

CQI-11v2



Special Process: Plating System Assessment

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ISBN#: 9871605342443-90000

Special Process: Plating System Assessment, 2nd Edition			
Facility Name: DeKalb Metal Finishing			
Address: 625 West 15th Street / PO Box 70 Auburn, IN 46706			
Phone Number: 260-925-1820	Type(s) of Plating Processing at this Facility:		
Fax Number: 260-925-5258	Process Table A: YES		
	Zinc		
Number of Plating Employees at this Facility: 63	Zinc Alloy Plating		
Captive Plater (Y/N): NO	Process Table B: NO		
Commercial Plater (Y/N): YES			
Date of Assessment: 1/1/2019	Process Table C: NO		
Date of Previous Assessment: 1/1/2018			
Date of Re-assessment (if necessary):			
	Process Table E: NO		
	Process Table F: NO		
	Process Table G: NO		
	Process Table H: NO		
	Process Table I: NO		
	Process Table J: YES		
	Process Control and Testing Equipment		
Current Quality Certification(s): 16949			
Personnel Contacted:			
Name:	Title:	Phone:	Email:
Matt Morris	Quality Manager	260-925-1820 x114	mmorris@dekalbmetal.com
Auditors/Assessors:			
Name:	Company:	Phone:	Email:
Matt Morris	Quality Manager	260-925-1820 x114	mmorris@dekalbmetal.com
Number of "Not Satisfactory" Findings: 0			
Number of "Needs Immediate Action" Findings: 0			
Number of "Fail" Findings in the Job Audit(s): 0			
Number of Process Table items identified as failed in Comments/Observation column: 0			

Special Process: Plating Process Assessment (General Facility Overview)							
Question Number	Question	Requirements and Guidance	Objective Evidence	Assessment			
				N/A	Satisfactory	Not Satisfactory	Needs Immediate Action
Section 1 - Management Responsibility and Quality Planning							
1.1	Is there a dedicated and qualified plating person on-site?	To ensure readily available expertise, there shall be a dedicated and qualified plating person on the 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 plating knowledge. The qualifications shall include a minimum of 5 years experience in plating and surface finishing or a combination of formal chemistry/chemical engineering education and plating experience totaling a minimum of 5 years.	Our Lab Manager has more than 20 years of experience in the plating/surface finishing industry. The Job Description for the position of Lab Manager reflects this requirement.	X			
1.2	Does the plater perform advanced quality planning?	The plater shall incorporate a documented advance quality planning procedure. A feasibility study shall be performed and internally approved for each part. Similar parts can be grouped into part families for this effort as defined by the plater. After the part approval process is approved by the customer, no process changes are allowed unless approved by the customer. The plater shall contact the customer when clarification of process changes is required. This clarification of process changes shall be documented.	The AIAG manual is used as a reference for the APQP. Procedure 14 further defines our APQP policy. DMF219 is used as a confirmation checklist for APQP activities. Feasibility studies are maintained as hard copy and/or electronic records.	X			

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				N/A	Satisfactory	Not Satisfactory	Needs Immediate Action
1.3	Are plater FMEA's up to date and reflecting current processing?	The plater shall incorporate the use of a documented Failure Mode and Effects Analysis (FMEA) procedure 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. In any case, they shall address all process steps from part receipt to part shipment and all key plating process parameters as defined by the plater. A cross-functional team shall be used in the development of the FMEA. All characteristics, as defined by the plater and its customers, shall be identified, defined, and addressed in the FMEA.	The AIAG manual is used as a reference for the FMEA's. Procedure 14 further defines our FMEA policy. FMEAs are process specific (PFMEAs).		X		
1.4	Are finish process Control Plans up to date and reflecting current processing?	The plater shall incorporate the use of a documented Control Plan procedure 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 and written for each process. In any case, they shall address all process steps from part receipt to part shipment and identify all equipment used and all key plating process parameters as defined by the plater. A cross-functional team, including a production operator, 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 plater and its customers, shall be identified, defined, and addressed in the Control Plans. Sample sizes and Frequencies for evaluation of process and product characteristics shall also be addressed consistent with the minimum requirements listed in the Process Tables.	DeKalb Metal Finishing uses the AIAG manual as a reference for the creation and implementation of Control Plans. In addition, we utilize Procedure 14, to further define our Control Plan policy. Control Plans are created electronically and are directly linked to our lab controls in order to ensure that changes to the control plan are immediately communicated to all affected parties. Control Plans are process specific.		X		

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Question Number	Question	Requirements and Guidance	Objective Evidence	Assessment			
				N/A	Satisfactory	Not Satisfactory	Needs Immediate Action
1.5	Are all plating related and referenced specifications current and available? For example: SAE, AIAG, ASTM, General Motors, Ford, and Chrysler.	To ensure all customer requirements are both understood and satisfied, the plater shall have all related plating and customer referenced standards and specifications available for use and a method to ensure that they are current. Such standards and specifications include, but are not limited to, those relevant documents published by SAE, AIAG, ASTM, General Motors, Ford, and Chrysler. The plater 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 shall not exceed two weeks. The plater 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 plating organization, how the current status is established, and how the relevant information is cascaded to the shop floor within the two-week period. The plater shall identify who is responsible for performing these tasks.	Plating specifications are acquired through the requesting customer or through a service that notifies us when new specifications have been released. All documents are available electronically via our document management software.		X		
1.6	Is there a written process specification for all active processes?	The plater shall have written process specifications for all active processes and identify all steps of the process including relevant operating parameters. Examples of operating parameters include process temperatures, cycle times, load rates, rectifier settings, etc. Such parameters shall not only be defined, they shall have operating tolerances as defined by the plater in order to maintain process control. All active processes should have a written process specification. These process specifications may take the form of work instructions, job card, computer-based recipes, or other similar documents.	Job Instructions are in place for current production parts. Job Instructions include recommended cycle times, recommended rectifier settings, pieces per rack, racks per frame, required engineering specification, color, thickness requirements, racking requirements, packaging requirements, and other special requirements as defined by each customer.		X		

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Question Number	Question	Requirements and Guidance	Objective Evidence	Assessment			
				N/A	Satisfactory	Not Satisfactory	Needs Immediate Action
1.7	Has a valid product capability study been performed initially and after process change?	To demonstrate each process is capable of yielding acceptable product the plater shall perform product capability studies for the initial validation of each process, after relocation of any process equipment, and after a major rebuild of any equipment. The plater shall define what constitutes a major rebuild. Initial product capability studies shall be conducted for all plating processes per line as defined in scope of work and in accordance with customer requirements. Capability study techniques shall be appropriate for the plating product characteristics, e.g. plate thickness, corrosion resistance, etc.. Any specific customer requirements shall be met. In the absence of customer requirements, the plater shall establish acceptable ranges for measures of capability. An action plan shall exist to address the steps to be followed in case capability indices fall outside customer requirements or established ranges.	Procedure 10 and Procedure 28 define our process for meeting this requirement.		X		
1.8	Does the plater collect and analyze data over time, and react to this data?	The analysis of products and processes over time can yield vital information for defect prevention efforts. The plater shall have a system to collect, analyze, and react to product or process data over time. Methods of analysis shall include ongoing trend or historical data analysis of special product or process parameters. The plater shall determine which parameters to include in such analysis.	Product and process data is gathered and stored in databases. This data is analyzed on an ongoing basis to make improvements to the QMS.		X		
1.9	Are records retained and available?	All process control and testing records must be retained for a minimum of one calendar year after the year in which they were created.	Process control records are maintained in a database for a minimum of one calendar year after the year in which they were created.		X		

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Question Number	Question	Requirements and Guidance	Objective Evidence	Assessment			
				N/A	Satisfactory	Not Satisfactory	Needs Immediate Action
1.10	Does management review and verify bake oven logs for parts requiring hydrogen embrittlement relief every 24 hours?	Management shall review the oven monitoring systems/logs at intervals not to exceed 24 hours or prior to parts being released for shipment. The plater shall have reaction plans for non-conformances to process requirements. This is to contain, at minimum, requirements for quarantining material and notifying customer.	N/A	X			
1.11	Are internal assessments being completed on an annual basis, at a minimum, incorporating AIAG PSA?	The plater shall conduct internal assessments on an annual basis, at a minimum, using the AIAG PSA. Concerns shall be addressed in a timely manner.	Requirement is met through completion of this survey.		X		
1.12	Is there a system in place to authorize reprocessing and is it documented?	The quality management system shall include a documented process for reprocessing that shall include authorization from 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 new processing control sheet issued by qualified technical personnel denoting the necessary plating modifications. Records shall clearly indicate when and how any material has been reprocessed. The Quality Manager or a designee shall authorize the release of reprocessed product.	Procedure 29 defines our process for meeting this requirement.		X		
1.13	Does the Quality Department 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. A disciplined problem solving approach shall be used.	A software system is in place for recording and managing customer complaints and rejections.		X		

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				N/A	Satisfactory	Not Satisfactory	Needs Immediate Action
1.14	Is there a continual improvement plan applicable to each process defined in the scope of the assessment?	The plater shall define a process for continual improvement for each plating process identified in the scope of the PSA. The process shall be designed to bring about continual improvement in quality and productivity. Identified actions shall be prioritized and shall include timing (estimated completion dates). The plater shall show evidence of program effectiveness.	There is a three tier system (Red, Yellow, Green) for controlling the plating process and measuring process improvement. This systems is monitored as part of management review for effectiveness verification.		X		
1.15	Does the Quality Manager or designee authorize the disposition of material from quarantine status?	The Quality Manager or designee is responsible for authorizing and documenting appropriate personnel to disposition quarantine material.	The Quality Manager, or Plant Manager will determine the disposition of quarantined material.		X		
1.16	Are there procedures or work instructions available to plating personnel that define the plating process?	There shall be procedures and work instructions available to plating personnel covering the plating process. These procedures or work instructions shall include methods of addressing potential emergencies (such as power failure), equipment start-up, equipment shut-down, product segregation (See 2.8), product inspection, and general operating procedures. These procedures or work instructions shall be accessible to shop floor personnel.	Procedures, work instructions and other documentation required in this section are made available to all personnel through our Document Management software and are available at each workstation.		X		

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Question Number	Question	Requirements and Guidance	Objective Evidence	Assessment			
				N/A	Satisfactory	Not Satisfactory	Needs Immediate Action
1.17	Is management providing employee training for plating?	The plater shall provide employee training for all plating 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 assessment of the effectiveness of the training. Management shall define the qualification requirements for each function, and ongoing or follow-up training shall also be addressed.	Employees are trained on plating operations using Program 1000 and Program 2000. Documented evidence is maintained in our training software.		X		
1.18	Is there a responsibility matrix to ensure that all key management and supervisory functions are performed by qualified personnel?	The plater shall maintain a responsibility matrix identifying all key management and supervisory functions and the qualified personnel who may perform such functions. It shall identify both primary and secondary (backup) personnel for the key functions (as defined by the plater). This matrix shall be readily available to management at all times.	Responsibility Matrix (DMF301) defines all key management and supervisory functions to ensure they are performed by qualified personnel.		X		
1.19	Is there a preventive maintenance program? Is maintenance data being utilized to form a predictive maintenance program?	The plater shall have a documented preventive maintenance program for key process equipment (as identified by the plater). 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 predictive maintenance program.	Documented evidence is maintained on our maintenance log and included both preventive and predictive maintenance.		X		
1.20	Has the plater developed a critical spare part list and are the parts available to minimize production disruptions?	The plater shall develop and maintain a critical spare parts list and shall ensure the availability of such parts to minimize production disruptions.	The critical spare parts list is included this in the maintenance log.		X		

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				N/A	Satisfactory	Not Satisfactory	Needs Immediate Action
Section 2 - Floor and Material Handling Responsibility							
2.1	Does the facility ensure that the data entered in the receiving system matches the information on the customer's shipping documents?	Documented processes and evidence of compliance shall exist, e.g., shop travelers, work orders, etc. The facility shall have a detailed process in place to resolve receiving discrepancies.	Receiving Tags (DMF114, DMF135, DMF250, or DMF324) are checked against customers incoming paperwork.		X		
2.2	Is product clearly identified and staged throughout the plating process?	Procedures for part and container identification help to avoid incorrect processing or mixing of lots. Appropriate location and staging within the facility also help to ensure that orders are not shipped until all required operations are performed. Customer product shall be clearly identified and staged throughout the plating process. Non-plated, in-process, and finished product shall be properly segregated and identified. All material shall be staged in a dedicated and clearly defined area.	Customer product is generally identified by the customer somewhere on their packaging. Additionally, we identify the product to ensure disposition is clearly defined. After plating, parts are stamped to clarify their need for additional operations or readiness for shipping.		X		
2.3	Is lot traceability and integrity maintained throughout all processes?	Out-going lot(s) shall be traceable to the incoming lot(s). The discipline of precisely identifying lots and linking all pertinent information to them enhances the ability to do root cause analysis and continual improvement.	DMF114, DMF135, DMF250, or DMF324 are used to maintain lot integrity throughout all processes.		X		
2.4	Are procedures adequate to prevent movement of non-conforming product into the production system?	The control of suspect or non-conforming product is necessary to prevent inadvertent shipment or contamination of other lots. Procedures shall be adequate to prevent movement of non-conforming product into the production system. Procedures shall exist addressing proper disposition, product identification and tracking of material flow in and out of hold area. Non-conforming hold area shall be clearly designated to maintain segregation of such material.	Procedure 29 defines the process for insuring the integrity of the non-conforming / hold area to ensure proper segregation.		X		

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				N/A	Satisfactory	Not Satisfactory	Needs Immediate Action
2.5	Is there a system to identify and inspect trap points in the entire plating process to reduce risk of mixed parts (inappropriate, unfinished, or improperly plated parts)?	There shall be a list of trap points and work instructions detailing inspection frequencies.	Trap points have been identified and are posted on signage throughout the plant.		X		
2.6	Are containers free of inappropriate material?	Containers handling customer product shall be free of inappropriate material. After emptying and before re-using containers, containers shall be inspected to ensure that all parts and inappropriate material have been removed. The source of inappropriate material shall be identified and addressed. This is to ensure that no nonconforming plating parts or inappropriate material contaminate the finished lot.	Parts are packaged in customer supplied containers.		X		
2.7	Is part loading specified, documented and controlled?	Loading parameters shall be specified, documented and controlled. Examples include parts per rack and load size.	Job Setup Instructions specify loading parameters. These documents are controlled electronically.		X		
2.8	Are operators trained in material handling, containment action and product segregation in the event of an equipment emergency including power failure?	Unplanned or emergency downtime greatly raises the risk of improper processing. Operators shall be trained in material handling, containment action, and product segregation in the event of an equipment emergency including power failure. Training shall be documented. Work instructions specifically addressing potential types of equipment emergencies and failures shall be accessible to and understood by equipment operators. These instructions shall address containment/reaction plans related to all elements of the process. Evidence shall exist showing disposition and traceability of affected product.	Operators are trained on material handling, containment, and product segregation. This training is verified through the use of our procedure quiz (DMF268).		X		

Special Process: Plating Process Assessment (General Facility Overview)							
Question Number	Question	Requirements and Guidance	Objective Evidence	Assessment			
				N/A	Satisfactory	Not Satisfactory	Needs Immediate Action
2.9	Is the handling, storage and packaging adequate to preserve product quality?	The plater's loading/unloading systems, in process handling and shipping process shall be assessed for risk of part damage or other quality concerns.	Procedure 18 defines our process for ensuring preservation of product.		X		
2.10	Are plant cleanliness, housekeeping and environmental and working conditions conducive to control and improved quality?	Plant cleanliness, housekeeping, environmental, and working conditions shall be conducive to controlling and improving quality. The plater should evaluate such conditions and their effect on quality. A housekeeping policy shall be clearly defined and executed. The facility shall be reviewed for the following items: loose parts on floor, spillage around tanks, overall plant lighting, fumes etc.	Procedure 09 and DMF194 define the cleanliness process. The maintenance log includes facility inspections (e.g. tanks, lighting)		X		
2.11	Are process control parameters monitored per frequencies specified in Process Tables?	Process control parameters shall be monitored per frequencies specified in Process Tables. Computer monitoring equipment with alarms and alarm logs satisfy the verification requirement. A designated floor person shall verify the process parameters, e.g., by initialing a strip chart or data log.	Process parameters are created, monitored, and logged electronically and are directly linked to the control plans. This ensures that changes made to the control plan are communicated to all affected parties immediately.		X		
2.12	Are out of control/specification parameters reviewed and reacted to?	Are there documented reaction plans to both out of control and out of tolerance process parameters? Is there documented evidence that reaction plans are followed?	Control points are identified and reviewed electronically. When a control point falls outside the specified range, affected parties are automatically notified and action is taken to ensure the control point is restored to appropriate levels.		X		
2.13	Are In-Process / Final Test Frequencies performed as specified in Process Tables?	In-Process / Final Test Frequencies shall be performed as specified in Process Tables. Refer to Process Tables.	Data from in process inspection is stored in a database. Data collected during final inspection is stored in the Final Audit Log (DMF140)		X		

Special Process: Plating Process Assessment (General Facility Overview)							
Question Number	Question	Requirements and Guidance	Objective Evidence	Assessment			
				N/A	Satisfactory	Not Satisfactory	Needs Immediate Action
2.14	Is product test equipment verified?	Test equipment shall be verified/calibrated per applicable customer specific standard or per an applicable consensus standard, e.g., ASTM, SAE, ISO, NIST, etc. Verification/calibration results shall be internally reviewed, approved and documented. Refer to Process Tables for frequency of checks.	Gage calibration software is used to log and monitor calibrations and MSA studies.		X		
2.15	Are the water rinses controlled and detailed in the process Control Plan to reflect full process parameters?	Identify operating parameters including: - number of rinse tanks between process stages, - tank type (single rinse, counter flowing, stationary rinse, spray rinse) - flow rate, - water requirements (city or deionized water, reverse osmosis), - filtration (if applicable) - control methods.	Water Rinses are listed on the Process Flows, FMEAs and Control Plans .		X		

Section 3 - Zinc/ Zinc Alloy Plating Equipment							
Question Number	Question	Requirements and Guidance	Objective Evidence	Assessment			
				N/A	Satisfactory	Not Satisfactory	Needs Immediate Action
3.1	Are process and testing equipment calibrations and/or verification certified, posted, and current?	A system shall be used by the plating facility to track calibration dates of equipment. This system will typically be a computerized tracking system or other notification system. Test equipment shall be verified/calibrated per applicable customer specific standard or consensus standard, e.g., ASTM, SAE, ISO, NIST, etc. Verification/calibration results shall be internally reviewed, approved and documented. Refer to Process Table J, for equipment certification time table.	Gage calibration software is used to log and monitor calibrations and MSA studies.		X		
3.2	Are barrels, racks, and baskets maintained?	Plater shall have preventative maintenance system that is documented and implemented.	Tooling is maintained on an on-going basis as part of our preventive maintenance program. When racks are found to be in disrepair, they are repaired or replaced.		X		
3.3	Are rectifiers maintained?	Plater shall have preventative maintenance system that is documented and implemented.	Rectifiers inspection is included in our preventive maintenance program.		X		
3.4	Are Contacts and Bussing maintained?	Plater shall have preventative maintenance system that is documented and implemented.	Contact and bussing inspection is included in our preventive maintenance program.		X		
3.5	Are filters maintained?	Plater shall have preventative maintenance system that is documented and implemented.	Filters are verified per process control plan frequency.		X		
3.6	For hydrogen embrittlement relief ovens, are temperature uniformity surveys performed yearly?	Uniformity survey must show that ovens were tested both empty and with a full load. Parts must come up to temperature within one hour of entering oven and meet temperature tolerance specified by customer.	N/A	X			
3.7	For hydrogen embrittlement relief ovens, are thermocouples checked and/or replaced quarterly?	Plater shall have preventative maintenance system that is documented and implemented.	N/A	X			
3.8	Is there a drying/curing system in place?	Plater shall have a defined drying process to adequately dry parts. Process to include control and verification of temperature and time.	The drying process is included on the process control plan.		X		

Section 3 - Job Audit - Finished Product Review

Customer: Confidential
Shop Order Number: 080318-01-70
Part Number: 24230 EA000
Part Description: Bracket
Material: Zinc-Iron
Plating Requirements: 0.0002

Question #	Job Audit Question	Related PSA Question #	Customer or Internal Requirement	Job (Shop) Order or Reference Documentation Requirement	Actual Condition (Objective Evidence)	Pass / Fail / N/A
7.1	Are contract review, advance quality planning, FMEA, Control Plans, etc., performed by qualified individuals?	1.2 1.3 1.4 1.17	Yes	N/A	Sales Manager, Quality Manager, Lab Manager	Pass
7.2	Does the plater have the proper customer specifications for the part?	1.5	Yes	N/A	Yes, M4059 is available in SESuite	Pass
7.3	Is a shop traveler created to meet customer requirements?	1.6 2.1	Yes	Procedure 17	DMF250	Pass
7.4	Is material identification (part numbers, lot numbers, contract numbers, etc.) maintained throughout the plating process?	2.2 2.3 2.4	Yes	Procedure 17	Yes, on DMF250	Pass
7.5	Is there documented evidence of Receiving Inspection?	2.1	Yes	Procedure 19	Yes, on DMF250	Pass
7.6	Are the Loading / Racking requirements identified?	1.6 2.7 2.9	Yes		DMF147	Pass
7.7	Is the proper procedure or process specification used? Refer to Process Tables for specific parameters. List parameters that were verified in this audit in the spaces provided below.	1.5 1.6 2.1 2.11 2.13	Yes	Control Plans	Control Plan 01	Pass
7.8	What are the product inspection requirements?	2.13	Each part may have one or more requirements determined by the plating specification. Parts must meet each requirement. List each requirement below and validate.			
7.8.1	Requirement: Plate Thickness					
	Test Method:		Internal	Procedure 19	X-Ray	Pass
	Test frequency or quantity:		Internal	Procedure 19	First 6, one per hour, Last 6	Pass
	Selection of samples:		Internal	Procedure 19	Random	Pass
	Specification:		N/A	M4059	.00032"	Pass
7.8.2	Requirement: Corrosion Resistance					N/A

	Test Method:		Internal	ASTM B117	Salt Spray Chamber	Pass
	Test frequency or quantity:		Internal	As Required by Customer	1 panel per day	Pass
	Selection of samples:		Internal	Random	Random	Pass
	Specification:		N/A	Customer Print	No corrosion present	Pass
7.8.3	Requirement: Hydrogen Embrittlement Relief (if Applicable)		This includes the transition time from the plating bath to the oven plus heating time. The time to temperature is different for different customers. The most strict (shortest heating time) requirements shall be met.			
	Test Method:					
	Test frequency or quantity:					
	Selection of samples:					
	Specification:					
7.8.4	Requirement: Adhesion Test					
	Test Method:					
	Test frequency or quantity:					
	Selection of samples:					
	Specification:					
7.8.5	Requirement: Substrate Alloy (if Applicable)					
	Test Method:					
	Test frequency or quantity:					
	Selection of samples:					
	Specification:					
Operator or Inspector Responsibilities						
7.9	Were appropriate process steps signed off?	1.4 2.2 2.3 2.11	Yes	DMF250	Verified in DMF250 and Final Audit Log	Pass
7.10	Were all inspection steps, as documented in the Control Plan performed?	1.2 1.4	Yes	ERP and SESuite	Verified inspection records in ERP and SESuite	Pass
7.11	Were steps/operations performed that were not documented in the Control Plan?	1.2 1.4 1.6	Yes	Control Plan	No	Pass
7.12	If additional steps were performed, were they authorized?	1.2 1.4 1.6 1.11 1.17	N/A		N/A	Pass
7.13	If the order was certified, did the certification accurately reflect the process performed?	2.11 2.13	N/A		N/A	Pass
7.14	Was the certification signed by an authorized individual?	1.17	N/A		N/A	Pass

7.15	Are the parts and containers free of foreign objects or contamination?	2.6	Yes		No foreign objects were present in the container.	Pass
Packaging Requirements						
7.16	Are packaging requirements identified?	2.9	Yes	DMF147	Packaging requirements were identified on DMF147	Pass
7.17	Are parts packaged to minimize mixed parts (parts packed over height of container)?	2.9	Yes	DMF147	Parts were packaged in customer supplied containers and as specified by the customer.	Pass
Shipping Requirements						
7.18	Were the parts properly identified?	2.3	Yes	Procedure 17	Verified on DMF250	Pass
7.19	Were the containers properly labeled?	2.3 2.9	Yes		No labeling requirements for this job	Pass

PROCESS TABLE A - Zinc & Zinc Alloy Plating

All requirements given below are subordinate to applicable customer/OEM specific requirements.

The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify plater is conforming to customer requirements.

*If minimum requirements are not met, provide supporting records to justify actual conditions. To justify reduced monitoring frequencies, a minimum of 30 consecutive measurements (data points) at stated frequencies must be documented. If any data points at reduced monitoring frequencies are outside of control limits, then revert back to the frequencies stated under the minimum requirements.

For multiple tanks that serve the same purpose copy and paste sections as needed.

Process Line Identification:

Type of Line: Rack or Barrel

ITEM #	Related PSA Question #	Category/Process Steps	Type of Control		Monitoring Frequency		Observation/Comments (Pass / Fail / N/A)
			Minimum Requirement	Actual Condition	Minimum Requirement	Actual Condition	
1.0		Metal Cleaning					
		Type: Soak and Electro					
		Size, volume: Confidential					
		Proprietary name: Confidential					
		Chemical supplier: Confidential					
A1.1	1.4; 2.11; 2.13	Temperature	Automatic	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Pass
A1.2	1.4; 2.11; 2.13	Concentration	Manual	Manual	Once per day	1/24 hours worked	Pass
A1.3	1.4; 2.11; 2.13	Time	Automatic	Automatic	After any program changes.	N/A	N/A
A1.4		Agitation	Automatic	Automatic	Per process sheet	1/8 hours worked	Pass
A1.5	1.4; 2.11; 2.13	Amperage or Voltage Control	Automatic	Automatic	Once every 8 hours*	1/8 hours worked	Pass
A1.6		Solution Level	Manual	Manual	Once every 8 hours	1/8 hours worked	Pass
A1.7	2.15	Flowing Rinse	Automatic	Automatic	Once every 8 hours	1/8 hours worked	Pass
2.0		Acid Pickling					
		Type: Hydrochloric					
		Size, volume: Confidential					

		Proprietary name: Confidential					
		Chemical supplier: Confidential					
A2.1	1.4; 2.11; 2.13	Temperature (if applicable)	Automatic	N/A	Continuous monitoring by controller. Manually verify daily.	N/A	Pass
A2.2	1.4; 2.11; 2.13	Concentration	Manual	Manual	Once every 8 hours*	Twice per Day	Pass
		Metallic impurity concentration. Obtain metallic impurity limits from chemical supplier with required corrective actions.	Manual	Manual	Once per month	1x/ month	Pass
A2.3	1.4; 2.11; 2.13	Time (Less than 10 Minutes or Customer Specific)	Automatic	Automatic	After any program changes.	N/A	Pass
A2.4		Inhibitor	Manual	N/A	Per Control Plan	N/A	Pass
A2.5		Solution Level	Manual	Manual	Once every 8 hours	1/8 hours worked	Pass
A2.6	2.15	Flowing Rinse	Automatic	Automatic	Once every 8 hours	1/8 hours worked	Pass
4.0		Alkaline Plating Bath					
		Type: Zinc/Zinc-Iron					
		Size, volume: Confidential					
		Proprietary name: Confidential					
		Chemical supplier: Confidential					
A4.1	1.4; 2.11; 2.13	Temperature	Automatic	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Pass
A4.2	1.4; 2.11; 2.13	Time	Automatic	Automatic	After any program changes.	N/A	N/A
A4.3	1.4; 2.11; 2.13	Current/Voltage	Automatic or Manual	Manual	Once every 8 hours	1/8 hours worked	Pass
A4.4		Caustic Concentration	Manual	Manual	Once per day	1/24 hours worked	Pass
A4.5		Plating Test Cell (Hull)	Manual	Manual	Once per day	1/24 hours worked	Pass
A4.6		Plating Metal Concentration(s)	Manual	Manual	Once per day	2/24 hours worked	Pass
A4.7		Metallic impurity concentration. Obtain metallic impurity limits from chemical supplier with required corrective actions.	Manual	Manual	Once per month	No metallic impurity requirements on the TDS	Pass
A4.8		Filtration	Continuous	Continuous	Once every 8 hours	1/8 hours worked	Pass
A4.9	2.15	Flowing Rinse	Automatic	Automatic	Once every 8 hours	1/8 hours worked	Pass
7.0		Acid Activation (i.e., nitric, sulfuric, etc.)					
A7.1		pH/concentration	Manual	Automatic	Once every 8 hours	1/1 hour worked	Pass
A7.2	1.4; 2.11; 2.13	Time	Automatic*	Automatic*	After any program changes.	N/A	Pass
8.0		Passivates					
		Type: Black and Clear					
		Size, volume: Confidential					
		Proprietary name: Confidential					

		Chemical supplier: Confidential					
A8.1		Concentration	Automatic or Manual	Manual	Prior to production start-up. If automatic control once per day, once every 8 hours if manual.	1/24 hours worked	Pass
A8.2	1.4; 2.11; 2.13	Temperature	Automatic	Manual	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Pass
A8.3	1.4; 2.11; 2.13	Time	Automatic or Manual	Automatic	Automatic -After any program changes. Manual - every load.*	N/A	N/A
A8.4		pH	Automatic*	Automatic	Prior to production start-up. If automatic control once per day, once every 8 hours if manual.	1/1 hour worked	Pass
A8.5		Agitation	Automatic	Automatic	Once every 8 hours	N/A	Pass
A8.6		Metallic Impurity level(s) (e.g. Fe, Zn)	Manual	Manual	Once per week	1x/ week worked	Pass
A8.7	2.15	Flowing Rinse	Automatic	Automatic	Once every 8 hours	1/8 hours worked	Pass
9.0		Supplemental Treatments - Topcoats, Sealants and Friction Modifiers					
		Type:					
		Size, volume: Confidential					
		Proprietary name: Confidential					
		Chemical supplier: Confidential					
A9.1		Concentration	Manual	Manual	Prior to production start-up. If automatic control once per day, once every 8 hours if manual.	Once per day	Pass
A9.2	1.4; 2.11; 2.13	Temperature (if applicable)	Automatic	N/A	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Pass
A9.3		pH (if applicable)	Automatic or Manual	N/A	Prior to production start-up. If automatic control once per day, once every 8 hours if manual.	1/24 hours worked	Pass
A9.4	1.4; 2.11; 2.13	Time	Automatic*	Automatic*	After any program changes if automatic.	N/A	N/A

10.0		Drying					
A10.1	3.7	Drying Time	Automatic or Manual	Automatic	Per Process Sheet and TDS	After any program changes.	Pass
A10.2	3.7	Drying Temperature	Automatic or Manual	Automatic	Per Process Sheet and TDS	1/8 hours worked	Pass
A10.3		Verify operation of blowers and/or rotation of dryer.	Manual	Manual	Once per 8 hours	1/8 hours worked	Pass
A10.4	3.7	There is a procedure to ensure dryness of parts.	Manual	Manual	Every container and rack.	N/A	N/A

Proceed to PT - Embrittlement Bake (If required)

PROCESS TABLE J - Process Control and Testing Equipment

All requirements given below are subordinate to applicable customer/OEM specific requirements.

The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. The auditor shall verify plater is conforming to customer requirements.

*If minimum requirements are not met, provide supporting records to justify actual conditions. To justify reduced monitoring frequencies, a minimum of 30 consecutive measurements (data points) at stated frequencies must be documented. If any data points at reduced monitoring frequencies are outside of control limits, then revert back to the frequencies stated under the minimum requirements.

For multiple tanks that serve the same purpose copy and paste sections as needed.

ITEM #	EQUIPMENT TYPE	Zinc/Zinc Alloy	Decorative Plating	Electroless Nickel	Hard Chrome	Electropolish	Chrome flash	Verification Frequency	Calibration / Certification Frequency	Observation/Comments (Pass / Fail / N/A)
1.0	LABORATORY EQUIPMENT									
J1.1	Wet Analysis: Before use, chemicals must be checked for shelf life and/or expiration date	X	X	X	X	X	X	Daily	N/A	Pass
J1.2	pH / Conductivity Meter	X	X	X		X		Daily	Yearly	Pass
J1.3	pH / Conductivity Probes Solution compatible probes must be used. Dedicated probes must be used for chromates / passivates.	X	X	X		X		Before each use	N/A	Pass
J1.4	Laboratory Balance (Weight Scale) (Optional)	X	X	X	X			Monthly	Yearly	Pass
J1.5	Atomic Absorption (AA)*	X	X	X				Before each use	Yearly	Pass
J1.6	X-Ray Fluorescence (XRF)	Alloy Only						Thickness and alloy verification daily	Yearly	Pass
J1.7	Hardness Tester*		X		X			Daily	Yearly	N/A
J1.8	Profilometer				X			Daily	Yearly	N/A
J1.9	Lab Rectifier	X	X		X			When applicable	Yearly	Pass

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2.0	TESTING EQUIPMENT									
J2.1	Salt Spray Cabinet	X			X			Daily	Yearly	Pass
J2.2	Thickness Tester	X	X	X	X		X	Daily	Yearly	Pass
J2.3	Coulometric (STEP) Tester		X					Daily	Yearly	N/A
J2.4	CASS Cabinet		X		X		X	Daily	Yearly	N/A
J2.5	Microscope (Min 100X) with calibrated grid reticle for Pore/Crack Count		X		X			N/A	Yearly	N/A
J2.6	Freezer		X					Daily	Yearly	N/A
J2.7	Lab Oven	X	X				X	Daily	Yearly	Pass

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3.0	PROCESSING EQUIPMENT									
J3.1	Rectifier	X	X		X	X	X	Ripple checked every 12 months	N/A	Pass
J3.2	Amp Meter/Volt Meter	X	X		X	X	X	Checked every 12 months	N/A	Pass
J3.3	Plating Solution Filters	X		X				Daily	N/A	Pass
J3.4	Plate filters (bright and semi-bright nickel tanks)		X					Daily	N/A	N/A
J3.5	Oven Temperature recorder							Every 3 months	Yearly	Pass
J3.6	Data/Chart recorder for deembrittlement or EN hardness oven	X	X	X				Yearly	N/A	N/A
J3.7	Thermocouples	X	X	X				Every 3 months		Pass
J3.8	Controllers: (If Used)	X	X	X	X	X	X	Set points and/or feed rates are verified (if applicable)		
J3.9	Automatic feeders							Daily		Pass
J3.10	Timers							Daily		Pass
J3.11	Temperature	X	X	X	X	X	X	Daily	Yearly	Pass
J3.12	Volume							Daily		Pass
J3.13	pH / Conductivity							Daily		Pass

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ITEM #	EQUIPMENT TYPE	Zinc/Zinc Alloy	Decorative Plating	Electroless Nickel	Hard Chrome	Electropolish	Chrome flash	Verification Frequency	Calibration / Certification Frequency	Observation/Comments (Pass / Fail / N/A)
J3.14	Agitation type:	X	X	X		X				
J3.15	Air							Daily		Pass
J3.16	Cathode rod							Daily		
J3.17	Eductor							Daily		
J3.18	Water source:	X	X	X	X	X	X			
J3.19	POTW									Pass
J3.20	RO							Daily		
J3.21	Well									
J3.22	Deionized			X				Daily		
J3.23	Drying type:	X	X	X	X	X	X			
J3.24	Spin Dryer							Daily		Pass
J3.25	Forced Air Drying							Daily		Pass
J3.26	Belt Oven							Daily		
J3.27	Box Oven							Daily		