Special Process: Rubber Processing System Assessment – Mixing & Molding	
Facility Name:Armada Rubber Mfg. Co.	
Address:24586 Armada Ridge Road	
Phone Number:586-784-9135	
Number of Molding Employees at this Facility:62	**Type(s) of rubber processes are performed at this Facility:**
	(X) Injection Molding (X) Transfer Molding ( )Compression Molding (X) Mixing
Captive molder and/or mixer (Y/N):	**◯ Yes x No Specify:**
Commercial Molder or mixer (Y/N):	**◯ Yes x No Specify:**
Date of Assessment:	**10/11/2023**
Date of Previous Assessment:	**10/13/2022**
Actions from Previous Assessment (reference Findings *below)* :	**N/A**
Current Quality Certification(s):IATF 16949:2016	
Date of Re-assessment (if necessary):	
Personnel Contacted:	

Name: Don Edwards	**Title: GM**	**Phone:586-784-9135**	**Email:donedwards@armadarubber.com**
Auditors/Assessors:			
Name: Jeramy Evely	**Company: Armada Rubber MFG Co**	**Phone: 586.784.9135**	**Email: jevely@armadarubber.com**
Number of "Not Satisfactory" Findings: 0			
Number of "Needs Immediate Action" Findings: 0			

Section 1 - General, Pre-Audit Survey				
	Company Name:	Armada Rubber Mfg. Co.		
	Company Address:	24586 Armada Ridge Road, Armada, MI 48005		
	Division:			
	Number of Manufacturing Shifts:	2		
		Capability Exists on Site		
	Guidance	**Yes**	**No**	**Observations & Comments**
1.1	**In-House Manufacturing Capabilities**			
1.1.1	Prepping of elastomers		x	
1.1.2	Prepping of textiles (cleaning, priming, forming, shaping)		x	
1.1.3	Calendering/skim coating		x	
1.1.4	Textile solution coating		x	
1.1.5	Compounding	x		
1.1.6	Injection Molding	x		
1.1.7	Transfer Molding	x		
1.1.8	Cold pot	x		
1.1.9	Traditional	x		
1.1.10	Compression Molding			
1.1.11	Molding textile reinforced		x	
1.1.12	Molding composite articles (rubber-metal; rubber-plastic)		x	
1.1.13	Substrate Treatment		x	
1.2	**Principal Curing Methods**			
1.2.1	Autoclave		x	
1.2.2	In-mold	x		
1.2.3	Oven		x	
1.3	**Post Cure**			
1.3.1	Air circulating ovens		x	
1.3.2	E-beam		x	
1.3.3	**Deflashing**	x		

1.3.4	**Post Molding Trimming**	x		
1.3.5	**Inspection/Product Testing**		x	
1.3.6	**Outsourced Processes/Operations**		x	
1.3.7	**Testing on-site**	x		
1.3.8	**Inspection on-site**	x		
1.3.9	**Quality Conformance Testing**	x		
1.3.9.1	Performed internally	x		
1.3.9.2	Performed externally		x	
1.3.9.3	Combination of both		x	
1.4	**Calibration Capability**			
1.4.1	Performed internally (compliant with ISO/IEC 17025 or ISO 10012)	x		
1.4.2	Outsourced ISO/IEC 17025 accredited Laboratory		x	
1.4.3	Combination of both		x	
1.5	**Is there a current Quality Certification**			
1.5.1	Name of Auditing/Certifying Organization	x		NSF
1.5.1.1	Type of Certificate			IATF 16949:2016
1.5.2	Certificate Issue Date			4/7/2022
1.5.3	Certification expiration Date			4/4/2025
1.5.4	Certificate number			447714

	Section 2 - Management Responsibility & Quality Planning
2.1	There shall be a dedicated and qualified molding professional on site.

• To ensure readily available expertise, there shall be a dedicated and qualified professional on site.
• This individual shall be a full-time employee and the position shall be reflected in the organization chart.
• A job description shall exist identifying the qualifications for the position including chemical and molding knowledge.

Guidance	Yes	No	Observations & Comments
What is this person's title?	x		GM
Is this position reflected in the organizational chart?	x		
Is there a documented job description listing all the required qualifications and responsibilities of this position?	x		
Describe in detail this person's educational background and practical experience.	x		57 years experience as GM
How many years of process experience at rubber mixing/molding facility does this person have?			57
Is this individual a full-time employee at the location being audited?	x		

	Section 2 - Management Responsibility & Quality Planning
2.2	The facility shall perform advanced quality planning.

• The organization shall incorporate a documented advanced product quality planning process.
• A feasibility study shall be performed and internally approved for each new part or process. Similar parts can be grouped into part families for this effort as defined by the organization.
• After the part approval process is approved by the customer, no process changes are allowed unless approved by the customer.
• The organization shall contact the customer when clarification of process changes is required. This clarification of process changes shall be documented.

Guidance	Yes	No	Observations & Comments
Does the facility use a documented advanced quality planning process?	x		
Does the facility perform a documented internal feasibility study for each part before processing? If no, does the facility perform a documented internal feasibility study for similar part types or family of parts before processing?	x		
What is the procedure for changing the process after PPAP or other customer-specified part/process approval?	x		change process

	Section 2 - Management Responsibility & Quality Planning
2.3	The facilities FMEAs shall be up to date and shall reflect the current process.

• The organization shall incorporate the use of a documented Failure Mode and Effects Analysis (FMEA) and ensure the FMEAs are updated to reflect current part quality status.
• The FMEA shall be written for each part or part family or they may be process specific and written for each process.
• FMEAs shall address every process step from part receipt to part shipment.
• A cross-functional team shall be used in the development of the FMEA.
• All special characteristics, as defined by the organization and its customers, shall be identified, defined, and addressed in the FMEA.

Guidance	Yes	No	Observations & Comments
Does the facility have a documented Failure Mode and Effects Analysis (FMEA) in use?	x		
Identify the names and job function of the team members used in the development of the FMEA.			Edwards, Evely, Ankley
Identify if the FMEA is written for each part, part family or process specific.	x		Family
Are all FMEAs consistent with all associated documentation such as control plans, work instructions and shop travelers?	x		
Do all FMEAs include every process step from part receipt to part shipment?	x		

Are special characteristics, as defined by the organization and its customers, identified, defined, and addressed in the FMEAs?	x		
Provide evidence that the FMEA has been updated in response to quality issues.	x		

	Section 2 - Management Responsibility & Quality Planning
2.4	The process control plans shall be up to date and shall reflect the current process.

• The organization shall incorporate the use of a documented control plan and ensure the control plans are updated to reflect current controls.
• The control plans shall be written for each part or part family or they may be process-specific.
• The control plans shall address all process steps from part receipt to part shipment and identify all equipment used and all key molding process parameters as defined by the organization.
• A cross-functional team shall be used in the development of control plans, which shall be consistent with all associated documentation such as work instructions, shop travelers, and FMEAs.
• All special characteristics, as defined by the organization and its customers, shall be identified, defined, and addressed in the control plans.
• The control plan shall detail the product and process characteristics, and controls including testing frequency and sample size.

Guidance	Yes	No	Observations & Comments
Does the facility have a documented control plan in use?	x		
Identify if the control plan is written for each part, part family or process specific.	x		
Do all control plans include every process step from part receipt to part shipment?	x		
Does the control plan identify all key molding process parameters?	x		
Identify the names and job function of the team members used in the development of the control plan.			Edwards, Evely, Ankley
Are the control plans consistent with all associated documentation such as work instructions, specifications and FMEAs?	x		
Provide evidence that sample sizes and frequencies for evaluation of process and product characteristics are addressed and consistent with the minimum requirements.	x		
Are special characteristics, as defined by the organization and its customers, identified, defined, and addressed in the control plans?	x		
Provide evidence that the control plan has been updated in response to quality issues, customer requirements and process changes.	x		Updated 2023

	Section 2 - Management Responsibility & Quality Planning
2.5	All rubber mixing and molding related and referenced specifications shall be up to date and available. For example: SAE, AIAG, ASTM, General Motors, Ford, Stellantis, Toyota, Volvo Truck.

• A document control system is pertinent for the handling and internal distribution of received customer specifications and to keep up to date with national or global standards related to rubber mixing and molding processes. To ensure all customer requirements are understood and satisfied, the organization shall have all related molding and customer referenced standards and specifications available for use and a process to ensure that they are current.
• The organization shall have a process to ensure the timely review, distribution, and implementation of all customer and industry engineering standards and specifications and changes based on customer required schedule. This process shall be executed as soon as possible and should not exceed two weeks.
• The organization shall document this process of review and implementation, and it shall address how customer and industry documents are obtained, how they are maintained within the organization, how the current status is established, and how the relevant information is cascaded to the shop floor within the two week period.
• The organization shall identify who is responsible for performing these tasks.

Guidance	Yes	No	Observations & Comments
Does the organization have all related molding and customer referenced standards and specifications available for use?	x		
How are standards and specifications obtained?	x		AIAG Global Oversight
Describe the system and timing used to maintain the standards and specifications to ensure that they are up to date.	x		
Define that process used to review and communicate within the two week period updated standards and specifications throughout the organization. Include the names and job functions of the responsible personnel.	x		

	Section 2 - Management Responsibility & Quality Planning			
2.6	All molding related internal and external best practices shall be documented and maintained.			
Guidance		**Yes**	**No**	**Observations & Comments**
Does the organization have a documented process and system for maintaining best practices obtained through lessons learned or from industry knowledge?		x		
	Section 2 - Management Responsibility & Quality Planning			
2.7	There shall be documented process instructions.			
• The organization shall have written process instructions for all active parts or family of parts, including relevant part specific requirements, and relevant operating parameters. Examples of operating parameters include process temperatures, cycle times, etc. Such parameters shall not only be defined, they shall have operating tolerances as defined by the molder in order to maintain process control. • These process instructions may take the form of work instructions, job card, computer-based recipes, or other similar documents.				
Guidance		**Yes**	**No**	**Observations & Comments**
Does the organization have written process instructions for all active parts or family of parts and include all relevant operating parameters?		x		
What form of process specification is used? (These may be in the form of work instructions, job card, computer-based recipes, or other similar documents.)		x		
	Section 2 - Management Responsibility & Quality Planning			
2.8	A valid product capability study shall be performed.			
• To demonstrate each process is capable of yielding acceptable product, the organization shall perform product capability studies for the initial validation of each process, after relocation of any process equipment, and after a major change of any process or equipment. The organization shall define what constitutes a major change. • Initial product capability studies shall be conducted for all molding processes per line as defined in scope of work and in accordance with customer requirements. Capability study techniques shall be appropriate for the molding product characteristics (e.g., molding thickness, and part weight). • An action plan shall exist to address the steps to be followed in case capability indices fall outside customer requirements or established ranges.				
Guidance		**Yes**	**No**	**Observations & Comments**
Has an initial product capability study been performed?		x		
Are studies conducted for each molding process for each line in the facility?		x		
Has a new study been completed after relocation of any process equipment, major rebuild of any equipment, or any significant change in process chemistry?		x		
How does the organization define what constitutes a major change?		x		Drawing change
What steps are followed when capability indices fall outside specified requirements?		x		N/A
	Section 2 - Management Responsibility & Quality Planning			
2.9	The organization shall have a process in place to collect, analyze, and react to product and process data at specified intervals.			
• The analysis of product characteristics and processes parameters over time can yield vital information for defect prevention efforts. • Methods of analysis shall include ongoing trend or historical data analysis of special product and process parameters. • The organization shall determine which parameters to include in such analysis. • Management or management designee shall review the monitoring systems/logs at specified intervals. • The organization shall have reaction plans for nonconformances to process requirements.				
Guidance		**Yes**	**No**	**Observations & Comments**

What product characteristics and process parameters are used?			Dimensional Study
How is the ongoing trend or historical data reviewed and analyzed?			Each PPAP
How does the organization use this data to prevent future failures and improve the quality system?			A3 /8D Problme Solving
Define the process in place to gather and review this information.			PPAP
Identify the manager or management designee reviewing the process records from the monitoring systems/logs.			GM
Describe reaction plans for nonconformances to the written process requirements.			Report and Correct
	Section 2 - Management Responsibility & Quality Planning		
2.10	All process control and testing records must be retained for a minimum of one calendar year after the year in which they were created.		
Guidance	**Yes**	**No**	**Observations & Comments**
What is the process to retain these records?	x		
What is the process for retention of customer specific documents with longer retention times?	x		
	Section 2 - Management Responsibility & Quality Planning		
2.11	Internal assessments shall be completed at a minimum once every 12 months using the latest revision of the AIAG CQI-30 Rubber Processing System Assessment – Mixing & Molding.		
Guidance	**Yes**	**No**	**Observations & Comments**
What is the date of the last AIAG CQI-30 Rubber Processing System Assessment – Mixing & Molding?			See above cover sheet
	Section 2 - Management Responsibility & Quality Planning		
2.12	There shall be an internal system in place to authorize reprocessing and it shall be documented.		
• The quality management system shall include a documented process for reprocessing that shall include authorization from the quality manager or a designated individual. • The reprocessing procedure shall describe product characteristics for which reprocessing is allowed as well as those characteristics for which reprocessing is not permissible. • All reprocessing activity shall require a separate rework specific process control sheet or other identification method issued by qualified technical personnel denoting the necessary molding modifications. • Records shall clearly indicate when and how any material has been reprocessed. • The rework of material shall comply with the customer's specifications and/or requirements.			
Guidance	**Yes**	**No**	**Observations & Comments**
Describe the procedure for authorizing reprocessing of nonconforming material.			Resident chemist can approve deviation
Does the reprocessing procedure describe product characteristics that allow or not allow reprocessing?	x		
Did the quality manager or manager's designee authorize the rework and determine the reprocessing procedure?	x		
How do you identify that material has been reprocessed?			Tags
Do the records clearly indicate when and how any material has been reprocessed including the quality manager's authorization of release?	x		
Provide evidence that the rework complies with your customer's specifications and/or requirements.			Final test results
	Section 2 - Management Responsibility & Quality Planning		
2.13	The Quality Department shall review, address, and document customer and internal concerns.		
The quality management system shall include a process for documenting, reviewing, and addressing customer concerns and any other concerns internal to the organization.			
Guidance	**Yes**	**No**	**Observations & Comments**

Describe the procedure for reviewing and addressing external customer and internal concerns.	x		Quality manager logs and responds
Describe the problem solving approach that is used.	x		8D
Describe the communication process used to respond to the originator.	x		Email
Provide a recent example of this procedure in use.			

	Section 2 - Management Responsibility & Quality Planning
2.14	The organization shall have a continual improvement process.

• The continual improvement process shall be designed to achieve improvements in quality and productivity.
• Identified actions shall be prioritized and shall include timing (estimated completion dates).
• The organization shall show evidence of program effectiveness.

Guidance	**Yes**	**No**	**Observations & Comments**
Describe the continual improvement process used to achieve improvements in quality and productivity.	x		Monthly meetings report results
Provide a recent example of how actions are identified, prioritized and completion dates assigned.			See minutes
Describe how the organization measures the effectiveness.			Cost of quality

	Section 2 - Management Responsibility & Quality Planning
2.15	There shall be predefined personnel responsible for management of materials in quarantine area.

Only the quality manager or designee may authorize the disposition of material from quarantine status.

Guidance	**Yes**	**No**	**Observations & Comments**
Define the process for release of material from quarantine.			Red tag must reflect approval
List the authorized personnel with job titles.			Edwards, Evely, Randall Quality dept
Review evidence that only these persons are releasing materials from the quarantine area.			See tags

	Section 2 - Management Responsibility & Quality Planning
2.16	There shall be documented procedures and/or work instructions for all processes and they shall be available to all of the organization's personnel.

• There shall be procedures or work instructions available to personnel covering their responsibilities.
• These documents shall include instructions for addressing potential emergencies (such as power failure), equipment start-up, equipment shut-down, product segregation (See 2.3, 2.8), product inspection, and general operating procedures.

Guidance	**Yes**	**No**	**Observations & Comments**
Review the procedure/work instruction for process start-up and shut-down.			IATF 16949 certificate
Review the procedure/work instruction for process control during operation.			IATF 16949 certificate
What is the procedure in place to address potential emergencies? (Such as power outage and/or equipment failure).			IATF 16949 certificate
Review the procedures for inspection of the product, in process or after completion.			IATF 16949 certificate
Verify that these procedures/work instructions are accessible to personnel performing the job at all times.			IATF 16949 certificate

	Section 2 - Management Responsibility & Quality Planning
2.17	The organization and management shall provide employee training.

• The organization shall provide employee training for all operations. • All employees, including backup and temporary employees, shall be trained. • Documented evidence shall be maintained showing the employees trained and the evidence shall include an employee assessment. • Management shall define the qualification requirements for each function, and ongoing or follow-up training shall also be addressed.			
Guidance	**Yes**	**No**	**Observations & Comments**
Review the process for initial training of all employees, including backup and temporary.			IATF 16949 certificate
Review the process for ongoing and/or follow-up training.			IATF 16949 certificate
Provide a recent copy of the training matrix.			IATF 16949 certificate
Provide documented evidence that shows how the organization verifies effectiveness of training.			IATF 16949 certificate
	Section 2 - Management Responsibility & Quality Planning		
2.18 Essential management and supervisory functions shall be performed by qualified personnel at all times and a matrix of these essential responsibilities shall be available for review.			
• The organization shall maintain a responsibility matrix identifying all essential management and supervisory functions and list the qualified personnel who may perform such functions. • It shall identify both primary and secondary (backup) personnel for the essential functions (as defined by the organization). • This matrix shall be readily available to management at all times.			
Guidance	**Yes**	**No**	**Observations & Comments**
Review and provide an example of the most recent matrix.			IATF 16949 certificate
Confirm that the matrix includes both primary and secondary persons.			IATF 16949 certificate
Describe how and where this information is made available.			IATF 16949 certificate
	Section 2 - Management Responsibility & Quality Planning		
2.19 There shall be a preventive maintenance program and maintenance data shall be utilized to form a predictive/preventive maintenance program.			
• The organization shall have a documented preventive maintenance program for essential process equipment (as identified by the organization). • The program shall be a closed-loop process that tracks maintenance efforts from request to completion to assessment of effectiveness. • Equipment operators shall have the opportunity to report problems and problems shall also be handled in a closed-loop manner. • Company data (e.g., downtime, quality rejects, first time-through capability, recurring maintenance work orders, and operator-reported problems) shall be used to improve the preventive maintenance program. • Maintenance data shall be collected and analyzed as part of a preventive maintenance program.			
Guidance	**Yes**	**No**	**Observations & Comments**
Show evidence that a documented preventive maintenance program exists.			IATF 16949 certificate
Describe the process for reporting problems.			IATF 16949 certificate
Provide a recent example showing that the person reporting the problem received feedback after the problem was resolved.			IATF 16949 certificate
Give a recent example of how the program was used to prevent/predict potential equipment failure.			IATF 16949 certificate
How is the data being generated reviewed with management to improve the quality system?			IATF 16949 certificate
	Section 2 - Management Responsibility & Quality Planning		
2.20 The organization shall develop a critical spare part list and the parts must be available to minimize production disruptions.			
Spare part suppliers, minimum quantity and lead times shall be documented.			
Guidance	**Yes**	**No**	**Observations & Comments**
Provide the critical spare parts list.			IATF 16949 certificate

Does the critical spare parts list include inventory, lead time and suppliers?			IATF 16949 certificate
Describe how and when the organization updates the list.			IATF 16949 certificate
What criteria are used to determine whether critical spare parts are kept at the facility or sourced off site?			IATF 16949 certificate
Describe the process used to maintain minimum quantities.			IATF 16949 certificate

Section 3 - Job Audit - Finished Product Review				
	Job Identity:	**16605**		
	Customer:	**Stellantis**		
	Company manufacturing location/site being observed:	**Armada Rubber, Armada MI**		
	Date of observation:	**10/11/2023**		
	Operator identifier manufacturing the article at time of observation:	**Tammy**		
	Part number being manufactured at time of observation:	**16605**		
	Rubber compound used during manufacturing of article at time of observation:	**EP6006**		
	Equipment identifier used for manufacturing of article at time of observation:	**Press 13**		
	Operational shift (1st, 2nd, 3rd) responsible for manufacturing of article at time of observation:	**1st Shift**		
	Shop Order Number:	**16605**		
	Part Description:	**Rubber Plug**		
	Molding Requirements:	**Per Drawing**		
Question #	**Job Audit Question**	**Customer or Internal Requirement Identified; reference number/name**	**Actual Condition (Objective Evidence)**	**Satisfactory Not Satisfactory Needs Immediate Action Not Applicable**
3.1	Is contract review and advanced quality planning, FMEA, Control Plans, etc., in place and performed by qualified individuals?			**Satisfactory**
3.2	Does the molder have the proper customer specifications for the part?			**Satisfactory**
3.3	Is there documented evidence of a receiving inspection process?			**Satisfactory**
3.4	Is material identification (part numbers, lot numbers, contract numbers, etc.) maintained throughout the molding process?			**Satisfactory**
3.5	What are the product inspection requirements? *Reference to specific customer requirements by drawing or specification number/name*	Each part may have one or more requirements determined by the specification. Parts must meet each requirement. List each requirement below and validate.		**Satisfactory**
	Complete blue boxes with required information			
3.5.1	**Requirement:**	Part Drawing Specification		**Satisfactory**
	Test Method:		Pass	**Satisfactory**
	Test frequency or quantity:		Pass	**Satisfactory**
	Selection of samples:		Pass	**Satisfactory**
	Specification:	Part Drawing Specification		**Satisfactory**
3.5.2	**Requirement:**			N/A
	Test Method(s):			N/A
	Test frequency or quantity:			N/A
	Selection of samples:			N/A
	Specification:			N/A
3.5.3	**Requirement:**			N/A
	Test Method:			N/A
	Test frequency or quantity:			N/A
	Selection of samples:			N/A
	Specification:			N/A

Section 3 - Job Audit - Finished Product Review				
	Job Identity:	**16605**		
	Customer:	**Stellantis**		
	Company manufacturing location/site being observed:	**Armada Rubber, Armada MI**		
	Date of observation:	**10/11/2023**		
	Operator identifier manufacturing the article at time of observation:	**Tammy**		
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	Operational shift (1st, 2nd, 3rd) responsible for manufacturing of article at time of observation:	**1st Shift**		
	Shop Order Number:	**16605**		
	Part Description:	**Rubber Plug**		
	Molding Requirements:	**Per Drawing**		
Question #	**Job Audit Question**	**Customer or Internal Requirement Identified; reference number/name**	**Actual Condition (Objective Evidence)**	**Satisfactory Not Satisfactory Needs Immediate Action Not Applicable**
3.5.4	**Requirement: Flash**			N/A
	Test Method(s):			N/A
	Test frequency or quantity:			N/A
	Selection of samples:			N/A
	Specification:			N/A
3.5.5	**Requirement: Dimension**			
	Test Method:		Optical Comparitor	**Satisfactory**
	Test frequency or quantity:		Annual	**Satisfactory**
	Selection of samples:		Random	**Satisfactory**
	Specification:	Per Drawing Specification		**Satisfactory**
3.5.6	**Requirement: Appearance**			N/A
	Test Method:			N/A
	Test frequency or quantity:			N/A
	Selection of samples:			N/A
	Specification:			N/A
3.5.7	**Requirement: Customer Specific**			N/A
	Test Method(s):			N/A
	Test frequency or quantity:			N/A
	Selection of samples:			N/A
	Specification:			N/A
Operator or Inspector Responsibilities				
3.6	Were all inspection steps, as documented in the Control Plan performed?			**Satisfactory**
3.7	Were steps/operations performed that were not documented in the Control Plan?			**Satisfactory**
3.8	If additional steps were performed, were they authorized?			**Satisfactory**

Section 3 - Job Audit - Finished Product Review				
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Question #	**Job Audit Question**	**Customer or Internal Requirement Identified; reference number/name**	**Actual Condition (Objective Evidence)**	**Satisfactory Not Satisfactory Needs Immediate Action Not Applicable**
3.9	Does the governing specification allow reprocessing or rework?			**Satisfactory**
3.10	If the order was certified (e.g. PPAP), did the certification accurately reflect the process performed?			**Satisfactory**
3.11	Was the certification/PSW, if applicable, signed by an authorized individual?			**Satisfactory**
3.12	Are the parts and containers free of inappropriate materials/objects and contamination?			**Satisfactory**
3.12.1	Is the container such that environmental protection (from rain/snow, dust, air borne contaminants, etc.) is afforded to the contents?			**Satisfactory**
Packaging Requirements				
3.13	Are packaging requirements identified?			**Satisfactory**
3.14	Are parts packaged to minimize mixed parts or damaged			**Satisfactory**
Shipping Requirements				
3.15	Were the parts properly identified?			**Satisfactory**
3.16	Were the containers properly labeled?			**Satisfactory**

Section 4 - Rubber Mixing			
The organization shall ensure that customer data entered into the receiving system matches the customer's shipping documents.			
• It is critical that all customer requirements and lot identification be correctly transferred to internal documents. • The facility shall ensure that the data entered in the receiving system match the information on the customer's shipping documents. • Documented processes and evidence of compliance shall exist (e.g., shop travelers, work orders). • Sometimes the material received does not precisely correspond to customer shipping documents. The facility shall have a detailed procedure in place to resolve receiving discrepancies. • The requirements stated apply to captive, in-house, commercial and all involved departments.			
	Guidance	**Observation & Comments (should reflect status of section audit: Satisfactory, Not Satisfactory, Needs Immediate Attention)**	**Satisfactory Not Satisfactory Needs Immediate Action Not Applicable**
4.1	**Purchasing Raw Materials**		
4.1.1	Are there purchase specifications for raw materials (chemicals & polymers)? Reference ARPM SP series.		**Satisfactory**
4.1.1.a	Do purchase specifications account for special packaging for special raw materials which are sensitive to environmental conditions?		**Satisfactory**
4.1.2	**Risk Management**: Are there Qualified Product Listings for alternative raw materials as part of the purchase specifications?		**Satisfactory**
4.1.2.a	Is there a documented procedure for evaluating and approving alternative raw materials?		**Satisfactory**
4.1.2.b	Is there a change management protocol in place for raw materials? Reference AIAG D-22		**Satisfactory**
4.1.2.c	Is the rubber mixing operation using statistical methods to evaluate and control incoming raw materials?		**Satisfactory**
4.1.3	**RM Purchasing**		
4.1.3.a	Does the buyer have identified critical characteristics for each raw material?		**Satisfactory**
4.1.3.a.i	Is there an agreed-upon in-process control for each critical characteristic specified by the buyer/engineering? Raw material suppliers to demonstrate control and consistency to prevent shifts that will result in quality issues.		**Satisfactory**
4.1.3.b	Is there a system in place whereby regular review of trends against the raw material specifications are reviewed for capability?		**Satisfactory**
4.1.3.b.i	Are there regular feedback discussions with the supplier regarding these quality analysis?		**Satisfactory**
4.1.4	**Internal RM Management**		
4.1.4.a	Is there a system in effect whereby the certificate of analysis for raw materials are stored?		**Satisfactory**
4.1.4.b	Is there a system in effect whereby the certificate of analysis for raw materials can be easily retrieved and related to use in finished rubber compound batches for traceability?		**Satisfactory**

4.1.5	Is there incoming inspection for raw materials?		**Satisfactory**
4.1.5.a	Is there an audit/sampling plan in place to monitor and ensure the raw material supplier quality?		**Satisfactory**
4.1.5.a.i	Is there a protocol for incoming inspection of raw materials?		**Satisfactory**
4.1.5.a.ii	The organization shall have a process in place, and being followed, to determine the frequency of inspection and shall be based on the risk analysis contribution of the raw material in order: Polymer<Cure System<Filler<Softeners/Plasticizers.		**Satisfactory**
4.1.6	Is there a system in place whereby non-conforming material is quarantined?		**Satisfactory**
4.1.7	Is there a documented supplier audit process in place and active?		**Satisfactory**
4.2	**Section 2 - Internal Management of Raw Material**		
Procedures are required for part and container identification to avoid incorrect processing or			
• As received, in-process, and finished product or material shall be properly segregated, identified, and stored in a dedicated and clearly defined area.			
Guidance		**Observation & Comments (should reflect status of section audit: Satisfactory, Not Satisfactory, Needs Immediate Attention)**	**Satisfactory Not Satisfactory Needs Immediate Action Not Applicable**
4.2.1	Is product clearly identified and stored throughout the surface finishing process and is lot traceability and integrity maintained?		**Satisfactory**
4.2.2	Inventory control - Does the rubber mixer/compound supplier have in place a warehouse inventory management system?		**Satisfactory**
4.2.2.a	Does the warehouse inventory management system have in place a protocol whereby the minimum quantity standards are maintained?		**Satisfactory**
4.2.2.a.i	Does the warehouse inventory management system practice first-in-first-out (FIFO) protocol?		**Satisfactory**
4.2.2.a.ii	Is there an age control protocol in place for inventoried raw materials?		**Satisfactory**
4.2.2.a.iii	Is hazard communication clearly practiced?		**Satisfactory**
4.2.2.a.iv	Is packaging integrity monitored and maintained?		**Satisfactory**
4.2.2.b	Does the warehouse maintain environmental controls for temperature, humidity, dew point?		**Satisfactory**
4.2.3	Are raw materials identified that require specific environmental control?		**Satisfactory**
4.2.4	When special packaging is required for environmentally sensitive raw materials, is there a protocol in place to use and store material in accordance to manufacturer recommendation or internal requirements?		**Satisfactory**
4.2.5	Is there a method that ensures the parts and lot numbers are correctly identified and maintained throughout the process?		**Satisfactory**
4.2.6	Is the received, in-process, and finished product or material is properly segregated, identified, and stored in a dedicated and clearly defined area?		**Satisfactory**
4.3	**Section 3 - RM Weigh Up**		
Molder shall use adequate system for material weighment			

Guidance		Observation & Comments (should reflect status of section audit: Satisfactory, Not Satisfactory, Needs Immediate Attention)	Satisfactory Not Satisfactory Needs Immediate Action Not Applicable
4.3.1	Is there a controlled weight up system for raw materials?		**Satisfactory**
4.3.2	As part of the DTPT process has a tolerance for the raw materials been established?		**Satisfactory**
4.3.3	Are the scales calibrated regularly?		**Satisfactory**
4.3.4	What is the frequency of calibration?	Quartly	**Satisfactory**
4.3.5	Are the scales checked daily for accuracy of weight range with NIST standards?		**Satisfactory**
4.3.6	Are there separate scales in use for heavy raw materials (e.g. polymers, fillers) and for light raw materials (e.g. cure chemicals, anti-degradants)?		**Satisfactory**
4.3.7	Are there separate weigh up vessels used for specific raw materials to avoid cross contamination?		**Satisfactory**
4.3.8	Are the vessels/scoops etc. being used to store/transfer the WIP raw material dedicated?		**Satisfactory**
4.3.9	If common transfer vessels/scoops are used is there a cleaning frequency established and followed?		**Satisfactory**
4.3.10	Are there environmental controls in place to mitigate raw material changes due to exposure to environmental conditions (temperature and humidity)?		**Satisfactory**
4.3.11	Is there an integrated raw material identification system such that only the specified/correct raw material can be used?		**Satisfactory**
4.3.11.a	Is there a poke yoke for the system to prevent the incorrect raw material and incorrect amount of raw material (whether it is the correct substance or not) from being used?		**Satisfactory**
4.3.11.b	Is it possible that an incorrect raw material can be used?		**Satisfactory**
4.3.11.c	Is the raw material control system integrated such that FIFO is practiced at the time of weigh-up?		**Satisfactory**
4.3.11.d	Is the actual quantity measured noted on the batch sheet for the compound batch to be mixed?		**Satisfactory**
4.3.11.e	Is this information electronically captured automatically without operator input?		**Satisfactory**
4.3.11.f	Is the protocol in place to store the WIP chemical weigh bags?		**Satisfactory**
4.3.11.g	Is the Chemical weigh bags part of Incoming Inspections based on defined critical parameters?		**Satisfactory**
4.3.11.h	Is there complete traceability of the contents of the pre-weigh bags such that each chemical contained within can be traced to a specific lot ?		**Satisfactory**
4.4	**Section 4 - Formulation Control**		

Guidance		Observation & Comments (should reflect status of section audit: Satisfactory, Not Satisfactory, Needs Immediate Attention)	Satisfactory Not Satisfactory Needs Immediate Action Not Applicable
4.4.1	Are there procedures in place to ensure formulation control?		Satisfactory
4.4.1.a	Is there a single, controlled repository for the recipe/formula?		Satisfactory
4.4.1.a.i	Is the formulation control electronic?		Satisfactory
4.4.1.a.ii	Are the formulations protected from unauthorized modifications?		Satisfactory
4.4.1.a.iii	Are the formulations presented from a centralized, controlled access location to the weigh up station?		Satisfactory
4.4.2	Is there a change management system in place for the formulations?		Satisfactory
4.4.3	Is there a formal process for scaling up the formulation from the lab to the trial mass production process; design-to-production-transition process (DTPT)?		Satisfactory
4.4.4	Are critical ingredients identified (e.g. cure chemicals or special additives)?		Satisfactory
4.4.5	Is there a DFMEA associated with the formulation?		Satisfactory
4.4.5.a	Does the traceability system have the ability to trace a particular lot of ingredient backward to its certificate of analysis or receiving inspection data and show that the lot is within the established control limits for that ingredient?		Satisfactory
4.5	**Section 5 - Mixing**		
For bulk processing there shall be a procedure to identify critical controls throughout the entire process to reduce risk of unfinished, improperly- mixed parts.			
• The organization shall have documented procedures to identify critical controls and monitor them for each process/equipment.			
Guidance		**Observation & Comments (should reflect status of section audit: Satisfactory, Not Satisfactory, Needs Immediate Attention)**	**Satisfactory Not Satisfactory Needs Immediate Action Not Applicable**
4.5.1	Are there in place procedures and processes to ensure correct mixing procedures are observed and practiced for each compound mixed?		Satisfactory
4.5.1.a	Is there a DTPT protocol in place?		Satisfactory
4.5.1.b	Has the type of mix been defined? (example: conventional, upside down, late oil addition, or sandwich)		Satisfactory
4.5.1.c	Has the number of mixer passes been defined for each compound?		Satisfactory
4.5.1.c.i	Single pass		Satisfactory
4.5.1.c.ii	Multiple pass		Satisfactory
4.5.1.d	Is the total batch weight confirmed and does it match with the weigh-up data?		Satisfactory
4.5.1.e	Is the batch factor (percentage fill) established for *each* rubber compound to be mixed?		Satisfactory
4.5.1.f	Is there a defined order of addition of ingredients?		Satisfactory
4.5.1.f.i	Is there an audit plan to ensure sequence of ingredients addition is followed consistently ?		Satisfactory

4.5.1.g	Is there a mixer set-up protocol for each compound?		**Satisfactory**
4.5.1.h	Is there a defined Temperature specifications for:		**Satisfactory**
4.5.1.h.i	Rotors		**Satisfactory**
4.5.1.h.i.i	Body		**Satisfactory**
4.5.1.h.i.i.i	Door		**Satisfactory**
4.5.1.h.iv	Ram Weight		**Satisfactory**
4.5.1.i	Is Ram Position Indicator in use?		**Satisfactory**
4.5.1.j	Is variable RPM capability used?		**Satisfactory**
4.5.2	Is there an equipment readiness check performed prior to mixing the batch?		**Satisfactory**
4.5.2.a	Is the cleanliness of the mixer verified? How? (e.g. 4-eyes)		**Satisfactory**
4.5.2.b	Is the equipment readiness check acknowledged? How?		**Satisfactory**
4.5.2.b.i	Is there a documented maintenance plan available for the mixer as per mixer equipment manufacturer recommendation?		**Satisfactory**
4.5.2.c	Is there a poke yoke for equipment readiness check in place? (The organization's mixing process shall have a check of the mixing equipment before each batch is to be mixed.)		**Satisfactory**
4.5.2.d	Is the operator trained?		**Satisfactory**
4.5.2.d.i	Is there a documented training protocol for the mixer operator?		**Satisfactory**
4.5.2.d.ii	Are the training records available for review?		**Satisfactory**
4.5.3	Does the rubber compound mixer have the capability to monitor and control the mixing equipment based on:		**Satisfactory**
4.5.3.a	Mix time		**Satisfactory**
4.5.3.b	Mix temperature		**Satisfactory**
4.5.3.c	Measurement as to the amount of work (power integration) applied to mixing the batch (aka integrated power mixing)		**Satisfactory**
4.5.3.d	Ram position and pressure		**Satisfactory**
4.5.4	Is there a clean-out protocol available to ensure that there is no cross contamination between compounds ?		**Satisfactory**
4.5.4.a	If same mixer is used for different base rubber mix -Is there a protocol to ensure rubber compounds are not mixed during compound changeovers based on the incompatibility factor?		**Satisfactory**
4.5.5	When mill mixing the rubber compound, does the mixing protocol include/address:		**Satisfactory**
4.5.5.a	Nip setting		**Satisfactory**
4.5.5.b	Roll temperatures		**Satisfactory**
4.5.5.c	Roll speed		**Satisfactory**
4.5.5.d	Measurement of rubber compound temperature during milling		**Satisfactory**
4.5.5.e	Is the mill sized properly for the quantity of rubber being milled?		**Satisfactory**
4.5.5.f	Measuring and controlling the work being input into the rubber compound during the milling operation –Max/min batch size, No. of passes, cutting direction (or cut-backs)?		**Satisfactory**
4.5.5.g	Is time on the mill controlled?		**Satisfactory**

4.5.5.h	If mixing is performed in stages, is complete sequencing of intermittent stages is controlled?		**Satisfactory**
4.5.6	For batch-off or drop mill and blender milling operations		**Satisfactory**
4.5.6.a	Is there a protocol for set up of the mill and does it specify milling time, roll temperature, roll speeds, nip distance, and NTE compound temperature?		**Satisfactory**
4.5.6.b	Is there control of the time between discharge from the mixer and starting the milling operation?		**Satisfactory**
4.5.6.c	Is there a process in place to control the time on the mill?		**Satisfactory**
4.5.6.c.i	Is “andon” or similar methods in use to control/monitor time on mill?		**Satisfactory**
4.5.6.d	Is the temperature of the rubber compound stock measured, recorded and controlled at time of removal from the mill?		**Satisfactory**
4.5.6.e	Is the complete removal of mixed compound ensured post the milling/mixing operation-including the mill droppings?		**Satisfactory**
4.5.6.f	Are the contamination risks -specified and controlled?		**Satisfactory**
	Cooling the batch		
4.5.7	Is there a protocol for cooling the compound after all the work to create the compound has been completed?		**Satisfactory**
4.5.8	If a partitioning agent bath is to be used to apply an anti-tack to the rubber compound, is there a specification to control the amount that can be applied to the slab/sheet/strip?		**Satisfactory**
4.5.8.a	Are key attributes identified and measured -Time, Temperature?		**Satisfactory**
4.5.8.b	Is there data supporting the quality of the cooling/slab dip bath?		**Satisfactory**
4.5.9	Is there a protocol in place to control the uniformity of anti-tack applied to the rubber compound?		**Satisfactory**
4.5.10	If cooling racks are used, is the rubber compound protected from contamination during the cooling process?		**Satisfactory**
4.5.11	If cooling tables are used, is their temperature checked and controlled to eliminate surface condensation?		**Satisfactory**
4.5.12	Is the quantity of rubber milled during cooling sized appropriately for the mill used? Refer to table below.		**Satisfactory**
4.5.12.a	Tire Manufactures - has mill capacity been determined, using a method the same or similar to that found in https://www.thefreelibrary.com/Method+for+determining+load+on+open+roll+mills.-a0223749695, and is mill operating in accordance with determined capacity?		**Not Applicable**

Open Roll Mill Capacities

Roll Size, inches	Approx. Batch Cap., kg	Motor; HP
6 x 13	1.23 ~ 2	7.5/190
8 x 16	2.5 ~ 4	10-15/190
10 x 20	5 ~ 8	15-20
12 x 24	10 ~ 18	30-40
14 x 30	20 ~ 30	40-50
16 x 42	30 ~ 50	60-75
18 x 48	45 ~ 70	75-100
22 x 60	75 ~ 125	125-150
24 x 72	125 ~ 200	150-200
26 x 84	150 ~ 250	150-200
28 x 84	175 ~ 300	200-250

4.6	**Section 6 - Finishing**		
The handling, storage and packaging shall be adequate to ensure product quality is maintained throughout the entire process.			
• Handling, storage, and packaging shall be adequate to ensure rubber mix batch quality. • Batch cleanliness shall be maintained throughout the process. • All rubber mix/batches shall be stored in a controlled environment.			
Guidance		**Observation & Comments (should reflect status of section audit: Satisfactory, Not Satisfactory, Needs Immediate Attention)**	**Satisfactory Not Satisfactory Needs Immediate Action Not Applicable**
4.6.1	Is there a protocol for the set-up of the preforming equipment?		**Satisfactory**
4.6.2	Does the protocol address the cleanliness of the equipment prior to use?		**Satisfactory**
4.6.3	Does the protocol address the temperature of the equipment prior to use?		**Satisfactory**
4.6.4	Does the protocol specify the measurement and control of the temperature of the rubber during preforming?		**Satisfactory**
4.6.5	Is the speed of preforming controlled?		**Satisfactory**
4.6.6	Is the pressure that the rubber is being subjected to during preforming specified and controlled?		**Satisfactory**
4.6.7	Are there dimensional specifications for the preform?		**Satisfactory**
4.6.8	Are there weight and dimensional tolerances established for the rubber preform?		**Satisfactory**

4.6.9	Is he rubber preform sensitive to environmental conditions (humidity and temperature)?		**Satisfactory**
4.6.9.a	Are the environmental sensitivities addressed?		**Satisfactory**
4.6.9.b	Are the environmental sensitivities controlled? How?		**Satisfactory**
4.6.10	Is there an inventory management system in place for finished, ready to use rubber?		**Satisfactory**
4.6.11	Is the Compound identification/traceability controls are evident for input and output material?		**Satisfactory**
4.7	**Section 7 - Quality Control - Testing of the Rubber Compound**		
	Each process step shall be documented and traceable.		
	Guidance	**Observation & Comments (should reflect status of section audit: Satisfactory, Not Satisfactory, Needs Immediate Attention)**	**Satisfactory Not Satisfactory Needs Immediate Action Not Applicable**
4.7.1	Does the operator verify that all process steps have been completed in the specified order and in within specified time limits? For example, some raw materials are environmentally sensitive. The sensitivity of individual ingredients, such as metal oxides or various soaps (potassium stearate or sodium stearate), to moisture absorption, is a concern. Therefore, the mixing protocols should address these concerns – even when purchasing from an external supplier – should be established as part of their internal quality standard and address for external supplies according to IATF 16949, 8.4.3.		**Satisfactory**
4.7.2	Is each batch measured for the critical characteristics identified as part of the APQP and DTPT (Design to Production Transition) process as well as those set forth by the customer?		**Satisfactory**
4.7.3	Are the procedures and processes in place for sampling and measurement of the critical characteristics identified as part of APQP and DTPT as well as those set forth by the customer?		**Satisfactory**
4.7.4	Is all measurement equipment calibrated?		**Satisfactory**
4.7.5	Is there a type 1 gage study for each piece of measurement equipment/gage?		**Satisfactory**
4.7.6	Are the operators trained on the measurement equipment?		**Satisfactory**
4.7.7	Are their training documents available?		**Satisfactory**
4.7.8	Is there a test data review process for each lot/batch of rubber before disposition of "pass/fail" is made? By whom?		**Satisfactory**
4.7.9	Are there procedures and processes in place to handle a non-conforming batch of rubber compound?		**Satisfactory**
4.7.10	Is the data from the laboratory test performed on the mixed rubber compound input into control charts to identify any differences between batches?		**Satisfactory**

4.7.11	Is the laboratory test results integrated as part of the total traceability program?		**Satisfactory**
4.7.12	Is the rubber quality testing evaluated on the ready to use rubber compound or the rubber compound taken from the batch off mill/drop mill/cooling mill?		**Satisfactory**
4.7.13	Is the disposition for the batch/lot of rubber compound being examined by the testing laboratory, resulting in a “Pass”/”Fail” for the batch/lot physically present on the rubber lot/batch?		**Satisfactory**
4.7.13.a	Who’s responsibility is it to physically place the disposition result on the rubber lot/batch? Is this person a trained, authorized individual that can review the data and make a decision as to the quality of the material and its disposition for use?		**Satisfactory**

Section 5 - Inspection and Testing			
	Guidance	**Observation & Comments (should reflect status of section audit: Satisfactory, Not Satisfactory, Needs Immediate Attention)**	**Satisfactory Not Satisfactory Needs Immediate Action Not Applicable**
5.1	**Sampling Plans**	**See results from CQI-23**	
5.1.1	Has the customer defined the rate of sampling protocol or an AQL plan; for example, annually validation for full specification compliance?		
5.1.2	Internal Procedure?		
5.1.3	Are records of customer granted exceptions maintained according to a records retention procedure?		
5.1.4	Are dimensional verifications (final article, rubber preform) conducted according to customer requirements or drawings?		
5.1.5	Are all non-conforming parts accounted for, segregated and identified?		
5.1.6	If non-conforming parts are identified as "use as is" is there retained records documenting customer acceptance?		
5.1.7	How are lot numbers assigned?		
5.1.8	Are lot numbers interconnected (compounding lot related to manufacturing lot)?		
5.1.9	Are individual articles fully traceable back to the lots of raw materials used to produce the compound?		
5.1.10	Is individual article fully traceable by day, shift, operator, and cavity identifier?		
5.2	**Essential Rubber Testing Capabilities/Equipment**		
5.2.1	Roll mill?		
5.2.2	Compression molding machine?		
5.2.3	ASTM slab molds in accordance with ASTM D3182?		
5.2.4	Air Circulating Oven, ASTM E145?		
5.2.5	Cure meter?		
5.2.6	Mooney Viscometer?		
5.2.7	Universal Test Machine?		
5.2.8	Hardness measurement gage?		
5.3	**Tensile Properties Testing**		
5.3.1	ASTM D412 die?		
5.3.2	ISO 37 die?		
5.4	**Hardness Testing**		
5.4.1	ASTM D2240?		
5.4.2	ASTM D1415?		
5.4.3	ISO 7619?		
5.5	**Compression Set Testing**		
5.5.1	ASTM D395, et al?		

5.6	Basic Analytical Capabilities In-House (Company-wide)		
5.6.1	Analytical scale, 0.0001 g capability?		
5.6.2	Differential Scanning Calorimeter (DSC)?		
5.6.3	Infrared Spectrometer (FTIR)?		
5.6.4	Type 1 gage study relative to rubber batch release testing measurements (i.e., hardness, cure meter characteristics, tensile, elongation)?		

Section 6 - Facilities and Equipment			
	Note: Molding process sheets must be attached to this CQI-30 Internal Audit Findings Sheet		
	Guidance	**Observation & Comments (should reflect status of section audit: Satisfactory, Not Satisfactory, Needs Immediate Attention)**	**Satisfactory Not Satisfactory Needs Immediate Action Not Applicable**
6.1	**General Expectations**	**See results from CQI-23**	
6.1.1	Are all quantities of articles produced accounted for?		
6.1.2	Are scrap bins easily accessible and secure to prevent retrieval of article once scrapped?		
6.1.3	Is there good housekeeping (5S evident) in each area?		
6.1.4	Are travelers used to track movement and operations?		
6.1.5	Are there procedures in place to prevent the incorrect part numbers from being shipped?		
6.1.6	Are there procedures in place to prevent mixed part numbers from being shipped?		
6.1.7	Are there procedures/protocols in place to prevent the incorrect rubber/material from being used to mold the part number?		
6.1.8	Is there a verification procedure in use to verify material is being used to produce the parts is correct?		
6.2	**Equipment Requiring Temperature Control**		
6.2.1	Are temperature units (ovens, refrigerators, freezers) equipped with at least a calibrated temperature log?		
6.2.2	Is temperature continuously recorded?		
6.2.3	Does the temperature uniformity comply with ASTM E 145, AMS 2750 et al?		
6.2.4	Is the temperature unit equipped with preventions for thermal runaway?		
6.2.5	In the event of a temperature excursion/failure, is there a process and procedure that describes actions to be taken?		
6.2.6	Are all product/article within the temperature unit segregated and identified to prevent mixing materials/parts numbers?		
6.3	**Preventative & Predictive Maintenance**		
6.3.1	Is there a documented preventative maintenance plan that includes all major equipment (oven, curing presses, laboratory equipment, dies, fixtures, etc.) as necessary?		
6.3.2	Is the preventative maintenance frequency defined?		
6.3.3	Are the preventative maintenance records current?		
6.3.4	Do you utilize predictive maintenance?		
6.3.5	Can you provide examples of predictive maintenance?		
6.4	**Calibration**		
6.4.1	Is the rubber fabrication/measurement equipment calibrated (timers, pressures, flatness, temperature indicators, etc.)?		
6.4.2	Are all controls calibrated throughout the useful range of operation?		
6.4.3	Are ancillary/measurement equipment associated with rubber article fabrication calibrated (scales, trimmers, dies, vision systems, etc.)?		
6.4.4	Is product quality acceptance performed with calibrated equipment?		

6.5	General Manufacturing Protocols		
6.5.1	Is the overall condition of the equipment in good repair (oil leaks, maintains pressure, functional timers, heater capacity, etc.)?		
6.5.2	Is the equipment used for rubber article manufacturing acceptable?		
6.5.3	Is there contamination avoidance protocols in place?		
6.5.4	Are the manual cleaning tools (sweeps, shop cloths, dust pans, etc.) manufactured from products that would not contaminate the rubber compound or molded article?		
6.5.5	Is there dedicated cleaning tools for each piece of equipment?		
6.5.6	Is there dedicated cleaning tools specific to the rubber compound?		
6.5.7	Is there dedicated mill guides specific to the rubber compound?		
6.5.8	Are the mill guides removable or able to be rotated upward for cleaning?		
6.5.9	Is "Four-Eyes" principal in practice relative to cleaning of equipment between rubber compound and part number changes?		
6.5.10	Is there local ventilation at the molding press to prevent inhalation of vulcanization/curing by-products?		
6.5.11	Are floor or ceiling fans in use?		
6.5.12	Are hand building operations used?		
6.5.13	Are there documented procedures for hand building operations?		
6.5.14	Is tooling uniquely identified clearly as to specific part numbers?		

Section 7 - Molding			
Note: Molding process sheets must be attached to this CQI-30 Internal Audit Findings Sheet			
	Guidance	**Observation & Comments (should reflect the status of section audit: Satisfactory, Not Satisfactory, Needs Immediate Attention)**	**Satisfactory Not Satisfactory Needs Immediate Action Not Applicable**
7.1	**General Molding Common Requirements**	**See results from CQI-23**	
7.1.1	Is there a documented set-up sheet for each specific job?		
7.1.2	Does the set-up sheet give the customer part number and/or internal part number?		
7.1.3	Are key set-up parameters identified as such?		
7.1.4	Are there ranges stated for each set-up parameter for the job?		
7.1.5	Are the press settings in agreement with the control plan?		
7.1.6	What is the protocol to ensure that the press is set-up correctly, according the specific set-up sheet?		
7.1.7	Have the ranges that are stated for each set-up parameter been validated to legitimize the stated ranges?		
7.1.8	Is the temperature uniformity of the tooling (molds) within ± 2°C across the entire tool surface?		
7.1.9	Is the temperature uniformity measured with calibrated equipment?		
7.1.10	Is the process controlled based on crosslink density of the rubber?		
7.1.11	Is the crosslink density of the molded article known for each cavity in use and by cavity location?		
7.1.12	Is state of cure/cross link density performed in accordance with the ARPM Technical Guidance Document State of Cure, SP913?		
7.1.13	Does the crosslink density of the molded articles correspond to the crosslink density of the rubber specimen used to determine compound conformance to the Customer's material specification at the time of qualification and approval of the compound?		
7.1.14	Is there a regular internal audit (daily) of the molding process?		
7.1.15	Can the molding operator adjust any parameters without supervision interaction?		
7.1.16	Is the mold/tool identified with a specific part number or code to relate the tool to the specific customer job?		
7.1.17	Does the set-up sheet reference the tool identification?		
7.1.18	Is mold release utilized?		
7.1.19	Is there a procedure to control how much mold release is applied and the frequency of application?		
7.1.20	Is there a process on how to select the mold release to be used?		
7.1.21	Are molded parts fully traceable to the individual raw material level?		
7.1.22	Is the product handled in such a way as to prevent damage to moldings?		
7.1.23	Is contamination avoidance relative to over spray from mold release and lubricants to prevent drifting onto other fabrication areas?		
7.1.24	Are gloves being worn during handling of the rubber compound or treated inserts (for bonding)?		
7.1.25	If gloves are worn during the handling of treated inserts for bonding, are they of a lint-free and leaving no fibers when in use?		

7.1.26	Are the gloves being worn specific for use only during handling of treated metal inserts?		
7.1.27	Are the gloves clean and changed in accordance with a standard practice?		
7.1.28	Are there food or drink at the fabrication stations?		
7.1.29	If there is drink at the fabrication stations, is it in a spill-proof container?		
7.1.30	Is the fabrication equipment able to capture key fabrication data by heat (cycle time, temperatures, pressures, closure data)?		
7.1.31	Is the fabrication stations well lit?		
7.1.32	If article inspection is performed at the fabrication stations, is the equipment adequate for the task (e.g. is the magnification sufficient to detect the defects as defined by the customer's drawings or specifications)?		
7.1.33	Is there a defect board showing acceptable and non-acceptable articles?		
7.1.34	Are the tools/molds/dies regularly cleaned according to a documented SOP?		
7.1.35	Where multiple materials are required, is the molding process (work instructions) specific to multiple material used?		
7.1.36	Is there a defined process for first article inspection as part of the initial molding confirming set-up and authorizing, through inspection data and sign-off , production to commence?		
7.1.37	Is there traceability by part number, material name and lot number, use-by date for the rubber compound?		
7.1.37.a	Is there storage conditions associated with the uncured rubber material?		
7.1.38	For inserts does the traveler give the part number, insert lot number, and if pre-treated, treat date, and use-by date along with proper storage conditions?		
7.1.39	Is there periodic quality checks taken from production throughout the production run?		
7.1.40	Is completed moldings controlled to prevent mixing of parts?		
7.1.41	Has the traceability (either electronically or manually) been acknowledged by the operator to assure the correct material information was captured?		
7.1.42	Does documentation include the number of good parts made and rejected parts made?		
7.1.43	Does documentation include all causes of defective parts?		
7.1.44	Is there a 3-point curemeter showing the effect of temperature on key cure characteristic of ts2, Tc50, Tc90?		
7.2	**Compression Molding**		
7.2.1	Are the preforms identified by a code or other identifier?		
7.2.2	Is the shelf life/use-by date reflected on the material traveler?		
7.2.3	Is the shelf life/use-by date of the preformed material confirmed at the time of use?		
7.2.4	Has cure meter testing been performed on the as-delivered material, prior to molding?		
7.2.5	Is the preform type ID associated with a particular job, machine, or tool ID?		
7.2.6	Is the preform type ID associated with a particular job, machine, or tool ID available to the press operator?		
7.2.7	Are all preforms accounted for at the end of the operators shift and confirmed?		
7.2.8	Has state of cure/cross link density been confirmed on each part for each cavity as part of the set-up protocol prior to commencing serial production?		

7.2.9	If inserts are used, are they inspected at point of use?		
7.2.10	When using inserts, is there a procedure to verify that the correct insert is being used and the correct material is being used?		
7.2.11	If inserts are used, are they handled in such a way to prevent being contaminated by any source?		
7.2.12	Is there clear, documented, guidance on acceptable/not acceptable insert quality?		
7.2.13	Is there an operating procedure governing the molding press during break times and lunch times?		
7.3	**Transfer Molding**		
7.3.1	Are the transfer pads/charges identified by a code or other identifier?		
7.3.2	Is the shelf life/use-by date of the transfer pads/charges reflected on the traveler for the material?		
7.3.3	Is the shelf life/use-by date of the transfer pad/charge material confirmed at the time of use?		
7.3.4	Has cure meter testing been performed on the preformed material as it is at point of use?		
7.3.5	Is the preform type ID associated with a particular job, machine, or tool ID?		
7.3.6	Is the preform type ID associated with a particular job, machine, or tool ID available to the press operator?		
7.3.7	For cold pot transfer operations, has there been a determination of the fit-for-use of the transfer pad/charge material based on exposure to temperature?		
7.3.8	Has state of cure/cross link density been confirmed on each part for each cavity as part of the set-up protocol prior to commencing serial production?		
7.3.9	If inserts are used, are they inspected at point of use?		
7.3.10	When using inserts, is there a procedure to verify that the correct insert is being used and the correct material is being used?		
7.3.11	If inserts are used, are they handled in such a way to prevent being contaminated by any source?		
7.3.12	Is there clear, documented, guidance on acceptable/not acceptable insert quality?		
7.3.13	Is there a 3-point curemeter showing the effect of temperature on key cure characteristic of ts2, Tc50, Tc90?		
7.3.14	Is there an operating procedure governing the molding press during break times and lunch times?		
7.4	**Injection Molding**		
7.4.1	Are there specifications on the feed strip geometry?		
7.4.2	In the case of a stuffer fed material, are there specifications on the geometry and mass of the preform placed into the stuffer?		
7.4.3	Has cure meter testing been performed on the feed strip as it is a point of use?		
7.4.4	Is the shelf life/use-by date of the feed strip reflected on the traveler for the feed strip material?		
7.4.5	Is the shelf life/use-by date of the feed strip confirmed at time of use?		
7.4.6	Is the shelf life/use-by date of the stuffer preform reflected on the traveler for the stuffer preform material?		
7.4.7	Is the shelf life/use-by date of the stuffer preform confirmed at time of use?		
7.4.8	Is there a specification for the temperature of the rubber at exit from the injection nozzle?		
7.4.9	Is the temperature of the rubber at exit from the injection nozzle verified?		
7.4.10	Is there a specification for the temperature of the rubber after exit from the mold sprues?		

7.4.11	Is the temperature of the rubber at exit from the mold sprues verified?		
7.4.12	Is the effect of dwell time in the injector unit (barrel & screw assembly) on the cure behavior of the rubber known?		
7.4.13	Is there a 3-point curemeter showing the effect of temperature on key cure characteristic of ts2, Tc50, Tc90?		
7.4.14	Is there an operating procedure governing the molding press during break times and lunch times?		
7.4.15	If inserts are used, are they inspected at point of use?		
7.4.16	When using inserts, is there a procedure to verify that the correct insert is being used and the correct material is being used?		
7.4.17	If inserts are used, are they handled in such a way to prevent being contaminated by any source?		
7.4.18	Is there clear, documented, guidance on acceptable/not acceptable insert quality?		

Section 8 - Substrate Preparation			
Note: All surface preparation process sheets must be attached to this CQI-30 Internal Audit Findings Sheet			
	Guidance	**Observation & Comments (should reflect status of section audit: Satisfactory, Not Satisfactory, Needs Immediate Attention)**	**Satisfactory Not Satisfactory Needs Immediate Action Not Applicable**
8.1	**Metal Finish**		
8.1.1	Are the incoming metals inspected to a drawing/specification?		**Not Applicable**
8.1.2	Are the specifications in place to govern metal processing chemicals e.g. sampling oils?		**Not Applicable**
8.1.3	Does the substrate have a phosphate or anodic coating?		**Not Applicable**
8.1.4	Is there evidence that the metal process chemicals specifications are being followed?		**Not Applicable**
8.1.5	Is there a procedure for the phosphate or anodic coating process?		**Not Applicable**
8.1.6	Is there evidence that they are being followed?		**Not Applicable**
8.1.7	Are the quality control characteristics identified for each process step associated with the surface conversion?		**Not Applicable**
8.1.8	Are there control charts for these QC characteristics?		**Not Applicable**
8.1.9	Is there evidence that there are corrective actions that take place to prevent out of control situations?		**Not Applicable**
8.1.10	Is surface energy used to control cleanliness of the substrate (after cleaning) prior to chemical surface conversion?		**Not Applicable**
8.1.11	Is coating weight used to control the metal surface conversion coating?		**Not Applicable**
8.1.12	Is there a control of the critical characteristics of the converted metal surface (e.g. crystal size, sludge build-up and crystal shape/size along with weight)?		**Not Applicable**
8.1.13	If the substrate is aluminum, is the anodized surface sealed?		**Not Applicable**
8.1.14	Is there evidence that the surface preparation been performed in accordance with customer drawing, specifications requirements?		**Not Applicable**
8.1.15	Is there a procedure for control of the treated metal inserts?		**Not Applicable**
8.2	**Adhesive**		
8.2.1	Is there a process that describes how the bonding agent(s) were selected?		**Not Applicable**
8.2.2	Is the material certification available for the adhesive(s) being applied?		**Not Applicable**
8.2.3	Are the bonding agents being mixed/applied according to their manufacturers recommendations?		**Not Applicable**
8.2.4	Is the container with the mixed adhesive labeled with content, lot#, mix date, and use-by date?		**Not Applicable**
8.2.5	Is there a procedure to check the adhesive mixtures before application?		**Not Applicable**
8.2.6	Is the adhesive(s) applied within the use-by date?		**Not Applicable**
8.2.7	Is there a procedure for the application of the adhesives?		**Not Applicable**
8.2.8	Is the adhesive being applied in accordance with the adhesive manufacturers recommendation?		**Not Applicable**
8.2.9	Does the adhesive go through a heat treatment (baking) process after application?		**Not Applicable**
8.2.10	Is it a one piece flow through the heat treatment/baking being practiced?		**Not Applicable**
8.2.11	Is there quality checks done on the adhesive treated substrates after baking?		**Not Applicable**

8.2.12	Is there a specialized training for those associated with mixing and applying adhesives?		**Not Applicable**
8.2.12.a	Are there training records available?		**Not Applicable**
8.2.13	Is there a scheduled frequency for confirmation of substrate temperature during baking?		**Not Applicable**
8.2.14	Is the upper and lower thickness specifications for the adhesive coating verified for fit for function?		**Not Applicable**
8.2.15	Are/is adhesive film thickness measured on the coated substrate as part of quality control of the adhesive application process?		**Not Applicable**
8.2.16	Are the adhesive thickness measurements made with a calibrated instrument?		**Not Applicable**
8.2.17	Is there a work instruction or operating procedure governing the adhesive thickness measurement process?		**Not Applicable**
8.2.18	Is there a specification for the adhesive layer(s) thickness?		**Not Applicable**
8.2.18.a	Is there a method used for determining the optimum adhesive thickness?		**Not Applicable**
8.2.19	Is the specification for the adhesive layer(s) thickness part of the customer's specification?		**Not Applicable**
8.2.20	Do you have a shelf-life or use-by date established for the adhesive coated substrates?		**Not Applicable**
8.2.21	Do you have a protocol for establishment of use-by dates for adhesive coated substrates?		**Not Applicable**
8.2.22	Is the adhesive coated substrates packaged in such a way that they are protected from contamination?		**Not Applicable**
8.2.23	Are the containers used for shipping adhesive coated substrates inspected for cleanliness?		**Not Applicable**
8.2.24	Is there a work instruction or operating procedure governing the inspection and re-use of the shipping containers?		**Not Applicable**
8.2.25	Are the treated substrates packaged in such a way that humidity exposure is monitored and controlled until time/point of use?		**Not Applicable**
8.3	**Plastic Finish**		
8.3.1	Are plastic inserts being used and over molded with rubber?		**Not Applicable**
8.3.2	Is the incoming plastic inserts inspected to the drawing/specification?		**Not Applicable**
8.3.3	Does the plastic inserts undergo surface treatment prior to molding (e.g. plasma, corona, etching, mechanical…)?		**Not Applicable**
8.3.4	Is there a process standard or specification covering the surface treatment?		**Not Applicable**
8.3.5	Is there evidence that the surface preparation been performed in accordance with customer drawing or specifications requirements?		**Not Applicable**
8.3.6	Are there quality control characteristics identified for each process step?		**Not Applicable**
8.3.7	Is there a document that specifies the condition of the surface of the plastic when it is ready to be used for molding?		**Not Applicable**
8.3.8	Are there control charts for these QC characteristics?		**Not Applicable**
8.3.9	Is there evidence that the process standards/specifications are being followed?		**Not Applicable**