Master Molded
Products Corporation

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www.mastermolded.com

An ISO 9001/ISO 14001/TS16949 Registered Company

MMPC Supplier Quality Manual

Signature Page

As the undersigned authorities of this document (QA 0878, Revision E, 2/1/2010) and consistent with ISO-9001/TS 16949 quality requirements and MMPC supplier quality system expectations, we enthusiastically endorse and support the Master Molded Products Corp. Supplier Quality Manual, its policies and its contents as a means toward continuous quality improvement and waste reduction among the supply base.

We strongly encourage each supplier to adopt these standards as a minimum quality expectation and continuously strive to develop improved practices that are both systemic and value-added.

Art Schueneman
Art Schueneman, Vice President of Operations

Ken Mraz
Ken Mraz, Director of Quality Operations

Liz Roush
Liz Roush, Quality Assurance Manager

Supplier Acknowledgement

As a supplier of production materials to MMPC, I acknowledge that:

I received a copy of the MMPC Supplier Quality Manual and accept its terms.

Signature

Printed Name

Company Name

Title

Date

Supplier System Certifications (please check all boxes that apply and fax copies of certifications):

☐ **ISO-9001**	☐ **TS-16949**	☐ **ISO-14001**	**Others:** _____

☐ **None (Please include certification plans & timing):** _____

Please send this completed acknowledgement by fax to:

Quality or Purchasing Dept.
847-695-9707
MMPC Supplier Quality Manual

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Introduction

Goal:

The intention of the MMPC Supplier Quality Manual (QA 0878, Rev E, 2/1/2010) is to clearly communicate the quality system expectations for the supply base. Through quality system standardization, the secondary goal is to move a supplier's product from an inspection-based system to a ship-to-stock system by verifying a supplier's quality system and product.

Purpose:

The MMPC Supplier Quality Manual defines the minimum and fundamental quality system expectations for all MMPC suppliers of production materials and services. MMPC is committed to developing long-standing strategic relationships that are mutually beneficial. In doing so, MMPC is requiring its supply base to adopt and embrace these standards as a first step in improving quality and reducing variation and waste throughout the supply chain.

Approach:

The MMPC Supplier Quality Manual is a union of best practices of industry leaders, ISO 9001:2008/TS 16949:2009 requirements and specific needs of MMPC. The supplier will notice many similarities with the current ISO 9001:2008/TS 16949:2009 Quality System Requirements. This was done to prevent the supplier from having to adopt multiple quality systems in order to satisfy its registrar and MMPC. Important differences do exist, though. First, not all requirements of ISO 9001:2008/TS 16949:2009 have been included; second, wherever an opportunity existed to insert MMPC -specific requirements directly into this standard it was taken; and finally, Section II summarizes remaining MMPC -specific requirements. Further, the supplier's attention is called to additional AIAG-sanctioned manuals where appropriate.

The word "shall" indicates a mandatory requirement. The word "*should*" indicates a requirement that MMPC requests be complied with and its written use has been italicized for easier identification.

Any note of clarification has been bolded and italicized; an example would be "***Note:***".

Applicability:

The MMPC Supplier Quality Manual is applicable to all suppliers of production materials and services to MMPC, including distributors, independent of product, volume or sales dollars. Depending on the specific supplier, not all sections or sub-sections may apply. If in doubt, contact the MMPC Quality Department.

Each applicable section and sub-section of this standard is to be complied with regarding MMPC and its product including those sections not specifically named with MMPC.

Implementation:

Production material and service suppliers to MMPC are to establish, implement, and maintain quality systems in accordance with this standard upon receipt. Representatives of MMPC may verify conformance to this standard personally. Failure to comply with or maintain a quality system at least consistent with this standard may result in loss of business.

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Section I – ISO 9001: 2008 /TS 16949: 2009 - Based Requirements

1.0 Management Responsibility

1.1 Quality Policy

The supplier shall formally define and document a quality policy. This policy shall include objectives for and management's commitment to quality.

1.2 Quality Representative

The supplier shall have as part of its own management team a member who has authority and responsibility for:

- Establishing and implementing a quality system
- Reporting on the performance of the quality system
- Acting as a liaison between the supplier and MMPC regarding quality issues

1.3 Management Review

The supplier shall conduct regular reviews of the performance of its quality system. These reviews shall include all aspects of the quality system and be documented.

1.4 Analysis and Use of Data

The supplier shall document trends in at least quality, productivity, efficiency and effectiveness. Metrics of trends for MMPC product *should* be maintained.

1.5 Customer Satisfaction

The supplier shall have a documented process for determining the level of customer satisfaction of MMPC. Trends of satisfaction and indicators of dissatisfaction shall be documented and supported with evidence.

1.6 MMPC Notification

The supplier shall notify MMPC immediately of any major non-conformance found during any third party audits or if certification status is down graded or revoked. All Suppliers shall provide a legible electronic or faxed copy of their ISO 9001:2008 or ISO /TS 16949:2009 certificate. These certificates, or information related to such certificates, must be re-submitted to MMPC within ten (10) days of any change or update related to such certification.

2.0 Quality System

2.1 General

The supplier shall establish, document and maintain a quality system as a means of ensuring to MMPC that product conforms to specifications. The supplier shall prepare a quality manual that encompasses at least the requirements of this standard.

2.2 Quality System Procedures

The supplier shall prepare documented procedures at least consistent with this standard and the supplier's quality policy, and ensure such procedures are effectively implemented.

Procedures may make reference to additional documents such as work instructions, visual aids, process instructions, etc.

2.3 Quality Planning

The supplier shall define and document how the requirements for quality will be met taking into consideration:

- Quality plans
- The identification of all resources necessary to achieve the required quality
- The compatibility of the total process and the entire supply chain
- Updating or upgrading of the quality system
- The clarification of any standard of acceptability prior to production

Note: MMPC's supply base is encouraged to use techniques identified in the AIAG Advanced Product Quality Planning and Control Plan manual for quality planning purposes.

2.4 Special Characteristics

The supplier's FMEAs and control plans specific to MMPC product shall be marked with the special characteristic symbols used by MMPC as identified on its design records.

2.5 Feasibility Reviews

The supplier shall investigate and confirm the feasibility of proposed products prior to acceptance of any contract to produce those products.

2.6 Failure Mode and Effects Analysis (Design and Process)

The supplier shall develop PFMEAs for MMPC products that take into consideration DFMEAs, if provided. Reference the AIAG Potential Failure Mode and Effects Analysis manual.

2.7 Mistake Proofing

The supplier should make use of mistake-proofing methodologies throughout the quality planning phases and as part of continuous production improvement.

2.8 Control Plan

The supplier shall develop control plans for MMPC product. Reference the AIAG Advanced Product Quality Planning and Control Plan manual.

2.9 Production Part Approval Process

The supplier shall submit and be granted PPAP approval in accordance with the requirements of this standard prior to the first production shipment. The Business Development Group-Quality Engineer or Quality Manager of MMPC shall approve any deviation from the above in writing. Reference the AIAG Production Part Approval Process (PPAP) manual.

2.10 Continuous Improvement

The supplier shall continuously improve in quality, service, project timing, delivery and price. The supplier *should* identify opportunities for quality and productivity improvement and implement improvement projects.

2.11 Tooling Management

The supplier shall establish and implement a system for tooling management that includes:

- Maintenance and repair (internal or external)
- Storage
- Setup
- Perishable tooling
- Tooling modification

3.0 Contract Review

3.1 General

Before the acceptance of a contract or order, the supplier shall ensure that:

- The requirements of MMPC are adequately defined, documented, and understood
- The supplier has the capacity to meet stated requirements
- The requirements stated in this standard can be met
- Any discrepancies are resolved

3.2 Records

Records of contract reviews shall be maintained.

4.0 Design Control

4.1 General

The supplier shall control and verify the design of MMPC product, as it pertains to the manufacture of that product, to ensure that specified requirements are met.

4.2 Design Input

The supplier shall perform a document review of a MMPC design as it pertains to the manufacture of the product. The supplier shall notify MMPC of any conflicting or ambiguous design requirements prior to PPAP and production.

4.3 Design Output

The supplier's design output, if necessary, shall:

- Meet the design input requirements
- Contain or make reference to established acceptance criteria
- Identify special characteristics utilized by MMPC

4.4 Design Review

The supplier shall conduct documented design at appropriate stages.

4.5 Design Validation

The supplier shall conduct design validation and submit records of such validation to MMPC when requested.

4.6 Design Changes

The supplier shall notify and receive written authorization from MMPC prior to the implementation of any design changes. Design changes with authorization from MMPC require the supplier to submit PPAP documenting such changes.

5.0 Document and Data Control

5.1 General

The supplier shall establish, implement and maintain a system that controls all documents and data related to the requirements of this standard.

6.0 Purchasing

6.1 General

The supplier shall establish, implement and maintain a system to ensure that purchased product conforms to specified requirements.

6.2 MMPC - Specified Sources

MMPC may specify the use of a specific source for production materials. In those cases, the supplier shall purchase materials from that source. Even though MMPC has specified the source, this does not relieve the supplier of ensuring the product conforms to specifications.

7.0 Control of Customer-Supplied Product

7.1 General

When MMPC has provided the supplier product owned or under the control of MMPC, the supplier shall establish, implement and maintain a system for controlling, verifying, storing and maintenance of such product. If such product becomes lost, damaged or is otherwise unusable the supplier shall immediately notify MMPC.

Note: Generally this clause refers to tooling and returnable packaging, but the intent covers any product or material owned or under the control of MMPC. Additional examples may include test equipment and fixtures, raw material, design records, hardware/software, etc.

8.0 Product Identification and Traceability

8.1 Identification

The supplier shall ensure that MMPC product is identifiable during all stages of manufacture.

8.2 Traceability

MMPC may specify that sub-components, sub-assemblies or finished goods be traceable from receipt through manufacture to delivery to MMPC. In such cases, the supplier shall establish, implement and maintain a system that uniquely identifies individual product or batches.

8.3 Labeling

A supplier's finished goods packaging shall be labeled with:

- The MMPC part number
- Part revision level (if applicable)
- Date of manufacture or lot number
- Quantity
- Manufacturer's part number (if applicable)

9.0 Process Control

9.1 General

9.1.1 Cleanliness

The supplier shall maintain its operations in a state of order, cleanliness and repair.

9.1.2 Contingency Plans

The supplier shall prepare contingency plans in the event of unexpected conditions that could affect the supply of product to MMPC.

9.1.3 Preventive Maintenance

The supplier shall identify process equipment that is key to the manufacture of MMPC product and develop a preventive maintenance system for that equipment. This preventive maintenance system shall include, at a minimum:

- Maintenance procedures
- Maintenance schedules

9.2 Process Control

9.2.1 General

The supplier shall monitor its processes until long-term process capability or performance is achieved and thereafter at defined intervals. Process monitoring shall be included on the control plan.

9.2.2 Cpk/Ppk

Processes that are considered to have long-term process capability or performance has an index value ≥ 1.67; processes that may be acceptable, have an index value ≥ 1.33 but ≤ 1.67. Processes that are considered unstable have an index value ≤ 1.33 and the supplier shall initiate a special containment process that includes, at a minimum, 100% inspection.

9.3 Process Changes

The supplier shall not alter its processes without prior written authorization from MMPC.

Note: MMPC encourages its supply base to improve in both productivity and efficiency. Such improvement may require process changes that can be documented and approved by MMPC in a PPAP submission. Consult the AIAG Production Part Approval Process manual for further definition.

9.4 Appearance Items

For suppliers providing product designated as "appearance", the supplier shall at least:

- Provide appearance masters

Note: In all cases unless specifically designated by the supplier, the supplier's PPAP samples shall be considered the appearance masters.

10.0 Inspection and Test

10.1 General

The supplier shall establish, implement and maintain inspection and test activities for MMPC product that verifies product requirements have been met during manufacture and prior to shipment. Product shall be appropriately identified as either conforming or nonconforming. Records of inspection and test shall be maintained.

10.2 Receiving Inspection

The supplier *should* conduct inspection and test on incoming product. Alternative methods also include:

- Evaluation of statistical data
- Independent inspection and test from an external party from the sub-supplier

10.3 In-Process Inspection and Test

The supplier shall conduct inspection and test on in-process product per the control plan or other documents.

10.4 Final Inspection and Test

The supplier shall conduct final inspection and test on product per the control plan or other documents, holding product until all required inspection and test activities have been completed.

10.5 Certificates of Compliance, Material Certificates, and Statistical Data.

All Suppliers shall include any specific requirements as noted on the MMPC Purchase Order.

10.5.1 Suppliers of resins

Suppliers of resins shall provide MMPC, with each shipment, a Material Certificate with MMPC's unique part number printed on it as ordered. (Reference MMPC Purchase Order).

10.5.2 Suppliers of inserts and components

Suppliers of inserts and components shall provide MMPC, with each shipment, A Certificate of Compliance and supporting statistical data stating that the production lot shipped:

- Meets all requirements of the current blueprint revision
- Product was produced using the correct material
- Meets or exceeds Cpk = 1.67 on all special characteristics
- A representative of the supplier shall sign the certificate of compliance.

10.6 Suppliers other than resin, inserts, or components suppliers

All other suppliers to MMPC should contact a MMPC Quality Engineer or the Quality Manager for direction on product/lot quality documentation requirements.

***Note**:* Required quality data shall be affixed to the outside of the container and clearly marked so as not to be confused with other shipping documents Required quality data may also be sent in an electronic format to the appropriate quality engineer or the quality manager.

11.0 Inspection, Measuring and Test Equipment

11.1 General

The supplier shall establish and maintain procedures to control, calibrate, and maintain inspection, measuring, and test equipment used by the supplier to demonstrate conformance of MMPC product to the specified requirements.

12.0 Inspection and Test Status

12.1 General

The inspection and test status of MMPC product shall be identified by suitable means, which indicates the conformance or nonconformance of product with regard to inspection and test performed.

Note: Additional verification/identification may be required on new product launch or other significant event (i.e.: production after engineering change).

13.0 Control of Nonconforming Product

13.1 General

The supplier shall establish, implement and maintain a system for ensuring that product which does not meet MMPC requirements is prevented from further processing or shipment. This level of control shall include product identification, evaluation, segregation, disposition and notification to MMPC as necessary.

Note: For the purpose of this standard, nonconforming product shall also include suspect product.

13.2 Deviation for Product/Process Non-Quality

13.2.1 General

In the event it is necessary to request authorization for a temporary deviation for the purpose of product or process acceptance when that product or process is not currently approved, contact MMPC Purchasing for direction.

Authorization of a deviation by MMPC is conditional; the product or process under deviation must not adversely affect form, fit or function nor violate any contractual agreements.

13.2.2 Approval

Only a Quality Engineer or the Quality Manager of MMPC may approve product or process deviations and written approval is required before shipment.

13.2.3 Shipment Notification

Upon having received written approval, the supplier shall clearly and visibly attach the deviation record to each shipment container. It shall

be the supplier's responsibility to ensure the deviation notification is present at the time of receipt by MMPC.

14.0 Corrective and Preventive Action

14.1 General

The supplier shall establish, implement and maintain a system for corrective and preventive action.

14.2 Corrective Action

The supplier shall:

- Respond to any request by MMPC for corrective action within 24 hours, have a documented containment plan in effect within 48 hours, and have root-cause identified, corrected and verified within 30 days. It remains the supplier's responsibility to ensure that responses are received, understood and documented.
- Make use of disciplined problem-solving (See APPENDIX C for assistance)
- Involve its management team in problem awareness and resolution.

14.3 Preventive Action

The supplier shall use available sources of information and data, both internal and external, to detect, analyze and eliminate potential causes of nonconformance regarding MMPC product.

15.0 Handling, Storage, Packaging and Delivery

15.1 Handling

The supplier shall utilize methods for products handling that prevent damage or deterioration.

15.2 Storage

The supplier shall utilize designated product storage areas prior to shipment to MMPC.

15.3 Packaging

The supplier shall comply with all unique MMPC packaging standards including those imposed on a temporary basis.

15.4 Delivery

The supplier shall establish systems to support 100% on-time delivery of product to MMPC. If data indicates that 100% on-time delivery is not maintained, the supplier shall implement corrective action to improve its performance. The supplier must notify the MMPC Purchasing Dept. if any premium freight charges are incurred by the supplier in order to deliver on time,

16.0 Quality Records

16.1 Record Retention

Quality records of and relating to MMPC product shall be retained for one calendar year following the end-of-life cycle of the specific product. Exceptions to this standard may be sought by the supplier and granted by MMPC on a case-by-case basis in writing.

17.0 Internal Quality Audits

17.1 General

The supplier should plan, schedule, and perform internal audits of the supplier's quality system to identify opportunities for improvement.

18.0 Training

18.1 General

The supplier shall identify training needs and provide training of all personnel performing activities affecting MMPC product quality. Training effectiveness should be periodically reviewed.

19.0 Servicing

19.1 General

Where servicing is a specified contractual requirement, the supplier shall perform, verify, and report that the servicing meets the specified MMPC requirements.

20.0 Statistical Techniques

20.1 General

The supplier shall identify, establish and implement statistical techniques to control and verify process capability and product characteristics. Reference the AIAG Statistical Process Control manual. Statistical tools shall be identified on the control plan and other documents where required.

20.2 Statistical Tools

The supplier *should* identify statistical tools and their application during advanced quality planning activities.

Section II - MMPC - Specific Requirements

Appendix A - Supplier Quality Assessment

General

1. **Supplier's Subcontractors:** All suppliers are required to have a system that ensures compliance with this manual by all suppliers within your supply chain. Conformance to ISO/TS-

16949 dictates that suppliers evaluate their subcontractors on delivery performance, quality systems, continuous improvement and cost management. Customer specific requirements as defined by MMPC shall also be communicated to the supplier's subcontractors and compliance shall be ensured.

2. A completed MMPC Supplier Survey *(MAT 0394.doc)* will be required from a new supplier's quality system prior to contractual agreement or may be requested from an existing supplier for evaluation of suitability for continued business opportunities with MMPC.

3. Supplier quality performance will be reviewed quarterly. The need for on-site supplier auditing is based on performance history and will be scheduled on a prioritized basis. Suppliers will be notified at least two (2) weeks in advance of the planned date in the event of a need for an on-site audit.

4. Prior to an audit, a qualified auditor will reach consensus with the supplier on which sections and subsections of this standard may not be applicable and forward an audit agenda.

5. Based on audit results and/or quality performance, suppliers will be categorized as "Approved" or "Unapproved." A supplier may be designated Unapproved and de-sourced for reasons that include but are not limited to:

    - Consolidation of goods or services with fewer suppliers
    - Design changes or requirements
    - Material requirements
    - Quality
    - Pricing
    - Delivery
    - Servicing

Appendix B - PPAP

General

1. The supplier shall submit appropriate PPAP documentation to the MMPC Quality Engineer as directed by the QE and this standard or in accordance with instructions included in the AIAG Production Part Approval Process manual.

2. The supplier shall submit PPAP documents and sample parts off production-ready tooling.

3. The supplier shall ensure PPAP submissions are received and approved by MMPC prior to delivery of the first production shipment.

4. Full approval of PPAP submissions requires the supplier to meet all requirements of this standard, design records and the purchase order or contract.

5. The supplier shall submit at least thirty (30) samples for review. At least one (1) sample per cavity shall be submitted and tagged with the dimensional results.

Requirements

The supplier shall submit PPAP in accordance with the latest revision AIAG Production Part Approval Process manual and/ or MMPC specific requirements.

Submission

Submit PPAP documents and sample parts to:

Master Molded Products Corp
Attn: Quality Dept. /Quality Engineer
1000 Davis Rd.
Elgin, IL 60123

Appendix C - Corrective Action

General

1. The supplier shall respond to a MMPC corrective action request (CAR) using a disciplined problem-solving approach such as the Eight Disciplines (8D), 7-Step, 5-Why or others.

2. Regardless of the method chosen, the supplier's corrective action shall address at least the following points:

    - *Problem Description* - This is a statement of the issue as initially defined by MMPC with additional insight contributed by the supplier. The intent is to focus the problem-solving team on the exact nature of the issue. The problem description is subject to change and possibly expand as more knowledge is gained about the issue.

    - *Containment Action* - These are aggressive steps taken by the supplier to control and contain the affect of the issue on MMPC. Such steps may include placing all stock on hold pending review, purging all affected stock, on-site product review by the supplier at MMPC's location, 100% inspection of out-going product or others. Once in place, containment action means the supplier has protected MMPC from experiencing further issues of the same nature.

    - *Disposition* - Suspect or nonconforming product on hold by MMPC at its location requires the supplier to immediately provide MMPC with a disposition within 48 hours of initial notification regardless of additional action taken by MMPC. Failure of the supplier to respond within the specified time subjects the supplier to actions that may be taken by MMPC at the supplier's expense. Disposition by the supplier may include:

        - Return and replace
        - Sort/rework/repair by a 3rd-party at supplier's expense
        - Sort/rework/repair by MMPC with cost recovery
        - Scrap and replace.

      Note: Every effort will be made by MMPC to confirm the existence of a supplier issue prior to notification. As a check-and-balance, suspect or nonconforming product is normally reviewed by a cross-functional panel before supplier notification. The supplier is entitled to review samples of suspect or nonconforming product, but this does not preclude the supplier from providing MMPC a disposition within the required time limit.

    - *Root Cause* - This is the underlying cause of the failure that allowed the issue to go undetected until discovered by MMPC. Identification of root cause is critical and necessary before implementing corrective action. A root cause that specifies human error, operator error or equipment error will not be accepted, as this is not a root cause. The supplier's PFMEA and control plan should be updated once the root cause is identified.

    - *Permanent Corrective Action* - This is the most important aspect of the entire problem-solving session. Permanent corrective action refers to those actions taken by the supplier that completely eliminate occurrence of the original issue. If the original issue occurs again, either internally or externally, the corrective action was ineffective.

    - *Verification Activities* - This is how the activities were verified.

3. All steps of the corrective action process shall be completed before the corrective action request (CAR) is closed by MMPC.

Appendix D - Cost Recovery

General

1. MMPC reserves the right to charge back and recover costs from a supplier due to suspect or nonconforming product that ensues in:
    - Field failures that result in warranty burden;
    - Line stoppage;
    - Premium transportation costs; and/or
    - Sort, rework or repair undertaken at the expense of MMPC.
2. The supplier's account will be debited by MMPC.

Appendix E - Performance Reviews

General

1. MMPC will request suppliers with unacceptable performance to address corrective action plans with MMPC staff. An on-site review may be requested.
2. Unacceptable performance may include issues dealing with:
    - Quality;
    - Design;
    - Pricing;
    - Delivery;
    - Service; and/or
    - Other defined concerns.
3. The goal of an on-site review remains to understand the scope of the issue, identify short-term solutions and develop permanent action plans within time limits attainable by the supplier and agreeable to MMPC.
