



# Supplier Quality Manual

*Acceptance of Hexagon Agility's Purchase Order confirms the Supplier's agreement to comply with this Supplier Quality Manual, as applicable.*



## 1. Introduction

Hexagon Agility designs and manufactures products that store, transport, and dispense high pressure gases for automotive, aerospace and energy applications. Given the nature of these products, Hexagon Agility requires the highest commitment to product safety, quality, performance and customer service. This Supplier Quality Manual summarizes Hexagon Agility's expectations for Suppliers to support the integrity and quality of products delivered to customers and end users.

## 2. High-Level Expectations

- 2.1. Hexagon Agility expects our Suppliers to demonstrate an attitude of integrity, cooperation, transparency and continuous improvement to fully satisfy our mutual downstream customers.
- 2.2. Suppliers are expected to have the resources necessary (people, materials, facilities, equipment, and expertise) to supply and support the products required to accommodate Hexagon Agility's orders.
- 2.3. Suppliers are fully responsible for the applicable quality, performance, reliability, and regulatory compliance of their products. All Suppliers are responsible for providing products that meet or exceed all Hexagon Agility requirements and specifications and that the products are free from defects. This includes the work of their sub-suppliers, subcontractors, and service providers. Suppliers shall maintain control of their sub-suppliers' products and verify that their sub-suppliers' facilities, procedures, materials, and controls meet or exceed the agreed requirements.
- 2.4. Suppliers are expected to maintain control over their internal processes. Supplier management shall instill a culture where its employees have the authority and responsibility to stop any process, in both production and office environments, to prevent nonconformity, correct quality problems, reestablish process control, or contain defects and errors.
- 2.5. Hexagon Agility approval and verification of the supplier's facilities, systems, processes, and records do not absolve the supplier of the responsibility to provide an acceptable and conforming product.
- 2.6. Hexagon Agility expects zero-defect products from its Suppliers. Products that do not confirm to applicable requirements may be rejected and returned to Supplier with associated costs charged back as applicable. Payment does not constitute acceptance. Even after acceptance, Hexagon Agility reserves the right to return defective material for credit, with return and related costs borne by the Supplier.
- 2.7. Hexagon Agility expects Suppliers to meet all agreed delivery schedules.
- 2.8. Suppliers shall comply with [Hexagon Group Supplier Code of Conduct MS.0110](#).
- 2.9. If a change in the Suppliers' ownership, top management, quality management, or QMS certification status occurs, the Supplier shall notify the Hexagon Agility Buyer in writing within 5 working days.

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### 3. Quality Management System Requirements

- 3.1. Suppliers that manufacture direct products and materials shall implement and maintain an effective Quality Management System compliant with ISO 9001. Certification to ISO 9001, and compliance with IATF 16949 or SAE AS9100 where applicable, is strongly encouraged. Suppliers must demonstrate adequate maturity and capability via a Hexagon Agility Supplier Quality Assessment and/or third party QMS certification. Interim Supplier approval may be granted if Supplier can provide full confidence of product conformity and is actively working an agreed development plan to resolve identified findings.
- 3.2. Suppliers shall ensure that their sub-suppliers implement the same quality management system standards and certifications. Suppliers shall take appropriate steps to confirm the effectiveness of their sub-suppliers' quality management systems and maintain supporting objective evidence of continued compliance.

### 4. General Quality Requirements

- 4.1. Suppliers shall meet all Hexagon Agility product and service requirements. This includes all applicable requirements for packaging, storage, handling, transportation, identification, and documentation.
- 4.2. Suppliers must comply with all applicable statutory and regulatory requirements.
- 4.3. Suppliers shall make production process verification, test, and inspection records available to Hexagon Agility for review, upon request. Similarly, design-responsible Suppliers shall make product design records available to Hexagon Agility for review, upon request.
- 4.4. Suppliers shall periodically verify the accuracy of measurement devices used for product inspection and process control. These verifications shall be conducted using measurement devices traceable to national standards.
- 4.5. When statistical acceptance sampling procedures (e.g., MIL-STD-105, ANSI/ASQ Z1.4 or ISO 2859-1) are used, the acceptance criterion for all product and material characteristics is  $c=0$ : "accept on zero, reject on one".
- 4.6. Suppliers shall comply with applicable law, regulation and Hexagon Agility requirements related to prohibited materials in their process, products, and materials.
- 4.7. Unless otherwise obligated by law, regulation or Hexagon Agility requirements, Suppliers must retain their documents for the following minimum periods.

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Document Type	Examples	Minimum Retention Period
Production and product conformity records	Inspection records, material and functional test results, material certifications, torque records, traceability records, product release records, nonconforming material disposition records, rework and repair verification records, deviation records, corrective action records	10 years from date of product manufacture.
PPAP documentation	Drawings, process flow charts, control plans, FMEAs, DVP&Rs, PSWs, manufacturing instructions, etc.	Duration of production and service plus one year
Quality Management System documents	Internal quality system audits, product audits, management reviews, sub-supplier audit, and evaluation results	3 years from date of creation

## 5. Supplier Monitoring

- 5.1. Hexagon Agility will periodically request Suppliers to provide a self-assessment of its quality management system. Hexagon Agility expects Suppliers to return self-assessments within the requested timeframe.
- 5.2. Hexagon Agility may periodically audit its Suppliers, either on-site or remotely. Hexagon Agility expects the Supplier to support these audits and communicate the findings and actions to its top management.
- 5.3. In certain situations, at Hexagon Agility discretion, additional on-site monitoring of the Supplier's quality management system and manufacturing processes may be performed. Hexagon Agility expects Suppliers to allow prompt and cooperative access to its premises to inspect products, review records, verify manufacturing processes and audit its quality management system.
- 5.4. If quality problems originate from a sub-supplier, the Supplier shall make it possible for Hexagon Agility or its representatives to inspect, verify, and audit the sub-supplier's processes.

## 6. Product Quality Planning

- 6.1. Suppliers are expected to apply robust and effective quality planning practices consistent with APQP or VDA standards to ensure safe and reliable product performance. These practices include:
  - Identification and mitigation of potential failure modes through DFMEA for product design and PFMEA for manufacturing processes.
  - Development and execution of Design Verification Plan & Reports (DVP&R), ensuring all functional and performance requirements are validated prior to launch.
  - Identification and control of Special Characteristics throughout design, validation, and production.
  - Creation, implementation, and maintenance of production Control Plans.







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- Verification of measurement device adequacy through Measurement System Analysis (MSA).
- Confirmation of process performance through process capability studies (Cp and Cpk).
- Validate that the design, operation, and control of special processes (e.g., heat treating, plating, coating, welding, soldering, molding and extrusion) meet applicable industry standards.
- Conducting pilot production runs and safe launch activities to validate processes under real conditions before serial production.
- Submission of a complete Production Part Approval Process (PPAP) package to Hexagon Agility and obtaining formal sign-off prior to full-scale serial production.

6.2. Certain Hexagon Agility product specifications include features designated as Special Characteristics. In these situations, suppliers must:

- Characteristics.

Name	Symbols	Process Capability Requirements	Usage
Critical Characteristic (CC)	 or 	<ul style="list-style-type: none"> <li>• <math>C_{pk} \geq 1.67</math> (short-term)</li> <li>• <math>P_{pk} \geq 1.33</math> (long-term)</li> </ul>	A product feature that directly affects: <ul style="list-style-type: none"> <li>• The safety of vehicle users, people nearby or maintenance personnel,</li> <li>• Customer-specified critical requirements, or</li> <li>• Compliance with applicable law or regulation</li> </ul>
Significant Characteristic (SC)	 or 	<ul style="list-style-type: none"> <li>• <math>C_{pk} \geq 1.33</math> (short-term)</li> <li>• <math>P_{pk} \geq 1.00</math> (long-term)</li> </ul>	A product feature that directly affects fit, form, function, performance, durability or reliability.
Manufacturing Characteristic (MC)	 or 	<ul style="list-style-type: none"> <li>• <math>C_{pk} \geq 1.33</math> (short-term)</li> <li>• <math>C_{mk} \geq 1.33</math> (short-term)</li> </ul>	<ul style="list-style-type: none"> <li>• A product feature solely used to improve manufacturability, reduce variation/errors or maintain process control.</li> <li>• A process parameter that significantly effects fulfillment of a CC or SC product feature.</li> </ul>

## 7. Production Part Approval Process (PPAP)

- 7.1. Suppliers must comply with AIAG PPAP or VDA PPA standards to demonstrate that production processes consistently meet all design and quality requirements.
- 7.2. Supplier PPAP submission requirements may vary based upon part criticality and customer requirements, but typically include:
- Design Records / Engineering Change Documents (for design-responsible suppliers)
  - DFMEA (for design-responsible suppliers)

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- Process Flow Diagram and PFMEA
  - Process Control Plan
  - Dimensional Results. First article inspection shall be completed on three samples from the production run.
  - Material, Performance, and Functional Test Results
  - Measurement System Analysis and Initial Process Capability Studies of special characteristics
  - Appearance Approval Report (if applicable)
  - Sample Production Parts
  - Master Sample (if applicable)
  - Checking Aids (if applicable)
  - Part Submission Warrant (PSW)
  - PPAP Levels are as follows:
    - Level I PPAP submission and samples required
    - Level II PPAP submission and samples required.
    - Level III PPAP submission and samples required.
    - Level IV PPAP submission and samples required. Document submission requirements will be communicated by Hexagon Agility Quality Engineer or specified on Purchase Order.
    - Level V PPAP submission and samples required. On-site confirmation by Hexagon Agility may additionally be required.
- 7.3. As part of Quality Planning (see section 6), Suppliers are required to submit a complete PPAP package, and receive documented Hexagon Agility approval, prior to the start of serial production.
- 7.4. As part of Change Management (see section 8), suppliers are required to submit an updated PPAP package, and receive documented Hexagon Agility re-approval, prior to implementation of changes to product design, production process, and/or sub-suppliers.
- 7.5. Written approval from Hexagon Agility is mandatory prior to shipment of production parts. Deliveries of products without a PPAP approval must be clearly marked as "PPAP SAMPLE PARTS" per section 9.
- 7.6. The Supplier may submit PPAP documentation using their own template. If unavailable, the Hexagon Agility Supplier PPAP template FT.0140 is available on the [Hexagon Agility website](#).

## 8. Change Management

- 8.1. Suppliers shall not implement changes to product design, manufacturing processes (including production location), or sub-suppliers without prior written approval from Hexagon Agility.

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- 8.2. All proposed permanent changes must be formally submitted using Product/Process Change Notification (PPCN) form FT.1490 available on the [Hexagon Agility website](#). Hexagon Agility will review the request and communicate our expectations for the supplier to demonstrate conformity. Hexagon Agility typically requires an updated PPAP submission and approved PSW to validate the change before approving implementation.
- 8.3. Unauthorized change to products or manufacturing processes is considered a major violation that will result in supplier escalation and mandatory corrective action.
- 8.4. Change management requirements apply to all Suppliers, including Suppliers of off-the-shelf parts and design-responsible Suppliers.
- 8.5. Suppliers are responsible for ensuring their sub-suppliers follow the same change management process.

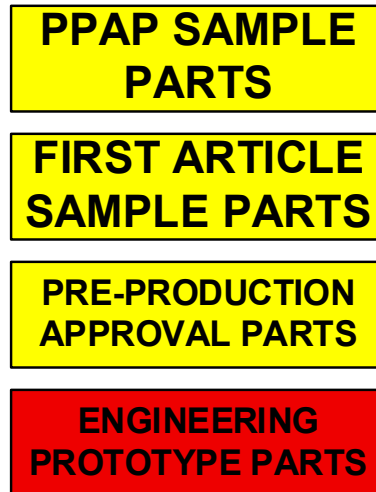
## 9. Identification and Traceability

- 9.1. Suppliers must implement and maintain a system that enables robust identification and traceability of materials and components throughout production and delivery.
- 9.2. Part numbers and revisions shall be clearly marked.
- 9.3. Production identification information (batch, lot, serial, work order, etc.) shall be clearly marked to allow traceability to raw materials and lower-level components.
- 9.4. For each lot, batch or serial number shipped to Hexagon Agility, records must be retained of traceability to the raw materials and components used. Each production run shall be assigned a unique lot number(s) by the supplier. A new lot number must be assigned for each raw material lot change, whenever planned or unplanned interruptions occur (including equipment changes).
- 9.5. Manufacturing and expiration date information shall be clearly marked to enable FIFO and management of shelf life.
- 9.6. Suppliers are responsible for following the Packaging, Shipping & Parts Preservation guidelines in ES.0017.

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- 9.7. PPAP sample parts, first article sample parts, pre-production approval parts and engineering prototype parts must be clearly identified with the following labels:



- 9.8. The above requirements extend through the supply chain to sub-suppliers, as applicable.

## 10. Documentation Requirements

- 10.1. Suppliers must provide all required documentation with each shipment to verify conformance and product integrity. The following documents are required unless otherwise specified by Hexagon Agility:
- Certificate of Conformance (CoC) confirms that the supplied product meets all applicable specifications, drawings, and purchase order requirements.
  - Material certifications and test reports of raw materials, as required by the part specification or drawing. These certifications and test reports must be specific and traceable to the batch or lot of raw materials within the supplied parts.
  - Functional and performance test reports provide evidence of successful completion of testing per agreed requirements and applicable standards. These test reports must specify the batch, lot or serial number of products tested, the measured value and the test result.

## 11. Nonconforming Product Control

- 11.1. Suppliers shall not knowingly ship potentially nonconforming material to Hexagon Agility.
- 11.2. If a Supplier determines any possibility that nonconforming material may have been previously shipped to Hexagon Agility, the Supplier must immediately notify Hexagon Agility. Hexagon Agility expects the Supplier to fully support the containment of suspect parts in-transit, within Hexagon Agility inventory, at customer locations and in the field.

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- 11.3. If a Supplier knows or suspects that nonconforming material exists within its inventory or production processes, the Supplier must immediately contain all potentially defective parts and ensure that none are allowed to ship. Contained parts must be clearly identified and segregated from conforming parts. Supplier records of all containment and disposition activities shall be retained.
- 11.4. Any rework or repairs to products must be conducted in a controlled and authorized manner. Rework or repair activities must follow documented work instructions and include independent verification to ensure reworked or repaired products meet Hexagon Agility specifications and requirements. Supplier records of all rework and verification activities shall be retained.
- 11.5. If a Supplier desires to ship products to Hexagon Agility that do not fully conform to the specification, the Supplier must first submit Supplier Deviation Request form FT.0006. The Supplier must receive written approval from Hexagon Agility before any shipment is released. Shipments of parts under deviation must be clearly marked as instructed by Hexagon Agility and include a valid copy of the approved deviation document. The Hexagon Agility Supplier Deviation Request form can be found on the [Hexagon Agility website](#).
- 11.6. Hexagon Agility will not approve any deviation of product with a nonconforming design feature designated with a Critical Characteristic symbol. See section 6.2.

## 12. Response to Rejected Products

- 12.1. Hexagon Agility will notify the Supplier if it rejects product confirmed, or reasonably suspected, to be out of specification. The Supplier shall then immediately implement effective internal containment and short-term corrective actions. Situations involving potential product safety, risk of a Hexagon Agility production line shutdown or late customer delivery demand, especially urgent Supplier attention and customer-focused support.
- 12.2. Hexagon Agility may require the Supplier to rapidly provide certified conforming replacement parts and/or deploy personnel to Hexagon Agility or other locations to sort, rework or repair parts. These actions shall be conducted at the Supplier's expense.
- 12.3. When applicable, the Supplier shall provide prompt response to a Hexagon Agility Return Material Authorization (RMA) request.
- 12.4. If a Supplier disagrees with the rejection or cannot reproduce the nonconforming condition, it shall promptly notify Hexagon Agility with its findings and seek clarification and mutual understanding. Denial of a Hexagon Agility rejection claim without direct follow-up and discussion is not acceptable.

## 13. Corrective Action and Escalation

- 13.1. Suppliers are expected to implement corrective actions to systemically eliminate the root causes of nonconformities and prevent recurrence. This applies to every instance where defective products are delivered to Hexagon Agility, regardless of whether Hexagon Agility requests formal corrective action or approves a deviation.

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13.2. When Hexagon Agility reports a defect, Suppliers must initiate a structured problem-solving process. The 8D method, or other equivalent industry process, is recommended.

- Form a cross-functional team
- Define and agree on the problem statement
- Correction/Containment: Immediately contain potentially defective parts and prevent further similar defective material from entering production or the supply chain.
- Cause Investigation: Investigate the issue and identify the cause(s) using structured data-driven analysis tools.
- Corrective Action: Define and implement permanent measures to eliminate the identified causes.
- Verification/Validation: Prove that the corrective actions were implemented as intended and eliminate the original problem.
- Lessons learned: Proactively apply corrective actions to similar products and process to prevent additional occurrences.

13.3. Within the scope of each corrective action, Hexagon Agility expects the Supplier to address both the cause of the defect and the lack of defect detection/control. In some cases, Hexagon Agility may additionally request more systemic corrective action related to the supplier's Quality Management System or organization.

13.4. Hexagon Agility expects Suppliers to respond to corrective action requests with the following timing:

- Initial response with containment actions provided within two (2) days of notification.
- Interim update with cause investigation results provided within 14 days.
- Final report with implemented corrective actions and evidence of effective validation provided within 60 days.

13.5. If a Supplier's corrective actions are ineffective and issues persist, Hexagon Agility will escalate the situation with the Supplier. Hexagon Agility may require heightened inspection or controlled shipping (see Quality Clauses 9 and 10) at the Supplier's expense. The situation may result in reduced orders, new business hold or Supplier deactivation. The escalation process is intended to support Suppliers in achieving zero-defect performance, while protecting Hexagon Agility and its customers.

## 14. Cost Recovery

14.1. Suppliers are responsible for reimbursing Hexagon Agility for all costs incurred due to Supplier-related quality issues. These costs may include, but are not limited to:

- Costs for sorting and inspecting Supplier products, whether performed by Hexagon Agility or a third party.
- Charges for reworking, repairing or scrapping defective products.

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- Expenses related to line stoppages, expedited freight and recovery actions required to maintain customer deliveries.
- Costs associated with warranty claims, field repairs and customer penalties due to Supplier nonconformance.
- Charges may also apply for problems related to PPAP, documentation, packaging, or launch readiness.

14.2. Supplier chargebacks are intended to recover actual costs incurred by Hexagon Agility and ensure accountability for quality performance.

## 15. Counterfeit Parts

The Supplier is responsible to prevent shipments containing counterfeit parts and or components. A Counterfeit Part is an unauthorized copy, imitation, substitute, or modified part (e.g., material, part, component), which is knowingly misrepresented as a specified genuine part of an original or authorized manufacturer. Examples of a counterfeit part can include, but are not limited to, the false identification of marking or labeling, grade, serial number, date code, documentation, or performance characteristics.

## 16. Quality Clauses

**Note: The below Quality Clauses are applicable if called out on the print, engineering document, or other specific Hexagon Agility document.**

### 1. Special Test Report Required

Each shipment on this order requires a test report showing conformance to specified material, functional or regulatory requirements. The special test report shall include both the actual measured values and the applicable material specifications or limits. The test report shall identify the test lab and associated lot, batch and serial numbers.

### 2. REMOVED

### 3. Material Certification Required

For each lot of material supplied on this order, the Supplier shall furnish a material test report. Exact copies of the certification/test report are acceptable if certification/test report is legible, complete, and no content is omitted. A translation must be provided for certificates not written in English. The material test report shall include:

- The material specification/number and revision, alloy/grade/class/type, the producer's (mill) name, batch number and/or heat lot number.
- A statement that the material conforms to the requirements of the applicable material specification.

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#### **4. Special Process Certification Required**

For identified special processes, the Supplier shall provide a test/certification report. It shall include quantity, part number of items processed and a description of the process, including process specification, type, grade, etc. The report must show conformance to specification requirements, such as heat treating, welding, painting, finishing, NDT, pressure testing, etc. Suppliers shall maintain a valid special process assessment for heat treating, plating, coating, welding, soldering, molding per AIAG standards (CQI-9, 11, 12, 15, 17, 23, etc.) or equivalent.

#### **5. Certifications of Conformance Required**

For each lot of material supplied on this order, the Supplier shall provide a Certificate of Conformance (CoC) in English. The CoC shall include the following information:

- A statement of conformity that all requirements of the Hexagon Agility Purchase Order and associated drawings and specifications have been met.
- Hexagon Agility Purchase Order number and part number.
- Number and revision of all drawings and specifications referenced on the Hexagon Agility Purchase Order.
- Manufacturing/material traceability information, as required by Hexagon Agility.
- Name, title and signature of the Authorized Representative of the company.

#### **6. Traceability Required**

See Section 9 for additional information.

#### **7. Barcode Identification Required**

Identification of individual parts is required. At a minimum, it shall consist of both barcode and human-readable text that includes the Hexagon Agility part number, Supplier lot number and individual serial number. Use code 39 barcode format.

#### **8. FAI / PPAP submission Required.**

See Section 7 for additional information.

#### **9. Source Inspection Required**

Hexagon Agility-approved inspection is required prior to shipment from supplier's facility. Evidence of inspection must be included in shipping documents. Suppliers must contact Hexagon Agility to establish verification arrangements and product release approval. Drawings, specifications, and inspection/test documents shall be available for review at supplier's facility.

#### **10. Controlled Shipping (100% Inspection)**

The control process is divided into two levels:

- **Level 1 (CSL 1):** The organization conducts 100% inspection using its internal resources in addition to the 8D Problem Solving Process

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- **Level 2 (CSL 2):** Same process as Level 1 with an external company, authorized by Hexagon Agility, performing the 100% inspection.

#### **11. Shelf-Life Controlled Material**

Time-sensitive material shall be furnished to Hexagon Agility with at least 80% of its shelf life and required product life remaining at the date of shipment. Shelf-life duration, date of manufacture, batch/lot number and date of expiration shall be listed on the material certification documents.