Cummins Inc.

Supplier Handbook

(Customer-Specific Requirements)

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A. Brand Promise

Powering our customers through innovation and dependability

We power the future with products and services that improve people's lives. Throughout our history, this has been our brand promise to our customers. We commit to offer innovations that make a positive and meaningful difference. We commit to offer dependability by doing what we say we will do when, where and how we say we will do it and through consistent products, services and actions. Understanding how we expect innovation and dependability to be embedded into everything we do is crucial to our ability to continue to build an organization that our customers rely on and that we are proud of. There is always tension in delivering both innovation and dependability, however, delivering both simultaneously is the only way that we can win.

INNOVATION

Innovation means we continually introduce high-quality products and services that exceed our customers' expectations. We consistently develop new technologies to improve performance, new services to increase productivity and lower cost and new ways to provide service, information and support. We anticipate what comes next for our customers. We look beyond obvious needs by bringing insight and new thinking to their challenges. As innovators, we are never satisfied with the status quo.

DEPENDABILITY

Dependability means we offer high-quality products and services that help our customers get the job done, whatever and wherever that job is. Our products perform as advertised and are reliable. Our services are timely and right the first time. The information we provide is accurate and available. We are responsive and have clear and consistent policies and procedures. How we engage with our customers is critical to being and remaining dependable. Every interaction matter, reflects our values and is of the same high quality that we demand of the products we make and the services we provide.

This is how we built enduring trust, which is critical to our reputation for dependability. Our job is to make our customers more successful. As their success grows, so does ours. When we are innovative and dependable, we all win.

Cummins relies on our direct material suppliers in order to achieve our brand promise of dependability. Zero defects is the goal for Warranty, OEM and In-plant from our direct material supply base. Cummins direct material suppliers should focus on fixing product quality issues, when they arise and driving the cultural change needed achieve zero defects.

B. Purpose

Bought out finished and direct purchased material make up over 70% of the total cost of the Cummins finished product. Therefore, it is essential to have clear, documented requirements and interaction processes between Cummins and its direct material suppliers.

This document communicates Cummins' Customer Specific Requirements and expectations to Cummins' direct material suppliers.

C. Scope

This document applies to all suppliers of direct material to Cummins plants and facilities globally. For the purpose of this document, Cummins/ Cummins Inc. shall mean and include Cummins Inc., its affiliates, including without limitation its joint ventures and subsidiaries (hereinafter referred to as "Cummins / Cummins Inc." in this Supplier Handbook.

Suppliers who are IATF 16949:2016 certified shall use this document as a supplement to their IATF 16949:2016 certification for Cummins Inc.

Suppliers who are ISO 9001:2015 certified shall use this document as a supplement to their ISO 9001:2015 certification for Cummins Inc.

This document defines certain customer-specific requirements (CSRs) for Cummins Inc.

This document is applicable to suppliers to all Cummins Inc. plants and facilities globally.

The English language version of this document shall be the official version for purposes of third-party registration.

Sanctioned translations of this document shall:

- Be for reference only.
- Reference the English version as the official language.
- Include Cummins in the copyright statement.

This Handbook is a controlled document. It is the responsibility of Cummins Purchasing to distribute the latest revision to each supplier. This will be accomplished by posting the Handbook on the

Cummins Supplier Portal (https://supplier.cummins.com). It is the supplier's responsibility to ensure compliance to customer specific requirements by periodically monitoring the website for change.

The supplier shall comply with any Customer Specific Requirements applied to Cummins by its customers.

If you are supplying parts to one of the Cummins facilities that require ISO 14001:2015 certification, you will be notified and required to submit proof of certification to ISO 14001.

It is impossible to cover every conceivable situation with a blanket statement or definition. If a situation occurs that is not covered by the Cummins Supplier Handbook, the Cummins SQE is the main point of contact for getting questions answered and situations resolved. The Cummins SQE has the authority to request data above & beyond the stated requirements in the Cummins Supplier Handbook if it is deemed pertinent to protect the interests of Cummins.

The supplier shall use the AIAG reference manuals for APQP, SPC, PPAP, FMEA and MSA processes.

The supplier shall appoint a 'quality contact'. This individual will be the prime path for communication of these handbook requirements to the supplier's organization.

D. Cummins Supplier Code of Conduct

1) Cummins values its global supply partners who share the Company's commitment to quality and value, and who operate under a philosophy that focuses on integrity, compliance and "doing the right thing."

   To support that philosophy, Cummins has a Code of Conduct for our employees and a Supplier Code of Conduct specifically for its supply base worldwide. The supplier code outlines the Company's expectations that all suppliers will comply with certain business and ethical standards and to the laws of their respective countries, all other applicable laws, rules and regulations. The code applies to all businesses that produce goods or provide services for Cummins and any subsidiaries, joint ventures, divisions or affiliates.

   Compliance with the principles of the Cummins Supplier Code of Conduct is required to do business with Cummins. Consistent with these commitments, Cummins requires its suppliers to acknowledge and adhere to the Supplier Code of Conduct. Cummins policies and procedures related to these standards are presented on Cummins Supplier Portal (https://supplier.cummins.com) and, as appropriate, in this Cummins Supplier Quality Handbook.

   The provisions of the Supplier Code of Conduct are in addition to, and not in lieu, of the provisions of any legal agreement or contract between a Supplier and Cummins or any of its subsidiaries, joint ventures, divisions, or affiliates.

   We expect suppliers to hold their supply chain, including subcontractors and third-party labor agencies, to the same standards contained in this Code. This Supplier Code of Conduct does not

create any third-party beneficiary rights or benefits for Suppliers, subcontractors, their respective employees, or any other party. Cummins reserves the right to update, alter, or change the requirements of its Supplier Code of Conduct, and Suppliers shall accept such changes and act accordingly.

2) Supplier Code of Conduct Principles

Cummins Supplier Code of Conduct is posted online in the Supplier Portal at: https://supplier.cummins.com

The following categories are addressed in the Supplier Code of Conduct:

1. Obey the law everywhere
2. Treat people with dignity and respect (Human Rights, Child Labor, Forced Labor, …)
3. Avoid conflicts of interest
4. Provide a safe and healthy workspace
5. Protect Cummins technology, information and intellectual property
6. Protect the environment and conserve natural resources
7. Your role in enforcing this code

3) Enforcement of Supplier Code of Conduct

Cummins suppliers are advised that they may be subject to survey, audit, and part mapping by Cummins and/or by third parties on behalf of Cummins to verify compliance with the following provisions. Non-compliance or misrepresentation of compliance by a supplier may result in sanctions, including, but not limited to, termination of their agreements with Cummins or cancellation of Purchase Order issued by Cummins for default.

Since Cummins does business around the world, it has translated the code and response letter into 14 languages so that the intentions and expectations are clear.

For more information on the Supplier Code of Conduct or to complete the Supplier Code of Conduct Response Letter, visit the Cummins Supplier Portal https://supplier.cummins.com under the heading Corporate Responsibility.

E. Quality System Requirements

A quality system is an integral part of a successful quality program. It is not, however, a guarantee of quality products and processes. A quality system establishes disciplines. Only when the disciplines are in place and effectively executed will the benefits be realized. Functioning quality systems lead to sustained improvements within an organization.

ISO 9001:2015, IATF 16949:2016 and this document define fundamental quality system requirements for organizations contracted by Cummins Inc. to provide production parts, service parts, components, and engines. These requirements shall be included in any scope of registration/certification to ISO 9001:2015 and/or IATF 16949 issued by an ISO/IATF-recognized and ISO/IATF-contracted certification body in order for the ISO 9001:2015 and/or IATF 16949 certificate to be recognized as satisfying Cummins Inc. organization for third party registration/certification.

All ISO 9001:2015 and/or IATF 16949:2016 requirements and the requirements of this document shall be addressed in the organization's quality system.

Unless explicitly specified, these requirements are not linked to the Customer-Specific Requirements (CSRs) of any other management system standard required by Cummins Inc. A nonconformance to a CSR of one standard does not imply that a nonconformance to another CSR exists. Specifically, a supplier who is not fully certified to ISO 14001 shall not receive a nonconformance from their IATF 16949 Certification Body.

This document is not applicable to organizations supplying Tooling and Equipment to Cummins Inc. Tooling and Equipment suppliers to Cummins Inc. shall be third-party registered to ISO 9001:2015.

Third-Party Registration

All organizations providing production parts to Cummins Inc. shall be third-party registered to ISO 9001:2015 through an IATF-recognized Certification Body. Certification requirements for suppliers providing parts or materials to various Cummins Inc. divisions may vary.

QMS Certification Requirements

Entity	ISO 9001:2015	IATF 16949:2016	Exceptions
Cummins	All Direct Material Suppliers	All Applicable Suppliers (2)	By Approval Only (1)

NOTE 1: Cummins will allow no exceptions for suppliers who ship products for Cummins automotive products. While Cummins would like all suppliers to be ISO 9001:2015 registered, exceptions may be allowed for suppliers of non-automotive product. The minimum acceptable quality system registration for a new supplier to Cummins is ISO 9001:2015 unless written approval of exception is given by the applicable Cummins Supplier Quality Leader.

NOTE 2: All suppliers of automotive product shall progress toward IATF 16949:2016 certification.

NOTE 3: Given that Cummins serves many different markets, Cummins may use suppliers in non-automotive applications who are not registered to ISO 9001:2015. All suppliers must have systems in place to ensure they meet Cummins Inc. Quality, Cost, and Delivery needs as outlined in this handbook.

1. Registration Verification

Organizations shall submit proof of registration by sending a digital copy (PDF, JPG, etc.) of their current registration certification to their SQE contact. The email should identify a contact for certification issues at this site, providing contact information for the contact.

Notification of ISO 9001:2015 and/or IATF 16949:2016 Registration Status Change

Organizations shall notify Cummins Inc. of any change in the ISO 9001:2015 and/or IATF 16949 registration status via email to their SQE contact. Such changes include, but are not limited to:

- Initial certification
- Recertification
- Transfer to certification to a new Certification Body
- Certificate withdrawal
- Certificate cancellation without replacement.

F. Acronyms and Definitions

1. **AECD/AES** – Auxiliary Emission Control Device / Auxiliary Emission Strategy
2. **BU** –a specific Business Unit within Cummins
3. **Business Resiliency Management - (BRM)** The Business Resiliency Management is a collection of guidelines and procedures that proactively outline disaster mitigation and response before, during and after the occurrence of an adverse incident, facilitating the continuity of critical functions. An adverse incident is an internal or external event or situation which may result in unacceptable interruption to the organization's operational status and/or its ability to provide customer service. The objective of the BRM is to help establish & maintain a basic level of operations following a disruptive event until normal operations can be fully restored.
4. **Component Certification** – A process whereby the supplier certifies, in some cases with measurement data, that components are within specification. Requirements for Component Certification will be identified by the Cummins Inc. receiving plant
5. **Compliance Data Exchange (CDX)** – A global data repository for product material/substance content used by all industries (typically non-automotive) for various reporting requirements.
6. **Cummins Seven Step Problem Solving** - A disciplined method for problem solving which emphasizes analysis for the true root cause and verification that the corrective action is effective in eliminating the root cause. The Seven Steps in the process are:
    1) Identify the Problem
    2) Determine and Rank Potential Root Causes
    3) Take Short Term Action and Containment
    4) Gather Data and/or Design Test
    5) Conduct Tests, Analyze Data, Identify Root Cause(s), Select Solution
    6) Plan and Implement Permanent Solution
    7) Measure, Evaluate and Recognize the Team

7. **Classification of Characteristics (C of C) -** The process of classifying product and process characteristics for the optimum utilization of engineering, manufacturing, and supply base resources. In IATF 16949 terms these are Customer Designated Special Characteristics.

   Note: Classification of Characteristics is intended to serve as a guide for the development of supplier process quality plans - not to relieve suppliers of the responsibility to produce all features to specification.

8. **CQMS -** Cummins Quality Management Solutions. This refers to a group of key quality functions and the various software tools that support those functions.
9. **Cummins Design Control –** The component is wholly designed, developed and specified by Cummins Inc. Suppliers are encouraged to participate in the design of these products to contribute their knowledge and expertise (e.g., process requirements, cost reduction opportunities, etc.). If a component is under Cummins Inc. design control, it is Cummins' responsibility to address quality issues arising from the design.
10. **Direct Material** - Components and assemblies used in Cummins' production and service processes that become part of the salable product. They are typically included as a Bill of Material item.
11. **Disruption Score** – The process at Cummins of assigning a numerical score to material non-conformances based on the significance of the disruption to Cummins and/or Cummins' customers.
12. **DQR –** Drawing Quality Review - A detailed cross-functional review of each drawing which ensures that the component is producible to the specification, drawings are accurate and complete, and suitable for PPAP (when applicable), prior to final release of the drawings.
13. **DVP&R –** Design Verification Plan and Report
14. **EDI -** Electronic Data Interchange is a document standard which when implemented acts as common interface between two or more computer applications in terms of understanding the document transmitted.
15. **FIRG** – Failure Incidence Review Reporting Group
16. **FMD** - Full material declaration
17. **In-plant Defect PPM** - The number of parts with supplier-caused defects found within a Cummins facility versus the number of parts received from that supplier by the Cummins facility, reported as parts per million (PPM) on a monthly basis.

    NOTE: For suppliers with multiple producing locations, each producing location will be considered separately.

18. **International Material Data System (IMDS)** - A global data repository for product content used by the automotive industry and used to gather data for various reporting requirements.
19. **iSCM** – A supplier portal used by some Cummins BU's. Suppliers to the Engine Business are required to register in iSCM.
20. **KEPT** - Key Element Performance Tracking tool, one of the SQPM processes.

21. **LPA** - Layered Process Audit (refer to AIAG CQI-8 for specific details)
22. **MCM - Master CAD Model** - A master CAD model is a 3-D computer-based solid geometry model, which is a complete and accurate representation of the design intent for a produced item. For castings and forgings, it includes parting line definition, draft geometry, and fillet/round geometry.
23. **MDS** - Material Data Sheet
24. **MQV** - Manufacturing Quality Verification – a process used by Cummins and Cummins' suppliers to reduce defects sent to customers by looking at FMEA findings and historical data, such as OEM defects, warranty, and customer touch points, and ensuring that steps have been taken to prevent these defects from reaching our customers. Steps can include, but are not limited to, design changes, process design changes, and fail-safing.
25. **MNC** – Material Non-Conformance Report in CQMS (formerly NCMR in the Cummins System)
26. **OEM Defect** - Supplier caused defect that reaches a Cummins OEM Customer
27. **Pass-Thru Characteristic (PTC)** – (a.k.a. customer touch point) A part characteristic which is not controlled or functionally tested in the Cummins assembly process where any issue would first be discovered by the Cummins Customer. May be represented using this symbol 
28. **PCC** – Production Capability Certification – Cummins verification that supplier production capability and readiness will meet full production timing and volumes sometimes also known as run at rate. The intent is to identify manufacturing problems prior to full production that typically don't become evident until full production runs are initiated. The process is used to verify supplier capacity and the supplier's ability to meet fluctuations in demand (+ 20%)
29. **PCRA** – Product Compliance and Regulatory Affairs - an organization within Cummins that is accountable for product compliance
30. **VPCR** - Product Change Management is the system through which Cummins typically controls changes to existing product. A Value Package Change Request is the Cummins document that details the specifics of and approvals for the individual changes.
31. **Preliminary / Inspection Control Plan** – Detailed plan for increased inspection frequencies during the safe launch timeframe.
32. **Production Capability Certification (PPC Run)** – Test of capacity and quality run by the supplier with Cummins Inc. personnel present. Similar to "Run at Rate".
33. **ROC**-Record of Conformance – The approval document (Warrant) for source released parts
34. **PPS** – Product Problem Solving process
35. **SCAR** – Supplier Corrective Action Request
36. **SCR –** Supplier Change Request – process suppliers are required to use to request approval of a change to a product or process. This process may also be referred to as Product Change Notification (PCN) in some business units.
37. **SIM -** Supplier Information Management – The supplier master data portal used by all Cummins BUs. All Cummins suppliers are required to register in SIM.
38. **SIP** – Supplier Improvement Process, one of the SQPM processes.

39. **Six Sigma -** Statistically based improvement process used throughout Cummins. Suppliers will be requested to participate where significant opportunities for improvements are identified.
40. **Source Release** – Process for ensuring the quality of non-PPAP approved components. Requirements include, but are not limited to: Record of Conformance, 3 Piece full dimensional layout, SPC or 100% inspection of special characteristics, material/performance test results, and Prototype Data Report (PDR) requirements when requested. This is a batch approval process that must be completed prior to each shipment.
41. **SQPM** – Supplier Quality Performance Management, is an escalation process used by the Cummins Supplier Quality function in the event supplier has adverse quality trends and/or repeat non-conformance, and Supplier has failed to meet the agreed upon continual improvement plan.
42. **SQE** - Supplier Quality Engineer
43. **Supplier Design Control** – The component is wholly designed and developed by the supplier to meet a Cummins Inc. specification, performance requirement, and technical profile. If a component is under the Supplier's design control, it is the supplier's responsibility to address quality, product safety, reliability, and durability issues arising from the design.
    a. The supplier is responsible for completing Design Failure Mode Effects Analysis, Design Reviews, and specific product testing that demonstrates compliance to expected reliability and durability (life).
    b. Supplier may be required to complete a Design Responsibility Agreement (DRA) to document the responsibility for Part Design, Graphics, Intellectual property, and right to use between Cummins Inc. and the Supplier.
44. **Supplier Scorecard** - A Cummins purchasing system that rates the supplier in the categories of Price/Cost, Quality, Delivery, Technology, and Attitude/Administration.
45. **TCO** – Total Cost of Ownership, A cost modeling tool that systematically accounts for all costs related to purchasing decision. TCO evaluates all costs, direct and indirect, incurred throughout the life cycle of an item, including acquisition and procurement, operations and maintenance, and end-of-life management. Sum of all expenses/costs associated with the purchase and use of equipment, materials and services.
46. **VDA** - VDA stands for **Verband der Automobilindustrie**. It's a German Automotive Standard which defines a process-based audit standard for evaluating and improving controls in a manufacturing organization's new product introduction and manufacturing processes.
47. **VPI** - Value Package Introduction is the Cummins process for new product introduction. This process is the vehicle through which Cummins satisfies the requirements of APQP.
48. **WIN** - What's Important Now, one of the SQPM processes.

G. Quality Management System and its Processes (4.4)

1) Conformance of Products and Processes

Suppliers shall ensure conformance of all products and processes, including service parts and those that are outsourced, to all applicable Cummins Inc., statutory, and regulatory requirements.

Suppliers shall comply with all applicable product compliance requirements and regulations, including but not limited to emissions and emissions control, product safety, restricted substances, product disclosure and cybersecurity.

2) **VDA Requirements**

VDA is required for some critical suppliers, and those critical suppliers may be required to submit proof of compliance as needed. The SQE would be the main point of contact for this purpose.

H. Actions to address risks and opportunities (6.1)

Supplier shall include in its risk analysis, at a minimum, lessons learned from product recalls, product audits, prior product launches, field returns and repairs, complaints, scrap, and rework.

The supplier shall retain documented information as evidence of the results of risk analysis.

1) **Preventive Action**

Suppliers shall determine and implement action(s) to eliminate the causes of potential nonconformities in order to prevent their occurrence. Preventive actions shall be appropriate to the severity of the potential issues.

The supplier shall establish a process to lessen the impact of negative effects of risk including the following:

a) Determining potential nonconformities and their causes;
b) Evaluating the need for action to prevent occurrence of nonconformities;
c) Determining and implementing action needed;
d) Documented information of action taken;
e) Reviewing the effectiveness of the preventive action taken;
f) Utilizing lessons learned to prevent recurrence in similar processes.

2) **Contingency Plans**

When there are potential risks that would impact Cummins deliveries or services, we expect suppliers to inform Cummins Sourcing Manager or SQE immediately. For additional support, Cummins has a BRM process and suppliers are expected to participate in that process. Please refer to Cummins Supplier Portal https://supplier.cummins.com for information related to BRM process.

I. Planning of Changes (6.3)

Supplier shall notify Cummins of any changes within their management structure within two weeks of changes taking effect. This includes changes in ownership as well as any changes to contacts related to doing business with Cummins.

J. Resources (7.1)

1) Measurement Systems Analysis

Current Calibration records are required for all gages/measurement equipment used to inspect Cummins product. Measurement Systems Analysis (MSA) is required for any measuring equipment used to inspect the special characteristics identified on the Cummins drawing or as defined by the Cummins SQE. The Anova method, as detailed in MSA 4th edition is the preferred method for submittal to Cummins. MSA acceptance limits shall be as follows:

% Tol Ratio (Precision to Tolerance)

P/T Ratio is less than 10% is acceptable

P/T Ratio between 10 and 30% is marginally acceptable

P/T Ratio greater than 30% is unacceptable.

% R&R (Repeatability and Reproducibility)

R&R less than 10% is acceptable

R&R between 10% and 30% is marginally acceptable

R&R greater than 30% is unacceptable

2) Calibration/verification records

The Supplier shall have a documented process for managing calibration/verification records. Records of the calibration/verification activity for all gauges and measuring and test equipment (including employee-owned equipment relevant for measuring, Cummins-owned equipment, or on-site supplier-owned equipment) needed to provide evidence of conformity to internal requirements, legislative and regulatory requirements, and Cummins-defined requirements shall be retained.

The Supplier shall ensure that calibration/verification activities and records shall include the following details:

a) Revisions following engineering changes that impact measurement systems;
b) Any out-of-specification readings as received for calibration/verification;
c) An assessment of the risk of the intended use of the product caused by the out-of-specification condition;
d) When a piece of inspection measurement and test equipment is found to be out of calibration or defective during its planned verification or calibration or during its use, documented information on the validity of previous measurement results obtained with this piece of inspection measurement and test equipment shall be retained, including the associated standard's last calibration date and the next due date on the calibration report;
e) Notification to Cummins if suspect product or material has been shipped;

f) Statements of conformity to specification after calibration/verification;
g) Verification that the software version used for product and process control is as specified;
h) Records of the calibration and maintenance activities for all gauging (including employee-owned equipment, Cummins-owned equipment, or on-site supplier-owned equipment);
i) Production-related software verification used for product and process control (including software installed on employee-owned equipment, Cummins-owned equipment, or on-site supplier-owned equipment).

3) Internal Laboratory

The Supplier's internal laboratory facility shall have a defined scope that includes its capability to perform the required inspection, test, or calibration services. This laboratory scope shall be included in the quality management system documentation. The laboratory shall specify and implement, as a minimum, requirements for:

a) Adequacy of the laboratory technical procedures;
b) Competency of the laboratory personnel;
c) Testing of the product;
d) Capability to perform these services correctly, traceable to the relevant process standard (such as ASTM, EN, etc.); when no national or international standard(s) is available, the Supplier shall define and implement a methodology to verify measurement system capability;
e) Cummins requirements, if any;
f) Review of the related records.
NOTE: Third-party accreditation to ISO/IEC 17025 (or equivalent) may be used to demonstrate the Supplier's in-house laboratory conformity to this requirement.

4) External Laboratory

External/commercial/independent laboratory facilities used for inspection, test, or calibration services by the Supplier shall have a defined laboratory scope that includes the capability to perform the required inspection, test, or calibration, and either:

– The laboratory shall be accredited to ISO/IEC 17025 or national equivalent and include the relevant inspection, test, or calibration service in the scope of the accreditation (certificate); the certificate of calibration or test report shall include the mark of a national accreditation body; or
– There shall be evidence that the external laboratory is acceptable to the customer.

NOTE: Such evidence may be demonstrated by customer assessment, for example, or by Cummins-approved second-party assessment that the laboratory meets the intent of ISO/IEC 17025 or national

equivalent. The second-party assessment may be performed by the organization assessing the laboratory using a Cummins-approved method of assessment.

Calibration services may be performed by the equipment manufacturer when a qualified laboratory is not available for a given piece of equipment. In such cases, the organization shall ensure that the requirements listed in sub-section Internal Laboratory have been met.

Use of calibration services, other than by qualified (or Cummins accepted) laboratories, may be subject to government regulatory confirmation, if required.

K. Competence (7.2)

1) **Competence--on-the-job training**

Each location shall have a sufficient number of trained individuals such that computer applications necessary for direct support of Cummins Inc. manufacturing can be accessed during scheduled Cummins Inc. operating times, and other applications can be regularly accessed during normal business hours. The specific computer applications required will vary with the scope of an organization site's operations. For manufacturing sites, the required quality applications include, but are not limited to:

- SCAR worksheet
- iSCM (APQP, PPAP, SCR & SR)
- CQMS (APQP, PPAP, SCR, SR, MNC, & SCAR)
- Supplier Portal

NOTE: Cummins Inc. SQEs have Supplier Training available to suppliers as needed. Contact your SQE for more information.

L. Documented Information (7.5)

1) **Record retention**

The supplier shall maintain PPAP records for the life of the product plus one year. Supplier inspection and test records shall be maintained for three years minimum or as directed by your SQE.

M. Customer Communication (8.2.1)

The organization shall establish a connection for electronic communication with Cummins Inc. through iSCM and/or Cummins Supplier Portal. Supplier shall ensure that contact information in all Cummins Electronic Systems is current. This update is required twice yearly at a minimum. (i.e., SIM, iSCM, Cummins Supplier Portal)

The supplier shall have the ability to communicate electronically with Cummins to address APQP, PPAP, SCAR, MNC, Source Release, RFQ, Scorecard, Survey, and Supplier Change Requests.

N. Review of the Requirements for Products and Services (8.2.3)

Cummins Inc. New Product Introduction Process, known as Value Package Introduction (VPI), contains some Cummins specific requirements not explicitly defined in APQP. Suppliers shall complete these VPI specific requirements which are part of APQP.

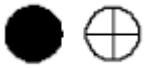
1) Customer-designated special characteristics

Initial Process Studies shall be completed according to the table below and documented in the Initial Process Study section of PPAP.

- The Initial Process Study shall conform to the AIAG PPAP and SPC manual.

Long Term Process Studies (On-going SPC analysis) shall be completed according to the table below and provided to CMI upon request.

- The long term process study shall conform to the AIAG SPC manual.
- Determine Capability Index (Cpk) or Performance Index (Ppk) for the long term process study.

Characteristic	Symbol	Interpretation
Safety Critical		Cummins requires a Performance Index, Ppk, greater than or equal to 1.67 as acceptance criteria for initial studies at the time of PPAP On-going SPC analyses (Long Term Process Studies) demonstrating an index of 1.33 minimum over time. Control plan documentation to ensure SPC results are monitored and maintained. Suppliers should evaluate and implement fail-safes as elements of their control plan.
Critical		Cummins requires a Performance Index, Ppk, greater than or equal to 1.67 as acceptance criteria for initial studies at the time of PPAP On-going SPC analyses (Long Term Process Studies) demonstrating an index of 1.33 minimum over time. Control plan documentation to ensure SPC results are monitored and maintained.
Major		Cummins requires a Performance Index, Ppk, greater than or equal to 1.67 as acceptance criteria for initial studies at the time of PPAP On-going SPC analyses (Long Term Process Studies) demonstrating an index of 1.33 minimum over time. Control plan documentation to ensure SPC results are monitored and maintained.
Significant Minor		Initial study per PPAP request (minimum of 30 pieces recommended) demonstrating conformance to specification and Ppk of 1.0 minimum. For attribute data, the entire PPAP capability run (typically 300 pieces) must conform to specification. Control plan item to demonstrate conformance to specification over time. NOTE: On-going SPC is not required for a significant minor; however, a sufficient control plan check should be in place to demonstrate conformance to specification over time (e.g. go/no go checks).
Minor	None	Conform to Specification per standard PPAP requirements (typically 3-piece layout). If an initial study is requested by the SQE, an index of 1.0 or greater must be demonstrated.
Key		The decision for requiring SPC/capability data is to be determined by the cross-functional team and if needed, will be classified as Key (Major) or Key (Minor). Control plan item to demonstrate conformance to specification over time.

		NOTE: On-going SPC is not required for a key; however, a sufficient control plan check should be in place to demonstrate conformance to specification over time (e.g., go/no go checks).
PTC (Pass-through Characteristic)		Control plan item that requires additional controls such as testing, in process checks, SPC, etc.… to ensure the defect will not reach the customer. The Cummins SQE reserves the right to add additional features, not specified as PTCs on the drawings, to be identified as such in a control plan.

While statistical studies are specified on special characteristics, this does not mean that the other characteristics on Cummins Engineering drawings may be ignored. All characteristics must meet specification and it is in the supplier's best interest to understand their capability on ALL features. All Significant Minor (A.K.A. Six Sigma characteristic) are to be studied using a minimum 30 piece sample and must demonstrate a capability or performance index of 1.0. Six Sigma Characteristics must also have a control plan item assigned to demonstrate conformance to specification over time.

In addition to the Special Characteristics called out on the drawing, the Cummins SQE may specify additional characteristics for process control purposes.

The organization may develop its own special characteristics symbols for internal use. If organization specific special characteristics are developed, the organization shall document the equivalence of the internal symbols with Cummins symbols and reference the equivalence when the organization uses internal symbols in its communications with Cummins.

2) **Labels and Direct Part Marking**

Suppliers must familiarize themselves with CES18287, other applicable Cummins engineering standards as well as any industry standard documents referenced within them. Additionally, Suppliers must have traceability of Product Safety Characteristics identified by Cummins or by the Supplier. Suppliers must ensure 100% readability by the receiving Cummins Plant(s) during APQP and PPAP, and that they have traceability of each component within their facility's database. Suppliers are required to 100% verify bar codes for readability on all production products. It is recommended that individual bar codes be verified at packaging to failsafe part count and shipping labels. Part marking and verification of readability will be part of the PPAP process. Part markings that are unreadable or missing when parts are received at a Cummins plant will be handled as non-conforming material.

O. Design and Development of Products and Services (8.3)

Each supplier participating in a New Product Introduction (VPI) project must be able to provide evidence of meeting the Cummins APQP checklist requirements for their component. APQP is applicable to VPI components, the revision of existing product designs, and to source changes (moving a component from one supplier to another). Some APQP elements need not be re-developed in every case. If the supplier and the Cummins SQE determine that an APQP element is not affected by the change, no action is required other than documenting the consideration. If an element is affected by the change, prior work is updated accordingly.

The Cummins SQE will engage a supplier for APQP activity with required task completion dates at the appropriate time in the Product/Process development cycle.

Cummins requires suppliers with projects deemed as high risk to participate in the Cummins Safe Launch process. This may apply to new components, changes from one supplier to another, and for some component design or process changes. Suppliers expected to complete this activity will be notified by their Cummins SQE. Safe Launch includes but is not limited to:

> **Production Capability Certification** (PCC Run) – test of capacity and quality run by the supplier with Cummins personnel present. Similar to "run at rate".
> **Source Release** – a process for ensuring non-PPAP approved parts meet quality requirements
> **Safe Launch Control Plan** – detailed plan for increased inspection frequencies during the safe launch timeframe.

Suppliers are required to use Cummins Electronic systems for submission of APQP, PPAP, and Source Release documentation. Documentation submission requirements will be defined by the Cummins SQE and may vary by business unit.

Cummins has developed a formal APQP review process. This review process brings the supplier's management; Cummins plant management, engineering, purchasing, and others together at different stages of the APQP process to review status of APQP activities associated with a specific component. Cummins suppliers shall participate in Cummins formal APQP process as requested by their Cummins SQE contact.

The requirement of APQP is crucial to the development of new products and processes, the revision of existing products and processes, and moving components from one supplier to another. Its single most important tenet is that quality does not just happen, it must be planned. Quality must be in the design of the product as well as in the development of the process that will produce the product. Three key outputs of APQP are the Process Failure Mode and Effects Analysis, Control Plan, and PPAP. Suppliers are expected to be knowledgeable of and follow the APQP process.

As a supplier to Cummins, awareness of at least two APQP processes happen in conjunction with one another:

a. Cummins initiates an APQP process internally in the development of new products (through VPI) and/or special projects.
b. As a supplier of a component or assembly to the new Cummins product, the supplier shall initiate an APQP process of its own when engaged by Cummins. The supplier's level of involvement will vary depending on where the responsibility for design control resides for the component or assembly that the supplier will be supplying.

Note 1: Cummins New Product Introduction Process, known at Cummins as Value Package Introduction (VPI), contains some Cummins-specific requirements not explicitly defined in APQP. You will be made aware of the additional requirements as you are engaged in the VPI process by the

Cummins SQE. Required task completion dates will be assigned and monitored by the Cummins SQE.

Note 2: Suppliers are required to utilize the APQP process. The level of oversight from Cummins will vary depending on risk level determined by Cummins' SQE.

Note 3: Suppliers providing prototype components to Cummins as part of a VPI program are required to comply with source release requirements prior to shipment of any material to Cummins.

1) **Design and Development Controls (8.3.4)**

Supplier will support the Cummins DVP&R process. In order to drive reliability into the product upfront, Supplier commits to have zero open FIRG incidents at the start of production as specified in the program schedule and/or quality issues at component introduction. Products quoted based on technical profiles or based on SUPPLIER application guidelines and limits must be included with the quote along with the testing parameters that established the application guidelines must be included in order to determine technical compatibility with Cummins applications and technical profile. Additional testing to meet Cummins technical validation requirements is the responsibility of supplier. Supplier must document any critical parameters and specifications, including product safety characteristics not listed on the technical profile. Supplier and Cummins will verify acceptance of the technical requirements by signing the technical profile document and if applicable the application guideline document prior to PPAP and production.

2) **Prototype Program**

Suppliers shall use Cummins Inc. Source Release process for prototype parts.

3) **Product Approval Process**

The organization shall comply with Production Part Approval Process (PPAP), current edition and Service Production Part Approval Process (Service PPAP), current edition.

Suppliers must have the ability to submit PPAP documentation electronically. Documentation submission requirements will be defined by the Cummins SQE.

Cummins must be notified of pending changes using the Cummins Supplier Change Request Process (SCR). If a Product Safety characteristic is involved, this must be noted on the Cummins Supplier Change Request. Informed decisions are then made on the impact of the changes and whether a full, partial, or no PPAP submission is required. It is the supplier's responsibility to ensure that Cummins has approved the PPAP before any parts are shipped to a manufacturing location.

NOTE 1: Some Cummins locations may batch certain changes and approve on a calendar basis (e.g., twice yearly).

Cummins-Specific PPAP Information:

a. Where the PPAP manual states "…contact the customer" or "…contact the customer product approval activity" that person is the SQE at Cummins.

b. The Submission Level (1 through 5) required by Cummins is defined by the SQE for each PPAP submission.

c. Both, production and service parts shall meet all Cummins engineering design record and specification requirements.

    i. Service parts samples submitted as part of PPAP must be run from tooling intended for service volume production. All service PPAP submissions shall provide evidence of a packaging approval with the submission.

Note 1: A Level 5 submission may include supplier site activity such as a Process/Product Audit or other means of verifying the capability of the production system in addition to the onsite completion of the PPAP

Note 2: Per AIAG manual, the supplier must complete all elements of a PPAP regardless of the submission level chosen, unless specifically waived in writing or via electronic system by Cummins SQE.

Note 3: In cases where PPAP volumes are very low, a "Special Level 4" PPAP may be utilized. You must get approval from your Cummins SQE engineer to use this variation.

Note 4: "Off The Shelf" Components: A part that is sold to the general public direct from the manufacturer or through a distributor network and is not being modified in any way to suit Cummins specific needs. These parts may be commercially available as a catalog item.

    i. A Level 1 PPAP will be submitted by the supplier to Cummins using the appropriate Cummins PPAP system to signify the supplier has appropriate controls in place for production of the part. Any inspection/test data relevant to product dimensions or part function are to be retained on site by the supplier and available for review by Cummins upon request. Cummins SQE has the right to request additional data as part of PPAP where there are questions regarding off the shelf rule applicability.

d. Three sample parts are the default requirement for dimensional verification during PPAP with some customers requiring more than three samples. The Cummins SQE will notify the supplier if other than three sample parts are required.

Note 1: Cummins' drawings state specific Engineering, Material, Process, Inspection standards and product notes that are required to enable the supplier to manufacture the part. Compliance to these standards and notes shall be confirmed in writing by the supplier during the PPAP process. The supplier may use the dimension report/ISIR and material/performance documents to record their compliance statements.

Note 2: When specified on the drawing, a master cad model may become a source for product definition. Verification of features only defined by the MCM must be agreed with the SQE. Engineering approval for the MCM measurements is required.

When a Cummins drawing references Cummins Engineering Standard 10012, Source Approval, all changes, regardless of their nature must be reviewed by Cummins engineering. Cummins engineering will determine the level of testing required prior to making the change. Tests may be performed by Cummins, the supplier or a combination of both. The supplier has the obligation for maintaining evidence of the test results (regardless of who performed the tests) per the PPAP requirement "Material, Performance Test Results", and for evidence of Cummins Engineering approval(s) per the PPAP requirement "Engineering Approval."

Note 1: Some Source Approval testing may extend beyond the need date for production parts. In these cases, Cummins Engineering may authorize PPAP Interim Approval until the testing has been satisfactorily completed. Cummins Product Engineering must provide approval to permit Interim PPAP approval for any components that have not completed source approval testing.

Note 2: Other, non-Source Approval functional, material or performance testing which is required on the drawing falls under PPAP element "Material, Performance Test Results."

e. Where PPAP Warrant indicates "Submitted by IMDS or other Customer format", the supplier shall enter one of the following:

- "IMDS" and the IMDS ID number (for automotive) of the Accepted entry
- "CDX" and the CDX ID number (for non-automotive) of the Accepted entry
- The method of submission if not IMDS or CDX (such as "Anthesis", BoMCheck", "E-mail") and the name of Cummins approver for the alternate method

Preservation, Part Identification, and Packaging parameters shall be included in the Process Flow Diagram, PFMEA, and Control Plan.

When a PPAP submission for a part has not been made to Cummins in the last 24 months, the requirement for the next PPAP, regardless of the change to the part or process, is a complete PPAP submission which shall include updated dimensional data, Control Plan, PFMEA, and updated Process Capability data at a minimum, as well as any other information requested by the Cummins SQE.

Cummins PPAP Run Size Expectation:

When annual usage is over 3600 pieces, a 300-piece run, with 100 of the 300 pieces collected and measured in sequential order for statistical analysis is required. High Volume PPAP's will not be fully approved without sufficient data. The Cummins SQE and the supplier will agree to the requirements per these instructions. A 30-piece machine study is NOT appropriate for PPAP approval.

Low and Ultra-Low Volume PPAP Rules:

When estimated annual usage is less than 3600 pieces, AIAG PPAP rules apply with the following Control Plan specific requirements: 1) The supplier shall document in their Control Plan that they will either: perform 100% inspection and record the results or conduct an Initial process study with a minimum of 30 production pieces and maintain SPC control charts of the special characteristics during production, and 2) that they will conduct first piece full layout inspection to verify set-up. 100% inspection or SPC Control Charts for Special Characteristics and set-up records containing the first piece inspection data shall be maintained per AIAG PPAP Record Retention requirements. The Cummins SQE may require Pre-control as defined by Cummins on special and any identified special characteristics.

In cases where annual usage is less than 360 pieces and statistical analysis of data impractical (e.g., normal manufacturing runs of less than 30 pieces) the supplier, upon agreement with the Cummins SQE, may use a Special Level 4 PPAP. This variant of the AIAG PPAP process is a Level 4 PPAP that requires submittal of the following elements: Design Record, Process Flow, Process FMEA, Control Plan, Dimensional Results, Material/Performance Test Results, Measurement Systems Analysis, and Part Submission Warrant. In addition, the supplier shall document in their Control Plan that they will perform 100% inspection of special characteristics and record the results, and conduct first piece full layout inspection to verify set-up. 100% inspection for Special Characteristics and set-up records containing the first piece inspection data shall be maintained per AIAG PPAP Record Retention requirements. Special Level 4 PPAP's are intended only for those components with such low volumes that statistical information is invalid.

The significant production run shall consist of at least one month production quantity of the Demonstrated Capacity (e.g., Annual Capacity = 2100 pieces, PPAP run size = 175 pieces).

Interim Approval of a PPAP shall only be used on an exception basis. The Cummins SQE will review the supplier PPAP submission and decide if an Interim approval is allowed using the Cummins guidelines. All interim approvals will require a detailed action plan to resolve the issues that prevented Full PPAP Approval. Material covered by an Interim approval that fails to meet the agreed to plan can be rejected.

P. Design and Development Outputs (8.3.5)

1) **Manufacturing process design output**

PFMEAs and control plans are required for prototype, pre-launch, and production phases.

Q. Control of Externally Provided Processes, Products and Services (8.4)

Cummins requires that Cummins Tier 1 suppliers allow and facilitate Cummins visits and audits of Sub-Tier suppliers as requested.

Suppliers are encouraged to apply the principles outlined in "CQI-19 AIAG Sub-Tier Supplier Management process guidelines" to all their sub-tier suppliers. Cummins reserves the right to require that a supplier apply the principles outlined in CQI-19 to address issues identified in the supplier's sub-tier supplier development and management process.

1) General (8.4.1)

Quotation Criteria - When submitting a quotation, the following criteria shall be addressed:

Clear understanding and agreement on the product specifications, requirements and applications. Supplier is encouraged to seek participation in the Drawing Quality Review (DQR) process to ensure full understanding of Cummins Print requirements.

When an Enhanced RFQ is requested, the quote should include a product/process design with a Zero Defect Mentality mindset. Contact you Sourcing Manager or SQE for more information.

Internal capabilities sufficient to manufacture products at consistent, acceptable, quality and performance levels.

Recommendation of any changes that will prove advantageous to product quality, performance, price and delivery.

Notice of any exceptions to be included with quotation bid.

Any tooling, gauges etc. provided by Cummins shall be controlled within the supplier's system (e.g. for calibration requirements). Any production and prototype tooling owned by Cummins, or its Customers located on the premises of a supplier must be properly protected from any loss or damage, properly tagged, maintained, and documented. Cummins may ask at any time for documentation related to customer tooling. Supplying or selling products made from customer tooling to any other customer is prohibited.

2) Supplier Selection Process (8.4.1.2)

For potential suppliers to Cummins Inc., the selection team from Cummins Inc. will assess the supplier against specific requirements including Quality, Total Cost of Ownership (TCO), Technical, Regulatory, financial, Warranty Commitment, Target Cost and Future Cost Reductions.

Potential suppliers will be asked to complete a Supplier Selection Assessment as a prelude to a site visit by the selection team. During the site visit, qualified members of the selection team will perform a Supplier Selection Assessment and/or a Focused Quality System Assessment. The selection team will be comprised of representatives of engineering, manufacturing, purchasing, quality and finance. The Supplier Selection Assessment looks at many of the supplier's systems in detail with the

objective of determining which areas need to be improved prior to launching a Cummins Inc. product at that facility. The Focused Quality System Assessment, rather than looking for the presence of an entire quality system, focuses on the effective implementation of the system and looks for evidence of routine execution.

Process/Product audits of similar products being run on the process proposed for Cummins Inc. may also be included as part of the Supplier Selection Process.

Suppliers which sell $5 million or more to Cummins Inc. in a country of import shall have a resident technical resource to handle sorting, screening, and issue resolution. Suppliers which sell less than $5 million to Cummins in a country of import shall use a third party for these types of activities at the supplier expense. Special arrangements can be made between the Cummins Inc. plant and the supplier at the request of the Cummins Inc. plant or Cummins Inc. purchasing. In some cases, suppliers which sell less than $5 million to Cummins Inc. in a country of import may be required to have a resident technical resource.

3) **Statutory and regulatory requirements (8.4.2.2)**

Many Customers of Cummins require material content be reported. Additionally, many regulations require visibility to a product's material/substance content. Material content shall be provided prior to PPAP submission to enable PCRA to approve MDS and provide approval notification. The request may come directly from the PCRA organization and/or through the MCC (Materials Compliance Central system). The product material content must be submitted as a FMD MDS via IMDS (Cummins IMDS ID 3664) for automotive parts or via CDX (Cummins CDX ID 13170) for non-automotive parts. When submitting the MDS, the supplier shall provide six-digit Supplier Information Master (SIM)/360 ID code so that the data is properly mapped to the product in Cummins Internal System. Should a supplier be unable to submit data in CDX for a non-automotive part, they may request an alternate reporting format (Anthesis, BoMCheck, etc.) Use of IMDS for non-automotive is restricted and is allowed if and only if the part is common to both auto and non-automotive. (Refer to the IMDS Terms of Use for details).

Supplier shall submit evidence of compliance in Section 19 of the PPAP.

The supplier shall obtain written approval/exemption for authorized use of listed substances from PCRA prior to shipment of parts to Cummins. The Declarable Substance list, Anthesis reporting template, Quick start guide, and Training on materials compliance requirements can be found on the Cummins Supplier Portal (https://public.cummins.com/sites/CSP/en-us/Pages/Materials-Disclosure-Guide.aspx). Any questions should be directed to the PCRA Organization at: supplier.compliance@cummins.com.

4) **Development of Products with Embedded Software (8.4.2.3.1)**

IATF 16949 certified Suppliers of components with embedded software

Automotive product-related software or automotive products with embedded software shall be in conformance with IATF 16949 8.3.2.3. Cummins recommends the use of Capability Maturity Model

Integration (CMMI), Automotive SPICE or equivalent. Evidence of compliance will be submitted as an APQP element, when applicable.

Suppliers of product-related software or products with embedded software shall complete Supplier Defeat Device Awareness and Prevention training on the Supplier Portal https://public.cummins.com/sites/CSP/Pages/PCRA-Training---Supplier-Defeat-Device-course-overview.aspx. Suppliers shall disclose all Auxiliary Emissions Control Devices / Strategies (AECD/AES) to Cummins Inc.

R. Information for External Providers (8.4.3)

Cascade and communicate all Cummins Inc. quality requirements throughout the organization's supply chain.

S. Control of Production and Service Provision (8.5.1)

The control plan shall include:

a) First off/last off part validation, as applicable

T. Preservation (8.5.4)

Preservation and Packaging are critical elements that aid in protection of our products from point of origin to the final point of use. All products are required to have a shelf life protection from corrosion and deterioration at a minimum of 6 months for Production products and minimum of 18 months for Aftermarket-Service products as per Cummins Inc. packaging standards.

The supplier is expected to review and shall meet the Cummins Inc. packaging requirements as defined in the Cummins packaging standards "Global Packaging Standard-Production Parts" and/or "Global Packaging Standard-New and ReCon Parts". The Supplier shall provide all packaging proposals in alignment with these standards to the Cummins Sourcing Manager using the Cummins Packaging Data Sheet (PDS) Template. The supplier is to complete a PDS for each individual part number and it shall be submitted with the request for quote for Cummins internal review and approval. For individual parts with multiple packaging design solutions; a PDS must be approved for each (e.g., Expendable, Returnable and Aftermarket). Additionally, the PDS approval is required prior to shipment of production and/or aftermarket-service product to a CMI facility. Detailed requirements of the PDS template are covered in the Cummins Packaging Standards. All packaging design change proposals for existing product require the Supplier resubmission of a PDS to the Sourcing Manager for Cummins internal review and approval.

These packaging standards, PDS template, and instructions for completing the PDS are available for download through this Cummins Supplier Portal link: https://public.cummins.com/sites/CSP/en-us/Pages/StandardsProcesses.aspx

U. Control of Changes (8.5.6)

Process/ Product Supplier Change Control (including Embedded Software changes)

a. The supplier shall notify the Cummins SQE of any proposed process or product changes as described in the AIAG PPAP manual.
b. The supplier shall obtain approval for all process and product change requests from their Cummins SQE prior to implementing a change. **Proposed** changes shall be approved using the Cummins Supplier Change Request Process (SCR). Informed decisions are then made on the impact of the changes and whether a full, partial, or no PPAP submission is required. **It is the supplier's responsibility to ensure that Cummins has approved the PPAP before any parts are shipped to a manufacturing location.**
c. Changes to the supplier's direct material supply base require the supplier to submit a Supplier Change Request (SCR). Upon approval of the Supplier Change Request the supplier may be required to submit a PPAP by the Cummins SQE.
d. The supplier shall gain approval from the Cummins SQE using the Supplier Change Request process when **any** alternate process is to be used.
    i. NOTE: An alternate process is one that is different than the process used during PPAP
    ii. NOTE: Rework or Salvage processes not approved during the initial PPAP process shall be treated as a process change.
e. Products produced on alternate processes may be subject to increased inspection and test requirements as agreed with the SQE.

V. Release of Products and Services (8.6)

1) **Annual Layout**

To ensure continuing conformance to all Cummins Inc. requirements, an annual layout, including all sub-components, shall be performed when requested.

W. Customer Notification (8.7.1)

The organization's Non-Conforming Material Process shall include immediate customer notification in the event that nonconforming product may have shipped.

- If a supplier notifies CMI that nonconforming product has been shipped, the MNC will charge the supplier with the actual # of defects that were already used in production. The unused parts will not count as defects toward the supplier.
- Nonconforming products which have an approved waiver/deviation resulting from pro-active communication from the supplier (prior to use of any parts by CMI plant) will not count as defects toward the supplier.
- Nonconforming products which have an approved waiver/deviation NOT resulting from pro-active communication from the supplier will count as defects toward the supplier.

X. Performance Evaluation (9)

Cummins will monitor the quality performance of the supplier primarily through In-plant and OEM Defect PPM measures. Cummins will report these measures to the supplier. Zero PPM is the goal for both measures. Failure to meet this goal may result in corrective action activity as described in the Non-Conforming Material section of this document. Cummins will set interim goals (targets) for suppliers who cannot immediately meet the zero defect goal. These targets will be reduced each year with the expectation that these suppliers will eventually meet the zero PPM goal.

Cummins will monitor the reliability performance of selected suppliers' components (especially suppliers with design control) through Warranty claims per engine, service campaign and temporary repair practice. Cummins will report these measures to the supplier.

a. The Suppliers must have the ability to submit Failure investigation electronically.

b. The Supplier shall monitor and participate to reduce field warranty claims. It is important to control problem resolution time in their processes.

c. In the event a reliability/product compliance, including but not limited to safety or emissions issue results in a recall, the supplier shall work with Cummins to urgently remediate the problem.

Y. Monitoring, Measurement, Analysis and Evaluation (9.1)

The supplier shall allow on-site verification activities as required by Cummins and Cummins' customers.

The supplier shall allow on-site Process/Product Audits and System Assessments when requested by Cummins.

The supplier shall allow and facilitate visits by Cummins personnel to their suppliers for purposes of audit, PPAP review, APQP review, review of corrective action effectiveness, or any other reason related to the quality of components produced for Cummins.

The supplier shall allow direct communication with their manufacturing facility as well as any sub-tier supplier's manufacturing facilities on quality issues.

1) Monitoring and Measurement of Manufacturing Processes

The supplier shall maintain routine quality data (e.g., quality indices updates, reliability test results, any data collection defined in control plans, etc.) that are required by the Cummins Engineering drawing, agreed to in the APQP/PPAP elements of the Cycle, or established as part of a corrective action plan. Such data shall be made available to Cummins upon request and provided within one (1) business day of such request.

Supplier shall perform and maintain results for any required Functional Reliability Verification (FRV) testing that is identified on the component drawing by a functional reliability specification. Functional Reliability verification is intended to be ongoing and conducted by the supplier during the life of a component or sub-assembly to assess the ongoing capability of the component or sub-assembly to meet a functional reliability specification. Possible verification methods include but are

not limited to: Fail-safing, in-process checks, process control, dimensional checks, and test-to-failure audit.

2) **Application of Statistical Concepts**

a. Suppliers are encouraged to adopt Six Sigma as a formal improvement process, particularly when aimed at improving quality or reducing costs.

b. Suppliers shall use statistical tools for managing and improving processes wherever possible.─Statistical tools may include but are not limited to Statistical Process Control.

Z. Customer Satisfaction (9.1.2)

1) **Supplier Relationship Management Scorecard**

Cummins Inc. Purchasing and Supplier Quality use the Supplier Balanced Scorecard to evaluate customer satisfaction with selected external production and service suppliers. Cummins Inc. stores, analyzes and reports organization performance data collected from other sources within Cummins Inc.

The Supplier Relationship Management Scorecard reports performance in five categories:

- Quality Management
- End Customer Quality
- Delivery
- Technology & Innovation
- Sustainability

2) **Controlled Shipping**

Cummins Inc. may, at its discretion, require the organization to participate in Controlled Shipping/Consequential Management activities. This may include third party containment/component certification processes that are provided at the supplier's expense. These actions will be implemented at the direction of Cummins Inc. Purchasing Supplier Quality Leader. These activities will be monitored at a senior level at Cummins Inc. and require the active participation of senior management at the supplier.

If a supplier is placed on Controlled Shipping Level 2, they are required to notify their Certification Registrar as part of the containment process.

AA. Internal Audit (9.2)

1) **Quality management system audit**

Supplier shall conduct an Internal Quality Management Systems audit at least once per year.

2) **Manufacturing process audit**

a. Layered Process Audits

i. All Suppliers should implement a Layered Process Audit program to promote continuous improvement within their facility.

Suppliers to the Columbus Midrange Engine Plant are required to implement an LPA program that includes Process Control Audits as well as Error Proofing Verification audits. Supplies should refer to AIAG CQI-8: Layered Process Audits for guidance on establishing an LPA program. If you are supplying parts to one of the Cummins facilities that require LPA program that includes Process Control Audits as well as Error Proofing Verification audits, you will be notified, and Supplier shall refer to AIAG CQI-8: Layered Process Audits for guidance on establishing an LPA program.

b. Special Process Assessments

- CQI-9 Special Process: Heat Treat System Assessment, latest edition
- CQI-11 Special Process: Plating System Assessment, latest edition
- CQI-12 Special Process: Coating System Assessment, latest edition
- CQI-15 Special Process: Welding System Assessment, latest edition
- CQI-17 Special Process: Soldering System Assessment, latest edition
- CQI-23 Special Process: Molding System Assessment, latest edition
- CQI-27 Special Process: Casting System Assessment, latest edition
- CQI-29 Special Process: Brazing System Assessment, latest edition

i. Suppliers shall complete assessments for all applicable, Special Process

ii. This requirement shall apply to any sub-tier suppliers that perform these processes for the direct supplier to Cummins Inc.

iii. Evaluation shall be self-assessment. The self-assessment shall be conducted annually at a minimum but may be repeated as needed. The self-assessment may be conducted as part of the supplier's internal quality audit or conducted separately. The self-assessments are to be retained on-site but made available for review by Cummins Inc. upon request.

iv. Suppliers to certain Businesses at Cummins Inc. may be required to comply with ISO-3834 Standard Quality Requirements for Welds. Where customers require this level of weld control, the Cummins Inc. SQE will notify the supplier of the expectation. Use of this standard supersedes the requirement for AIAG CQI-15.

BB. Nonconformity and Corrective Action (10.2)

Suppliers are required to use the Cummins Quality Management System (CQMS)

a) In the event that quality problems are experienced with product provided by a supplier, Cummins' corrective action process may escalate through several phases depending on the adequacy and timeliness of the supplier's response and the effectiveness of the actions taken. It may also go straight from problem notification to Senior Management depending on severity and urgency.

   Note 1: Reworked or repaired material is considered non-conforming unless prior approval of these processes was granted by the Cummins SQE and appropriate Cummins Engineering resources.

b) Cummins will notify the supplier when a nonconformance has occurred. At the time of notification, the supplier will also be advised if a corrective action response is required.
   i. When an MNC is issued to the supplier, it is Cummins' expectation that the supplier takes immediate action to contain any additional defects. The supplier is expected to take appropriate corrective action to prevent additional defects from being produced or reaching any Cummins site. Cummins SQEs may check supplier's actions taken as part of the Cummins Process/Product audit process.
   ii. The MNC gives the supplier the opportunity to document actions taken and Cummins suggests that the supplier document these actions. In some cases, a Cummins Plant may request that the supplier respond to an MNC. If response is requested, the supplier is expected to comply.

c) If a SCAR (Supplier Corrective Action Request) is issued, the following must take place:
   i. Suppliers are expected to submit evidence of problem solving tools used during root cause investigation of the issue. Suppliers are expected to use the Cummins SCAR worksheet to aid in the investigation process and ensure a thorough corrective action response is complete. The SCAR worksheet must be submitted as evidence in the Cummins Quality Management System (CQMS).
   ii. Supplier is required to take immediate containment actions to enable Cummins facilities to operate and protect Cummins from further non-conforming product.
      i. The supplier shall submit documented containment results within 24 hours of notification of non-conformity
      ii. The supplier's containment process must cover all possible areas of potential defects including:
         1. Supplier's manufacturing location
         2. All potential transportation links (e.g., supplier to ship, ship to warehouse, warehouse to Cummins, etc.)
         3. All warehousing operations from the supplier through the Cummins facility
         4. The notifying Cummins facility and any other potential Cummins facilities
         5. The AIAG inventory containment form shall be submitted to Cummins Inc to document containment has taken place at all possible inventory locations.
   iii. Root cause shall be identified and short term action in place within 48 hours of finding the defect. If a part is "required" to complete the root cause analysis, the 48 hours begins when the supplier receives the part. However, all attempts shall be made to complete the root cause

analysis without having component physically in hand. Photographs, measurement data, and defect descriptions are usually sufficient for this purpose.

iv. Long term action plan submitted within 10 working days of receipt of SCAR
v. Long term action plan in place within 30 days of finding the defect. Past Due SCARs will be escalated to Cummins management for further review.
    i. Timeliness of suppliers' responses to these due dates are measured and included in the Supplier Balanced Scorecard.
vi. All SCAR responses will be reviewed by the Cummins SQE for adequacy.
    i. Cummins reserves the right to institute third party sorting/certification of product at the Suppliers location if a Supplier Corrective Action is inadequate or in the case of a recurring defect. Any charges accrued associated with the activities conducted by the Third party will be at the Supplier's expense.
vii. PFMEA and Control Plan are to be reviewed and relevant revisions made as part of the problem solving process. The expectation is that these documents will be submitted as part of the completed SCAR response. Proprietary process documentation requires evidence that the review has been completed by the Cummins SQE. Process changes as a result of the problem solving process are expected to be submitted to Cummins for review using the SCR process and PPAPs completed where required.

d) Repetitive nonconformance, adverse quality trends, or other issues may escalate the corrective action process to include, but not be limited to:
    i. Formal Process/Product Audit of the supplier's facility by Cummins Supplier Quality, looking for systemic issues
    ii. Focused problem solving activity with agreed measures and targets and routine progress reporting into Cummins
    iii. Submission of capability information on selected characteristics
    iv. Submission of Paynter Charts tracking defects and Step 3 and Step 6 action monthly
    v. Participation in 6 Sigma projects
    vi. Participation in a formal Cummins SQPM Process, which includes Focus, SIP, WIN and KEPT process.
    vii. Participation in Controlled Shipping/Consequential Management activities, which may include Third Party containment/component certification processes that are provided at supplier's expense. These actions will be implemented at the direction of Cummins Purchasing Supplier Quality Leader

    These activities will be monitored at a senior level at Cummins and require the active participation of senior management at the supplier.

e) The final escalation of the corrective action process, if required, is a meeting of the supplier's highest management with appropriate Cummins' Plant, Purchasing or Corporate senior management. The supplier must be prepared at this meeting to commit resources to resolve the issues. Failure to follow through with these commitments would initiate re-sourcing activity by Cummins.

f) Cummins monitors supplier-caused disruption costs to Cummins and its Customers. Costs associated with supplier caused disruptions will be recovered from the supplier. Typically these costs could arise from:

   i. Nonconforming material detected within Cummins or by its customers
   ii. Supplier caused warranty issues
   iii. Line stoppages at Cummins or its customers due to supplier issues
   iv. SQE work beyond normal planned activity

   Examples of supplier disruption related charges Cummins entities may recover include, but are not limited to: scrap, rework, engine damage, tear down/re-test expenses, premium freight, assembly disruptions/work stoppage, administrative expenses, etc.

   Administrative expenses are determined based on the Cummins entity: business unit type, location (country), and the location of which the non-conformance was found in the Cummins entity's process.

1) Problem Solving

Cummins Inc. SCAR worksheet shall be used for problem solving.

Suppliers with high value, chronic or repeat quality issues are expected to participate in any Cummins driven problem solving initiative.

2) Warranty Management Systems

Organizations shall use CQI-14: Automotive Warranty Management, latest edition to integrate warranty into their quality management system.

3) Continual Improvement

Suppliers are expected to implement Cummins Inc. Manufacturing Quality Verification (MQV) tool as part of their continual improvement process when directed by their SQE or as part of APQP. MQV is a tool for identifying past and potential defects and ensuring that those defects cannot reach Cummins Inc. or its customers. Cummins Inc. uses MQV as an APQP tool and as a tool to drive continual improvement.

For electronics components, suppliers are expected to evaluate the manufacturing process for the application of Process Average Testing (PAT). This should be discussed with the Cummins Inc. SQE for appropriate application of PAT.

Cummins expects suppliers to monitor the outputs of their quality system and continually improve in quality, service, and cost. This philosophy should be fully deployed throughout the supplier's organization. Continual improvement in product characteristics means optimizing at a target value

and reducing variation around that value. This assumes that product characteristics currently meet specifications. Cummins customers have high expectations of the quality of the Cummins products and in order to meet these expectations we are equally demanding of our supply base.

Suppliers are expected to apply continual improvement techniques to non-product characteristics that impact quality, service, and cost such as machine downtime, floor space utilization, first-time PPAP approvals, testing methods, process flows, etc. Lean manufacturing methods are a proven way of achieving these improvements and are encouraged by Cummins.

g) SQPM is an escalation process used by the Cummins Supplier Quality function in collaboration with other cross-functional teams (Plant Quality, Purchasing, BU Quality etc.) in the event Supplier has adverse quality trends and/or repeat non-conformance, and Supplier has failed to meet the agreed upon continual improvement plan. SQPM process includes Focus, SIP, WIN and KEPT. If a Supplier is formally assigned to one of the SQPM processes (Focus, SIP, WIN or KEPT), SQE will notify Supplier. Respective Supplier quality team should work with Cummins SQE to develop the improvement plan based on areas of improvements. Suppliers shall graduate from Focus, SIP, WIN, or KEPT processes by implementing, documenting, and meeting the agreed graduation targets, improvement plan/glidepath and obtaining a signoff from Cummins. SQE will escalate the Supplier to next escalation process if the Supplier fails to meet the graduation targets or agreed upon improvement plan. Supplier shall participate in Controlled Shipping/Consequential Management activities, which may include third-party containment/component certification processes that are provided at Supplier's expense. These actions will be implemented at the direction of Cummins Supplier Quality Leadership and will be monitored at a senior level at Cummins. Supplier's senior management must actively participate in any quality improvement efforts.

CC. Forms

Many forms utilized by Cummins Inc. are referenced through PPAP, APQP, etc. Of all those referenced forms, the one that is required to be used without modification is the Part Submission Warrant (PSW) illustrated in PPAP. Other referenced forms (e.g., the Control Plan in APQP), are preferred to be used without modification; however, supplier modified forms are acceptable provided all information contained on the reference format is included.

Other forms utilized by Cummins Inc. may be Cummins-required (e.g., Advanced Quality Planning Status Report) or Cummins-preferred (e.g., SCAR Worksheet). The Cummins SQE will answer supplier questions on whether a form must be used without modification (Cummins-required) or if the form may be substituted with a form meeting the intent (Cummins-preferred).

DD. References

References cited by this document are the latest versions available at the date of publication. When a cited document is revised after the date of publication, the newer version shall apply.

A. References cited in these Customer-Specific Requirements

Automotive Industry Action Group (AIAG) North American Automotive Quality Core Tool Manuals

- Chrysler, Ford, General Motors Advanced Product Quality Planning and Control Plan (APQP): Second Edition July, 2008.
- Chrysler, Ford, General Motors Production Part Approval Process (PPAP), Fourth Edition, March 2006.
- Chrysler, Ford, General Motors Failure Mode and Effects Analysis (FMEA), Fourth Edition, June, 2008.

AIAG Quality Manuals

- CQI-8: Layered Process Audit Guideline, 2nd Edition
- CQI-9 Special Processes: Heat Treat System Assessment, 3rd Edition
- CQI-11 Special Process: Plating System Assessment, 2nd Edition
- CQI-12 Special Process: Coating System Assessment, 2nd Edition
- CQI-14: Automotive Warranty Management, 3rd Edition
- CQI-15 Special Process: Welding System Assessment
- CQI-16: ISO/TS 16949:2009 Guidance Manual
- CQI-17 Special Process: Soldering System Assessment
- CQI-19: Sub-tier Supplier Management Process Guideline
- CQI-23 Special Process: Molding System Assessment
- CQI-27 Special Process: Casting System Assessment, latest edition
- CQI-28 Traceability Guidelines, latest edition

Software Process Assessment

- Capability Maturity Model Integration (CMMI)
- VDA-Automotive SPICE (Software Process Improvement and Capability Determination)

ISO Standards

- ISO 9001:2015 “Quality Management Systems – Requirements”

International Automotive Task Force (IATF) Publications

- IATF 16949:2016 “Fundamental quality management system requirements for automotive production and relevant service parts organizations”
- Automotive Certification Scheme for ISO/TS 16949; Rules for achieving and maintaining IATF recognition; 5th Edition for IATF 16949, 1 November 2016.

Purchasing and Supplier Quality Documents and Applications

- iSCM Integrated Supply Chain Management (https://iscm.cummins.com)
- Supplier Portal (https://supplier.cummins.com)
- SCAR Worksheet and 3P5Y
- CQMS
- Supplier Scorecard
- MQV (Manufacturing Quality Verification) Tool
- Cummins Suppliers Guide to Prohibited and Restricted Substances

EE. REVISION LOG

Page	Description
6	Added requirement to ISO 14001 when required by CMI customers.
6	Added service parts
9	Added definition of Disruption Score (item 9)
15	Added Safety Critical Characteristics as a new customer special characteristic type
15-16	Revised Section N clarifying special characteristic capability
20-21	Clarified materials content reporting process
24	Revised Section T to clarify Packaging Data Sheet process
25	Added Section W (8.7.1) Customer Notification
28	Clarified CQI Special Process expectations
30	Added examples of supplier disruption costs and administrative expenses
31	Added Section CC Warranty Management Systems (10.2.5)
11, 16, 18, 19, 26	Added product safety
6	Reworded ISO 14001 requirement
6, 7	Added Supplier Code of Conduct Requirements
9, 10, 11, 12	Added new acronyms, AECD/AES, BRM, CDX, FMD, KEPT, MDS, PCRA, SQPM, SQE, VDA, WIN
12, 13	Added Compliance, emissions, cyber security, VDA and BRM Requirement
22	Modified PPAP warrant IMDS requirement
24	Added Cummins and customer tooling requirements
25, 26	Added embedded software, AECD, PCRA, material compliance requirements
28	Modified Reliability/product compliance requirement
30	Modified LPA requirement
30	Added Special Process CQI-29

32, 34	Added SQPM process
35	Added CQI-28 Traceability Guidelines AIAG Manual
All pages	Changed from SQIE/SQI to SQE

