

Special Process: Plating System Assessment Cover Sheet				
Facility Name: DeKalb Metal Finishing				
Address: 625 West 15th Street PO Box 70 Auburn, IN 46706				
Phone Number: 260.925.1820				
Current Quality Certification(s): IATF 16949:2016				
Number of Plating Employees at this Facility: 54				
Captive Plater (Y/N): N				
Commercial Plater (Y/N): Y				
Date of Assessment: 7/1/2020				
Date of Previous Assessment: 1/1/2020				
Date of Re-assessment (if necessary):				
Type(s) of Plating Processing at this Facility:				
Process Table A:		Process Table F:		
Zinc ✓		Hard Chrome Plating		
Zinc Alloy Plating ✓				
Process Table B:		Process Table G:		
Mechanical Plating		Electroless Nickel		
Process Table C:		Process Table H:		
Decorative Plating of Metal Substrates		Hydrogen Embrittlement Relief Process		
Process Table D:		Process Table I:		
Decorative Plating of Plastic Substrates		Process Control and Testing Equipment Verification and Calibration		
Process Table E:				
Electropolish and Chrome Flash				
Personnel Contacted:				
Name:	Title	Company	Phone	Email
Dave Houser	Plant Manager	DMF	260.925.1820, 116	dhouser@dekalbmetal.com
Paul Fry	Lab Manager	DMF	260.925.1820, 115	pfry@dekalbmetal.com
Larry Sidle	Lab Technician	DMF	260.925.1820, 117	lsidle@dekalbmetal.com
Drew Ritchie	Quality Technician	DMF	260.925.1820, 130	dritchier@dekalbmetal.com
Auditors/Assessors:				
Name:	Title	Company	Phone	Email
Matt Morris	Compliance Manager	DMF	260.925.1820, 114	mmorris@dekalbmetal.com
Lori Westrick	Quality Manager	DMF	260.925.1820, 145	lwestrick@dekalbmetal.com
Number of Nonconforming Findings from Section 1 and Section 2:				0
Number of Nonconforming Findings in the Job Audit(s): 0				0
Number of Nonconforming Findings in the Process Table(s):				0

Section 1 - Management Responsibility & Quality Planning		
1.1	There shall be a dedicated and qualified surface finishing person on site.	
<ul style="list-style-type: none"> • To ensure readily available expertise, there shall be a dedicated and qualified surface finishing person 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 surface finishing/surface finishing knowledge. • The qualifications shall include a minimum of 5 years' experience in surface finishing operation or a combination of a minimum of 5 years of relevant formal education and surface finishing experience. 		
	Guidance	Objective Evidence
		Conforming Nonconforming NA
	What is this person's title?	Lab Manager
	Is this position reflected in the organizational chart?	Business Plan and Quality Manual
	Is there a documented job description listing all the required qualifications and responsibilities of this position?	FORM DMF292
	Describe in detail this person's educational background and practical experience.	Background includes apprenticeship and 30+ years of practical experience.
	How many years of process experience at a plating facility does this person have?	Employed since 1982
	Is this individual a full-time employee at the location being audited?	Yes
Comments:		
Section 1 - Management Responsibility & Quality Planning		
1.2	The facility shall perform advanced quality planning.	
<ul style="list-style-type: none"> • 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	Objective Evidence
		Conforming Nonconforming NA
	Does the facility use a documented advanced quality planning process?	Procedure 14
	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?	Procedure 14, Procedure 11, DMF341
	What is the procedure for changing the process after PPAP?	Procedure 14
Comments:		
Section 1 - Management Responsibility & Quality Planning		
1.3	The facilities FMEAs shall be up to date and shall reflect the current process.	

<ul style="list-style-type: none"> • 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	Objective Evidence	Conforming Nonconforming NA
Does the facility have a documented Failure Mode and Effects Analysis (FMEA) in use?	PFMEA for each plating line	Conforming
Identify the names and job function of the team members used in the development of the FMEA.	Names and job functions listed on FMEA's	Conforming
Identify if the FMEA is written for each part, part family or process specific.	Process Specific	Conforming
Are all FMEAs consistent with all associated documentation such as control plans, work instructions and shop travelers?	Yes, review FMEAs for evidence	Conforming
Do all FMEAs include every process step from part receipt to part shipment?	Yes, review FMEAs for evidence	Conforming
Are special characteristics, as defined by the organization and its customers, identified, defined, and addressed in the FMEAs?	KCC	Conforming
Provide evidence that the FMEA has been updated in response to quality issues.	See Revision Notes for Evidence	Conforming
Comments:		
Section 1 - Management Responsibility & Quality Planning		
1.4	The process control plans shall be up to date and shall reflect the current process.	
<ul style="list-style-type: none"> • 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 surface finishing 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	Objective Evidence	Conforming Nonconforming NA
Does the facility have a documented control plan in use?	Control Plan for each plating line	Conforming
Identify if the control plan is written for each part, part family or process specific.	Process Specific	Conforming
Do all control plans include every process step from part receipt to part shipment?	Yes, review Control Plans for evidence	Conforming
Does the control plan identify all key surface finishing process parameters?	Yes, review Control Plans for evidence	Conforming
Identify the names and job function of the team members used in the development of the control plan.	Names and job functions listed on Control Plans	Conforming
Are the control plans consistent with all associated documentation such as work instructions, shop travelers, specifications and FMEAs?	Yes, review Control Plans for evidence	Conforming
Provide evidence that sample sizes and frequencies for evaluation of process and product characteristics are addressed and consistent with the minimum requirements.	Yes, review Control Plan and Procedure 19 for evidence	Conforming

Are special characteristics, as defined by the organization and its customers, identified, defined, and addressed in the control plans?	KCC	Conforming	
Provide evidence that the control plan has been updated in response to quality issues, customer requirements and process changes.	See Revision Notes for Evidence	Conforming	
Comments:			
Section 1 - Management Responsibility & Quality Planning			
1.5	All surface finishing related and referenced specifications shall be up to date and available. For example: SAE, AIAG, ASTM, General Motors, Ford, FCA, Toyota, Volvo Truck.		
<p>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 surface finishing processes. To ensure all customer requirements are understood and satisfied, the organization shall have all related surface finishing and customer referenced standards and specifications available for use and a process to ensure that they are current.</p> <ul style="list-style-type: none"> • 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 shall 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		Objective Evidence	Conforming Nonconforming NA
Does the organization have all related surface finishing and customer referenced standards and specifications available for use?		Surface Finishing standards and customer reference standards are available electronically in a document management system.	Conforming
How are standards and specifications obtained?		IHS Global, Customer Portals, Customer Communication	Conforming
Describe the system and timing used to maintain the standards and specifications to ensure that they are up to date.		Update notifications are sent from IHS and some Customer Portals. The rest are reviewed once their assigned validity date has expired (typically 1 year)	Conforming
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.		Matt Morris (Manager) or Lori Westrick (Quality Manager) review all obtained standards, notates applicable changes, loads them into a document management/notification system and schedules QMS updates as needed.	Conforming
Comments:			
Section 1 - Management Responsibility & Quality Planning			
1.6	There shall be documented process instructions.		
<ul style="list-style-type: none"> • The organization shall have written process instructions for all active parts or family of parts, including relevant part specific requirements. Examples of part specific requirements include process line, plating type, load size, rectifier settings, etc. • These process instructions may take the form of work instructions, job card, computer-based recipes, or other similar documents. 			
Guidance		Objective Evidence	Conforming Nonconforming NA

Does the organization have written process instructions for all active parts or family of parts and include all relevant operating parameters?	FORM DMF147	Conforming	
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.)	Work Instructions, Computer based recipes	Conforming	
Comments:			
Section 1 - Management Responsibility & Quality Planning			
1.7	A valid product capability study shall be performed.		
<p>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.</p> <ul style="list-style-type: none"> Initial product capability studies shall be conducted for all surface finishing processes per line as defined in scope of work and in accordance with customer requirements. Capability study techniques shall be appropriate for the surface finishing product characteristics, (e.g., surface finishing thickness, corrosion resistance, etc.). An action plan shall exist to address the steps to be followed in case capability indices fall outside customer requirements or established ranges. 			
Guidance		Objective Evidence	Conforming Nonconforming NA
Has an initial product capability study been performed?		Line Validation Documentation, PPAPs, Corrosion Reports	Conforming
Are studies conducted for each surface finishing process for each line in the facility?		Procedure 28	Conforming
Has a new study been completed after relocation of any process equipment, major rebuild of any equipment, or any significant change in process chemistry?		No recent relocations, rebuilds, or changes to process chemistry	Conforming
How does the organization define what constitutes a major change?		Procedure 10	Conforming
What steps are followed when capability indices fall outside specified requirements?		Procedure 29	Conforming
Comments:			
Section 1 - Management Responsibility & Quality Planning			
1.8	The organization shall collect, analyze, and react to product and process data over time.		
<ul style="list-style-type: none"> 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. 			
Guidance		Objective Evidence	Conforming Nonconforming NA
What product characteristics and process parameters are used?		See Procedure 28, SPC Module and ERP System for Evidence	Conforming
How is the ongoing trend or historical data reviewed and analyzed?		Integrated into Management Review	Conforming
How does the organization use this data to prevent future failures and improve the quality system?		Examples include updates to maintenance schedules and the addition of new process monitoring equipment.	Conforming
Comments:			

Section 1 - Management Responsibility & Quality Planning		
1.9	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	Objective Evidence
	What is the process to retain these records?	Procedure 01
	What is the process for retention of customer specific documents with longer retention times?	Retention limits specified in CSR's are aligned with internal record retention limits within Procedure 01.
Comments:		
Section 1 - Management Responsibility & Quality Planning		
1.10	There shall be a process in place to review the monitoring systems/logs at specified intervals.	
	<ul style="list-style-type: none"> • Management or management designee shall review the monitoring systems/logs at specified intervals. • In the case of Hydrogen Embrittlement avoidance and relief, review shall occur prior to parts being released for shipment and shall not exceed 24 hours. • The organization shall have reaction plans for nonconformances to process requirements. 	
	Guidance	Objective Evidence
	Define the process in place to gather and review this information.	Procedure 25 and FORM DMF118, Management Review
	Identify the manager or management designee reviewing the process records from the monitoring systems/logs.	Drew Ritchie
	In the case of Hydrogen Embrittlement baking, is the review taking place within the 24 hour period?	No parts require Hydrogen Embrittlement baking
	Describe reaction plans for nonconformances to the written process requirements.	Procedure 25, Control Plans
Comments:		
Section 1 - Management Responsibility & Quality Planning		
1.11	Internal assessments shall be completed at a minimum once every 12 months using the latest revision of the CQI-11 Plating System Assessment.	
	Guidance	Objective Evidence
	What is the date of the last AIAG CQI-11 Plating System Assessment?	https://dekalbmetal.com/wp-content/uploads/2016/08/CQI11.pdf
Comments:		
Section 1 - Management Responsibility & Quality Planning		
1.12	There shall be an internal system in place to authorize reprocessing and it shall be documented.	

<ul style="list-style-type: none"> • 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 surface finishing 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	Objective Evidence	Conforming Nonconforming NA
Describe the procedure for authorizing reprocessing of nonconforming material.	Procedure 29	Conforming
Does the reprocessing procedure describe product characteristics that allow or not allow reprocessing?	Procedure 19	Conforming
Did the quality manager or manager's designee authorize the rework and determine the reprocessing procedure?	Yes	Conforming
How do you identify that material has been reprocessed?	Procedure 19	Conforming
Do the records clearly indicate when and how any material has been reprocessed including the quality manager's authorization of release?	Procedure 19	Conforming
Provide evidence that the rework complies with your customer's specifications and/or requirements.	See Problem Module, SPC Module Final Audit Log for Evidence	Conforming
Comments:		
Section 1 - Management Responsibility & Quality Planning		
1.13	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	Objective Evidence	Conforming Nonconforming NA
Describe the procedure for reviewing and addressing external customer and internal concerns.	Procedure 29	Conforming
Describe the problem solving approach that is used.	8D and/or other customer required formats (i.e. 5-Why)	Conforming
Describe the communication process used to respond to the originator.	Problem Module issues a tracking number (i.e RMA)	Conforming
Provide a recent example of this procedure in use.	Review Problem Module for evidence	Conforming
Comments:		
Section 1 - Management Responsibility & Quality Planning		
1.14	The organization shall have a continual improvement process.	
<ul style="list-style-type: none"> • 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	Objective Evidence	Conforming Nonconforming NA

Describe the continual improvement process used to achieve improvements in quality and productivity.	Procedure 32	Conforming
Provide a recent example of how actions are identified, prioritized and completion dates assigned.	Review CIPA Log in Management Review for evidence	Conforming
Describe how the organization measures the effectiveness.	Review CIPA Log in Management Review for evidence	Conforming
Comments:		
Section 1 - Management Responsibility & Quality Planning		
1.15	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	Objective Evidence	Conforming Nonconforming NA
Define the process for release of material from quarantine.	Procedure 29 and Problem Module	Conforming
List the authorized personnel with job titles.	Matt Morris (Quality Manager) and Dave Houser (Plant Manager)	Conforming
Review evidence that only these persons are releasing materials from the quarantine area.	Review Problem Module for evidence (Question in Hold Log)	Conforming
Comments:		
Section 1 - Management Responsibility & Quality Planning		
1.16	There shall be documented procedures and/or work instructions for all processes and they shall be available to all of the organization's personnel.	
<ul style="list-style-type: none"> • 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	Objective Evidence	Conforming Nonconforming NA
Review the procedure/work instruction for process start-up and shut-down.	DMFWI112, DMFWI071, DMFWI072, DMFWI073, DMFWI074, DMFWI075, DMFWI076, DMFWI077	Conforming
Review the procedure/work instruction for process control during operation.	DMF147	Conforming
What is the procedure in place to address potential emergencies? (Such as power outage and/or equipment failure).	Procedure 29, Procedure 08	Conforming
Review the procedures for inspection of the product, in process or after completion.	Procedure 19	Conforming
Verify that these procedures/work instructions are accessible to personnel performing the job at all times.	Available Electronically at each work station.	Conforming
Comments:		
Section 1 - Management Responsibility & Quality Planning		
1.17	The organization and management shall provide employee training.	

<ul style="list-style-type: none"> • 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	Objective Evidence	Conforming Nonconforming NA
Review the process for initial training of all employees, including backup and temporary.	Procedure 06	Conforming
Review the process for ongoing and/or follow-up training.	Procedure 06	Conforming
Provide a recent copy of the training matrix.	Review Training Module for evidence	Conforming
Provide documented evidence that shows how the organization verifies effectiveness of training.	Review Training Module for evidence	Conforming
Comments:		
Section 1 - Management Responsibility & Quality Planning		
1.18	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.	
<ul style="list-style-type: none"> • 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	Objective Evidence	Conforming Nonconforming NA
Review and provide an example of the most recent matrix.	FORM DMF301	Conforming
Confirm that the matrix includes both primary and secondary persons.	FORM DMF301	Conforming
Describe how and where this information is made available.	Document Module	Conforming
Comments:		
Section 1 - Management Responsibility & Quality Planning		
1.19	There shall be a preventive maintenance program and maintenance data shall be utilized to form a predictive/preventive maintenance program.	
<ul style="list-style-type: none"> • 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	Objective Evidence	Conforming Nonconforming NA
Show evidence that a documented preventive maintenance program exists.	Procedure 23, Maintenance Log, Spart Part Log	Conforming

Describe the process for reporting problems.	Requests are sent to the Plant Manager who is responsible for scheduling tasks with the Maintenance Department. Results are recorded in the Notes section of the Maintenance Log.	Conforming
Provide a recent example showing that the person reporting the problem received feedback after the problem was resolved.	See notes section within Maintenance Log for evidence (e.g. DSL controller for Line 2 plating tank)	Conforming
Give a recent example of how the program was used to prevent/predict potential equipment failure.	See Change Records within Maintenance Log for Evidence	Conforming
How is the data being generated reviewed with management to improve the quality system?	Management Review	Conforming
Comments:		
Section 1 - Management Responsibility & Quality Planning		
1.20	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	Objective Evidence	Conforming Nonconforming NA
Provide the critical spare parts list.	REC007 in Document Module	Conforming
Does the critical spare parts list include inventory, lead time and suppliers?	REC007 in Document Module	Conforming
Describe how and when the organization updates the list.	Monthly Review	Conforming
What criteria is used to determine whether critical spare parts are kept at the facility or sourced off site.	Procedure 23	Conforming
Describe the process used to maintain minimum quantities.	Procedure 23, Spare Part Log	Conforming
Comments:		

Section 2 - Floor and Material Handling Responsibility		
2.1	The organization shall ensure that customer data entered into the receiving system matches the customer's shipping documents.	
<p>It is critical that all customer requirements and lot identification be correctly transferred to internal documents.</p> <ul style="list-style-type: none"> • 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, etc. • 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 above apply to captive, in-house, commercial and all involved departments. 		
	Guidance	Objective Evidence
	Describe the receiving process including listing the documentation used.	Procedure 17, Procedure 19
	Describe the process to identify the plating requirements.	FORM DMF114 ,FORM DMF135, FORM DMF250
	Describe the reaction process when material received does not correspond to the customer's documents.	See Conrol Plan for Evidence
Comments:		
Section 2 - Floor and Material Handling Responsibility		
2.2	Is product clearly identified and stored throughout the surface finishing process and is lot traceability and integrity maintained?	
<p>Procedures are required for part and container identification to avoid incorrect processing or mixing of lots.</p> <ul style="list-style-type: none"> • As received, in-process, and finished product or material shall be properly segregated, identified, and stored in a dedicated and clearly defined area. • 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. 		
	Guidance	Objective Evidence
	Describe the method that ensures the parts and lot numbers are correctly identified and maintained throughout the process.	Procedure 17, Final Audit Log
	Verify that received, in-process, and finished product or material is properly segregated, identified, and stored in a dedicated and clearly defined area.	Parts received, on hold, and finished are stored in locations marked with signage and will be marked with an identifying tag (DMF114, DMF135, DMF250) or a hold tag (DMF221)
Comments:		
Section 2 - Floor and Material Handling Responsibility		
2.3	Procedures shall be adequate to prevent movement of nonconforming product into and out of the production system.	
<p>The control of suspect or nonconforming product is necessary to prevent inadvertent shipment or contamination of other lots.</p> <ul style="list-style-type: none"> • Procedures shall be adequate to prevent movement of nonconforming product into the production system. • Procedures shall exist addressing authorized personnel, appropriate disposition, product identification and tracking of material flow in and out of hold area. • Nonconforming hold area shall be clearly designated to ensure segregation of such material. 		

Guidance	Objective Evidence	Conforming Nonconforming NA
Where is the nonconforming holding area, and how is it identified?	Located by the door that leads from the plant to the main office and identified with a sign.	Conforming
Describe the procedure to prevent the unauthorized movement of nonconforming products.	Procedure 29	Conforming
Provide evidence that material movement in and out of this area is documented.	Review Problem module for evidence.	Conforming
Comments:		
Section 2 - Floor and Material Handling Responsibility		
2.4	For bulk processing there shall be a procedure to identify trap points throughout the entire process to reduce risk of unfinished, improperly coated and mixed parts.	
<ul style="list-style-type: none"> • The organization shall have documented procedures to identify and monitor all trap points for each process/equipment. • Monitoring of potential trap points shall occur at minimum every part changeover. • Trap points may include: Plating barrels, part containers, loading and unloading equipment, spin dryers, transfer belts. 		
Guidance	Objective Evidence	Conforming Nonconforming NA
Describe the procedure to identify and monitor all trap points for each process and/or equipment.	Procedure 17	Conforming
Provide the list of trap points.	See signage posted at each line and in the shipping/receiving area.	Conforming
Comments:		
Section 2 - Floor and Material Handling Responsibility		
2.5	The handling, storage and packaging shall be adequate to ensure product quality is maintained throughout the entire process.	
<ul style="list-style-type: none"> • Handling, storage, and packaging shall be adequate to ensure product quality. • Part cleanliness shall be maintained throughout the process. • All parts shall be stored in a controlled environment. 		
Guidance	Objective Evidence	Conforming Nonconforming NA
Which process steps have dedicated in-process containers?	Loading/Unloading	Conforming
How are containers maintained to preserve part cleanliness?	Customer owned containers are stored in a clean, dry environment.	Conforming
Describe how the containers are inspected to ensure they are free of foreign material.	Containers are customer owned	N/A
What is used for liner material of customer containers before packing finished goods for shipment? (Materials like newspapers, used cardboard and bags should be avoided).	DMF147, Customer specified materials	Conforming
Provide a list of dedicated storage areas that avoid exposure to contamination and corrosion. (Storage outdoors, near media blasting and corrosive processes such as acid tanks should be avoided).	Warehouse at 625 or 924 W. 15th Street	Conforming
Comments:		

Section 2 - Floor and Material Handling Responsibility		
2.6	Each process step shall be documented and traceable.	
How does the operator verify that all process steps have been completed in specified order and in within specified time limits?		
Guidance	Objective Evidence	Conforming Nonconforming NA
Do you have a document (shop travelers, job sheet, etc.) that specifies all the processes for each part number/part family?	Form DMF147	Conforming
Define the procedure that ensures that all processes have been completed in the specified order.	Use of automatic lines that force all steps in the process to be done in the order specified on the control plan.	Conforming
Describe how time sensitive processes are completed in the specified time limits (e.g., hydrogen embrittlement baking).	N/A	N/A
Provide documentation that this process has been followed.	N/A	N/A
Comments:		
Section 2 - Floor and Material Handling Responsibility		
2.7	Part loading shall be specified, documented and controlled.	
<ul style="list-style-type: none"> • Loading parameters shall be specified, documented and controlled. • Examples include: parts per rack, part position and orientation, weight per barrel or masking. 		
Guidance	Objective Evidence	Conforming Nonconforming NA
Describe how the loading parameters are communicated to the operator.	Form DMF147	Conforming
Identify how the loading weight or rack quantity is recorded for each load or rack.	Form DMF147, Form DMF220	Conforming
Comments:		
Section 2 - Floor and Material Handling Responsibility		
2.8	There shall be a procedure for material handling, containment action and product segregation in the event of an unplanned process interruption.	
<p>Unplanned downtime greatly increases the risk of improper processing.</p> <ul style="list-style-type: none"> • Work instructions specifically addressing potential types of unplanned process interruptions shall be accessible to operators. • Specific instructions shall address containment/reaction plans for each step of the process. Where processes are time critical, immediate actions are required. Examples include process steps exposing parts to: acidic solutions, current, bake or curing processes. • Evidence shall exist showing disposition and traceability of affected product. 		
Guidance	Objective Evidence	Conforming Nonconforming NA
What procedure is used to address each step of the process?	Quality Manual, Process Flow Maps, Control Plans, DMF147	Conforming
Provide all work instructions that address unplanned process interruptions.	PFMEAs, Procedure 19, Procedure 29, DMFWI112, DMFWI071, DMFWI072, DMFWI073, DMFWI074, DMFWI075, DMFWI076, DMFWI077	Conforming

How is the affected product traced, dispositioned and documented?	Final Audit Log, Problem Module	Conforming
Comments:		
Section 2 - Floor and Material Handling Responsibility		
2.9	Plant cleanliness, environment, and working conditions shall be conducive to ensure product quality.	
<ul style="list-style-type: none"> • Plant cleanliness, housekeeping, environmental, and working conditions shall be adequate to preserve product quality. • A housekeeping policy shall be clearly defined and executed. 		
Guidance	Objective Evidence	Conforming Nonconforming NA
Provide a copy of the housekeeping procedure.	Procedure 09	Conforming
Provide a copy of the procedure used to handle dropped or spilled parts.	Procedure 29, DMF147	Conforming
Describe what is done with loose parts found on the floor of the plant.	Procedure 29, DMF147	Conforming
Define the process used to review the facility for conditions that are detrimental to quality processing such as chemical spills and inadequate ventilation.	Program 10000	Conforming
Comments:		
Section 2 - Floor and Material Handling Responsibility		
2.10	Plant lighting shall be adequate in all inspection areas.	
Lighting in the part and/or process inspection areas must be adequate for the intended operation.		
Guidance	Objective Evidence	Conforming Nonconforming NA
How do you ensure the lighting in the part and/or process inspection areas, including loading and unloading areas, is adequate for the intended operation?	Lighting is monitored quarterly as part of the building maintenance plan.	Conforming
For part inspection, how do you arrange the lighting to avoid spot lighting, glare, shadows and distracting reflections?	No appearance items per IATF16949 8.6.3	N/A
Comments:		

Product Audit

DMF338 Rev 01 10/21/2019

Job Identity:	
Customer: Metal Flow	
Shop Order Number: 110419-01-65	
Part Number: MFG-1644	
Part Description: Housing	
Material Substrate: Steel	
Plating Requirements: Zinc Iron Plating	
Specification Number and Revision: N/A (.0002" per Print)	

Question Number	Inspection Element	Identify Relevant Documents & Actual Condition (Provide Data or Values & Embed or Attach Documents)	Conforming Nonconforming NA
4.1	Attach evidence that the documentation for the specific part conforms to the requirements including: <ul style="list-style-type: none"> • Advanced quality planning process • FMEA • Process Control Plan 	PPAP completed on 01/19/2011. Reviewed DMFL001, FMEA01, ControlPlan01	Conforming
4.2	What customer specifications or requirements are used for this part? <ul style="list-style-type: none"> • List the specification(s) and revision(s) 	None. The print calls out the plating thickness and corrosion requirements.	Conforming
4.3	Provide evidence of receiving inspection.	DMF250 (110419-01-65)	Conforming
4.4	Provide the job traveler or attach a copy of this traveler showing: <ul style="list-style-type: none"> • Customer name • Lot number • Weight/quantity • Process instructions • Inspection requirements 	Review DMF250 (Traveler), DMF147 (Work Instruction) and DMF140 (Final Audit Log) for evidence.	Conforming
4.5	If the lot is divided how is the traceability maintained throughout the process?	Parts ship in the same containers that they arrived in.	N/A
4.6	Describe the method used to document each operation as being completed. Is there a sign-off with time stamp, bar code or scan, etc., after each operation?	DMF250	Conforming
4.7	Attach work instructions applicable to this part indicating proper barrel/basket mesh size or perforation (hole size), load size, appropriate rack configuration, appropriate part orientation on rack, etc.	DMF147	Conforming
4.8	Identify each process table pertaining to this job audit. Populate the applicable process tables with the actual process results/conditions at the time this part was processed (Columns H and I in Process Tables A through H).	See Process Tables	Conforming
4.9	Were appropriate process steps on the job router/traveler signed off? For electronic systems, a screen print is acceptable.	DMF250	Conforming
4.10	Were all inspection steps, as documented in the control plan performed?	ERP Line Checks and SPC Module	Conforming
4.11	Were steps/operations performed that were not documented in the control plan?	No	Conforming
4.12	If additional steps were performed, were they authorized?		N/A

4.13	If the order was certified, did the certification accurately reflect the process performed?		N/A
4.14	Was the certification signed by an authorized individual?		N/A
4.15	Are the parts and containers free of foreign objects or contamination?	Zytecs were clean / free of foreign objects	Conforming
4.16	Are packaging requirements identified?	DMF147	Conforming
4.17	Are parts packaged to prevent mixing or damage to parts (parts packed over height of container)?	Parts were packaged in customer supplied Zytecs and hooked at the end of each lot to ensure the appropriate number of pieces went back into each box	Conforming
4.18	Are storage condition sufficient to maintain part quality. e.g., parts are stored indoors in a clean, dry environment.	Parts were stored in warehouse located at 924 W 15th Street	Conforming
4.19	Were the parts properly identified and/or labeled before shipping?	DMF250. Tag was stamped "Final Audit Complete, Ready to Ship"	Conforming
4.20	For the finished part, list each test and inspection requirement per customer specification.	Each part may have one or more requirements determined by the plating specification. Parts must meet each requirement.	
	Inspection Element	Inspection Requirement	Conforming Nonconforming NA
Insert audit data below this line. Add additional sections as needed.			
4.20.1	Test Description:	Plating Thickness	
	Test Method:	Procedure 19	Conforming
	Test frequency or quantity:	First 6, one per hour, Last 6	Conforming
	Test Requirement:	.00020"	Conforming
	Result: Attach evidence:	.00028" - .00040"	Conforming
4.20.2	Test Description:	Corrosion Resistance	
	Test Method:	ASTM B117	Conforming
	Test frequency or quantity:	As Required	Conforming
	Test Requirement:	6 hrs. no white / 480 hours no red	Conforming
	Result: Attach evidence:	Report Number K06191	Conforming

Product Audit

DMF338 Rev 01 10/21/2019

Job Identity:	
Customer: Tenneco	
Shop Order Number: 110419-02-30	
Part Number: XM02B921870	
Part Description: Exhaust Isolator	
Material Substrate: Steel	
Plating Requirements: Zinc Nickel Plating	
Specification Number and Revision: PS.152.15A Rev G	

Question Number	Inspection Element	Identify Relevant Documents & Actual Condition (Provide Data or Values & Embed or Attach Documents)	Conforming Nonconforming NA
4.1	Attach evidence that the documentation for the specific part conforms to the requirements including: <ul style="list-style-type: none"> • Advanced quality planning process • FMEA • Process Control Plan 	PPAP approved on 12/22/2015. Reviewed DMFL002, FMEA02, ControlPlan02	Conforming
4.2	What customer specifications or requirements are used for this part? <ul style="list-style-type: none"> • List the specification(s) and revision(s) 	PS.152.15A Rev G	Conforming
4.3	Provide evidence of receiving inspection.	DMF250 (110419-02-30)	Conforming
4.4	Provide the job traveler or attach a copy of this traveler showing: <ul style="list-style-type: none"> • Customer name • Lot number • Weight/quantity • Process instructions • Inspection requirements 	Review DMF250 (Traveler), DMF147 (Work Instruction) and DMF140 (Final Audit Log) for evidence.	Conforming
4.5	If the lot is divided how is the traceability maintained throughout the process?	Parts ship in the same containers that they arrived in.	N/A
4.6	Describe the method used to document each operation as being completed. Is there a sign-off with time stamp, bar code or scan, etc., after each operation?	DMF250	Conforming
4.7	Attach work instructions applicable to this part indicating proper barrel/basket mesh size or perforation (hole size), load size, appropriate rack configuration, appropriate part orientation on rack, etc.	DMF147	Conforming
4.8	Identify each process table pertaining to this job audit. Populate the applicable process tables with the actual process results/conditions at the time this part was processed (Columns H and I in Process Tables A through H).	See Process Tables	Conforming
4.9	Were appropriate process steps on the job router/traveler signed off? For electronic systems, a screen print is acceptable.	DMF250	Conforming
4.10	Were all inspection steps, as documented in the control plan performed?	ERP Line Checks and SPC Module	Conforming
4.11	Were steps/operations performed that were not documented in the control plan?	No	Conforming
4.12	If additional steps were performed, were they authorized?		N/A

4.13	If the order was certified, did the certification accurately reflect the process performed?		N/A
4.14	Was the certification signed by an authorized individual?		N/A
4.15	Are the parts and containers free of foreign objects or contamination?	Cardboard boxes were clean / free of foreign objects	Conforming
4.16	Are packaging requirements identified?	DMF147	Conforming
4.17	Are parts packaged to prevent mixing or damage to parts (parts packed over height of container)?	Parts were packaged in customer supplied boxes and hooked at the end of each lot to ensure the appropriate number of pieces go back in each box	Conforming
4.18	Are storage condition sufficient to maintain part quality. e.g., parts are stored indoors in a clean, dry environment.	Parts were stored in warehouse located at 625 W 15th Street	Conforming
4.19	Were the parts properly identified and/or labeled before shipping?	DMF250. Tag was stamped "Final Audit Complete, Ready to Ship"	Conforming
4.20	For the finished part, list each test and inspection requirement per customer specification.	Each part may have one or more requirements determined by the plating specification. Parts must meet each requirement.	
	Inspection Element	Inspection Requirement	Conforming Nonconforming NA
Insert audit data below this line. Add additional sections as needed.			
4.20.1	Test Description:	Plating Thickness	
	Test Method:	Procedure 19	Conforming
	Test frequency or quantity:	First 6, one per hour, Last 6	Conforming
	Test Requirement:	.00024" - .00079"	Conforming
	Result: Attach evidence:	.00038" - .00065"	Conforming
4.20.2	Test Description:	Nickel Percent	
	Test Method:	Procedure 19	Conforming
	Test frequency or quantity:	First 6, one per hour, Last 6	Conforming
	Test Requirement:	10-17%	Conforming
	Result: Attach evidence:	12.1% - 13.7%	Conforming
4.20.3	Test Description:	Corrosion Resistance	
	Test Method:	ASTM B117	Conforming
	Test frequency or quantity:	As Required	Conforming
	Test Requirement:	720 hours no red	Conforming
	Result: Attach evidence:	Report Number K06194	Conforming

Product Audit

DMF338 Rev 03 01/20/2020

Job Identity:

Customer: Cooper / Conitech

Shop Order Number: 012820-02-86

Part Number: 2569651

Part Description: Upper Isolator Sub Assy

Material Substrate: Zinc Nickel

Plating Requirements: .00031' - .00055" | 12% - 17% Nickel

Specification Number and Revision: WSS-M21P51-A2

Question Number	Inspection Element	Identify Relevant Documents & Actual Condition (Provide Data or Values & Embed or Attach Documents)	Conforming Nonconforming NA
4.1	Attach evidence that the documentation for the specific part conforms to the requirements including: <ul style="list-style-type: none"> • Advanced quality planning process • FMEA • Process Control Plan 	PPAP approved on 06/15/2017. Reviewed DMFL002 OSP, FMEA02 OSP, ControlPlan02 OSP	Conforming
4.2	What customer specifications or requirements are used for this part? <ul style="list-style-type: none"> • List the specification(s) and revision(s) 	WSS-M21P51-A2 (Rev02 2019-03-22)	Conforming
4.3	Provide evidence of receiving inspection.	DMF250 0(12820-02-86)	Conforming
4.4	Provide the job traveler or attach a copy of this traveler showing: <ul style="list-style-type: none"> • Customer name • Lot number • Weight/quantity • Process instructions • Inspection requirements 	Review DMF250 (Traveler), DMF147 (Work Instruction) and DMF140 (Final Audit Log) for evidence.	Conforming
4.5	If the lot is divided how is the traceability maintained throughout the process?	Tags are being discarded during repack per customer instructions.	Conforming
4.6	Describe the method used to document each operation as being completed. Is there a sign-off with time stamp, bar code or scan, etc., after each operation?	DMF250	Conforming
4.7	Attach work instructions applicable to this part indicating proper barrel/basket mesh size or perforation (hole size), load size, appropriate rack configuration, appropriate part orientation on rack, etc.	DMF147, DMFW1128	Conforming
4.8	Identify each process table pertaining to this job audit. Populate the applicable process tables with the actual process results/conditions at the time this part was processed (Columns H and I in Process Tables A through H).	Reference Line 2 Process Table	Conforming
4.9	Were appropriate process steps on the job router/traveler signed off? For electronic systems, a screen print is acceptable.	DMF250	Conforming
4.10	Were all inspection steps, as documented in the control plan performed?	ERP Line Checks, SPC Module, DMFW1128	Conforming
4.11	Were steps/operations performed that were not documented in the control plan?	No	Conforming
4.12	If additional steps were performed, were they authorized?		N/A

4.13	If the order was certified, did the certification accurately reflect the process performed?		N/A
4.14	Was the certification signed by an authorized individual?		N/A
4.15	Are the parts and containers free of foreign objects or contamination?	Zytecs were clean / free of foreign objects	Conforming
4.16	Are packaging requirements identified?	DMF147, DMFWI128	Conforming
4.17	Are parts packaged to prevent mixing or damage to parts (parts packed over height of container)?	Parts were layer packed in customer supplied zytecs	Conforming
4.18	Are storage condition sufficient to maintain part quality. e.g., parts are stored indoors in a clean, dry environment.	Parts were stored in warehouse located at 924 W 15th Street	Conforming
4.19	Were the parts properly identified and/or labeled before shipping?	Per communication with Cooper, the established/approved process does not accomidate this	Conforming
4.20	For the finished part, list each test and inspection requirement per customer specification.	Each part may have one or more requirements determined by the plating specification. Parts must meet each requirement.	
	Inspection Element	Inspection Requirement	Conforming Nonconforming NA
Insert audit data below this line. Add additional sections as needed.			
4.20.1	Test Description:	Plating Thickness	
	Test Method:	Procedure 19	Conforming
	Test frequency or quantity:	First 6, one per hour, Last 6	Conforming
	Test Requirement:	.00031" - .00055"	Conforming
	Result: Attach evidence:	.00039"	Conforming
4.20.2	Test Description:	Nickel Percent	
	Test Method: Procedure 19	Procedure 19	Conforming
	Test frequency or quantity:	First 6, one per hour, Last 6	Conforming
	Test Requirement:	12-17%	Conforming
	Result: Attach evidence:	13.11%	Conforming
4.20.3	Test Description:	Corrosion Resistance	
	Test Method:	WSS-M1P87-A2	Conforming
	Test frequency or quantity:	As Required	Conforming
	Test Requirement:	240 H no White 960 Hours no Red	Conforming
	Result: Attach evidence:	Report Number A31201	Conforming

Product Audit

DMF338 Rev 01 10/21/2019

Job Identity:	
Customer: ITW	
Shop Order Number: 101819-03-107	
Part Number: DA030-05	
Part Description: Housing	
Material Substrate: Steel	
Plating Requirements: Zinc Plating	
Specification Number and Revision: N/A (.0003" - .0005" per Print)	

Question Number	Inspection Element	Identify Relevant Documents & Actual Condition (Provide Data or Values & Embed or Attach Documents)	Conforming Nonconforming NA
4.1	Attach evidence that the documentation for the specific part conforms to the requirements including: <ul style="list-style-type: none"> • Advanced quality planning process • FMEA • Process Control Plan 	PPAP completed on 03/18/2015. Reviewed DMFL003, FMEA03, ControlPlan03	Conforming
4.2	What customer specifications or requirements are used for this part? <ul style="list-style-type: none"> • List the specification(s) and revision(s) 	None. The print calls out the plating thickness and corrosion requirements	N/A
4.3	Provide evidence of receiving inspection.	DMF250 (Lot 102119-03-49)	Conforming
4.4	Provide the job traveler or attach a copy of this traveler showing: <ul style="list-style-type: none"> • Customer name • Lot number • Weight/quantity • Process instructions • Inspection requirements 	Review DMF250 (Traveler), DMF147 (Work Instruction) and DMF140 (Final Audit Log) for evidence.	Conforming
4.5	If the lot is divided how is the traceability maintained throughout the process?	Parts ship in the same containers that they arrived in.	N/A
4.6	Describe the method used to document each operation as being completed. Is there a sign-off with time stamp, bar code or scan, etc., after each operation?	DMF250	Conforming
4.7	Attach work instructions applicable to this part indicating proper barrel/basket mesh size or perforation (hole size), load size, appropriate rack configuration, appropriate part orientation on rack, etc.	DMF147	Conforming
4.8	Identify each process table pertaining to this job audit. Populate the applicable process tables with the actual process results/conditions at the time this part was processed (Columns H and I in Process Tables A through H).	See Process Tables	Conforming
4.9	Were appropriate process steps on the job router/traveler signed off? For electronic systems, a screen print is acceptable.	DMF250	Conforming
4.10	Were all inspection steps, as documented in the control plan performed?	ERP Line Checks and SPC Module	Conforming
4.11	Were steps/operations performed that were not documented in the control plan?	No	Conforming
4.12	If additional steps were performed, were they authorized?		N/A

4.13	If the order was certified, did the certification accurately reflect the process performed?		N/A
4.14	Was the certification signed by an authorized individual?		N/A
4.15	Are the parts and containers free of foreign objects or contamination?	Totes were clean / free of foreign objects	Conforming
4.16	Are packaging requirements identified?	DMF147	Conforming
4.17	Are parts packaged to prevent mixing or damage to parts (parts packed over height of container)?	Parts were packaged in customer supplied containers and scale counted according to the quantity listed on the customer label	Conforming
4.18	Are storage condition sufficient to maintain part quality. e.g., parts are stored indoors in a clean, dry environment.	Parts were stored in warehouse located at 625 W 15th Street	Conforming
4.19	Were the parts properly identified and/or labeled before shipping?	DMF250. Tag was stamped "Final Audit Complete, Ready to Ship"	Conforming
4.20	For the finished part, list each test and inspection requirement per customer specification.	Each part may have one or more requirements determined by the plating specification. Parts must meet each requirement.	
	Inspection Element	Inspection Requirement	Conforming Nonconforming NA
Insert audit data below this line. Add additional sections as needed.			
4.20.1	Test Description:	Plating Thickness	
	Test Method:	Procedure 19	Conforming
	Test frequency or quantity:	First 6, one per hour, Last 6	Conforming
	Test Requirement:	.00030" - .00050"	Conforming
	Result: Attach evidence:	.00031" - .00039"	Conforming
4.20.2	Test Description:	Adhesion Test	
	Test Method:	DMFWI090	Conforming
	Test frequency or quantity:	1 per Shipment	Conforming
	Test Requirement:	No adhesion loss	Conforming
	Result: Attach evidence:	Pass	Conforming
4.20.3	Test Description:	Corrosion Resistance	
	Test Method:	ASTM B117	Conforming
	Test frequency or quantity:	As Required	Conforming
	Test Requirement:	6 hrs. no white / 96 hours no red	Conforming
	Result: Attach evidence:	Report Number J21191	Conforming

Product Audit

DMF338 Rev 01 10/21/2019

Job Identity:	
Customer: Vibracoustic	
Shop Order Number: 110419-04-75	
Part Number: U-31096-303	
Part Description: Outer Metal	
Material Substrate: Steel	
Plating Requirements: Zinc Nickel Plating	
Specification Number and Revision: TES 1207 Rev REL	

Question Number	Inspection Element	Identify Relevant Documents & Actual Condition (Provide Data or Values & Embed or Attach Documents)	Conforming Nonconforming NA
4.1	Attach evidence that the documentation for the specific part conforms to the requirements including: <ul style="list-style-type: none"> • Advanced quality planning process • FMEA • Process Control Plan 	PPAP completed on 03/21/2017. Reviewed DMFL004, FMEA04, ControlPlan04	Conforming
4.2	What customer specifications or requirements are used for this part? <ul style="list-style-type: none"> • List the specification(s) and revision(s) 	TES 1207 Rev REL	Conforming
4.3	Provide evidence of receiving inspection.	DMF250 (110419-04-75)	Conforming
4.4	Provide the job traveler or attach a copy of this traveler showing: <ul style="list-style-type: none"> • Customer name • Lot number • Weight/quantity • Process instructions • Inspection requirements 	Review DMF250 (Traveler), DMF147 (Work Instruction) and DMF140 (Final Audit Log) for evidence.	Conforming
4.5	If the lot is divided how is the traceability maintained throughout the process?	Parts ship in the same containers that they arrived in.	N/A
4.6	Describe the method used to document each operation as being completed. Is there a sign-off with time stamp, bar code or scan, etc., after each operation?	DMF250	Conforming
4.7	Attach work instructions applicable to this part indicating proper barrel/basket mesh size or perforation (hole size), load size, appropriate rack configuration, appropriate part orientation on rack, etc.	DMF147	Conforming
4.8	Identify each process table pertaining to this job audit. Populate the applicable process tables with the actual process results/conditions at the time this part was processed (Columns H and I in Process Tables A through H).	See Process Tables	Conforming
4.9	Were appropriate process steps on the job router/traveler signed off? For electronic systems, a screen print is acceptable.	DMF250	Conforming
4.10	Were all inspection steps, as documented in the control plan performed?	ERP Line Checks and SPC Module	Conforming
4.11	Were steps/operations performed that were not documented in the control plan?	No	Conforming
4.12	If additional steps were performed, were they authorized?		N/A

4.13	If the order was certified, did the certification accurately reflect the process performed?		N/A
4.14	Was the certification signed by an authorized individual?		N/A
4.15	Are the parts and containers free of foreign objects or contamination?	Plastic totes were clean / free of foreign objects	Conforming
4.16	Are packaging requirements identified?	DMF147	Conforming
4.17	Are parts packaged to prevent mixing or damage to parts (parts packed over height of container)?	Parts were packaged in customer supplied totes and hooked at the end of each lot to ensure the appropriate number of pieces went into each box	Conforming
4.18	Are storage condition sufficient to maintain part quality. e.g., parts are stored indoors in a clean, dry environment.	Parts were stored in warehouse located at 625 W 15th Street	Conforming
4.19	Were the parts properly identified and/or labeled before shipping?	DMF250. Tag was stamped "Final Audit Complete, Ready to Ship"	Conforming
4.20	For the finished part, list each test and inspection requirement per customer specification.	Each part may have one or more requirements determined by the plating specification. Parts must meet each requirement.	
	Inspection Element	Inspection Requirement	Conforming Nonconforming NA
Insert audit data below this line. Add additional sections as needed.			
4.20.1	Test Description:	Plating Thickness	
	Test Method:	Procedure 19	Conforming
	Test frequency or quantity:	First 6, one per hour, Last 6	Conforming
	Test Requirement:	.00023"	Conforming
	Result: Attach evidence:	.00030" - .00068"	Conforming
4.20.2	Test Description:	Nickel Percent	
	Test Method:	Procedure 19	Conforming
	Test frequency or quantity:	First 6, one per hour, Last 6	Conforming
	Test Requirement:	10-15%	Conforming
	Result: Attach evidence:	12.5% - 14%	Conforming
4.20.3	Test Description:	Adhesion Test	
	Test Method:	DMFWI123	Conforming
	Test frequency or quantity:	First 3, one per hour, Last 3	Conforming
	Test Requirement:	No adhesion loss	Conforming
	Result: Attach evidence:	Pass	Conforming
4.20.4	Test Description:	Corrosion Resistance	
	Test Method:	ASTM B117	Conforming
	Test frequency or quantity:	As Required	Conforming
	Test Requirement:	720 hours no red	Conforming
	Result: Attach evidence:	Report Number K06193	Conforming

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.

Columns H and I are used for the Job Audit (Section 4).

Regularly scheduled measurements (e.g., temperature, concentrations, pH) are to be entered in the appropriate row.

For sections that are not applicable mark NA in the Comments column.

Instruction for creating the table with the form builder:

Using the Populate Forms list to the right, select the box that represents the first step of the process flow.

Then select the Populate Forms banner and that section of the process table will be added below.

For each additional step of the process flow, continue adding sections to the form by selecting the applicable step from the list to the right, followed by selecting the Populate Forms banner.

Rinses between process steps are to be included.

If using multiple counter flowed rinses only insert one Rinse section, document only the condition of the last rinse tank in the series.

Process Line Identification: Line 1

Type of Line: Rack

ITEM #	Category/Process Steps	Type of Control		Monitoring Frequency		Observation/ Comments	Job Audit Measurements	
		Minimum Requirement	Actual Condition	Minimum Requirement	Actual Condition		Conforming Nonconforming NA	Range
1.0	Alkaline Cleaning							
	Type: Soak							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A1.1	Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 5°C (10°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	169
A1.2	Concentration	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	12
A1.3	Time	Automatic	Automatic	After any program changes.	N/A	N/A	N/A	4 Min.
A1.4	Agitation (if applicable)	Automatic	Automatic	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A1.5	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A1.6	Impurity Content Check Per chemical supplier recommendation such as: - acid split (oil contamination) - alkalinity ratio	Manual	Not Recommended by Chemical Supplier	Once per week*	N/A	N/A	N/A	1.5 : 1
A1.7	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
2.0	Alkaline Cleaning							
	Type - Electro (cathodic)							
	Size, volume: Confidential							
	Chemical supplier: Confidential							

A2.1	Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 5°C (10°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	154
A2.2	Concentration	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	10
A2.3	Time	Automatic	Automatic	After any program changes.	N/A	N/A	N/A	4 Min.
A2.4	Agitation (if applicable)	Automatic	Automatic	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A2.5	Amperage or Voltage Control (if applicable)	Automatic	Automatic	Once every 8 hours*.	1/8 hours worked	Conforming	See Control Plan	3.8
A2.6	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A2.7	Impurity Content Check Per chemical supplier recommendation such as: - acid split (oil contamination) - alkalinity ratio	Manual	N/A	Once per week*	N/A	N/A	N/A	1.4 : 1
A2.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
3.0	Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire							
A3.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Counter Flowing		
A3.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A3.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A3.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A3.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A3.6	Flow rate (if applicable)	Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A3.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A3.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
4.0	Acid Pickling							
	Type: HCL							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A4.1	Concentration	Manual	Manual	Once every 8 hours*	2/24 hours worked.	Conforming. Data points show that reduced frequency is able to maintain process control.	See Control Plan	41.6
A4.2	Metallic impurity concentration. Obtain metallic impurity limits from chemical supplier with required corrective actions.	Manual	Manual	Once per month.	1/ month	Conforming	See Control Plan	4.325 1169
A4.3	Time (Less than 10 Minutes or Customer Specific)	Automatic	Automatic	After any program changes.	N/A	N/A	N/A	4 Min.
A4.4	Solution Level	Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A4.5	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
5.0	Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire							
A5.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A5.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A5.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A5.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A5.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes

A5.6	Flow rate (if applicable)	Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A5.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	1/Month	1/ month	Conforming	N/A	Complete
A5.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
6.0	Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire							
A6.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A6.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A6.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A6.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A6.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A6.6	Flow rate (if applicable)	Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A6.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	1/Month	1/ month	Conforming	N/A	Complete
A6.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
7.0	Alkaline Plating Bath							
	Type: Zinc-Iron							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A7.1	Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 3°C (5°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	83
A7.2	Time	Automatic or Manual	Automatic	Automatic - After any program changes. Manual - every load.*	N/A	N/A	N/A	19 Min
A7.3	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A7.4	Current/Voltage	Automatic or Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	5.1
A7.5	Plating Test Cell (Hull Cell)	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	1.7
A7.6	Zinc Generator Tank (if applicable) -Caustic Concentration -Zinc Concentration	Automatic or Manual	Manual	Once every 8 hours.	2/24 hours worked	Conforming. Data points show that reduced frequency is able to maintain process control.	See Control Plan	6.625
A7.7	Caustic Concentration	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	17.9
A7.8	Zinc Concentration	Manual	Manual	Once per day.	2/24 hours worked	Conforming	See Control Plan	1.8
A7.9	Alloying Element Concentration (e.g., Fe, Ni, Co; if applicable)	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	97
A7.10	Complexor Concentration (for alloy baths)	Manual	N/A	Once per month by Supplier.	1/ month	Conforming	See Letter from Supplier	See Letter from Supplier
A7.11	Metallic impurity concentration. Obtain metallic impurity limits from chemical supplier with required corrective actions.	Manual	Manual	Once per month.	1/ month	Conforming	See Control Plan	0 0 0 0 0
A7.12	Carbonate (CO ₃) concentration	Manual	Manual	Once per month (Twice per month for alloy plating).	2/ month	Conforming	See Control Plan	9.7
A7.13	Proprietary chemical additives concentration (e.g., carrier, brightener)	Manual	N/A	Once per month by Supplier.	1/ month	Conforming	See Letter from Supplier	See Letter from Supplier
A7.14	Chemical feeders	Automatic	Automatic	Once per week.	1/24 hours worked	Conforming	See Control Plan	52 75 39
A7.15	Agitation (Rack only - others optional)	Continuous	Continuous	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A7.16	Filtration Pressure	Continuous	N/A	Once every 8 hours.	N/A	N/A	N/A	N/A

A7.17	Fallen part removal	Manual	Manual	Rack: Once every 24 hours. Barrel: Once per week and after any lost load.	1/ week	Conforming	N/A	The part removal process may cause customer rejections and should only be done when the line is not in use.
A7.18	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
8.0 Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire								
A8.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A8.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A8.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A8.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A8.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A8.6	Flow rate (if applicable)	Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A8.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A8.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
9.0 Acid Activation (i.e., nitric, sulfuric, etc.)								
A9.1	pH/concentration	Manual	Automatic	Once every 8 hours.	1/1 hours worked	Conforming	See Control Plan	2.2
A9.2	Time	Automatic*	Automatic	After any program changes.	N/A	N/A	N/A	1 Min.
A9.3	Fallen part removal	Manual	Manual	Once every 24 hours for rack line.	1/24 hours worked	Conforming	See Control Plan	Yes
A9.4	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
10.0 Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire								
A10.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Spray		
A10.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A10.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	NA		
A10.4	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	N/A	N/A	N/A	N/A
A10.5	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	N/A	N/A	N/A	N/A
A10.6	Spray nozzle condition (if applicable)	Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A10.7	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
11.0 Passivates								
Type: Thick Film Trivalent								
Size, volume: Confidential								
Chemical supplier: Confidential								
A11.1	Concentration	Automatic or Manual		Prior to production start-up. If automatic control, once per day. If manual, once every 8 hours.	1/24 hours worked	Conforming	See Control Plan	14.7
A11.2	Temperature (Thermocouple)	Automatic	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	72
A11.3	Time	Automatic or Manual	Automatic	Automatic - After any program changes. Manual - every load.*	N/A	N/A	N/A	1 Min.
A11.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes

A11.5	pH	Automatic*	Automatic	Prior to production start-up. If automatic control, once per day. If manual, once every 8 hours.	1/1 Hours worked	Conforming	See Control Plan	1.98
A11.6	Agitation	Automatic	Automatic	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A11.7	Metallic Impurity level(s) (e.g., Fe, Zn)	Manual	Manual	Once per week.	1/ week	Conforming	See Control Plan	14 (Fe) 1632 (Zn)
A11.8	Fallen part removal	Manual	Manual	Once every 24 hours for rack line.	1/24 hours worked	Conforming	See Control Plan	Yes
A11.9	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
12.0 Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire								
A12.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A12.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A12.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A12.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A12.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A12.6	Flow rate (if applicable)	Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A12.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A12.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
13.0 Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire								
A13.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A13.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A13.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A13.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A13.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A13.6	Flow rate (if applicable)	Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A13.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A13.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
14.0 Supplemental Treatments - Topcoats, Sealants and Friction Modifiers								
Type: Sealer								
Size, volume: Confidential								
Chemical supplier: Confidential								
A14.1	Concentration	Manual	Automatic	Prior to production start-up. If automatic control, once per day. If manual, once every 8 hours.	1/24 hours worked	Conforming	See Control Plan	34
A14.2	Temperature (Thermocouple) (if applicable)	Automatic Max SAT difference allowed +/- 1°C (2°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	72
A14.3	pH (if applicable)	Automatic or Manual	Manual	Prior to production start-up. If automatic control, once per day. If manual, once every 8 hours.	1/24 hours worked	Conforming. Data points show that reduced frequency is able to maintain process control.	See Control Plan	8.6
A14.4	Time	Automatic*	Automatic	After any program changes if automatic.	N/A	N/A	N/A	1 Min.

A14.5	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A14.6	Filtration Pressure (if applicable)	Automatic		Once every 8 hours.	N/A	N/A	N/A	N/A
A14.7	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
15.0	Drying							
A15.1	Drying Time	Automatic	Automatic	Per Process Sheet and TDS.	N/A	N/A	N/A	7 Min.
A15.2	Drying Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 5°C (10°F).	Automatic	Per Process Sheet and TDS.	N/A	N/A	See Control Plan	134
A15.3	Verify operation of blowers and/or rotation of dryer.	Manual	Manual	Once per 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A15.4	There is a procedure to ensure dryness of parts.	Manual	Manual	Every container and rack.	Every container and rack.	Conforming	Per customer requirements	N/A

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.

Columns H and I are used for the Job Audit (Section 4).

Regularly scheduled measurements (e.g., temperature, concentrations, pH) are to be entered in the appropriate row.

For sections that are not applicable mark NA in the Comments column.

Instruction for creating the table with the form builder:

Using the Populate Forms list to the right, select the box that represents the first step of the process flow.

Then select the Populate Forms banner and that section of the process table will be added below.

For each additional step of the process flow, continue adding sections to the form by selecting the applicable step from the list to the right, followed by selecting the Populate Forms banner.

Rinses between process steps are to be included.

If using multiple counter flowed rinses only insert one Rinse section, document only the condition of the last rinse tank in the series.

Process Line Identification: Line 2

Type of Line: Rack

ITEM #	Category/Process Steps	Type of Control		Monitoring Frequency		Observation/ Comments	Job Audit Measurements	
		Minimum Requirement	Actual Condition	Minimum Requirement	Actual Condition		Conforming Nonconforming NA	Range
1.0	Alkaline Cleaning							
	Type: Soak							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A1.1	Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 5°C (10°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	166
A1.2	Concentration	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	9.3
A1.3	Time	Automatic	Automatic	After any program changes.	N/A	N/A	N/A	5 Min.
A1.4	Agitation (if applicable)	Automatic	Automatic	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A1.5	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A1.6	Impurity Content Check Per chemical supplier recommendation such as: - acid split (oil contamination) - alkalinity ratio	Manual	N/A	Once per week*	N/A	N/A	N/A	1.2 : 1
A1.7	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
2.0	Alkaline Cleaning							
	Type - Electro (cathodic)							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A2.1	Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 5°C (10°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	154
A2.2	Concentration	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	6.9
A2.3	Time	Automatic	Automatic	After any program changes.	N/A	N/A	N/A	4 Min.
A2.4	Agitation (if applicable)	Automatic	Automatic	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes

A2.5	Amperage or Voltage Control (if applicable)	Automatic	Automatic	Once every 8 hours*.	1/8 hours worked	Conforming	See Control Plan	3.8
A2.6	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A2.7	Impurity Content Check Per chemical supplier recommendation such as: - acid split (oil contamination) - alkalinity ratio	Manual	N/A	Once per week*	N/A	N/A	N/A	1.1 : 1
A2.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
3.0	Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire							
A3.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Counter Flowing		
A3.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI),Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A3.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A3.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A3.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A3.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	
A3.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A3.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
4.0	Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire							
A4.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Counter Flowing		
A4.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI),Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A4.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A4.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A4.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A4.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	
A4.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A4.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
5.0	Acid Pickling							
	Type: HCL							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A5.1	Concentration	Manual	Manual	Once every 8 hours*	2/24 hours worked.	Conforming. Data points show that reduced frequency is able to maintain process control.	See Control Plan	36.5
A5.2	Metallic impurity concentration. Obtain metallic impurity limits from chemical supplier with required corrective actions.	Manual	Manual	Once per month.	1/ month	Conforming	See Control Plan	2.2 2216 96 13 2539
A5.3	Time (Less than 10 Minutes or Customer Specific)	Automatic	Automatic	After any program changes.	N/A	N/A	N/A	5 Min.
A5.4	Solution Level	Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A5.5	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
6.0	Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire							
A6.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A6.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI),Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A6.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		

A6.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A6.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A6.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A6.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A6.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
7.0	Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire							
A7.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A7.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A7.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A7.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A7.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A7.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A7.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A7.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
8.0	Alkaline Plating Bath							
	Type: Zinc-Nickel							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A8.1	Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 3°C (5°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	76
A8.2	Time	Automatic or Manual	Automatic	Automatic - After any program changes. Manual - every load.*	N/A	N/A	N/A	27 Min.
A8.3	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A8.4	Current/Voltage	Automatic or Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	6
A8.5	Plating Test Cell (Hull Cell)	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	3.5
A8.6	Zinc Generator Tank (if applicable) -Caustic Concentration -Zinc Concentration	Automatic or Manual	Manual	Once every 8 hours.	2/24 hours worked	Conforming. Data points show that reduced frequency is able to maintain process control.	See Control Plan	3.1
A8.7	Caustic Concentration	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	18.8
A8.8	Zinc Concentration	Manual	Manual	Once per day.	2/24 hours worked	Conforming	See Control Plan	1.75
A8.9	Alloying Element Concentration (e.g., Fe, Ni, Co; if applicable)	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	1960
A8.10	Complexor Concentration (for alloy baths)	Manual	N/A	Once per month by Supplier.	1/ month	Conforming	See Letter from Supplier	See Letter from Supplier
A8.11	Metallic impurity concentration. Obtain metallic impurity limits from chemical supplier with required corrective actions.	Manual	Manual	Once per month.	1/ month	Conforming	See Control Plan	186.5 .33 0 0 0
A8.12	Carbonate (CO ₃) concentration	Manual	Manual	Once per month (Twice per month for alloy plating).	2/ month	Conforming	See Control Plan	12.1
A8.13	Proprietary chemical additives concentration (e.g., carrier, brightener)	Manual	N/A	Once per month by Supplier.	1/ month	Conforming	See Letter from Supplier	See Letter from Supplier
A8.14	Chemical feeders	Automatic	Automatic	Once per week.	1/24 hours worked	Conforming	See Control Plan	255 52 250
A8.15	Agitation (Rack only - others optional)	Continuous	Continuous	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A8.16	Filtration Pressure	Continuous	N/A	Once every 8 hours.	N/A	N/A	N/A	N/A

A8.17	Fallen part removal	Manual	Manual	Rack: Once every 24 hours. Barrel: Once per week and after any lost load.	1/ week	Conforming	N/A	The part removal process may cause customer rejections and should only be done when the line is not in use.
A8.18	Tank and solution maintenance schedule documented and followed.	Manual		Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
9.0	Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire							
A9.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Stagnant		
A9.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI),Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A9.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A9.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A9.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A9.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A9.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A9.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
10.0	Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire							
A10.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Stagnant		
A10.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI),Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A10.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A10.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A10.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A10.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A10.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A10.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
11.0	Acid Activation (i.e., nitric, sulfuric, etc.)							
A11.1	pH/concentration	Manual	Automatic	Once every 8 hours.	1/1 hours worked	Conforming	See Control Plan	6.2
A11.2	Time	Automatic*	Automatic	After any program changes.	N/A	N/A	N/A	1 Mon.
A11.3	Fallen part removal	Manual	Manual	Once every 24 hours for rack line.	1/24 hours worked	Conforming	See Control Plan	Yes
A11.4	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
12.0	Passivates							
	Type: Thick Film Trivalent							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A12.1	Concentration	Automatic or Manual	Automatic	Prior to production start-up. If automatic control, once per day. If manual, once every 8 hours.	1/24 hours worked	Conforming	See Control Plan	13.7
A12.2	Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 1°C (2°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	90
A12.3	Time	Automatic or Manual	Automatic	Automatic - After any program changes. Manual - every load.*	N/A	N/A	N/A	1 Min.
A12.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A12.5	pH	Automatic*	Automatic	Prior to production start-up. If automatic control, once per day. If manual, once every 8 hours.	1/1 Hours worked	Conforming	See Control Plan	2.2

A12.6	Agitation	Automatic	Automatic	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A12.7	Metallic Impurity level(s) (e.g., Fe, Zn)	Manual	Manual	Once per week.	Once per week	Conforming	See Control Plan	170 (Fe) 9759 (Zn)
A12.8	Fallen part removal	Manual	Manual	Once every 24 hours for rack line.	1/24 hours worked	Conforming	See Control Plan	Yes
A12.9	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
13.0	Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire							
A13.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A13.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A13.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A13.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A13.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A13.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A13.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A13.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
14.0	Supplemental Treatments - Topcoats, Sealants and Friction Modifiers							
	Type: Sealer							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A14.1	Concentration	Manual	Manual	Prior to production start-up. If automatic control, once per day. If manual, once every 8 hours.	1/24 hours worked	Conforming. Dumped and replaced every day.	6	6
A14.2	Temperature (Thermocouple) (if applicable)	Automatic Max SAT difference allowed +/- 1°C (2°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	121
A14.3	pH (if applicable)	Automatic or Manual	Manual	Prior to production start-up. If automatic control, once per day. If manual, once every 8 hours.	1/24 hours worked	Conforming. Data points show that reduced frequency is able to maintain process control.	See Control Plan	10.8
A14.4	Time	Automatic*	Automatic	After any program changes if automatic.	N/A	N/A	N/A	1 Min.
A14.5	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A14.6	Filtration Pressure (if applicable)	Automatic	N/A	Once every 8 hours.	N/A	N/A	N/A	N/A
A14.7	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
15.0	Drying							
A15.1	Drying Time	Automatic	Automatic	Per Process Sheet and TDS.	N/A	N/A	N/A	6 Min.
A15.2	Drying Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 5°C (10°F).	Automatic	Per Process Sheet and TDS.	N/A	N/A	See Control Plan	168
A15.3	Verify operation of blowers and/or rotation of dryer.	Manual	Manual	Once per 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A15.4	There is a procedure to ensure dryness of parts.	Manual	Manual	Every container and rack.	Every container and rack.	Conforming	Per customer requirements	N/A

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.

Columns H and I are used for the Job Audit (Section 4).

Regularly scheduled measurements (e.g., temperature, concentrations, pH) are to be entered in the appropriate row.

For sections that are not applicable mark NA in the Comments column.

Instruction for creating the table with the form builder:

Using the Populate Forms list to the right, select the box that represents the first step of the process flow.

Then select the Populate Forms banner and that section of the process table will be added below.

For each additional step of the process flow, continue adding sections to the form by selecting the applicable step from the list to the right, followed by selecting the Populate Forms banner.

Rinses between process steps are to be included.

If using multiple counter flowed rinses only insert one Rinse section, document only the condition of the last rinse tank in the series.

Process Line Identification: Line 3

Type of Line: Rack

ITEM #	Category/Process Steps	Type of Control		Monitoring Frequency		Observation/ Comments	Job Audit Measurements	
		Minimum Requirement	Actual Condition	Minimum Requirement	Actual Condition		Conforming Nonconforming NA	Range
1.0	Alkaline Cleaning							
	Type: Soak							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A1.1	Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 5°C (10°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	161
A1.2	Concentration	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	10.8
A1.3	Time	Automatic	Automatic	After any program changes.	N/A	N/A	N/A	4 Min.
A1.4	Agitation (if applicable)	Automatic	Automatic	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A1.5	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A1.6	Impurity Content Check Per chemical supplier recommendation such as: - acid split (oil contamination) - alkalinity ratio	Manual	N/A	Once per week*	N/A	N/A	N/A	1.6 : 1
A1.7	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
2.0	Alkaline Cleaning							
	Type - Electro (cathodic)							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A2.1	Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 5°C (10°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	147
A2.2	Concentration	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	8.9
A2.3	Time	Automatic	Automatic	After any program changes.	N/A	N/A	N/A	4 Minutes
A2.4	Agitation (if applicable)	Automatic	Automatic	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A2.5	Amperage or Voltage Control (if applicable)	Automatic	Automatic	Once every 8 hours*.	1/8 hours worked	Conforming	See Control Plan	4.8

A2.6	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A2.7	Impurity Content Check Per chemical supplier recommendation such as: - acid split (oil contamination) - alkalinity ratio	Manual	N/A	Once per week*	N/A	N/A	N/A	1.5 : 1
A2.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
3.0 Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire								
A3.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A3.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A3.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A3.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A3.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*		Conforming	See Control Plan	681
A3.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A3.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A3.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
4.0 Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire								
A4.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A4.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A4.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A4.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A4.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*		Conforming	See Control Plan	662
A4.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A4.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A4.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
5.0 Acid Pickling								
Type: HCL								
Size, volume: Confidential								
Chemical supplier: Confidential								
A5.1	Concentration	Manual	Manual	Once every 8 hours*	2/24 hours worked.	Conforming. Data points show that reduced frequency is able to maintain process control.	See Control Plan	40%
A5.2	Metallic impurity concentration. Obtain metallic impurity limits from chemical supplier with required corrective actions.	Manual	Manual	Once per month.	1/ month	Conforming	See Control Plan	2.225 531
A5.3	Time (Less than 10 Minutes or Customer Specific)	Automatic	Automatic	After any program changes.	N/A	N/A	N/A	3 Minutes
A5.4	Solution Level	Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A5.5	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
6.0 Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire								
A6.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A6.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A6.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A6.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes

A6.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	75650	
A6.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes	
A6.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	1/Month	1/Month	Conforming	N/A	Complete	
A6.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete	
7.0	Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire								
A7.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA		Flowing		
A7.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA		Municipal		
A7.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA		Air		
A7.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes	
A7.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	988	
A7.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes	
A7.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete	
A7.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete	
8.0	Alkaline Plating Bath								
	Type: Zinc								
	Size, volume: Confidential								
	Chemical supplier: Confidential								
A8.1	Temperature (Thermocouple)	Automatic	Automatic	Max SAT difference allowed +/- 3°C (5°F).	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	84
A8.2	Time	Automatic or Manual	Automatic	Automatic - After any program changes. Manual - every load.*		N/A	N/A	N/A	15 Minutes
A8.3	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes	
A8.4	Current/Voltage	Automatic or Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	6.7	
A8.5	Plating Test Cell (Hull Cell)	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	1.6	
A8.6	Zinc Generator Tank (if applicable) -Caustic Concentration -Zinc Concentration	Automatic or Manual	Manual	Once every 8 hours.	2/24 hours worked	Conforming. Data points show that reduced frequency is able to maintain process control.	See Control Plan	2.1	
A8.7	Caustic Concentration	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	18.2	
A8.8	Zinc Concentration	Manual	Manual	Once per day.	2/24 hours worked	Conforming	See Control Plan	1.7	
A8.9	Metallic impurity concentration. Obtain metallic impurity limits from chemical supplier with required corrective actions.	Manual	Manual	Once per month.		Conforming		0 0 0 0 0	
A8.10	Carbonate (CO ₃) concentration	Manual	Manual	Once per month (Twice per month for alloy plating).	1/ month	Conforming	See Control Plan	7.2	
A8.11	Proprietary chemical additives concentration (e.g., carrier, brightener)	Manual	Manual	Once per month by Supplier.	1/ month	Conforming	N/A	See Letter from Supplier	
A8.12	Chemical feeders	Automatic	Automatic	Once per week.	1/24 hours worked	Conforming	See Control Plan	75	
A8.13	Agitation (Rack only - others optional)	Continuous	Continuous	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes	
A8.14	Filtration Pressure	Continuous	N/A	Once every 8 hours.	N/A	N/A	N/A	N/A	
A8.15	Fallen part removal	Manual	Manual	Rack: Once every 24 hours. Barrel: Once per week and after any lost load.	1/ week	Conforming	N/A	The part removal process may cause customer rejections and should only be done when the line is not in use.	
A8.16	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete	
9.0	Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire								

A9.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A9.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI),Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A9.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A9.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A9.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*		Conforming		PENDING
A9.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A9.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/Month	Conforming	N/A	Complete
A9.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
10.0 Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire								
A10.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A10.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI),Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A10.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A10.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A10.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	1430
A10.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A10.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/Month	Conforming	N/A	Complete
A10.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
11.0 Acid Activation (i.e., nitric, sulfuric, etc.)								
A11.1	pH/concentration	Manual	Automatic	Once every 8 hours.	1/1 hours worked	Conforming	See Control Plan	1.84
A11.2	Time	Automatic*	Automatic	After any program changes.	N/A	N/A	N/A	1 Minute
A11.3	Fallen part removal	Manual	Manual	Once every 24 hours for rack line.	1/24 hours worked	Conforming	See Control Plan	Yes
A11.4	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
12.0 Passivates								
Type: Thin Film AND Thick Film Trivalent								
Size, volume: Confidential								
Chemical supplier: Confidential								
A12.1	Concentration	Automatic or Manual	Automatic	Prior to production start-up. If automatic control, once per day. If manual, once every 8 hours.	1/24 hours worked	Conforming	See Control Plan	7.3
A12.2	Temperature (Thermocouple)		Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	82.3
A12.3	Time	Automatic or Manual	Automatic	Automatic - After any program changes. Manual - every load.*	N/A	N/A	N/A	1 Minute
A12.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A12.5	pH	Automatic*	Automatic	Prior to production start-up. If automatic control, once per day. If manual, once every 8 hours.	1/1 Hours worked	Conforming	See Control Plan	1.96
A12.6	Agitation	Automatic	Automatic	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A12.7	Metallic Impurity level(s) (e.g., Fe, Zn)	Manual	Manual	Once per week.	1/ week worked	Conforming	See Control Plan	45(Fe) 7033(Zn)
A12.8	Fallen part removal	Manual	Manual	Once every 24 hours for rack line.	1/24 hours worked	Conforming	See Control Plan	Yes
A12.9	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
13.0 Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire								
A13.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A13.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI),Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		

A13.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A13.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A13.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	1155
A13.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	N/A	N/A	See Control Plan	Yes
A13.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	Conforming	N/A	N/A	Complete
A13.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
14.0 Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire								
A14.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A14.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A14.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A14.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A14.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	570
A14.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	N/A	N/A	See Control Plan	Yes
A14.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	Conforming	N/A	N/A	Complete
A14.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
15.0 Drying								
A15.1	Drying Time	Automatic	Automatic	Per Process Sheet and TDS.	N/A	N/A	N/A	6 Min
A15.2	Drying Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 5°C (10°F).	Automatic	Per Process Sheet and TDS.	N/A	N/A	See Control Plan	124
A15.3	Verify operation of blowers and/or rotation of dryer.	Manual	Manual	Once per 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A15.4	There is a procedure to ensure dryness of parts.	Manual	Manual	Every container and rack.	Every container and rack.	Conforming	Per customer requirements	N/A

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.

Columns H and I are used for the Job Audit (Section 4).

Regularly scheduled measurements (e.g., temperature, concentrations, pH) are to be entered in the appropriate row.

For sections that are not applicable mark NA in the Comments column.

Instruction for creating the table with the form builder:

Using the Populate Forms list to the right, select the box that represents the first step of the process flow.

Then select the Populate Forms banner and that section of the process table will be added below.

For each additional step of the process flow, continue adding sections to the form by selecting the applicable step from the list to the right, followed by selecting the Populate Forms banner.

Rinses between process steps are to be included.

If using multiple counter flowed rinses only insert one Rinse section, document only the condition of the last rinse tank in the series.

Process Line Identification: Line 4

Type of Line: Rack

ITEM #	Category/Process Steps	Type of Control		Monitoring Frequency		Observation/Comments	Job Audit Measurements	
		Minimum Requirement	Actual Condition	Minimum Requirement	Actual Condition	Conforming Nonconforming NA	Range	Actual Measurements supporting time of Job Audit
1.0	Alkaline Cleaning							
	Type: Soak							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A1.1	Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 5°C (10°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	181
A1.2	Concentration	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	8.2
A1.3	Time	Automatic	Automatic	After any program changes.	N/A	N/A	N/A	4 Min.
A1.4	Agitation (if applicable)	Automatic	Automatic	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A1.5	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A1.6	Impurity Content Check Per chemical supplier recommendation such as: - acid split (oil contamination) - alkalinity ratio	Manual	N/A	Once per week*	N/A	N/A	N/A	1.2 : 1
A1.7	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
2.0	Alkaline Cleaning							
	Type - Electro (cathodic)							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A2.1	Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 5°C (10°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	155
A2.2	Concentration	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	9

A2.3	Time	Automatic	Automatic	After any program changes.	N/A	N/A	N/A	4 Min.
A2.4	Agitation (if applicable)	Automatic	Automatic	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A2.5	Amperage or Voltage Control (if applicable)	Automatic	Automatic	Once every 8 hours*.	1/8 hours worked	Conforming	See Control Plan	3.8
A2.6	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A2.7	Impurity Content Check - acid split (oil contamination) - alkalinity ratio	Manual	N/A	Once per week*	N/A	N/A	N/A	1.1 : 1
A2.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
3.0 Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire								
A3.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A3.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A3.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A3.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A3.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A3.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A3.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A3.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
4.0 Acid Pickling								
Type: HCL								
Size, volume: Confidential								
Chemical supplier: Confidential								
A4.1	Concentration	Manual	Manual	Once every 8 hours*	2/24 hours worked.	Conforming. Data points show that reduced frequency is able to maintain process control.	See Control Plan	32.7
A4.2	Metallic impurity concentration. Obtain metallic impurity limits from chemical supplier with required corrective actions.	Manual	Manual	Once per month.	1/ month	Conforming	See Control Plan	4.325 2,039
A4.3	Time (Less than 10 Minutes or Customer Specific)	Automatic	Automatic	After any program changes.	N/A	N/A	N/A	4 Min.
A4.4	Solution Level	Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A4.5	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
5.0 Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire								
A5.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A5.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A5.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A5.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A5.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A5.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A5.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A5.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
6.0 Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire								
A6.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		

A6.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A6.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A6.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A6.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A6.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A6.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A6.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
7.0	Alkaline Plating Bath							
	Type: Zinc-Nickel							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A7.1	Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 3°C (5°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	75
A7.2	Time	Automatic or Manual	Automatic	Automatic - After any program changes. Manual - every load.*	N/A	N/A	N/A	26 Min
A7.3	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual		Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A7.4	Current/Voltage	Automatic or Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	5
A7.5	Plating Test Cell (Hull Cell)	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	3.1
A7.6	Zinc Generator Tank (if applicable) -Caustic Concentration -Zinc Concentration	Automatic or Manual		Once every 8 hours.	2/24 hours worked	Conforming. Data points show that reduced frequency is able to maintain process control.	See Control Plan	3.2
A7.7	Caustic Concentration	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	18.4
A7.8	Zinc Concentration	Manual	Manual	Once per day.	2/24 hours worked	Conforming	See Control Plan	1.65
A7.9	Alloying Element Concentration (e.g., Fe, Ni, Co; if applicable)	Manual	Manual	Once per day.	1/24 hours worked	Conforming	See Control Plan	1976
A7.10	Complexor Concentration (for alloy baths)	Manual	N/A	Once per month by Supplier.	1/ month	Conforming	See Letter from Supplier	See Letter from Supplier
A7.11	Metallic impurity concentration. Obtain metallic impurity limits from chemical supplier with required corrective actions.	Manual	Manual	Once per month.	1/ month	Conforming	See Control Plan	3.95 0 0 0 0 0
A7.12	Carbonate (CO ₃) concentration	Manual	Manual	Once per month (Twice per month for alloy plating).	2/ month	Conforming	See Control Plan	13.8
A7.13	Proprietary chemical additives concentration (e.g., carrier, brightener)	Manual	N/A	Once per month by Supplier.	1/ month	Conforming	See Letter from Supplier	See Letter from Supplier
A7.14	Chemical feeders	Automatic	Automatic	Once per week.	1/24 hours worked	Conforming	See Control Plan	240, 49, 245
A7.15	Agitation (Rack only - others optional)	Continuous	Continuous	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A7.16	Filtration Pressure	Continuous	N/A	Once every 8 hours.	N/A	N/A	N/A	N/A
A7.17	Fallen part removal	Manual	Manual	Rack: Once every 24 hours. Barrel: Once per week and after any lost load.	1/ week	Conforming	N/A	The part removal process may cause customer rejections and should only be done when the line is not in use.
A7.18	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
8.0	Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire							
A8.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Counter Flowing Spray		
A8.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A8.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		

A8.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A8.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A8.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A8.7	Spray nozzle condition (if applicable)	Manual	Manual	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A8.8	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A8.9	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
9.0	Passivates							
	Type: Thick Film Trivalent							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A9.1	Concentration	Automatic or Manual	Automatic	Prior to production start-up. If automatic control, once per day. If manual, once every 8 hours.	1/24 hours worked	Conforming	See Control Plan	6
A9.2	Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 1°C (2°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	77
A9.3	Time	Automatic or Manual	Automatic	Automatic - After any program changes. Manual - every load.*	N/A	N/A	N/A	1 Min
A9.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A9.5	pH	Automatic*	Automatic	Prior to production start-up. If automatic control, once per day. If manual, once every 8 hours.	1/1 Hour worked	Conforming	See Control Plan	4.3
A9.6	Agitation	Automatic	Automatic	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A9.7	Metallic Impurity level(s) (e.g., Fe, Zn)	Manual	Manual	Once per week.	1/ week worked	Conforming	See Control Plan	3 (Fe) 1422 (Zn)
A9.8	Fallen part removal	Manual	Manual	Once every 24 hours for rack line.	1/24 hours worked	Conforming	See Control Plan	YES
A9.9	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
10.0	Rinse (This section is to be repeated as necessary to document all individual rinse steps in the entire							
A10.1	Rinse Type - Identify in comment section e.g., Flowing, Counter Flowing, Spray, Stagnant, Drag-in/out, etc.	NA	NA	NA	NA	Flowing		
A10.2	Water Type- Identify in comment section e.g., Municipal, Deionized (DI), Reverse Osmosis (RO), etc.	NA	NA	NA	NA	Municipal		
A10.3	Agitation type - Identify in comment section (if applicable) e.g., Mechanical (Describe), Air, Ultrasonic, etc.	NA	NA	NA	NA	Air		
A10.4	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A10.5	Rinse Quality - Identify in comment section e.g., pH, Impurity Check, Conductivity	Manual	Manual	Once every 8 hours.*	1/8 hours worked	Conforming	See Control Plan	Yes
A10.6	Flow rate (if applicable)	Manual	N/A	Once every 8 hours.	1/8 hours worked	Conforming	See Control Plan	
A10.7	Verify position of incoming water feed is near the bottom (if immersion tank).	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
A10.8	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
11.0	Supplemental Treatments - Topcoats, Sealants and Friction Modifiers							
	Type: Sealer							
	Size, volume: Confidential							
	Chemical supplier: Confidential							
A11.1	Concentration	Manual	Manual	Prior to production start-up. If automatic control, once per day. If manual, once every 8 hours.	1/24 hours worked	Conforming. Dumped and replaced every day.	6	6
A11.2	Temperature (Thermocouple) (if applicable)	Automatic Max SAT difference allowed +/- 1°C (2°F).	Automatic	Continuous monitoring by controller. Manually verify daily.	1/8 hours worked	Conforming	See Control Plan	121

A11.3	pH (if applicable)	Automatic or Manual	Manual	Prior to production start-up. If automatic control, once per day. If manual, once every 8 hours.	1/24 hours worked	Conforming. Data points show that reduced frequency is able to maintain process control.	See Control Plan	10.2
A11.4	Time	Automatic*	Automatic	After any program changes if automatic.	N/A	N/A	N/A	1 Min
A11.5	Solution Level - Parts, heaters, and transducers are completely submerged.	Automatic or Manual	Manual	Continuous monitoring by controller. Manually verify daily for automatic controls, every 8 hours for systems without controllers.	1/8 hours worked	Conforming	See Control Plan	Yes
A11.6	Filtration Pressure (if applicable)	Automatic	N/A	Once every 8 hours.	N/A	N/A	N/A	N/A
A11.7	Tank and solution maintenance schedule documented and followed.	Manual	Manual	Per preventive maintenance program.	1/ month	Conforming	N/A	Complete
12.0	Drying							
A12.1	Drying Time	Automatic	Automatic	Per Process Sheet and TDS.	N/A	N/A	N/A	6 Min.
A12.2	Drying Temperature (Thermocouple)	Automatic Max SAT difference allowed +/- 5°C (10°F).	Automatic	Per Process Sheet and TDS.	N/A	N/A	See Control Plan	137
A12.3	Verify operation of blowers and/or rotation of dryer.	Manual	Manual	Once per 8 hours.	1/8 hours worked	Conforming	See Control Plan	Yes
A12.4	There is a procedure to ensure dryness of parts.	Manual	Manual	Every container and rack.	Every container and rack.	Conforming	Per customer requirements	N/A

PROCESS TABLE I - Process Control and Testing Equipment Verification and Calibration

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.

ITEM #	EQUIPMENT TYPE	Verification Frequency	Conforming Nonconforming NA	Calibration / Certification Frequency	Conforming Nonconforming NA	Observation / Comments
1.0						
11.1	Before use, chemicals must be checked for shelf life and/or expiration date.	Daily	Conforming	NA	N/A	
11.2	Temperature Controller	Per Section 3 Pyrometry (Daily per 3.3.1.2)	Conforming	Annually	Conforming (All controllers that are capable)	
11.3	Thermocouple	Per Section 3 Pyrometry (N/A not referenced in any section or table)	Conforming	Per Section 3 Pyrometry	Conforming	
11.4	pH Meter	Per equipment manufacturer's specifications	Conforming	Annually	Conforming	
11.5	pH Probe	Once every 4 hours, using a minimum of 2 buffer solutions near the min and max of the chemical control range.*	Conforming	NA	N/A	1x per Day
11.6	Conductivity Meter	Per equipment manufacturer's specifications	Conforming	Annually	Conforming	
11.7	Conductivity Probe	Once every 4 hours, using a minimum of 2 reference solutions near the min and max of the chemical control range.	N/A	NA	N/A	
11.8	Ion Selective (ISE) Probe	Once every 4 hours, using a minimum of 2 reference solutions near the min and max of the chemical control range.	N/A	NA	N/A	
11.9	Laboratory Balance	Monthly using a minimum of 2 reference mass standards.	Conforming	Annually	Conforming	
11.10	Atomic Absorption (AA)	Before each use.	N/A	Annually	N/A	
11.11	Inductively Coupled Plasma (ICP)	Before each use.	Conforming	Annually	Conforming	
11.12	Ion Chromatography (IC)	Before each use.	N/A	Annually	N/A	
11.13	X-Ray Fluorescence (XRF)	Daily. Thickness and alloy for each combination of plating and substrate.	Conforming	Annually	Conforming	
11.14	Hardness Tester	Daily	N/A	Annually	N/A	
11.15	Profilometer	Daily	N/A	Annually	N/A	
11.16	Lab Rectifier	NA	N/A	Annually	Conforming	
11.17	Hand held digital thermometer	NA	N/A	Annually	Conforming	
11.18	Glass thermometer	Visual inspection before each use.	N/A	Annually	N/A	
11.19	Pipettes - Before use, pipettes must be checked for broken tips	Before each use	Conforming	NA	N/A	
11.20	Salt Spray Cabinet	Daily	Conforming	Annually	Conforming	
11.21	Thickness Tester	Every 8 hours	Conforming	Annually	Conforming	
11.22	CASS Cabinet	Daily	N/A	Annually	N/A	
11.23	Microscope (Min 100X) with calibrated grid reticle for Pore/Crack Count	Daily	N/A	Annually	N/A	
11.24	Lab Oven	Per Section 3 Pyrometry (Once every 6 Months per 3.3.1.1)	Conforming	Annually	Conforming	
11.25	Torque-tension/Friction Tester	NA	N/A	Annually	N/A	
11.26	Refractometer	Monthly	N/A	NA	N/A	
11.27	Spectrophotometer	Monthly	N/A	Annually	N/A	
11.28	Color Meter	Daily	N/A	Annually	N/A	
11.29	Gloss Meter	Monthly	N/A	Annually	N/A	
11.30	Digital Temperature Recorder (i.e., DataPac)	NA	N/A	Annually	N/A	