etc. is a direct reflection on the supplier's management of quality systems, product development cycle, manufacturing processes, capital expenditures and maintenance, customer focus, organizational leadership and continual improvement efforts.

Scope

This standard applies to all approved direct material and select critical indirect material and service suppliers to Clarios worldwide locations.

Suppliers are expected to comply with all sections of this supplier quality manual as well as to the general terms and conditions of the purchase order. Any requirement section **not referenced** in this document indicate there are no additional requirements from Clarios Procurement and Supplier Quality will provide additional clarification or direction, as needed.

Requirements

In this manual, the terms "shall" and "must" mean that the described action is mandatory; "should" means that the described action is necessary and expected with some flexibility allowed in the method of compliance; and "may" means that the described action is permissible or discretionary.

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1. Definitions and Abbreviations

Critical Indirect – Any material not listed on the Bill of Material (BOM), but is critical for the manufacture process of components or a final product.

Direct Materials – Materials used by Clarios plants to manufacture components or a final product and are included in the BOM.

CR – Change Request

CO – Change Order

Statement of Review and Acceptance (SRA) – Form used to review and confirm that a supplier can meet a material specification or drawing.

Supplier Non-Conformance Report (SNR) – Report used when a Clarios Plant location receives material out of specification from a supplier this report is conducted through a CAPS or Quality Alert.

8D Report – 8D methodology uses a structured eight step approach to problem solving. The objective is to face the problem and discover the weaknesses in the manufacturing/management systems that permitted the problem to occur in the first place. The output of an 8D process is an 8D report.

PSW – Part Submission Warrant - This is the form that summarizes the whole PPAP package. This form shows the reason for submission (design change, annual revalidation, etc.) and the level of documents submitted to the customer.

Production Part Approval Process (PPAP) – Evidence that all customer engineering design record and specification requirements are properly understood by the supplier and that the manufacturing process has the potential to produce product consistently meeting these requirements during an actual production run at the quoted production rate.

SAS – Supplier Assessment Survey a process to determine if a new or existing direct material suppliers meet the minimum quality system requirements established by Clarios.

VDA – German Automobile Industry Association (Verband der deutschen Automobilindustrie), association in charge to create standards for the automotive industry.

SQE – Supplier Quality Engineer

BSS – Brazil Supplier Scorecard

PSO – Process Sign-Off is a method to verify that a Supplier's quality planning processes have been successfully executed and that its production processes are capable of producing quality parts in sufficient quantity for production.

MQR – Management Quality Review – A formal forum in which elevated supplier quality issues are reviewed with a Clarios cross-functional leadership team and the supplier.

2. Quality Management System Requirements

2.1 General Requirements

- Suppliers that have not achieved certification to IATF 16949 must have at a minimum achieved certification to ISO9001 and a formal plan to demonstrate compliance to IATF 16949. Suppliers are required to submit updated copies of all required regional certifications (i.e. ISO9001, IATF16949, and ISO14001) on an annual basis to Clarios. Specific regional customers might require ~~s~~IATF 16949 certification to their Tier 2 suppliers; in this event a development plan must be defined with the respective region SQE.
- In the event a supplier **is not** certified to ISO9001 shall be subjected to an annual quality systems assessment by SQE. Suppliers at minimum should be in compliance with the "Minimum Automotive Quality Management System Requirements for Sub-tier Suppliers" available through https://www.iatfglobaloversight.org/
- Certification requirements applies to all central, technical and manufacturing sites.
- All renewal certificates must be submitted to Supplier Quality before the expiration date of the certificate. Failure to submit certificates or valid transition timelines will have a negative impact on the supplier's scorecard and may jeopardize future business.
- ISO9001/IATF certificates shall have the accreditation mark of a recognized IAF MLA.
- Clarios may verify the suppliers manufacturing location for compliance to these standards by performing an audit by a supplier quality representative.
- The IATF 16949 core elements are expected to be incorporated in the quality system. The core elements of APQP, PPAP, FMEA, MSA, & SPC (blue books) are available at AIAG.org. Suppliers are expected to have core elements in their QMS.
- Clarios SQE may support regionally in supplier development/ improvement if required.
- Clarios and its customers may audit the quality system, Clarios product, and process of the supplier with agreed advance notice.

2.2 Environmental

It is expected that all local government regulations are met. Suppliers should adopt an environmental management system that is in accordance with ISO 14001, or equivalent.

2.3 Control of Records

Clarios suppliers shall maintain quality records such that they remain retrievable and legible upon request by Clarios and subsidiaries. Clarios requires record retention duration for "life of program". Records related to nonconforming product for trend analysis and problem identification shall also be maintained. This requirement also applies to any supplier's sub-supplier. Additional record retention requirements can be referenced per AIAG or ISO 9001 and/or IATF16949 (latest editions).

2.4 Customer Specific Requirements

The supplier and their sub-tier suppliers should have an effective process to cascade customer specific requirements. This includes but not limited to all applicable technical requirements, quality system, drawings, specifications, regulatory requirements, the document and control of 'key characteristics' and/or 'key processes', and customer specific requirements (CSR's) from Clarios customers. Follow link below for OEM CSRs.

http://www.iatfglobaloversight.org/oem-requirements/customer-specific-requirements/

Customer Specific Requirements from Clarios customers, or simply, additional customer expectations, specifically, like, part-specific requirements (dimensions, materials, performance characteristics, etc.), delivery requirements, general quality system requirements (PPAP, CP, etc.) or process requirements, are processed or connected to Clarios suppliers via material specifications/ drawings and/or any relevant/ dedicated technical/ quality/ specific documents (Statement of Review and Acceptance (SRA), Global Supplier Manual (GSM), Supporting document (SD), Supplier Quality System Assessment Survey (SAS), etc)."

2.5 Electronic Data Interchange Requirements (EDI)

Two-Way electronic supplier communication shall be enabled, if applicable, to have all data coming from an ERP system without manual data downloads. Firm releases or purchase orders and shipment notifications are the minimum requirement. EDI is the traditional tool used to communicate forecasts to suppliers. Web-EDI and other more advanced tools, such as e2Open are alternatives.

Suppliers shall have a backup method in the event the organization online system fail.

2.6 Customer Communication

Written or verbal communication shall be in the language agreed with the customer. The supplier shall have the ability to communicate necessary information, including data in a customer-specified compute language and format (e.g., computer-aided design data, electronic data interchange).

3. Supplier Development

3.1 Purchasing Process – (Kick-Off Process)

In order to receive a production purchase order, a supplier must be approved and qualified per Clarios procedures.

Supplier Approval
Criteria for approval could include, but is not limited to, the following:

- Mutual Non- Disclosure Agreement
- Certified Quality Management System
- Financial viability
- Supplier Review and Acceptance (SRA) of drawings/material specifications
- Supplier Statement of Work

Supplier Qualification
The supplier must be qualified for a specific raw material, part or commodity. In order to determine a supplier capabilities in several core competencies will include, but is not limited to, the following:

- Supplier Onsite Assessment
- APQP/PPAP
- Supplier Quality Requirements Manual Acknowledgement
- Risk Management
- Production Process Sign-Off

3.2 Supplier Quality Management System Development

Clarios may conduct a Supplier Assessment Survey (SAS), and/or request a self-assessment. The SAS will assess the supplier's documentation and processes to ensure Clarios expectations are being met. It is the expectation to achieve greater than 60% of the core QMS competence criteria. In the event it has been determine a supplier does not meet the minimum criteria a targeted action plan must be implemented.

If applicable Supplier Assessment could be conducted using VDA 6.3 process audit.

Clarios may schedule additional audits depending on supplier performance.

3.3 Customer Approved Sources

Where specified by the Clarios Contract (e.g. customer engineering drawing, specification), the supplier shall purchase products, raw materials or services from approved sources.

The use of customer-designated sources, including tool/gauge suppliers, does not relieve the supplier of the responsibility for ensuring the quality of purchased products.

4. Leadership

4.1 Management Responsibility

Management Responsibility- Supplier management at highest levels shall demonstrate involvement and support for process efficiency, customer focus, quality policy, planning, defining responsibility, authority and communication and management review.

5. Planning

5.1 Provision of Resources

The supplier shall determine and provide the necessary resources to maintain and continually improve the system of quality management and also customer satisfaction by meeting customer requirements.

5.2 Supplier Training Requirement

Effective training and development system is established. Training records are available and tracked for all key processes affecting quality. All employees affecting quality are included, including design engineering.

5.3 Training on the Job

The supplier must ensure that every person in all levels of the company, which may affect product quality, has professional training and receive adequate training to function performance. Including direct and indirect staff.

The supplier shall:

- Provide training to perform the function
- Evaluate the effectiveness of these trainings.
- Implement a system that ensures staff retraining at a frequency determined.
- Provide “on-the-job” training for any new job or modified process that affects product quality.
- Keep records of internal / external trainings, education and job retraining or recertification.
- Have a process to encourage employees to achieve quality objectives and to make continual improvements.
- Effective training and development system is established. Training records are available for all key processes.

5.4 Infrastructure

The supplier shall have an infrastructure that ensures compliance with the requirements of the product. The plant layout should be optimized in order to avoid excessive handling and transport, facilitating the material flow.

5.5 Plant, Facility and Equipment Planning

Lean Manufacturing principles should be understood with evidence of implementation. If not fully implemented, a plan for managing, training and implementation is in place and implementation tracked with progress evident. Examples of Lean: (5S, Value Stream Mapping, Error Proofing, Quick Change-Over, Kan Ban, Kaizen, Total Productive Maintenance, Visual Management).

5.6 Risk Analysis

Suppliers are expected to perform risk analysis, and consider lessons learned for example from Clarios product complaints, product audits, field returns, repairs, scrap, and rework.

5.7 Work Environment

5.7.1 Personnel safety to achieve conformity to product requirements

The use of Personal Protective Equipment is defined and in place.

5.7.2 Cleanliness of Premises

Supplier is expected to follow 5S principles. The supplier's manufacturing areas are well lit, free of clutter, clean and safety practices are evident that prevent injury.

6. Supplier Operations

6.1 Advance Product Quality Planning (APQP) - Design and development planning

Suppliers shall develop products according to the AIAG Advanced Product Quality Planning (APQP) Process.

Suppliers shall ensure the design and development planning activities (for e.g., APQP or VDA-6.3) are AIAG (latest version) Production Part Approval Process (PPAP) and Advance Product Quality Planning (APQP) must be followed and is required for all critical/significant parts and materials prior to serial production and during Program Management Phases.

The supplier will designate a contact person responsible for determining a cross functional team, establishing the Advance Product Quality Planning (APQP) documents and submitting documentation as required to Clarios Launch or change requirements.

6.2 Prototype Requirements

When required by Clarios, "Prototype", "Pre-Production" trial and initial production run after PPAP parts or material are expected to receive extra attention, testing, inspection and containment. These parts are to be clearly identified on the parts and/or containers as “Prototype” or “Pre-Production”, as well as the quantity, date, Clarios Part Number and Description of the part.

6.3 Pre-Launch Production Trial Run

Suppliers are expected to perform a Run@Rate or any other appropriate methods prior to PPAP, to verify that the actual production process can meet program volumes at the expected quality level. For select commodities a minimum piece run will be required. Suppliers will be advised on specific quantity requirements by Clarios.

Supplier should retain the first piece throughout the production run and maintain at the operation. The last piece, once compared to the first piece and accepted, be kept until the next run of that product.

Suppliers must perform ‘all piece’ inspection, and chemical suppliers must test product(s) to meet specified material specification requirements during appropriate process intervals.

6.4 Production Part Approval Process (PPAP) – Add Safe Launch

Prior to serial production, Clarios expects to have an approved Part Submission Warrant (PSW); Level 3 PPAP requirements are the Clarios default, but may be amended by Clarios Supplier Quality/Development to a different level (i.e. level 4) defined per local requirements after supplier assessment and review.

Bulk Material suppliers should follow the Bulk Material Requirements provided by Clarios Supplier Quality/Development. A separate PPAP is required for each part or material supplied.

Suppliers are expected to execute the process of qualification and PPAP by their own means, supported by Clarios.

During "Prototype" and "Pre-Production" Program Management Phases, prior to serial production shipments, APQP documents like, for e.g., Process Flow Diagram, Design and/or Process Failure Mode and Effects Analysis (D/PFMEA), Controls Plans, Measurement System Analysis (MSA), Inspection Reports, and Capability Studies, Feasibility Analysis, etc. are recommended to be developed.
Special characteristics must be identified on the Clarios drawing or specification and must be on the supplier's Process Flow Diagram, FMEAs and Control Plans.

DFMEA is required where supplier is responsible for design.

When Clarios Plant locations are required to submit PPAP to their customer, all external production supplier PPAP documentation must no more than a year old.

Sub-Suppliers
Clarios expects suppliers to utilize the AIAG PPAP Process to document conformance of their purchased component and raw material suppliers (Sub-Suppliers). Sub-suppliers are assessed, approved and ongoing quality monitored. Suppliers may be required to provide a list of sub-suppliers that are being used.

6.5 International Material Data System (IMDS)

Clarios may require all suppliers to submit materials information as part of the PPAP Qualification Process. Clarios utilizes the IMDS to manage material and substance information for all products. The substances report shall be submitted on the IMDS web site (www.mdsystem.com) or otherwise specified by our customer. To approve the PPAP it is necessary to place the MDS ID on PSW. (See AIAG PPAP Section 2.2.1.1 and 2.2.18). The Clarios SQE of each region inform the ID unity for the supplier submit the IMDS.

6.6 Special Characteristics

Special Characteristics (SC's, … CC's) may be identified on drawings or specifications that depict the minimum characteristics that are assigned for statistical control and capability, poke yoke or 100% inspection, as approved on Control Plan. Symbols and letters may be used, examples: K, *, SC, CC or below, but not limited to your sourced local region:

∇	Designates critical characteristic requiring process performance studies and ongoing monitoring per the Control Plan. Capability Indices > 1.67 or 100% inspection
⬡	Designates significant characteristic requiring process performance studies and ongoing monitoring per the Control Plan. Capability Indices > 1.33
□ ◇	Designates significant/Critical characteristic requiring process performance studies at initial/subsequent customer/supplier part submission only.

For bulk chemicals (i.e. acid) identified material specification attribute characteristics a quarterly analysis may be performed.

6.7 Statistical Process Control (SPC)

Statistical Process Control (SPC), Process Capability (Ppk/Cpk) Analysis (The long-term criteria for Capability Indices are > 1.67 for Critical Characteristics and 1.33 or greater for Significant Characteristics), Testing and Inspection are done per an approved Supplier Process Control Plan. Where no Clarios characteristics are identified on drawings and/or material specifications the supplier will manage SPC/process capability on critical processes or key product characteristics identified in their management system.

6.8 Measurement system analysis (MSA Studies) (Gage R&R)

This requirement should be applied to all measurement systems when applicable to be cited in the control plan. Clarios adopts as reference the AIAG - MSA Manual.

The supplier shall conduct statistical studies to analyze the variation present in each type of measurement system and means of control. MSA Study including Gage Repeatability and Reproducibility (GRR) must adhere to AIAG rules.

Suppliers must declare all study types (i.e. R&R, linearity, tendency, stability).

All inspection, measuring gages, test equipment, fixtures, etc., for product and key processes are to be calibrated to national standards.

6.9 Calibration/verification records

All inspection, measuring gages, test equipment, fixtures, etc., for product and key processes are to be calibrated to national standards.

7.0 Laboratory Requirements

Internal Lab- The supplier shall have conditions to perform tests, inspection or calibration services and the laboratory must have a written scope which includes the activities to perform. Must have procedures to perform the tests and meet customer specifications, as well as, trained staff to execute the activities.

External Lab- When the supplier cannot conduct tests, inspections and calibration services internally, external laboratories are to be accredited to ISO/IEC 17025 or national equivalent. Use of any non-certified outside lab must have written agreement with Clarios.

When there is no qualified laboratory for specific equipment, the calibration service can be done by the equipment manufacturer.

Bulk material testing frequency can be found in the material specification. If not, full specification to be tested at least annually.

Suppliers are to maintain master samples and production retains, as agreed.

7.1 Certificate of Analysis (CoA)

Performance Reporting- unless otherwise waived in writing, an accounting with actual data will be provided with lot traceability. This data should be in the form of an electronic spreadsheet showing capability study results, end-of-line test results, inspection results, or for bulk materials the Certificates of Analysis (CoA) must show results versus Clarios specification. An e-mail with lot test data to the Clarios Plant Quality department and SQE is to be sent monthly as requested or other agreed upon timeframe, for trend analysis.

Certificates of Analysis in all cases CoA's are expected to be sent to Clarios Plants with shipment and for NA region emailed to: Supplier-Quality@clarios.com CoA's are expected to display data to Clarios specification limits as specified on the material specification for most supplied parts unless directed otherwise by the SQE.

Certificate of Analysis (CoA**)** for all raw material used in the manufacturing of a purchased component are required to be kept on file at the supplier for a minimum of (3) years and made available to Clarios upon request. Material certifications are required with each shipment of direct raw materials, such as chemicals and plastic resins. CoA must include Clarios specification limits for required significant and critical characteristics identified.

7.2 Manufacturing process design input

Poke-Yoke, Mistake-Proofing or Error Prevention practices, as appropriate, should be evident and reviewed. Focus should be for repetitive functions, difficult task prone to mistakes, or where the cost for error is high.

8. Handling, Storage, Packaging, Preservation

Suppliers are responsible for ensuring that the appropriate measures are conducted and maintained to preserve product quality during process handling, storing, packaging, preservation, and delivery.

The supplier is responsible for packaging the parts/ material in such a fashion as to ensure product integrity and prevent damage upon receipt at Clarios and is evaluated at PPAP.

The supplier is responsible for monitoring the self-life of the product and should not ship product that has exceeded its product life.

8.1 First In First Out (FIFO)

The suppliers have to ensure that no obsolete material is shipped to Clarios. The suppliers shall perform first in/first out (FIFO) inventory management practices. This requirement is subject to audit by Clarios.

8.2 Identification and traceability

Product identification is to be per the drawing or Component Specification. Package labels, at a minimum, must show Clarios Part Number, Description, Lot Number and/or Ship Date, Quantity, and barcode, if requested.

All product is to be traceable from incoming to delivery at Clarios.

8.3 Incoming product conformity to requirements

Adequate controls and inspections and storage are in place for incoming goods. Incoming inspection verification may cover, but is not limited to, product type, quantity, supplied documents including CoA or test reports, dimensional inspection, material specification compliance, and/or externally visible transportation damage.

Supplier is responsible for handling of all returns, reworks, resubmission of inspected Product.

8.4 Supplier Routing Instruction

Where Clarios is responsible for paying freight charges, a routing instruction will be provided to the supplier. It is the supplier's responsibility to ensure compliance and availability. Contact your Purchasing Lead if you have not received a supplier specific routing instruction.

8.5 Product Safety & Regulations

Suppliers shall take due care regarding product safety**.** Supplier shall ensure that a member of their management team fills the function of a "Product Safety Responsible". This function has to act as an interface between Clarios and the Supplier in regard to all aspects of product safety.

8.6 Safety

Suppliers will provide Safety Data Sheet (SDS) or national equivalent on products, upon request.

9. Supplier Performance Evaluation

The expectation for supplier performance is Zero (0) Parts per Million (PPM) (zero defects). Product received into Clarios facilities that does not conform to the drawing, specifications and/or agreed upon standards will be counted against a supplier's PPM record. This includes, but is not limited to, product, packaging, mixed or miscounts, damage, etc.

Supplier defective part PPM will be tracked and evaluated for continued or new business recommendations. If the supplier notifies Clarios of defective product sent, but prior to use in the Clarios process, and is contained, the PPM found will not be counted against the supplier.

The supplier is to monitor performance of their manufacturing processes.

9.1 Supplier Scorecard

Supplier Scorecard (SS) - Clarios will track performance of suppliers in several categories. Evaluations are made for considerations for global expansion, volume considerations, etc., based on GSS scores. Categories are in:

- Quality
- Commercial
- Supply Chain Management
- Service and General Expectations
- Social and Environmental Sustainability

Delivery Performance- Parts/ materials are expected to be received at Clarios 100% on-time and at ordered quantities, per Clarios authorization on the purchase order or contractual agreement. Use of premium freight should be minimized and tracked.

9.2 Supplier Escalation

Management Quality Review (MQR) - Clarios may require an on-site supplier management review of 8D's or resolution explanation for major, recurring or multiple issues at Clarios site. Escalation to the supplier's highest management levels may be required. This formal process is managed by the Clarios Management Quality Review (MQR) process.

MQR / New Business Hold Criteria	MQR1	MQR2	MQR3	Business Hold
Chronic documented problems in the area of quality, delivery or logistics, including prototype, pre-production, or production issues.	X			
Production suspended at Clarios plant due to a supplier's product quality, parts shortage, or logistical issue.	X			
Supplier has an unresolved SMRR, DMR, containment issue, or unacceptable response regarding an issue.	X			
Chronic documented unresolved MQR problems or unacceptable response from the supplier indicating that no progress has been made to resolve similar MQR1 issues at other locations.		x		
Discovery that a supplier has not notified Clarios personnel and/or PPAP'd for a product / process change (i.e. tool move to different location / sub-supplier, material / part change, process controls changed from the last approved PPAP, etc.)		X		
Supplier is issued a SNR that is verified to be the responsibility of the supplier. MQR2 is called only when the SNR has been confirmed to be their responsibility, and with agreement from the Supplier Quality Director.		X		
Clarios RPPM or OEM customer disruption due to a supplier's product quality, parts shortage, or logistical issue. Disruption in our customers shall be considered as MQR3.		X	X	
Chronic documented unresolved MQR2 problems or unacceptable response from the supplier indicating that no progress has been made to resolve similar MQR2 issues at other locations.			X	X
Continued customer dissatisfaction on a supplier's product quality, delivery or logistical issue including a customer mandate to change suppliers to a known capable supplier			X	X
Supplier inability or unwillingness to work with Clarios to make fundamental quality, delivery or logistical improvements.			X	X
Excessive / unresolved SNR's at the supplier			X	X
Unauthorized tool move, product / process change, etc.			X	X

An MQR3 requires supplier and customer senior management review at Clarios Headquarters (unless otherwise specified) for issues that meet the defined MQR3 / New Business Hold criteria. The MQR3 meeting is an executive discussion and the format and agenda is prepared as appropriate.

9.3 Layout Inspection and functional testing (Requalification)

The supplier may be requested to participate in Layout Inspection and Functional testing. The use of Six Sigma or a similar approach is recommended. Specific requirements will be provided by Supplier Quality

Requalification- SQE will provide specific requirements to dimensions and tests are to be validated on a defined frequency. This frequency is expected to be on the control plan. Submit results to Clarios Supplier Quality. 5 total parts and at least 1 part per cavity is recommended for layout.

Materials that are used for VW customer, the requalification need to be done every three years.

9.4 Quality Management system audit

Some Clarios Plants operate under IATF and/or VDA (region specific) in those cases, suppliers who supply specific parts will be informed and will be expected to participate in a specific system audit.

9.5 Second Party audit

Clarios may conduct a Supplier Assessment Survey (SAS or VDA 6.3), request a self-assessment or some other communication median. The Audit will assess the supplier's documentation and processes to ensure Clarios and Customer expectations are being met. Clarios will determine the need, type, frequency and scope of second party audits based on risk analysis, including product safety/regulatory requirements, performance and QMS certification level.

Supplier Process Sign-Off (PSO) may be required prior to PPAP approval to review a Supplier's planned and actual manufacturing process at the quoted peak daily line rate, including manpower, facilities, equipment, material, methods, procedures, software level, and tooling.

Suppliers should perform internal quality systems/ process audits as required.

10. Supplier Change Control

10.1 Change Management

Supplier requested change(s) must be approved prior to implementing. A Supplier Change Request Form must be completed by the supplier and approved by Clarios Supplier Quality.

10.2 Supplier Change Approval

The supplier shall notify Clarios of all requests to change a product or process, and obtain Clarios approval prior to implementing the change. The supplier is required to submit a change implementation plan, including a timeline, and must inform Clarios whenever a deviation to the approved initial change plan occurs.

Any change to design, material, sub-supplier, process, equipment location, tooling inactive for 12 months, etc. (As described in Section 3 of the PPAP manual) will require Clarios notification and another PPAP (Submission- Level dependent on change request). A new PPAP with PSW approval from Supplier Quality in writing must be given prior to serial production.

Any supplier or sub-supplier driven costs due to the changes are the responsibility of the Supplier or their sub-supplier, unless agreed to otherwise by Clarios.

Examples of common supplier changes that require notification and approval include, but are not limited to, the following:

- Manufacturing location changes and/or manufacturing process changes
- Adding an additional, duplicate or optional production line
- Material changes and/or material source changes
- Design changes (part, process, packaging, etc.)
- Engineering / testing / material specification changes

Requests for change should be submitted for approval using the Supplier Engineering Approval Request form. All changes will require PPAP resubmission and approval prior to acceptance of shipments to Clarios.

10.3 Supplier Deviation Approval

Supplier must notify Regional SQE or Purchasing Lead in case of product or process deviation to the approved process / product specification, fit or function, sub-supplier deviation, etc.

Examples of deviation reasoning include, but are not limited to, the following:

- Parts are less PPAP approval (non-PSW parts)
- Parts are dimensionally out of tolerance
- Parts are reworked via special means (outside parameters of approved process)
- Parts do not meet engineering or quality standards for Clarios

Written approval from Clarios must be received prior to product shipment.

11. Control of nonconforming product

If parts/material are found defective at Clarios, or field, CAPS will be sent to the supplier. This may be in the form of electronic notification or interactive system. Initial response in 24 hours, initial containment in 24 hours, root cause analysis and corrective action plan in 7 days.

Containment at Clarios or its customer for defective supplier parts/material is the responsibility of the supplier. The supplier may choose to contain the issue with supplier provided labor. Containment and/or replacement costs incurred by Clarios will be charged back to the supplier. These costs may include extra freight, travel costs, line stoppages, rework, sort, scrap, recalls, etc.

Clarios may require additional inspection or test certification until there is confidence that the problem is resolved. These parts and/or containers will be identified as "certified" with an agreed marking or label.

If product is to be shipped back to the supplier, the supplier will provide a Returned Material Authorization (RMA) Number, or equivalent and any special return instructions.

11.1 Controlled Shipping Level 1 and 2 (CS1 and CS2)

Controlled Shipping- The supplier will be placed in Controlled shipping to protect Clarios and customers when non-conformance is found at final customer, stoppage of production lines, and recurrence of same problem with product.

CS1- The supplier's quality manager will be notified that they are at Controlled Shipping Level 1 and supplier shall:

- In 24 hours, implement a control area away from the process
- Develop an inspection plan for characteristic
- 100% inspect the affected characteristic.
- Develop and train personnel to the inspection plan
- Create visual standard with acceptance limits
- Submit action plan to Clarios within 48 hours- include timeline and responsibilities
- All material inspected to be identified with agreed to marking
- Packages sent to Clarios must be identified with label for "controlled shipping" advising what characteristic under inspection
- Control area kept in place minimum of 30 days with no defects found
- Supplier to send evidence of training, control area and results to Clarios
- All costs associated with this controlled shipping will be paid by the supplier.

CS2- If level 1 is not effective in containment or there is recurrence of non-conformance, the supplier will be placed in Controlled Shipping Level 2 and both supplier's quality manager and plant manager or above will be notified.

- In addition to CS1, the supplier will hire a 3rd Party Inspection service approved or designated by Clarios for 100% re-inspection, in the supplier's control area.
- All costs associated with 3rd party to be paid by supplier.
- The control area must be in place for 60 days minimum with no rejects found.

11.2 Notification of Certification Body – Clarios Specific Requirement

The certification body could be notified in the following situations:

- When the reports of non-compliance sent to the supplier are not answered within an agreed timeline.
- When the deadlines set in the action plan for Controlled Shipping Level 1 are not obeyed.

- When the supplier enters in Controlled Shipping Level 2.

11.3 Cost of Nonconforming – Clarios Specific Requirement

All costs due to quality problems detected in our process or in our customers caused by the supplier, when proven, will be transferred to the supplier. The method of payment will be negotiated with the Procurement area of Clarios. The cost of non-conformance includes: extra freight, internal or client line stoppages, rework, sort of material, scrap in the process, travel costs, yard operations, recalls, etc.

12. Improvement

12.1 Quick Response Problem Solving

When purchased material does not meet Clarios requirements (e.g. quality, engineering change level, adherence to test specifications, etc.), last qualified PPAP, or a quality claim is issued by Clarios Plants through our quality system. An immediate response is expected from the supplier with the submission of a standard 8D form provided. Root cause response timing requirements may vary by region based on time of occurrence. Below are recommended timing.

Clarios expect within 24 hours (from initial complaint)
• 1D - Establish the team
• 2D - Problem description / Problem understanding and problem solving launch
• 3D - Containment actions to secure Clarios (customer)

Clarios expect 4D/7D within 7 working days (from …)
• 4D - Root cause analysis for “Non-Detection” and for “Occurrence”
• 5D - Definition of actions to remove the root-cause
• 6D - Confirmation of implemented actions and effectiveness of actions to remove containment actions
• 7D - Actions to prevent reoccurrence

Clarios expect 8D within 24 working days (from …)
• 8D - Official closure of 8D

For EMEA the timing for 8D analysis will be 2 days (mandatory for 3D)/ 7 days (mandatory for 4D)/ 30 days (target for 8D).”

An action plan shall be provided including due dates for each improvement / action. An updated copy of this plan showing progress made shall be sent to the relevant Clarios SQE on a weekly basis (or as otherwise agreed), until all items are complete with proven capability of the long-term

solution. In the event verification of actions cannot be made within the expected 30 days SQE will review on a case by case basis.

Supplier corrective action verification will be required to ensure that the cause(s) of the non-conformity have been eliminated. Evidence can be in the form of various data, pictures, procedures, or records submitted along with the 8D. Evidence amount can vary based on the magnitude of the issue and on the SQE's recommendations.

Further verification of corrective action effectiveness may be within 3 months and can be used the listed below, which are currently part of Clarios Quality Management System

- Supplier Quality Trend analysis
- Periodic incoming inspection checks
- Supplier on-site audits

13 Contingency plans

Contingency plans shall be in place to ensure Clarios deliveries and other requirements are met despite emergencies that arise such as utility interruptions, labor shortages, key equipment failure, back up records (i.e. quality documents, traceability documents, measurement data) and field returns.

Additional Clarios Specific Requirements

Ethics Policy

The Clarios Ethics Policy is expected to be understood and followed by the supply base. This Clarios standard policy may vary from contract to contract. This policy can be found at: https://codeofethics.clarios.com/

The supplier should have their own equivalent Ethics Policy that is documented, reviewed and accepted by all employees.

Hierarchy of Documented Requirements- precedence of Clarios documented requirements

1) Purchase Orders/ Supplier Statements of Work/ Contracts
2) Engineering Drawings/ Component Technical Specifications
3) Supplier Quality Manual Standard

Material Management Operations Guideline (MMOG)

The Global MMOG/Le is the recommended business practice for continued evaluation of the supply chain. The tool is aligned with the common goals of ISO 9001 and IATF 16949 and contains number and terminology consistent with this widely implemented global standard. The tool can be used throughout the entire product life cycle, including early product development and pre-production phases, and the post-production aftermarket/service phases. Suppliers can obtain current information and training from AIAG. www.aiag.org.

References

References cited by this document are the latest versions available at the date of publication. When the cited document is revised after the date of publication, the newer version shall apply. It is the supplier's responsibility to check periodically https://www.clarios.com for current versions of this manual.

ISO 9001:2015: *"Quality management systems- Requirements"*

ISO/IEC 17025: 2015: *"General requirements for competence of testing and calibration laboratories"*

IATF 16949:2016 "Quality management systems – Particular requirements for automotive production and relevant service part organizations"

AIAG PPAP Manual 4th Edition

German Association of the Automotive Industry (VDA)

Reference Forms

It is the responsibility of the supplier to utilize the latest revision of any form referenced of this manual. Suppliers should contact the appropriate Clarios. Purchasing Lead or Supplier Quality to obtain these documents.

Automotive Industry Action Group Manuals (see http://www.aiag.org/)
IMDS Form (International Standard http://www.mdsystem.com/)
Management Quality Review procedure- PS-PTP-PR-74-E
Supplier Assessment Survey (SAS) – A form used to assess a supplier Quality Management System and Capabilities –Provided by the SQE
8D Report – Corrective Action form (HV-LOS-FR-14-01) or workbook – Available upon request
OE Customer Specific Requirements Guideline – (Available upon request)
Supplier Change Request Form PS-PTP-FR-75-E

Websites References

https://www.clarios.com – Clarios (Supplier Portal)
http://www.iatfglobaloversight.org– International Automotive Task Force
https://www.vda.de/en/ - German Association of the Automotive Industry (VDA)

Revision History

Revision	Date	Description of Changes
1	Nov-10	Initial Release.
2	Nov-15	Added new JCI specific requirements section.
3	June-17	Added CSR requirements, renumbering of sections for improved readability
4	May-18	Added ISO9001/IATF certificates shall have the accreditation mark of a recognized IAF MLA. Added 12.1 note Further verification of corrective action effectiveness may be within 3 months
5	Oct-19	Change JCI to Clarios Modifications blue mark in sections 2.4, 3.2, 7.1, 9.3, 9.5 and 12.1

APPENDIX

Region Specific Supplier Requirements

Brazil

- Suppliers shall be certified to ISO9001.
- Suppliers must submit a recommendation letter as evidence and submit the definitive certificate within 30-60 days.
- Suppliers are expected to send the CoAs to br-certificates@clarios.com