

Metal Powder Products Company

Supplier Quality Manual

Revision 2

MPP Supplier Quality Manual

Introduction

1. **Purpose:** This manual has been created for Metal Powder Product's (MPP) Production, Prototype and Service Suppliers. The manual is for all product lines. The manual is provided to communicate quality, delivery and purchasing requirements. This Supplier Quality Manual outlines business rules and supplier requirements necessary to standardize supplier processes, rejections and supplier performance.
2. **Scope:** The intent of this manual is to extend the scope of latest IATF 16949, ISO 9001 and ISO/TS16949 requirements and to include the additional requirements of MPP and MPP's customers. This document defines the basic quality systems and procedures required for suppliers of Production, Prototype and Service parts to MPP and are intended to orient suppliers to these requirements. The supplier's quality system is subject to review and evaluation by MPP personnel and this document will serve as the basis for such a review. The MPP divisions or plants initiating the purchase orders may provide supplemental requirements.
3. **Approach:** MPP is committed to selecting suppliers that are willing to work with MPP to achieve: zero defects, continuous improvement, on-time delivery and increased value. MPP quality systems focus on Advanced Product Quality Planning (APQP). Suppliers are expected to employ effective APQP process. Refer to AIAG APQP manual.
4. **Audit:** MPP personnel and/or customers or the customer's representative has the right to verify at the supplier's premises and at MPP's premises that subcontracted product conforms to specified requirements. A "Supplier Audit" is mandatory for all new Suppliers, meaning any supplier who has never before supplied material to any MPP facility and who is a supplier of high risk or new/key material used. The first phase of the "Supplier Audit" requires the supplier to complete the Supplier Profile form. Based on the information provided, the MPP Purchasing and / or Quality Department will then decide whether or not a facility review will also be required using the Supplier Audit form.
 - a. MPP has the right to conduct periodic visits at any supplier location that currently does direct and indirect business with MPP. These visits will be performed by Supplier Quality, Supplier Development, or Plant/Corporate staff. They will conduct problem visit resolution reviews, APQP/ launch readiness reviews, supplier capacity and over-all supplier performance reviews.
5. As required by OEM Customer Specific TS16949, sub-tier suppliers to MPP are to have CQI-9/ 11/ 12 Assessments for heat treated/ plated/ coated/ components. Suppliers will be responsible to update and submit their annual copies of assessments to MPP. Should Metal Powder Products need to contact you directly regarding a document, it is expected that the newest version document will be provided to the Requestor within 5 business days. Failure to provide the requested documentation within the allotted timeframe will result in escalation which may include: SCAR issuance, New Business Hold, Removal from ASL, etc.
6. **Distribution:** This document is maintained by MPP and will be available on our website. Compliance to the requirements of this SQM is mandated on the purchase orders. The supplier is responsible for compliance to the most recent version of the SQM.
7. **Confidentiality:** All information concerning the relationship between MPP and its suppliers will be respected as confidential. This includes, but is not limited to, purchase specifications, pricing and customer information.
8. **Code of Conduct:** MPP employees, Contractors and Suppliers are expected to comply with the latest version of Code of Conduct located at www.MPPstandard.com under Investors.

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Quality Systems

General Overviews

1. The supplier is responsible for providing written communication to MPP Purchasing of all manufacturing process changes that affect the material(s) being supplied to MPP. Based on the specific circumstances, MPP will then evaluate whether or not MPP can accept the supplier's specification requirements and/or if re-approval is required. This would include the supplier's inability to meet any parameters listed on the MPP specification. Examples include any changes in product form, any changes in the manufacturing process, a supplier wanting to supply the same product / material from a different manufacturing site that is not already approved, material changes, and/or related changes that may affect fit, form, or function.
2. Suppliers are required to notify MPP of any company name, or significant personnel or contact changes within their company. Once MPP is notified, the updates will be made on the Approved Source List – ASL without re-approval. If there are changes in the supplier's manufacturing location a Supplier Audit may be conducted. New MSDS sheets with the corrected manufacturer name will be required for products already on the Approved Source List.
3. Outstanding quality and delivery performance including adherence to MPP "Zero Defects" and "100% On Time Delivery" standards are required. Cost competitiveness and excellent customer service are also required. Sustained poor performance in conjunction with unacceptable corrective action could potentially result in the removal of a supplier from the Approved Source List, which entails re-sourcing that business the supplier has with MPP.
4. The Automotive Industry Action Group (AIAG) www.aiag.org has published several manuals that standardize procedures, technical classifications, and reporting formats, which are required by our customers. Suppliers are responsible to remain current with these standards.
5. Suppliers are required to maintain an accredited 3rd party certification to IATF 16949, ISO9001 or ISO/TS16949. Suppliers providing goods and services for MPP automotive applications are strongly encouraged have IATF certification or be pursuing it. Exceptions for certification include pallet, box, bag and other non-production suppliers. Suppliers are likewise expected to be conforming to an environmental management system consistent with ISO 14001. Suppliers will be responsible to update and submit their valid copies of registration certificate to MPP. Suppliers who fail a surveillance audit must notify their MPP Buyer immediately. Failure to maintain your IATF 16949, ISO9001 or TS16949 certification will result in the removal of a supplier from the Approved Source List, which entails re-sourcing that business the supplier has with MPP. All external labs used for gage calibration and validation testing must be ISO/IEC17025.
 - a. Should Metal Powder Products need to contact you directly regarding a document (e.g. IATF 16949, ISO9000, TS16949, Profile, CQI, etc), it is expected that the newest version document will be provided to the Requestor within 5 business days. Failure to provide the requested documentation within the allotted timeframe will result in escalation which may include: SCAR issuance, New Business Hold, Removal from ASL, etc.
6. MPP Supplier Development, Supplier Quality, or Plant Quality will provide assistance to suppliers in the following areas:
 - a. Resolution of critical issues between the supplier and the MPP facilities
 - b. Provide direction on MPP policies pertaining to suppliers
 - c. Assist high impact suppliers with improvement activities
 - d. Work with potential new suppliers to bring them to a level to be added to the ASL
 - e. Provide resources for, and where appropriate, conduct specific training when a supplier has a need for additional knowledge

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PPAP Submission Approval Process

1. The level of PPAP submission to MPP always defaults to a Level-3 PPAP submission, unless otherwise specified. The language is English parallel translations are acceptable. The PPAP is at no cost to MPP.
2. In order to receive full payment related to the specific product being purchased by the MPP plant the supplier must obtain full PPAP approval from the MPP receiving plant.
3. Each supplier must meet all of the PPAP requirements including the promise date of submission to the MPP plant in question. PPAP promise dates are established at product launch meetings with the MPP Launch Teams or Plant Program Management Teams. It will be the responsibility of the supplier to supply an AIAG / OEM compliant PPAP package. The package will be in accordance with AIAG PPAP Manual, and submitted to the receiving MPP plant. The PPAP package will be representative of the final customer format in which the receiving plant will be submitting to its customer. Each of the OEM specific requirements must be in accordance with customer specific requirements and instructions found in the AIAG PPAP Manual.
4. MPP receiving plant will inspect the PPAP samples and review the documentation. If the submission is found to comply with all requirements, the Part Submission Warrant (PSW) will be marked approved, signed and returned to the supplier. If discrepancies are found, the submission will be rejected and put on hold until those discrepancies are resolved. The PSW will be marked rejected, signed and returned to the supplier, along with a Supplier Request for Corrective Action form detailing the discrepancies.
5. With the PPAP submission, the supplier is to include the latest version of the Metal Powder Products PPAP Checklist or relevant end user checklist.

APQP & Safe Launch

1. All suppliers shall utilize and maintain the AIAG Advanced Product Quality Planning (APQP) methods at all stages with the goal of problem free seamless launch. Reference Manuals:
 - a. AIAG Production Part Approval Process (PPAP)
 - b. AIAG Statistical Process Control (SPC)
 - c. AIAG Measurement Systems Analysis (MSA)
 - d. AIAG Advanced Product Quality Planning and Control Plan manual (APQP)
 - e. AIAG Potential Failure Mode and Effects (FMEA)
 - f. International Automotive Task Force ISO/TS 16949
2. Pass-thru characteristics (PTC) are supplier controlled that once generated, are not further controlled or 100% functionally tested / inspected during processing at the MPP Plant. Non-conformance in these types of characteristics will be passed on to MPP customers.
 - a. Suppliers are required to conduct the following:
 - i. Ensure that PTC's are considered during their APQP activities and that relevant controls are identified and applied in the Process Failure Modes and Effects Analysis and Control Plan
 - ii. Identify each pass-thru characteristic as PTC on their control plan
 - iii. Communicate PTC's to their sub-tier suppliers and require proper control
3. All suppliers must utilize a safe launch process to include product/material certification during initial production runs. The duration of certification shall be initiated by the supplier with the MPP plant at time of PPAP. Individual part markings or box labeling shall be as instructed by the MPP plant.
4. The supplier's product quality team must assess the feasibility of the proposed design during their APQP phase of the program. Customer design ownership does not preclude the supplier's obligation to assess design feasibility. The team must be satisfied that the proposed design can be manufactured, assembled, tested, packaged and delivered in sufficient quantity on schedule at an acceptable cost to Metal Powder Products. The supplier's consensus that the proposed design is feasible should be documented along with all open issues that require resolution and presented to MPP for their support.

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Run @ Rate / Capacity Analysis

1. Suppliers are required to perform a run at rate / capacity study as part of their PPAP process. The results shall be documented on the Supplier Run @ Rate Capacity form and submitted as part of the PPAP package.
2. The purpose of the run @ rate / capacity is to ensure that the supplier's process is capable of meeting PPAP requirements and quoted volumes.
 - a. Where equipment and / or processes are shared with other part numbers, the supplier is required to perform a capacity study prior to a Run @ Rate, to ensure that equipment / process capacity is not over sold.
3. During the analysis, all production tooling must be in place and running at full capacity, using all processes, personnel, gauging and procedures. The process and controls shall be reflected in the supplier's control plan.
4. The number of components to be produced during the Run @ Rate Capacity will be the same quantity required for PPAP and / or as specified by the purchase order. The results should then be projected to show the results based on an 8-hour production run.
5. Future capacity studies may be requested to the supplier based on volume increases

Tool Acceptance Report & Math Data Submission

1. Any production tooling/gages that is the property of MPP must have a Tool Acceptance Report submitted as a part of the PPAP process. It is the supplier's responsibility to complete the Tool Acceptance Report.
2. The purpose for the Tool Acceptance Report is to have a record of the tools/gages built by the supplier or the supplier's vendor. This should assist with the approval process for payment of the tooling/gage.

Annual Validation

1. All effected product characteristics must be measured annually at a minimum to ensure continuing conformance to the drawing, material and specifications for all parts and services provided to MPP. Annual validation submissions are to be retained at the supplier location and made available upon request. Current Laboratory Certificates are also to be available upon request. Inability to provide timely annual validation documents when requested will result in the issuance of a Defective Material Notice (SCAR). This requirement applies to all drawing, specification and purchase order requirements unless otherwise waived by an approved deviation.
2. The results of dimensional inspection, material and functional testing must be documented using the sequence of the numbered blueprint from the PPAP submission. Supplier forms are acceptable but must be in English.

Note: Certifications of Compliance are not acceptable. Note:
Annual Validation is at no cost to MPP.

Note: Based on MPP's specific customer requirements, additional documentation may be required. If additional items are needed, this will be communicated to the supplier.

Product Identification and Traceability Requirements

1. MPP requires the supplier to establish and maintain procedures for identifying the production lots from receipt of raw material through shipment of final product. This system should permit the segregation of suspect material, and the reporting of quality and production data, based upon lot control for each shipment supplied to MPP.
2. All required paperwork such as material certifications, inspection reports, shall be retained by the supplier, and be available to MPP upon request.

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Record Retention

1. Records will be retained at the supplier as followed
 - a. PPAP minimum of 10 years past life of program
 - b. Material certification 3 years
 - c. Inspection reports 3 years
 - d. All other documents not specified for a minimum of 3 years
2. Suppliers with Design Responsibility Records will be retained at the supplier as followed
 - a. Control plans, material & performance test results, process studies, AAR, checking aids 15 years past life of program
 - b. Design records (ECR's, DPFMEA, PFMEA, process flow, dimensional results, laboratory documents, sample production, records of compliance and PPAP records 50 years past life of program.

Supplier Performance Scorecard

Supplier Performance Rating System, (SPRS)

1. SPRS is used to monitor supplier performance on an annual basis at minimum. This system will put variable data in a numeric database, which will be used to provide feedback to both the supplier and MPP about on-going performance. Feedback will be provided to the suppliers on an annual basis.

Repercussions of Poor Supplier Performance

1. The supplier performance information (SPRS) will be used to determine future sourcing decisions and supplier development activities. In addition, suppliers that exhibit poor performance or Non/Poor-Responsiveness to corrective actions will be notified by MPP to provide their specific corrective action reports and their overall improvement plan. Suppliers who continue to exhibit poor performance or non-responsiveness could be subject to an on-site Supplier Quality Audit by MPP, placed on New Business Hold status, and/or could be resourced and removed from the Approved Source List, depending on the severity of the quality issues. All prior purchase commitments made with a supplier will be considered void if this supplier is removed from the Approved Source List due to unacceptable performance.

Supplier Corrective Action Request (SCAR)

SCAR's will be issued for the following

1. SCAR's will be issued when the supplier's product (bulk, raw, component, assembly, etc) has been determined to not meet design/print/functional requirements. Reason may include dimensional, appearance, fit, form, and/or function that cannot be used within the MPP facility or is returned from an MPP customer. The origin of the reject can occur at any process step (MPP facility, MPP's customer, or customer warranty). Other examples for issuing a SCAR include not meeting the engineering specifications, foreign material present in the product, damaged material, incorrect material shipped, short shipments, mislabeling, packaging, PPAP, failure to maintain annual validation records, safety issues, launch, late corrective action responses, missing/expired required upload documents, non- responsiveness, etc.
2. Each MPP plant will issue specific instructions if material is rejected. When supplier product is rejected from either a MPP plant or one of the MPP customer locations, rejections must occur in accordance with the SQM. Suppliers to MPP will be responsible for costs incurred due to the supply of defective material. The supplier is responsible for replacing non-conforming material in a timely manner to meet MPP delivery requirements. In the event MPP detects non-conforming purchased items, and production scheduling and inventories prohibit return to the

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supplier, MPP reserves the right to perform the necessary separation of non-conforming product at the Suppliers expense. Additional associated costs as a result of the non-conformance may be charged back to the supplier.

Concerns will be issued for the following

1. Concerns are for any minor issue which does not directly affect the quality of a MPP manufacturing process but the supplier needs to be aware. Concerns do not affect the supplier's scorecard and are only for historical records or to process cost only paperwork.
2. Possible reasons for concerns could include these limited examples; sorting cost or return of product not included on previous SCARs, incorrect product labeling, missing paperwork, slightly damaged packaging, ect.
3. Should a supplier pro-actively call the MPP Plant with a potential issue that MPP is not aware of, this would also be coded as Concern.

Supplier Response

1. Should a SCAR be issued, the supplier is expected to immediately contact the MPP Plant to understand the issue and agree on the proper level of support needed to maintain production at MPP. Then, throughout the SCAR corrective action process there are time limits for timely completion.
 - a. Immediately upon SCAR issuances identify containment with the MPP SCAR Author.
 - b. Within 10 days of SCAR issuance identify root cause and corrective action.
 - c. Within 15 days of SCAR issuance implement permanent corrective action.
 - d. If more time is needed, please obtain prior agreement from the MPP SCAR author.
 - e. The first reply of the SCAR is to be within the first 24 hours.
 - f. Future replies SCAR are to be no more than every 7 days thereafter to document progress until the corrective action is approved by Metal Powder Products.
2. If the above timing is not meet, MPP may issue a Customer Dissatisfaction SCAR. If a SCAR continues to go unanswered or continues to receive poor response after on-going documented attempts by the MPP, then MPP Management will intervene and develop next steps (e.g. supplier meeting, placement on No New Business Hold, removal from ASL, and/or resourcing of current business).
3. As part of the evidence of the permanent corrective action, ALL Documentation (Control Plan, PFMEA, WI, etc.) shall be up-dated and be provide with the SCAR reply as evidence of change. These documents shall clearly identify the SCAR# on both the Control Plan & PFMEA. If the SCAR is a repeat issue that shall also be noted on the Control Plan & PFMEA. The new RPN # on the PFMEA shall reflect the actions taken utilizing the latest AIAG PFMEA Edition.
4. Operator Error is not an acceptable root cause and a SCAR with this reason will be Rejected.
5. The duration of certifying stock is until the Permanent Corrective Action (PCA) is implemented, plus a verification period (as defined by the MPP plant) to confirm the PCA effectiveness.

Supplier SCAR Appeal Process

1. The supplier may appeal the issuance of a SCAR or specific information contained in the SCAR. To appeal, the supplier shall use the following process:
 - a. The supplier shall provide objective evidence to the issuing location demonstrating the rationale for the appeal.
 - b. Any request for change or appeal to a SCAR must be submitted within 10 calendar days of issuance of the SCAR. Requests after this time frame will not be reviewed.
 - c. If 10 calendar days are not enough time to determine if a SCAR appeal is needed, then the supplier shall submit a written communication to the SCAR Author requesting additional time.

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2. If the supplier does not agree on the outcome of the appeal, the supplier may pursue the appeal further within 10 days of the MPP plant decision. The 2nd level appeal should be directed to the MPP Director of Purchasing, for further consideration.

Controlled Shipping / Containment

1. The purpose of the containment is to ensure only conforming product is shipped uninterrupted to MPP plants. Controlled shipping is a requirement for a supplier to implement a redundant inspection process to sort for non-conforming material resulting from ineffective supplier process controls. Controlled shipping must become a corrective action process, not just an inspection process. The redundant inspection is in addition to normal controls. In addition to providing defect free product, controlled shipping results will help identify system failures and in-effective corrective actions previously taken. Suppliers required to implement either a Level 1 or 2 containment shall be notified via email or in a formal letter by the MPP plant.

Determination of the need for Contained Shipping-Level 1 or 2

1. MPP makes the determination whether the supplier can effectively correct the nonconforming material situation through the SCAR process and isolate the end customer from the problem. One or several of the following may be considered for implementation of Contained Shipping:
 - a. Excessive issuance of SCARs to the same supplier
 - b. Repeat SCARs for the same component or component family
 - c. Duration and severity of the problem
 - d. Incapable processes
 - e. Impact on MPP's Customer
 - f. Severity of quality problem
 - g. Inadequate containment and/or resolution of nonconformance via the SCAR Process.
 - h. Major Disruptions at either MPP plant or MPP's customer
 - i. APQP, Safe Launch, PPAP and / or Launching problems
2. Based on consideration of the above, MPP decides whether Level 1 or Level 2 would be appropriate. Input for this decision may be provided by the various MPP departments as appropriate.

Level 1 Controlled Shipping includes a problem solving process as well as a one additional redundant inspection process. The supplier is required to perform a 100% certification using an additional off line inspection process, of all products prior to shipment to MPP. This certification shall be over and above the present controls in place. The inspection process is enacted by the supplier's employees at the supplier's location to isolate MPP from receipt of nonconforming parts/material. As defined by MPP, the supplier shall clearly identify each container to identify that it has been undergone Level 1 certification. As defined by MPP, each individual part may be required to be marked to show certification.

Level 2 Controlled Shipping includes a problem solving process as well as two redundant inspection processes. First by the supplier per level 1 above, then by a separate 3rd party company. The supplier is required to contract a certified 3rd party to certify and inspect off line all products prior to shipment to MPP. Level 2 containment is imposed on a supplier when level 1 is not successful, early production issues, or as deemed necessary by MPP. The third party sorting company is selected by the supplier, approved by MPP and paid for by the supplier. In special cases, the Level 2 Controlled Shipping inspection may be required to be performed outside the supplier's facilities at a location defined by MPP. Suppliers are required to notify their registrar when placed on Level 2 containment. As defined by MPP, the supplier shall clearly identify each container to identify that it has been undergone Level 2 certification. As defined by MPP, each individual part may be required to be marked to show certification.

The key steps of the Controlled Shipping process

1. An agreement within MPP Quality and MPP Plant management that current controls by the supplier are not sufficient to insulate MPP from the receipt of nonconforming parts/material.
2. Determination by MPP which level of controlled shipping is required and how it is to be

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- implemented.
3. Provide formal written communication to the supplier of action (Level 1 or Level 2) to be taken including an exit criterion.
 4. Supplier provides containment status, sort results and effectiveness on a regular basis.
 5. Review of irreversible corrective action plans.
 6. Once corrective action is proven to be effective, removal of contained shipping status.

Supplier Initiated Changes / Engineering Change Request (ECR) Process

1. Prior to implementing any post PPAP or post Launch change, obtain written MPP approval to proceed. Changes needing MPP prior written approval including but not limited to material, process, manufacturing location, sub-supplier, tool modifications shall be communicated through the respective divisional purchasing department. If you have any question regarding the MPP form to be used, contact the MPP plant directly for clarification prior to the change implementation. All costs associated to non-approved changes are the responsibility of the supplier for payment.

Cost Recovery

Supplier Cost Recovery & Debits Process

1. All costs associated with supplier rejections are entered by the SCAR Author and processed through the SCAR process.
2. The Acceptance Criteria for product shipped to MPP is Accept on Zero, Reject on One. Although this appears to be very strict, it has been the acceptance criteria for companies supplying the automotive industry for a number of years.
3. The quality standards for products supplied to MPP include the criteria set forth on the approved drawings, specifications, written communications, the business rules set forth in the Supplier Manual and any other requirements specified by the MPP plant in order to produce final products which are acceptable to the end customers. Suppliers will be made aware of specific quality requirements through communications which may include any or all of the following; Launch Meetings, APQP meeting, Supplier Assessments, Process Review Meetings, SQM and actual production experience at the MPP plant. MPP will attempt to make the supplier aware of quality requirements prior to the start of production, however actual production experience and end customer feedback may necessitate changes to the originally expectations.
4. Supplier charge backs are meant to recover lost cost incurred by MPP. This may include cost associated with supplier Non-conforming product, PPAP issues, Delivery issues, Safety issues, Launch issues, Warranty issues, upload Documentation issues, and Packaging issues. Standardized costs are outlines in regional supporting documentation.
5. The supplier may appeal the issuance of a Supplier Chargeback contained in the SCAR. To appeal, the supplier shall use the following process:
 - a. The supplier shall first complete the entire corrective action for the SCAR and include all supporting documentation in the reply. Then request a meeting with the MPP plant to discuss the rationale for the appeal.
 - i. If less than \$10,000 USD the MPP Plant Quality Manager and Plant Manager will provide the appeal outcome decision.
 - ii. If more than \$10,000 USD, the MPP plant will organize a discussion to include at least one of the following: MPP Director Operations, Director Purchasing, and Divisional Controller for the appeal outcome decision.
6. If the Supplier does not respond within 10 working days from when the charge was entered in the SCAR system or documented to the supplier, the Supplier will be

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deemed to have accepted the charge. If additional time is required for the supplier to appeal the Chargeback, the supplier shall submit a written communication requesting more time to the SCAR Author.

Health, Safety & Environment

1. The supplier must ensure that products and services delivered comply with all relevant regulatory requirements on occupational and public health and safety as well as environmental protection in both: the country of manufacture as well as in the country of sale.
2. The supplier must provide all regulatory required documentation for the products and services delivered (e.g.: safety data sheets; marking and labeling of hazardous materials; machines safety conformity declarations associated with operation manual and technical file; etc.) in the languages needed.
3. MPP expects the supplier to perform its manufacturing and other activities in compliance with all relevant health, safety & environmental regulatory requirements.
4. MPP encourage that the supplier establishes and maintains an environmental management system in accordance with ISO 14001 or equivalent. At least, environmental procedures should be in place covering the manufacture and delivery (e.g. durable, recyclable packaging) of the products or services in question.

Contingency Plan

1. Suppliers shall develop a contingency plan for potential catastrophes disrupting product flow to MPP, and advise MPP at the earliest in the event of an actual disaster. In an actual catastrophe, the supplier shall provide MPP access to the supplier's tools and/or their replacements.

Revision History

Date	Revision		Author / Dept	Approved By
Jan, 9 2017	1	Original Release	D. Smith / Quality	
Feb, 12, 2019	2		S. Kahn/ Purchasing	MJ Schneider