



Automotive Industry Action Group

Special Process: Coating System Assessment			
Zinc Phospating Only			
Facility Name:		SWD Inc.	
Address:			
910 South Stiles Ave.			
Addison, IL 60101-4913			
Phone Number:	(630) 543-3003	Type(s) of Coating Processes at this Facility:	
Fax Number:	(630) 589-3524	Process Table A	
Number of Coating Employees at this Facility: 125		Aqueous Cleaning	Cleaning prior to Phospating
		Process Table B	
		Mechanical Cleaning	None
Captive Coater (Y/N):	Y	Process Table C	
Commercial Coater (Y/N):	Y	Phosphating	X
		Process Table D	
Audit Date: January 9, 2012	Original Audit date 12/18/2007	Powder Coating	None
		Process Table E	
Date of Previous Assessment:	21-Jan-2011	Electrocoat	None
		Process Table F	
		Spray	None
		Process Table G	
		Dip/Spin	None
		Process Table H	
		Autophoretic	None
		Process Table I	
		Convective Cure	None
		Process Table J	
		Equipment	X

Current Quality Certification(s):	ISO 9001:2008, ISO 14001:2004 & ISO 17025:2005
Date of Re-assessment (if necessary):	

Personnel Contacted:			
Name:	Title:	Phone:	Email:
Ashok Patel	Director of Quality	(630) 543-3003	apatel@swdinc.com

Auditors/Assesors:			
Name:	Company:	Phone:	Email:
John P Pop	University of Illinois - BIS	630-505-0500 x357	jpop@uiuc.edu
Ashok Patel	Director of Quality	(630) 543-3003	apatel@swdinc.com

Number of "Not Satisfactory" Findings:	0
Number of "Needs Immediate Action" Findings:	0
Number of "Fail" Findings in the Job Audit:	0



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Special Process: Coating System Assessment (General Facility Overview)							
Question Number	Question	Requirements and Guidance	Objective Evidence	Assessment			
				N/A	Satisfactory	Not Satisfactory	Needs Immediate Action
<b>Section 1 - Management Responsibility and Quality Planning</b>							
1.1	Is there a dedicated and qualified coating person on-site?	To ensure readily available expertise, there shall be a dedicated and qualified coating person on the site. This individual shall be a full-time employee and the position shall be reflected in the organization chart. A job description shall exist identifying the qualifications for the position including chemical and coating knowledge. The qualifications shall include a minimum of 5 years experience in coating operation or a combination of a minimum of 5 years of formal chemical education and coating experience.	Over 5 years experience and/or formal chemical education. SWD has been a chemical conversion coater for 30 years, processing black oxide, passivation of stainless steel, and phosphate coatings. Lab Manager is a degreed Chemical Engineer, and the Dip-Spin Supervisor has 4 years of e-coat experience before joining our organization. The company President and VP of Operations have both been intimately involved in our dip-spin process since starting the line in July 2004.		Satisfactory		
1.2	Does the coater perform advanced quality planning?	The organization shall incorporate a documented advanced quality planning procedure. 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 coater shall contact the customer when clarification of process changes is required. This clarification of process changes shall be documented.	Procedure 73-02 Product Part Approval & submitted PPAP's. Reviewed control plan for calcium modified zinc phosphating dated 2/17/08 rev C.		Satisfactory		
1.3	Are the coater's FMEA's up to date and reflecting current processing?	The organization shall incorporate the use of a documented Failure Mode and Effects Analysis (FMEA) procedure and ensure the FMEAs are updated to reflect current part quality status. The FMEA shall be written for each part or part family or they may be process-specific and written for each process. In any case, they shall address all process steps from part receipt to part shipment and all key coating process parameters as defined by the organization. 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.	Control plans with PFMEA's are process specific. Reviewed PFMA process afterfinish oil dated 11/15/09 developed by team members using APQP software.		Satisfactory		

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Question Number	Question	Requirements and Guidance	Objective Evidence	Assessment			
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1.4	Are finish process control plans up to date and reflecting current processing?	<p>The organization shall incorporate the use of a documented Control Plan procedure and ensure the Control Plans are updated to reflect current controls. The Control Plans shall be written for each part or part family or they may be process-specific and written for each process. In any case, they shall address all process steps from part receipt to part shipment and identify all equipment used and all key coating process parameters as defined by the organization. A cross-functional team, including a production operator, shall be used in the development of Control Plans, which shall be consistent with all associated documentation such as work instructions, shop travelers, and FMEAs. All special characteristics, as defined by the organization and its customers, shall be identified, defined, and addressed in the Control Plans. Sample sizes and frequencies for evaluation of process and product characteristics shall also be addressed consistent with the minimum requirements listed in the Process Tables.</p>	<p>Control plans with PFMEA's are process specific. Control plan for Process Recipe 79 dated 2/17/08 Rev C Page 5 of 8 for the control of 14Ap_H_SEA NON-CHROME-SEAL tritration test with spec 2.5% to 2.7% performed by the chemist. Cross functional team representing Mgm't., QA, Production, Lab, Sales, Shipping &amp; Maintenance. Procedure 73-01 Design of Manufacturing Processes and Procedure 73-02 Product Approval Part paragraph 2.3 and APQP checklist.</p>		<b>Satisfactory</b>		
1.5	Are all coating related and referenced specifications current and available? For example: SAE, AIAG, ASTM, General Motors, Ford, and DaimlerChrysler.	<p>To ensure all customer requirements are both understood and satisfied, the organization shall have all related coating and customer referenced standards and specifications available for use and a method to ensure that they are current. Such standards and specifications include, but are not limited to, those relevant documents published by SAE, AIAG, ASTM, General Motors, Ford, and DaimlerChrysler. 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.</p>	<p>All customer referenced specifications are on-site. Organization subscribes to ihs, SAE, ASTM &amp; ASQ websites for updates on all customer specific requirements with twice per year lookups. Quarterly audit ensures compliance. New specification and changed specifications are funneled thru QA and broadcasted throughout the organization in a timely manner.</p>		<b>Satisfactory</b>		

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1.6	Is there a written process specification for all active processes?	The coater shall have written process specifications for all active processes and identify all steps of the process including relevant operating parameters. Examples of operating parameters include process temperatures, cycle times, load rates, rectifier settings, etc. Such parameters shall not only be defined, they shall have operating tolerances as defined by the organization in order to maintain process control. All active processes should have a written process specification. These process specifications may take the form of work instructions, job card, computer-based recipes, or other similar documents.	All coating process are identified by recipe supported by the product description on the shop traveler and are computer controlled.		Satisfactory		
1.7	Has a valid product capability study been performed initially and after process change?	To demonstrate each process is capable of yielding acceptable product, the organization shall perform product capability studies for the initial validation of each process, after relocation of any process equipment, and after a major rebuild of any equipment. The organization shall define what constitutes a major rebuild. Initial product capability studies shall be conducted for all coating processes per line as defined in scope of work and in accordance with customer requirements. Capability study techniques shall be appropriate for the coating product characteristics, e.g., coating thickness, corrosion resistance, etc.. Any specific customer requirements shall be met. In the absence of customer requirements, the organization shall establish acceptable ranges for measures of capability. An action plan shall exist to address the steps to be followed in case capability indices fall outside customer requirements or established ranges.	Sample panels on phosphate coating used to measure coating weight as pass or fail. Discrete data does not lend itself to Cpk calculations. Process verification determined by salt spray testing.		Satisfactory		
1.8	Does the coater collect and analyze data over time, and react to this data?	The analysis of products and processes over time can yield vital information for defect prevention efforts. The organization shall have a system to collect, analyze, and react to product or process data over time. Methods of analysis shall include ongoing trend or historical data analysis of special product or process parameters. The organization shall determine which parameters to include in such analysis.	Laboratory testing for corrosion resistance. Coating thickness verified every order. Supported by ISO 17025 lb accreditation and internal audits.		Satisfactory		
1.9	Are internal assessments being completed on an annual basis, at a minimum, incorporating AIAG CSA?	The organization shall conduct internal assessments on an annual basis, at a minimum, using the AIAG CSA. Concerns shall be addressed in a timely manner.	Last assessment on 1/21/11. CQI-12 scheduled for annual assessments.		Satisfactory		

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1.10	Is there a system in place to authorize reprocessing and is it documented?	The quality management system shall include a documented process for reprocessing that shall include authorization from a designated individual. The reprocessing procedure shall describe product characteristics for which reprocessing is allowed as well as those characteristics for which reprocessing is not permissible. All reprocessing activity shall require a new processing control sheet issued by qualified technical personnel denoting the necessary coating modifications. Records shall clearly indicate when and how any material has been reprocessed. The Quality Manager or a designee shall authorize the release of reprocessed product.	Procedure 83-01 Control of Nonconforming Product includes authorization of designated individuals (Director of QA or QA Tech) and when reprocessing is not permissible. Reprocessing records are maintained of rework.	N/A	Satisfactory		
1.11	Does the Quality Department review, address, and document customer and internal concerns?	The quality management system shall include a process for documenting, reviewing, and addressing customer concerns and any other concerns internal to the organization. A disciplined problem-solving approach shall be used.	Customer complaints tracked and acted upon. 8-D and 5 Why's used as disciplined problem solving techniques.	N/A	Satisfactory		
1.12	Is there a continual improvement plan applicable to each process defined in the scope of the assessment?	The coater shall define a process for continual improvement for each coating process identified in the scope of the CSA. The process shall be designed to bring about continual improvement in quality and productivity. Identified actions shall be prioritized and shall include timing (estimated completion dates). The organization shall show evidence of program effectiveness.	Evidence of continual improvement plans forced by strategic plan.	N/A	Satisfactory		
1.13	Does the Quality Manager or designee authorize the disposition of material from quarantine status?	The Quality Manager or designee is responsible for authorizing and documenting appropriate personnel to disposition quarantine material.	Procedure 83-01 Control of Nonconforming Product includes authorization of designated individuals as, Director of QA or QA Tech. Observations verified this activity.	N/A	Satisfactory		
1.14	Are there procedures or work instructions available to coating personnel that define the coating process?	There shall be procedures or work instructions available to coating personnel covering the coating process. These procedures or work instructions shall include methods of addressing potential emergencies (such as power failure), equipment start-up, equipment shut-down, product segregation (See 2.8), product inspection, and general operating procedures. These procedures or work instructions shall be accessible to shop floor personnel.	Coating processes controlled with Shop travelers and computer-based recipes. Power outage procedure dated 2/3/09 posted at coating areas.	N/A	Satisfactory		

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				N/A	Satisfactory	Not Satisfactory	Needs Immediate Action
1.15	Is management providing employee training for coating?	The organization shall provide employee training for all coating operations. All employees, including backup and temporary employees, shall be trained. Documented evidence shall be maintained showing the employees trained and the evidence shall include an assessment of the effectiveness of the training. Management shall define the qualification requirements for each function, and ongoing or follow-up training shall also be addressed.	Formalized training program for the phos coating operators. Job descriptions define competence. Operators reviewed after 90 day , six months then every year.		Satisfactory		
1.16	Is there a responsibility matrix to ensure that all key management and supervisory functions are performed by qualified personnel?	The organization shall maintain a responsibility matrix identifying all key management and supervisory functions and the qualified personnel who may perform such functions. It shall identify both primary and secondary (backup) personnel for the key functions (as defined by the organization). This matrix shall be readily available to management at all times.	Skill matrix available for Metal Finishing + Org Chart .		Satisfactory		
1.17	Is there a preventive maintenance program? Is maintenance data being utilized to form a predictive maintenance program?	The organization shall have a documented preventive maintenance program for key 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 shop travelers, and operator-reported problems, shall be used to improve the preventive maintenance program. Maintenance data shall be collected and analyzed as part of a predictive maintenance program.	Procedure 75-04 Preventive Maintenance defines maintenance activities. Evidence of predictive maintenance with infrared and vibration analysis.		Satisfactory		
1.18	Has the coater developed a critical spare part list, and are the parts available to minimize production disruptions?	The coater shall develop and maintain a critical spare parts list and shall ensure the availability of such parts to minimize production disruptions.	Maintained critical spare parts list and inventory on maintenance computer. Spare parts stored on balcony.		Satisfactory		
Section 2 - Floor and Material Handling Responsibility							
2.1	Does the facility ensure that the data entered in the receiving system matches the information on the customer's shipping documents?	Documented processes and evidence of compliance shall exist, e.g., shop travelers, shop travelers, etc. The facility shall have a detailed process in place to resolve receiving discrepancies.	Procedure 74-02 Receiving Inspection of Customer Property. Use of temporary id numbers ensures correct identification. Permanent numbers assigned by office. Comparison made by Shipping personnel before Shop traveler processed.		Satisfactory		

Special Process: Coating System Assessment (General Facility Overview)							
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				N/A	Satisfactory	Not Satisfactory	Needs Immediate Action
2.2	Is product clearly identified and staged throughout the coating process?	Procedures for part and container identification help to avoid incorrect processing or mixing of lots. Appropriate location and staging within the facility also help to ensure that orders are not shipped until all required operations are performed. Customer product shall be clearly identified and staged throughout the coating process. Non-coated, in-process, and finished product shall be properly segregated and identified. All material shall be staged in a dedicated and clearly defined area.	Identification and staging process controlled by various work instructions, such as, WI-74-01-03 Issuing of Hold Ticket by Traffic & OED, WI-74-02-01 Receiving Inspection of Customer Property, WI-74-02-01 Inspection of Customer Property, WI-72-01-04 Weight Discrepany Chart, etc. All container observed were identified with a tag during processing plus staging areas.		Satisfactory		
2.3	Is lot traceability and integrity maintained throughout all processes?	Out-going lot(s) shall be traceable to the incoming lot(s). The discipline of precisely identifying lots and linking all pertinent information to them enhances the ability to do root cause analysis and continual improvement.	Lot traceability maintain by Shop traveler number. Shop traveler number linked to processing and inspection records.		Satisfactory		
2.4	Are procedures adequate to prevent movement of non-conforming product into the production system?	The control of suspect or non-conforming product is necessary to prevent inadvertent shipment or contamination of other lots. Procedures shall be adequate to prevent movement of non-conforming product into the production system. Procedures shall exist addressing proper disposition, product identification and tracking of material flow in and out of hold area. Non-conforming hold area shall be clearly designated to maintain segregation of such material.	Procedure 83-01 Control of Nonconforming Product plus WI-83-01-01 Return Goods Authorization, WI-83-01-02 Control of Nonconforming Product and WI-83-01-03 Job on Hold Trackin Procedure. Hold areas observed with tags for suspect and nonconforming product.		Satisfactory		
2.5	Is there a system to identify trap points in the entire process to reduce risk of mixed parts (inappropriate, unfinished or improperly coated parts)?	The coater shall have documented procedures to identify and monitor trap points for each process/equipment. Monitoring of potential trap points shall occur for every part changeover.	Plating barrels inspected prior to use and after dumping.		Satisfactory		
2.6	Are containers free of inappropriate material?	Containers handling customer product shall be free of inappropriate material. After emptying and before re-using containers, containers shall be inspected to ensure that all parts and inappropriate material have been removed. The source of inappropriate material shall be identified and addressed. This is to ensure that no nonconforming coated parts or inappropriate material contaminate the finished lot.	Customer containers verified at loading and unloading. Barrels cleaned per cleaning cycle. Observed basket cleaning.		Satisfactory		



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2.7	Is part loading specified, documented and controlled?	<p>Loading parameters shall be specified, documented and controlled. Examples include parts per rack and load size.</p> <p>Refer to Process Tables for frequency of checks.</p>	<p>Loading parameters documented at 1500# per barrel at coating.</p>		Satisfactory		
2.8	Are operators trained in material handling, containment action and product segregation in the event of an equipment emergency including power failure?	<p>Unplanned or emergency downtime greatly raises the risk of improper processing. Operators shall be trained in material handling, containment action, and product segregation in the event of an equipment emergency including power failure. Training shall be documented. Work instructions specifically addressing potential types of equipment emergencies and failures shall be accessible to and understood by equipment operators. These instructions shall address containment/reaction plans related to all elements of the process. Evidence shall exist showing disposition and traceability of affected product.</p>	<p>Operators trained to the hold procedure. Emergency power outage procedure dated 2/3/09 posted at work site.</p>		Satisfactory		
2.9	Is the handling, storage and packaging adequate to preserve product quality?	<p>The coater's loading/unloading systems, in-process handling and shipping process shall be assessed for risk of part damage or other quality concerns.</p>	<p>Lift truck movement of customer and/or SWD containers by certified lift truck operators. Certification training for all lift truck operators occurs every 3 years with newly hired as needed. Observed part separators in containers when required.</p>		Satisfactory		
2.10	Are plant cleanliness, housekeeping, environmental and working conditions conducive to control and improved quality?	<p>Plant cleanliness, housekeeping, environmental, and working conditions shall be conducive to controlling and improving quality. The coater should evaluate such conditions and their effect on quality. A housekeeping policy shall be clearly defined and executed. The facility shall be reviewed for the following items: loose parts on floor; spillage around tanks; overall plant lighting; fumes etc.</p>	<p>Cleanliness and orderliness observed. Policy is that any loose parts on the floor are scrapped. Observed operator pickup part on floor and scrap. Safety audits include housekeeping items.</p>		Satisfactory		

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2.11	Are process control parameters monitored per frequencies specified in Process Tables?	Process control parameters shall be monitored per frequencies specified in Process Tables. Computer monitoring equipment with alarms and alarm logs satisfy the verification requirement. A designated floor person shall verify the process parameters, e.g., by initialing a strip chart or data log.	See process table summaries.		Satisfactory		
2.12	Are out of control/specification parameters reviewed and reacted to?	There are documented reaction plans to both out of control and out of tolerance process parameters. There is documented evidence that reaction plans are followed.	Reaction plans are documented in process control plans. Lab records exist providing evidence of reactions.		Satisfactory		
2.13	Are In-Process / Final Test Frequencies performed as specified in Process Tables?	In-Process / Final Test Frequencies shall be performed as specified in Process Tables. Refer to Process Tables	See process table summaries.		Satisfactory		
2.14	Is product test equipment verified?	Test equipment shall be verified/calibrated per applicable customer specific standard or per an applicable consensus standard, e.g., ASTM, SAE, ISO, NIST, etc. Verification/calibration results shall be internally reviewed, approved and documented.  Refer to Process Tables for frequency of checks.	See process table and equipment table summaries.		Satisfactory		

**Section 3 - Job Audit - Finished Product Review**

**Phos Only**

**Job Identity:** Shop Traveler #735194  
**Customer:** Specialty Screw Corp  
**Shop traveler Number:** 735194  
**Part Number:** 41HW00MM 12030-049N-3  
**Part Description:** m12-175 X 30.0 MM HEX Washer Head  
**Coating Requirements:** Zinc Phospate with coating weight not less than 1100 mg/square ft.

Question #	Job Audit Question	Related CSA Question #	Customer or Internal Requirement	Job (Shop) Order or Reference Documentation Requirement	Actual Condition (Objective Evidence)	Pass / Fail / N/A
3.1	Is contract review and advanced quality planning, FMEA, control plans, etc., performed by qualified individuals?	1.1 1.2 1.3 1.4 1.6	Internal - By process	N/A	Process Control Plan dated 2/17/08 rev c	P
3.2	Does the Coater have the proper customer specifications for the part?	1.5	Customer	N/A	Product description identifies receipe # on posted chart.	P
3.3	Is a shop traveler created to meet customer requirements?	1.6 2.1	Internal	#735194	Shop travelers at plater operator station.	P
3.4	Is material identification (part numbers, lot numbers, contract numbers, etc.) maintained throughout the coating process?	2.2 2.3 2.4	Internal	Shop traveler and identification tags per container.	Tags on containers.	P
3.5	Is there documented evidence of Receiving Inspection?	2.1	Internal	Temporary number assigned at reveiving.	Temporary tags observed in container at shipping.	P
3.6	Are the Loading / Racking requirements identified?	1.6 2.7 2.9	Internal	Per control plan. Visual to prevent overloading.	1500 pound limit	P

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3.7	Is the proper procedure or process specification used? Refer to Process Tables for specific parameters. List parameters that were verified in this audit in the spaces provided below.	1.5 1.6 2.1 2.11 2.13	Internal	#735194	aim of phos coating is 1400 mg/square ft to ensure meeting 1100 min.	P
	Cal-Mod Zinc Phospate pretreatment		Cal Mod GM 1117M 1100 mg/sq ft minimum of heavy phos and 200 to 700 mg/ft sq of cal mod	Shop traveler	Traced Shop traveler #735194 process date to lab test results for that shift. Results were 1545 mg per sq ft.	P

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3.8	What are the product inspection requirements?	1.5 2.13 2.14	Each part may have one or more requirements determined by the coating specification. Parts must meet each requirement. List each requirement below and validate. (Listed below are some examples)			
3.8.1	Requirement: Coating Thickness		Internal			
	Test Method:		Coating	Lab procedure.	Plating Complete Analytical Report dated 12/6/11	P
	Test frequency or quantity:		Once per shift			P
	Selection of samples:		Sample plate			P
	Specification:		1100 mg/sq. ft. minimum		1545 mg/sq. ft.	P
	Test Method:					
	Test frequency or quantity:		Per shift.			P
	Selection of samples:		Random			P
	Specification:		not less than 1100 mg/square ft.			P
3.8.2	Requirement: Corrosion Resistance (if applicable).		Customer			
	Test Method(s):		Salt spray test.	24 hour salt spray test	Plating Complete Analytical Report dated 1/20/11	P
	Test frequency or quantity:		Daily on random lots			
	Selection of samples:		Random			
	Specification:					
3.8.3	Requirement: Hydrogen Embrittlement Relief (if applicable)	NA				
	Test Method:					
	Test frequency or quantity:					
	Selection of samples:					
	Specification:					
3.8.4	Requirement: Adhesion	NA				
	Test Method(s):					
	Test frequency or quantity:					
	Selection of samples:					
	Specification:					

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3.8.5	Requirement: Cure	NA				
	Test Method:					
	Test frequency or quantity:					
	Selection of samples:					
	Specification					
3.8.6	Requirement: Torque Tension (if applicable)	NA				
	Test Method:					
	Test frequency or quantity:					
	Selection of samples:					
	Specification:					

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Question #	Job Audit Question	Related CSA Question #	Customer or Internal Requirement	Job (Shop) Order or Reference Documentation Requirement	Actual Condition (Objective Evidence)	Pass / Fail / N/A
3.8.7	Requirement: Appearance (Decorative)	NA				
	Test Method:					
	Test frequency or quantity:					
	Selection of samples:					
	Specification:					
3.8.8	Requirement: Dimensional (if applicable)	NA				
	Test Method:					
	Test frequency or quantity:					
	Selection of samples:					
	Specification:					
3.8.9	Requirement: Color and Gloss (Decorative)	NA				
	Test Method:					
	Test frequency or quantity:					
	Selection of samples:					
	Specification:					
3.8.10	Requirement: Customer Specific	See above.				
	Test Method(s):					
	Test frequency or quantity:					
	Selection of samples:					
	Specification:					

**Section 3 - Job Audit - Finished Product Review**

**Phos Only**

**Job Identity:** Shop Traveler #735194  
**Customer:** Specialty Screw Corp  
**Shop traveler Number:** 735194  
**Part Number:** 41HW00MM 12030-049N-3  
**Part Description:** m12-175 X 30.0 MM HEX Washer Head  
**Coating Requirements:** Zinc Phospate with coating weight not less than 1100 mg/square ft.

Question #	Job Audit Question	Related CSA Question #	Customer or Internal Requirement	Job (Shop) Order or Reference Documentation Requirement	Actual Condition (Objective Evidence)	Pass / Fail / N/A
<b>Operator or Inspector Responsibilities</b>						
3.9	Were appropriate process steps signed off?	1.4 1.6 2.2 2.3 2.11	Internal	Shop travler	Sign offs on Shop travelers.	P
3.10	Were all inspection steps, as documented in the control plan performed?	1.2 1.4	Internal	Control plan for phos coating recipe #70	Sign offs on Shop travelers and lab records.	P
3.11	Were steps/operations performed that were not documented in the control plan?	1.2 1.4 1.6	Internal		No evidence of undocumented steps or operations.	P
3.12	If additional steps were performed, were they authorized?	1.2 1.4 1.6 1.10 1.16	Internal	Hold procedure	None observed.	P
3.13	Does the governing specification allow reprocessing or rework?	1.5 1.10	Customer	Hold procedure	Customer notification of rework, re-process or failed corrison test notification.	P
3.14	If the order was certified, did the certification accurately reflect the process performed?	2.11 2.13	Customer	Shop travler	No certs required.	P
3.15	Was the certification signed by an authorized individual?	1.16	Internal -	Shop travler	If required, lab tech signs certification.	P
3.16	Are the parts and containers free of inappropriate objects or contamination?	2.6	Internal	Policy	Confirmed by observation.	P



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**Part Description:** m12-175 X 30.0 MM HEX Washer Head  
**Coating Requirements:** Zinc Phospate with coating weight not less than 1100 mg/square ft.

Question #	Job Audit Question	Related CSA Question #	Customer or Internal Requirement	Job (Shop) Order or Reference Documentation Requirement	Actual Condition (Objective Evidence)	Pass / Fail / N/A
<b>Packaging Requirements</b>						
3.17	Are packaging requirements identified?	2.6 2.7 2.9	Internal	Shop traveler, label & bar code.		P
3.18	Are parts packaged to minimize mixed parts (for example, parts packed over height of container)?	2.6 2.7 2.9	Internal	Shop traveler, label & bar code	Lot seperation throughout processing.	P
<b>Shipping Requirements</b>						
3.19	Were the parts properly identified?	2.3 2.9	Internal	Shop traveler, label & bar code	Matched tags with shop traveler in containers.	P
3.20	Were the containers properly labeled?	2.3 2.9	Internal	Shop traveler, label & bar code	Package labelled. Containers contain tags.	P

**PROCESS TABLE A - Pretreatment (Aqueous)**

All requirements given below are subordinate to customer specific requirements. The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.					Actual Condition (Objective Evidence)
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring	
<b>1.0</b>		<b>AQUEOUS CLEANING PROCESS (Alkaline or Acid)</b>			
A1.1	1.4	There shall be an incoming part assessment procedure with criteria.	Per Control Plan	Per lot	Incoming inspection with temp number
<b>2.0</b>		<b>Cleaning Bath(s)</b>			
A2.1	2.11	The following checks shall be performed during production:			
A2.2	1.4 2.11 2.12	Pressure/Agitation	Automatic	Per Control Plan/Log Sheet (1/shift minimum)	Barrel rotation.
A2.3	1.4 2.11 2.12	Temperature	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)	Temp indicators at tank. Plating brief analytical lab report. Measure with master thermometer once per shift.
A2.4	1.4 1.6 2.11 2.12	Time	Automatic	Per Control Plan/Log Sheet (1/shift minimum)	Recipe controlled by computer.
A2.5	1.4 1.6 2.11 2.12	Chemical Concentration	Manual	Per Control Plan/Log Sheet (1/shift minimum)	Plating brief analytical report tested once per shift.
A2.6	1.4 2.11 2.12	Impurity Content (e.g. acid split)	Manual	Per Control Plan/Log Sheet (1/shift minimum)	NA
A2.7	2.11	There is a dump schedule for cleaning baths.	Manual	Per Control Plan/Log Sheet	Once per week.

**PROCESS TABLE A - Pretreatment (Aqueous)**

All requirements given below are subordinate to customer specific requirements.					Actual Condition (Objective Evidence)
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.					
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring	
3.0		<b>Rinse Bath(s)</b>			
A3.1	2.11	The following checks shall be performed during production:			
A3.2	1.4 2.11 2.12	Pressure/Agitation	Automatic	Per Control Plan/Log Sheet (1/shift minimum)	Barrel rotation.
A3.3	1.4 2.11 2.12	Temperature	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)	Temp indicators at tank. Plating brief analytical lab report. Test once per shift.
A3.4	1.4 1.6 2.11 2.12	Time	Automatic	Per Control Plan/Log Sheet (1/shift minimum)	Recipe controlled by computer.
A3.5	1.4 2.11 2.12	Impurity Concentration	Manual	Per Control Plan/Log Sheet (1/shift minimum)	Plating brief analytical report tested once per shift.
A3.6	1.4 2.11 2.12	Overflow Rate	Automatic	Per Control Plan/Log Sheet (1/shift minimum)	Continuous flow
A3.7	2.11	There is a dump schedule for rinses.	Manual	Per Control Plan/Log Sheet	Once per week.
A3.8	1.4 2.11	There is a visual inspection (e.g. water break) after each post cleaning rinse bath where possible. (not applicable for bulk)	Manual	Per Control Plan/Log Sheet (1/shift minimum)	Observation by plater and Lab Tech during once per shift data collection for lab analysis.
A3.9	1.4 2.11	There is a final rinse. It shall be monitored for presence of bacteria. (for plastic substrate)	Manual	Per Control Plan/Log Sheet (1/shift minimum)	NA
A3.10	1.4 2.11	For Metals -- Corrosion inhibitor concentration is checked. (If applicable)	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)	NA

**PROCESS TABLE A - Pretreatment (Aqueous)**

<p>All requirements given below are subordinate to customer specific requirements.</p> <p>The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.</p>					<p>Actual Condition (Objective Evidence)</p>
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring	

<b>PROCESS TABLE B - Pretreatment (Mechanical) Not Applicable.</b>				
All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
<b>1.0</b>		<b>ABRASIVE BLAST PROCESS</b>		
B1.1	1.4	There shall be an incoming part assessment procedure with criteria.	Per Control Plan	Per lot
B1.2	2.11	The following checks shall be performed during production:		
B1.3	1.4 1.6 2.11 2.12	Abrasive media flow	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
B1.4	1.4 1.6 2.11 2.12	Nozzle air pressure	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
B1.5	1.4 1.6 2.11 2.12	Dwell time	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
B1.6	1.4 2.11 2.12	Dust collector efficiency/air flow	Automatic	Per Control Plan/Log Sheet (2/shift minimum)
B1.7	1.4 2.11 2.12	Working mix	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
B1.8	1.4 2.11	Surface cleanliness is checked after process.	Manual	Per Control Plan/Log Sheet (1/shift minimum)
B1.9	1.4 2.11 2.13	Surface profile is checked after process (if applicable).	Manual	Per lot

<b><u>PROCESS TABLE B</u> - Pretreatment (Mechanical) <b>Not Applicable.</b></b>				
<p>All requirements given below are subordinate to customer specific requirements.</p> <p>The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.</p>				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring

**PROCESS TABLE C - Pretreatment (Phosphating)**

All requirements given below are subordinate to customer specific requirements.					Actual Condition (Objective Evidence)
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.					
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring	
<b>1.0</b>		<b>Conversion Coating</b>			
C1.1	1.4	There shall be an incoming part assessment procedure with criteria.	Per Control Plan	Per lot	Incoming inspection with temp number
<b>2.0</b>		<b>Rinse Conditioner (If Applicable)</b>			
C2.1	2.11	The following checks shall be performed during production:			
C2.2	1.4 2.11 2.12	Pressure/Agitation	Automatic	Per Control Plan/Log Sheet (1/shift minimum)	Barrel rotation.
C2.3	1.4 1.6 2.11 2.12	Time	Automatic	Per Control Plan/Log Sheet (1/shift minimum)	Recipe controlled by computer.
C2.4	1.4 2.11 2.12	Chemical Concentration	Manual	Per Control Plan/Log Sheet (1/shift minimum)	Plating brief analytical report tested once per shift.
C2.5	2.11	There is a dump schedule for rinse conditioner.	Manual	Per Chemical Manufacturer's Guideline	Once per week.
<b>3.0</b>		<b>Conversion Coating Bath</b>			
C3.1	2.11	The following checks shall be performed during production:			
C3.2	1.4 2.11 2.12	Pressure/Agitation	Automatic	Per Control Plan/Log Sheet (1/shift minimum)	Barrel rotation.

**PROCESS TABLE C - Pretreatment (Phosphating)**

All requirements given below are subordinate to customer specific requirements. The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.					Actual Condition (Objective Evidence)
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring	
C3.3	1.4 2.11 2.12	Temperature	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)	Plating brief analytical lab report. Recorded once per shift.
C3.4	1.4 1.6 2.11 2.12	Time	Automatic	Per Control Plan/Log Sheet (1/shift minimum)	Recipe controlled by computer.
C3.5	1.4 2.11 2.12	Chemical Concentration (Free Acid, Total Acid, Iron Content, pH, Accelerator Amount as Applicable)	Manual	Per Control Plan/Log Sheet (2/shift minimum)	Plating brief analytical report tested once per shift.
C3.6	1.4 2.11 2.12	Fluoride Ion Concentration (if aluminum is being coated)	Automatic/Manual	Per Control Plan/Log Sheet (2/shift minimum)	NA
C3.7	1.4 1.6 2.11 2.12	Coating Weight	Manual	Per Control Plan/Log Sheet (1/shift minimum)	Tested once per shift lab records.
C3.8	1.4 2.11 2.12	Crystal Size (If applicable)	Manual	Per customer requirement	NA



**PROCESS TABLE C - Pretreatment (Phosphating)**

All requirements given below are subordinate to customer specific requirements.					Actual Condition (Objective Evidence)
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.					
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring	
<b>4.0</b>		<b>Rinse After Phosphate</b>			
C4.1	2.11	The following checks shall be performed during production:			
C4.2	1.4 2.11 2.12	Impurity Concentration (e.g. Titration, Conductivity)	Manual	Per Control Plan/Log Sheet (1/shift minimum)	Once per shift as per lab records.
C4.3	1.4 2.11 2.12	Pressure/Agitation	Automatic	Per Control Plan/Log Sheet (1/shift minimum)	Barrel rotation.
C4.4	1.4 1.6 2.11 2.12	Time	Automatic	Per Control Plan/Log Sheet (1/shift minimum)	Recipe controlled by computer.
C4.5	2.11	There is a dump schedule for rinses	Manual	Per Chemical Manufacturer's Guideline	Once per week.
<b>5.0</b>		<b>Seal Rinse</b>			
C5.1	2.11	The following checks shall be performed during production:			
C5.2	1.4 2.11 2.12	Pressure/Agitation	Automatic	Per Control Plan/Log Sheet (1/shift minimum)	Barrel rotation.
C5.3	1.4 1.6 2.11 2.12	Time	Automatic	Per Control Plan/Log Sheet (1/shift minimum)	Recipe controlled by computer.
C5.4	1.4 2.11 2.12	Chemical Concentration	Manual	Per Control Plan/Log Sheet (1/shift minimum)	Once per shift as per lab records.

**PROCESS TABLE C - Pretreatment (Phosphating)**

All requirements given below are subordinate to customer specific requirements. The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.					Actual Condition (Objective Evidence)
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring	
C5.5	1.4 2.11 2.12	Temperature (If applicable)	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)	Temp indicators at tank. Plating brief analytical lab report. Test once per shift.
C5.6	2.11	There is a dump schedule for seal rinse.	Manual	Per Chemical Manufacturer's Guideline	Once per week.
<b>6.0</b>		<b>Dry-Off (If Applicable)</b>			
C6.1	1.4 2.11 2.12	Air temperature is monitored and controlled.	Automatic	Per Control Plan/Log Sheet (1/shift minimum)	NA
C6.2	1.4 2.11	There is a procedure to ensure dryness of parts prior to subsequent coating.	Visual	Each Lot	NA

**PROCESS TABLE D - Powder - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
<b>1.0</b>		<b>Powder Paint Application</b>		
D1.1	1.4 2.11	Parts are checked exiting dry-off oven for cleanliness and trapped water, prior to entering powder booth.	Manual	Per Control Plan/Log Sheet (1 per hour)
<b>2.0</b>		<b>Powder Booth and Equipment</b>		
D2.1	1.4 2.11 2.12	The temperature of parts entering the coating booth is monitored.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
D2.2	1.4 1.6 1.17 2.11 2.12	The conveyor is operating at the proper line speed (no abrupt movement or contact between parts).	Automatic	Per Control Plan/Log Sheet (1/shift minimum)
D2.3	1.4 2.11 2.12	The ground is checked using a 500 volt megohm meter (less than 1 megohm resistance).	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
D2.4	1.4 1.17 2.11 2.12	The air dryer and filter are on main compressed air line.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
D2.5	1.4 1.17 2.11 2.12	The booth temperature and humidity are checked.	Manual	Per Control Plan/Log Sheet (1/shift minimum)
D2.6	1.4 2.11 2.12	The air balance in the powder booth is checked.	Manual	Per Control Plan/Log Sheet (1/day minimum)
D2.7	1.4 1.17 2.11 2.12	The rotary seive is clean and operational.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
D2.8	1.4 2.11 2.12	The powder flow on seive is monitored.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
D2.9	1.4 2.11 2.12	The vent assist air pressure is checked.	Manual	Per Control Plan/Log Sheet (1/shift minimum)
D2.10	1.4 2.11 2.12	The vent on feed hopper is checked.	Manual	Per Control Plan/Log Sheet (1/shift minimum)
D2.11	1.4 1.17 2.11 2.12	The reclaim seive is operating properly.	Manual	Per Control Plan/Log Sheet (1/shift minimum)

**PROCESS TABLE D - Powder - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
D2.12	1.4 1.17 2.11 2.12	All guns are operational and in good repair.	Manual	Per Control Plan/Log Sheet (1/shift minimum)
D2.13	1.4 1.17 2.11 2.12	The venturis in the feed pumps and the pick up tubes in the hopper are checked.	Manual	Per PM schedule
D2.14	1.4 2.11 2.12	The feed hoses are checked to ensure that they have no excessive bends and kinks.	Manual	Per Control Plan/Log Sheet (1/day minimum)
D2.15	1.4 2.11 2.12	The virgin/reclaim ratio is checked. (feed pressure)	Manual	Per Control Plan/Log Sheet (1/shift minimum)
D2.16	1.4 1.17 2.11 2.12	The static pressure gauges on primary and final filters are checked.	Manual	Per Control Plan/Log Sheet (1/shift minimum)
D2.17	1.4 1.11 2.12 2.13	Appearance of parts exiting booth is checked.	Manual	Per Control Plan/Log Sheet (1 per hour)
D2.18	1.4 2.11 2.12	The powder supply and atomizing air pressure are checked.	Manual	Per Control Plan/Log Sheet (1/shift minimum)
<b>3.0</b>		<b>Cure (See Convective Cure Process Table I)</b>		

**PROCESS TABLE E - Electrocoat - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
<b>1.0</b>		<b>Pre-Electrocoat Paint Application Part Appearance</b>		
E1.1	1.4 2.11	Incoming parts are inspected for cleanliness and/or uniform phosphate coating (when phosphate is used).	Manual	Per Control Plan/Log Sheet (1 per hour)
<b>2.0</b>		<b>Electrocoat Laboratory</b>		
E2.1	2.14	Laboratory equipment is calibrated and in good working order.	N/A	
E2.2	2.14	Laboratory standards and reagents are properly stored, labeled, and not expired.	N/A	
E2.3	2.14	Laboratory records, internal and external, are filed and accessible for review.	N/A	Per Control Plan/Log Sheet (1/shift minimum)
<b>3.0</b>		<b>Electrocoat Tank</b>		
E3.1	1.4 2.11 2.12	Bath parameters (pH, conductivity, solid content, temperature, voltage) are checked and adjusted.	Automatic/Manual	Per Control Plan/Log Sheet
E3.2	1.4 1.6 2.11 2.12	Line speed setup is checked.	Automatic/Manual	Per Control Plan/Log Sheet
E3.3	1.4 2.11 2.12	Line speed is verified.	Manual	Once/week minimum
E3.4	1.4 2.11 2.12	There is circulation and it is monitored. (flow meter, pressure gage)	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
E3.5	1.4 2.11 2.12	Bag filter pressures are monitored. Bags changed when psi differential. >5-10 PSI.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
E3.6	1.4 2.11 2.12	Flow direction is checked (for monorail system).	Manual	Per Control Plan/Log Sheet (1/shift minimum)
E3.7	1.4 2.11 2.12	Flow over the weir is checked.	Manual	Per Control Plan (1/shift minimum)
E3.8	1.4 2.11 2.12	Bath is checked for microbial contamination.	Manual	Per Control Plan/Log Sheet (1/ per week minimum)
E3.9	1.4 2.11 2.12	Incoming DI / RO water is checked for cleanliness. (conductivity)	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
E3.10	1.4 1.17 2.11 2.12	Paint racks are being maintained.	Automatic/Manual	As needed

**PROCESS TABLE E - Electrocoat - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
E3.11	1.4 1.17 2.11 2.12	There is a paint rack maintenance schedule.	Manual	Required
E3.12	1.4 1.17 2.11 2.12	There is a tank clean up schedule.	Manual	Required (1/year minimum)

**PROCESS TABLE E - Electrocoat - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
<b>4.0 Anolyte System</b>				
E4.1	1.4 2.11 2.12	The anolyte solution is being controlled within the required conductivity limits.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
E4.2	1.4 2.11 2.12	The conductivity reading on the anolyte tank has been confirmed in the laboratory.	Automatic/Manual	Per Control Plan/Log Sheet 1 / week
E4.3	1.4 2.11 2.12	The pH of the anolyte solution has been checked.	Automatic/Manual	Per Control Plan/Log Sheet (1 per shift)
E4.4	1.4 2.11 2.12	Anodes have been inspected.	Manual	Per Control Plan/Log Sheet (1 per six months)
E4.5	1.4 2.11 2.12	The anolyte solution is being circulated to each cell.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
E4.6	1.4 2.11 2.12	Dump and clean schedule for anolyte being maintained.	Manual	Per Control Plan/Log Sheet
E4.7	1.4 2.11 2.12	Amperage draw has been checked on each anode.	Automatic/Manual	Per Control Plan/Log Sheet
<b>5.0 Rectifier</b>				
E5.1	1.4 1.6 2.11 2.12	The proper voltage is being used for the load size.	Manual	per Equip. Mfg.
E5.2	1.4 2.11 2.12	The ramp up time to full voltage has been verified.	Automatic/Manual	Per Control Plan/Log Sheet (1 per shift)
E5.3	2.10	There is a safety beacon to alert personnel when system is energized.		
E5.4	1.4 1.17 2.11 2.12	The ripple of the rectifier has been checked by an approved electrician.	Automatic/Manual	Per Control Plan / material supplier
<b>6.0 Rinse System</b>				
E6.1	1.4 2.11 2.12	Immersion rinse tanks are operating at the proper levels and tanks are being agitated correctly.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
E6.2	1.4 2.11 2.12	There is sufficient permeate supplied to the rinse.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
E6.3	1.4 2.11 2.12	The pH and conductivity of the rinse have been recorded.	Manual	Per Control Plan/Log Sheet (1/shift minimum)

**PROCESS TABLE E - Electrocoat - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
E6.4	1.4 2.11 2.12	There is microbial testing of rinses.	Manual	Per Control Plan / material supplier
E6.5	1.4 2.11 2.12	The ultrafilters are operating at proper pressures and bag filters are being used. What size bags?	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
E6.6	1.4 1.17 2.11 2.12	Rinses have been cleaned per maintenance schedule.	Manual	Per Control Plan / material supplier
7.0		<b>Cure (See Convective Cure Process Table I)</b>		



**PROCESS TABLE F - Spray - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
<b>1.0</b>		<b>Part Appearance</b>		
F1.1	1.4 2.11	Incoming parts are inspected for cleanliness, trapped water or water spots as well as uniform phosphate coating (when phosphate is used).	Manual	Per Control Plan/Log Sheet (1 per hour)
F1.2	1.14	Inspection criteria are posted.		
F1.3	2.10	Adequate lighting is in place.		
F1.4	1.4 2.9	Mutilation prevention items (i.e. gloves, belt buckle covers, watch covers, etc.) are in place.		
F1.5	1.4 1.17 2.11 2.12	Paint racks are maintained.	Manual	

**PROCESS TABLE F - Spray - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
2.0		<b>Paint Mixing</b>		
F2.1	1.4 2.11 2.12	Paint mixing rooms are controlled (mixing tank grounding, closed container, properly enclosed space, temperature, clean environment).	Automatic/Manual	Per Paint Manufacturer Recommendation
F2.2	1.4 2.11 2.12	FIFO system is being utilized.	Manual	Per Paint Manufacturer Recommendation
F2.3	1.4 1.6 1.17 2.11 2.12	Paint agitation/time and reduction (solvent package) are proper and documented.	Manual	Per Paint Manufacturer Recommendation
F2.4	1.4 1.6 1.17 2.11 2.12	Viscosity and temperature are in operational limits and documented.	Manual	Per Control Plan/Log Sheet/Paint Manufacturer Recommendation
F2.5	1.4 1.6 1.17 2.11 2.12	The proper filter size and type are in place.	Manual	Per Control Plan/Log Sheet/Paint Manufacturer Recommendation
F2.6	1.4 1.6 1.17 2.11 2.12	Pump pressures are set within operational limits.	Manual	Per Control Plan/Log Sheet/Paint Manufacturer Recommendation
F2.7	1.4 2.11 2.12	Circulation (flow meter, pressure gage) is monitored.	Automatic/Manual	Per Control Plan/Log Sheet
F2.8	1.4 2.11 2.12	Bag filter pressures are monitored (bags are changed when psi differential >5-10 PSI).	Automatic/Manual	Per Control Plan/Log Sheet

**PROCESS TABLE F - Spray - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
<b>3.0</b>		<b>Substrate Conditioning (Flame, Plasma, etc) (If applicable)</b>		
F3.1	1.4 2.11	Incoming parts are inspected to ensure that they are free of dirt and contamination.	Manual	
F3.2	1.17 1.4 2.11 2.12	Flame/Plasma is set at operational limits per equipment and material supplier recommendations.	Automatic	Per control plan and equipment and substrate suppliers recommendations
F3.3	1.4 2.11 2.13	Final surface tension is within specifications.	Manual	Per Control Plan
<b>4.0</b>		<b>Primer/Promoter</b>		
F4.1	1.4 2.11	Incoming parts are inspected to ensure that they are free of dirt and contamination.	Manual	Per Control Plan/Log Sheet (1/shift minimum)
F4.2	1.4 1.17 2.11 2.12	Destaticizing air is operational. (Plastic parts only)	Automatic	Per Control Plan/Log Sheet 1 / week
F4.3	1.4 2.11 2.12	Booth balance is monitored.	Manual	Per Control Plan/Log Sheet 1 / week
F4.4	1.4 1.6 1.17 2.11 2.12	Booth temperature and humidity are monitored (or set within operational limits if controlled).	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
F4.5	1.4 2.11 2.12	Film thickness is per customer requirements.	Manual	Per control plan and customer requirements
F4.6	1.4 1.6 1.17 2.11 2.12	Atomizer parameters (fluid flow, air pressures (atomizing fan, shaping), electrostatics and mixing) are set within operational limits.	Automatic/Manual	Per Control Plan/Log Sheet (1 per month minimum)

**PROCESS TABLE F - Spray - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
<b>5.0</b>		<b>Basecoat (If applicable)</b>		
F5.1	1.4 2.11	Incoming parts are inspected to ensure that they are free of dirt and contamination.	Manual	Per Control Plan / material supplier (once per shift minimum)
F5.2	1.4 1.6 2.11 2.13	Flashtimes between coats are set at suppliers recommended times.	Automatic/Manual	Per Control Plan/material supplier
F5.3	1.4 1.6 1.17 2.11 2.12	Booth temperature and humidity are monitored or set within operational limits if controlled. (Required for waterborne coatings)	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
F5.4	1.4 1.6 1.17 2.11 2.12	Atomizer parameters (fluid flow, air pressures (atomizing fan, shaping), electrostatics and mixing) are set within operational limits.	Automatic/Manual	Per Control Plan/Log Sheet (1 per month minimum)
F5.5	1.4 2.11 2.13	Film builds are per supplier recommendations.	Manual	Per Control Plan and suppliers recommendations
<b>6.0</b>		<b>Basecoat Heated Flash (Waterborne Materials Only)</b>		
F6.1	1.4 1.6 2.11 2.13	Set point is at suppliers recommended time, temperature and energy type (convection/IR/UV/etc.).	Manual	Per Control Plan / material supplier
F6.2	1.4 1.6 2.11 2.13	Percent solids after pre-dry is at the suppliers recommended percentage.	Manual	Per Control Plan/Log Sheet (1/shift minimum)
F6.3	1.4 1.17 2.11 2.12	The pre-dry oven is maintained.	Manual	Per Control Plan / material supplier

**PROCESS TABLE F - Spray - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
<b>7.0 Clearcoat</b>				
F7.1	1.4 2.11	Incoming parts are inspected to ensure that they are free of dirt and contamination.	Manual	Per Control Plan / material supplier (once per shift minimum)
F7.2	1.4 1.6 2.11 2.13	Flashtimes between coats are set at suppliers recommended times.	Automatic/Manual	Per Control Plan/material supplier
F7.3	1.4 1.6 1.17 2.11 2.12	Booth temperature and humidity are monitored or set within operational limits if controlled. (Required for waterborne coatings)	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
F7.4	1.4 1.6 1.17 2.11 2.12	Atomizer parameters (fluid flow, air pressures (atomizing fan, shaping), electrostatics and mixing) are set within operational limits.	Automatic/Manual	Per Control Plan/Log Sheet (1 per month minimum)
<b>8.0 Cure (See Convective Cure Process Table I)</b>				
<b>9.0 Final Part Inspection</b>				
F9.1	1.14	Inspection criteria are posted.		
F9.2	2.10	There is adequate lighting in inspection area.		
F9.3	1.4 2.9	Mutilation prevention items are in place.		
F9.4	1.4 1.8 1.12 2.13	Defects are being tracked.	Manual	Per Control Plan
F9.5	1.4 2.13	FTT is being monitored.	Manual	Per Control Plan
F9.6	1.10 1.11 1.12	Scrap and repaints are being tracked.	Manual	Per Control Plan

**PROCESS TABLE G - Dip/Spin - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
<b>1.0</b>		<b>Coating Material Application</b>		
G1.1	1.4 2.11	After pretreatment, parts are inspected for flash rust, wetness, oil or other defects.	Manual	Per Control Plan/Log Sheet (each lot)
G1.2	1.4 2.11	If phosphated, parts are checked for uniformity of phosphate coating.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
G1.3	2.6 1.17	Skids/bins used to hold parts between coating operations are free of oil, grease or other contaminants.	Manual	Per Control Plan/Log Sheet (each lot)
<b>2.0</b>		<b>Coating Bath</b>		
G2.1	1.4 2.11 2.12	Incoming paint viscosity is checked.	Manual	Each New Lot of Paint
G2.2	1.4 2.11 2.12	Incoming solids checks are performed.	Manual	Each New Lot of Paint
G2.3	1.4 1.17 2.11 2.12	Appropriate mixing equipment is used, capable of dispersing settled solids.	Manual	Ongoing
G2.4	2.9 2.10	Paint is stored properly, away from high humidity and temperature extremes.	Manual	Ongoing
G2.5	2.9 2.10	Paint is kept covered and/or sealed when not in use.	Manual	Ongoing
G2.6	2.9 2.10	Paint storage room is organized so each paint is easily found to prevent contamination.	Manual	Ongoing
G2.7	2.9 2.10	Paint storage room is kept clean.	Manual	Ongoing

**PROCESS TABLE G - Dip/Spin - Not Applicable.**

<p>All requirements given below are subordinate to customer specific requirements.</p> <p>The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.</p>				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
G2.8		The following checks shall be performed during production:		
G2.9	1.4 2.11 2.12	Paint Temperature.	Manual	Per Control Plan/Log Sheet (3/shift minimum)
G2.10	1.4 2.11 2.12	Viscosity.	Manual	Per Control Plan/Log Sheet (3/shift minimum)
G2.11	1.4 2.11 2.12	% Solids (by weight).	Manual	Per Control Plan/Log Sheet (1/Day minimum)
G2.12	1.4 2.11 2.12	Volume (paint depth in coating vat).	Automatic/Manual	Per Control Plan/Log Sheet (3/shift minimum)
G2.13	1.4 2.11 2.12	Vibratory feed tables are cleaned (if used).	Manual	Per Control Plan/Log Sheet (as needed)
G2.14	1.4 1.17 2.11 2.12	Basket condition (basket mesh clean and undamaged).	Manual	Per Control Plan/Log Sheet (as needed)
G2.15	1.4 2.11 2.12	Paint and/or solvent additions are documented.	Manual	Per Control Plan/Log Sheet (each addition)
G2.16	2.10	Viscosity cups are cleaned after each use.	Manual	Per Control Plan/Log Sheet (each check)
G2.17	2.14 1.17	Viscosity cups are verified.	Manual	2/Month minimum
G2.18	2.14 1.17	Thermometers are calibrated/verified.	Manual	Once/Month minimum

**PROCESS TABLE G - Dip/Spin - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
<b>3.0 Application Parameters</b>				
G3.1	1.4 1.6	A system is in place to ensure proper basket weights for specific parts, such as processing manual, traveller, or process recipe.	Automatic/Manual	Per Control Plan/Log Sheet (each lot)
G3.2	1.4 1.6	Baskets are kept less than 2/3 full.	Automatic/Manual	Per Control Plan/Log Sheet (each lot)
G3.3	1.4 1.6	Dip time is controlled.	Automatic/Manual	Per Control Plan/Log Sheet (each lot)
G3.4	1.4 1.6	Spin speed (RPM) is controlled.	Automatic/Manual	Per Control Plan/Log Sheet (each lot)
G3.5	1.4 1.6 1.17	The coating unit has an attached RPM indicator.		
G3.6	1.4 1.6 1.17	RPM's can be adjusted easily.		
G3.7	1.4 1.6	Spin time is controlled.	Automatic/Manual	Per Control Plan/Log Sheet (each lot)
G3.8	1.4 1.6	The number of spins is adjustable (single, double, triple).	Automatic/Manual	



**PROCESS TABLE G - Dip/Spin - **Not Applicable.****

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
G3.9	1.4 1.6	Tumble time is in/out of coating controlled (if applicable).	Automatic/Manual	Per Control Plan/Log Sheet (each lot)
G3.10	1.4 1.6 1.17	There is an adequate system to keep parts level going into the oven (raking, vibrate table, etc.).	Automatic/Manual	Per Control Plan/Log Sheet (each lot)
G3.11	2.10	Vibratory feed tables are cleaned (if used).	Manual	Per Control Plan/Log Sheet (as needed)
G3.12	2.9	There is evidence of steps taken to assist in soft handling of parts (shallow drops, lined chutes and hoppers, bumper boards, etc.).	Automatic/Manual	Per Control Plan/Log Sheet (each lot)
G3.13	1.4 2.9 2.11	Parts are cool to touch before each coating step.	Manual	Per Control Plan (each lot)
<b>4.0</b>		<b>Cure (See Convective Cure Process Table I)</b>		

**PROCESS TABLE H - Autophoretic - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
<b>1.0</b>	<b>3.1</b>	<b>Coating Bath</b>		
H1.1	1.4 2.11 2.12	Mixer speed and direction are monitored and adjusted.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
H1.2	1.4 1.6 2.11 2.12	Time (hoist program) is verified.	Automatic/Manual	Per Control Plan/Log Sheet (1/day minimum)
H1.3	1.4 1.17 2.11 2.12	Conveyor speed is verified (if applicable).	Manual	Annually or after repair
H1.4	1.4 1.6 2.11 2.12	Temperature is monitored and controlled.	Automatic	Per Control Plan/Log Sheet (1/shift minimum)
H1.5	1.4 2.11 2.12	Humidity level is monitored.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
H1.6	1.4 2.11 2.12	101 (fluoride) and ORP levels are checked.	Automatic/Manual	Per Control Plan/Log Sheet (every 2 hours minimum)
H1.7	1.4 2.11 2.12	Chemical concentration (% solids, starter/iron titration, conductivity) is checked and maintained.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
H1.8	1.4 1.17 2.11 2.12	Bath transfer is maintained.	Manual	Per PM schedule (1/year minimum)
<b>2.0</b>	<b>1.18</b>	<b>Tap Rinse After Coating</b>		
H2.1	1.4 2.11 2.12	Pump pressure or agitator speed is monitored.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
H2.2	1.4 2.11 2.12	Impurity concentration (conductivity) is checked.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)

**PROCESS TABLE H - Autophoretic - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.				
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
<b>3.0</b>	<b>3.2</b>	<b>Reaction Rinse</b>		
H3.1	1.4 2.11 2.12	Chemical concentration (titration, conductivity, pH, Hach Meter Test) is checked and maintained.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
H3.2	1.4 2.11 2.12	Pump pressure or agitator speed is monitored.	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
H3.3	1.4 2.11 2.12	Temperature is monitored and controlled (if applicable).	Automatic/Manual	Per Control Plan/Log Sheet (1/shift minimum)
H3.4	1.4 1.17 2.11 2.12	There is a dump schedule.	Manual	Per Chemical Manufacturer's Guideline (minimum 3 times per year)
<b>4.0</b>		<b>Cure (See Convective Cure Process Table I)</b>		

**PROCESS TABLE I - Convective Cure - Not Applicable.**

All requirements given below are subordinate to customer specific requirements.

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

Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
<b>1.0</b>				
I1.1	1.4 1.6 2.11 2.12	Oven temperature set point and limits are checked and documented.	Automatic	1/shift minimum or at every material change. Per coating supplier recommendation
I1.2	1.17	Part temperature profile is monitored.	Manual	1/month minimum
I1.3	1.4 1.6 2.11 2.12	Proper cure time is maintained (if applicable).	Automatic/Manual	Per coating supplier recommendation
I1.4	1.4 1.6 1.17 2.11 2.12	Conveyor speed is maintained (if applicable).	Automatic	1/month minimum (after PM)
I1.5	1.4 2.11 2.12	Airflow is measured (if required by coating supplier).	Automatic/Manual	Per coating supplier recommendation
I1.6	1.17	Air filter change is scheduled.	Manual	Per oven manufacturer, filter supplier recommendation
I1.7	1.17	Thermocouple for oven control is calibrated.		
I1.8	2.13	Cure testing is conducted by laboratory.	Manual	Per coating supplier recommendation
I1.9	2.13	Final color is monitored.	Manual	Per Control Plan/Log Sheet (1/shift or color change minimum)

**PROCESS TABLE I - Convective Cure - Not Applicable.**

<p>All requirements given below are subordinate to customer specific requirements.</p> <p>The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.</p>				
Item #	Related CSA Question #	Category/Process Steps	Control	Monitoring
11.10	2.13	Film thickness/coating weight is monitored.	Manual	Per Control Plan/Log Sheet (1/shift or color change minimum)
11.11	2.13	Gaugeability is checked (if applicable).	Manual	Per customer requirements
11.12	2.13	Paint adhesion is monitored.	Manual	Per Control Plan/Log Sheet (1/shift or color change minimum)

**PROCESS TABLE J - EQUIPMENT**

All requirements given below are subordinate to customer specific requirements.  
The customer may have additional requirements, e.g., inspection testing, greater frequencies, etc. When performing the job audit, the auditor shall verify coater is conforming to customer requirements.

PROCESS EQUIPMENT												
Item #	Related CSA Question #	Pretreatment	Powder Coat	E-Coat	Spray	Dip/Spin	A-Coat	Cure		Verification Frequency	Calibration Frequency	Comment
1.1	2.14	X							pH Meter/Probe	Daily	Yearly	Verified daily. Calibrated yearly.
1.2	2.14	X							Temperature Controller	At Start-up	2x/Year	Lab master thermometer calibrated 2 times per year.
1.3	2.14								Rectifier	At Start-up	N/A	
1.4	2.14	x							Wet Analysis	Phosphate - 3hr min.	N/A	Approx. every 2 hours
1.5	2.14								Atomic Absorption (Optional)			
1.6	2.14	X							Filters	*	N/A	Changed weekly.
1.7	2.14	X							Balance	1x/Week	Yearly	Calibrated once per year.
1.8	2.14	X							Conductivity Meter	Before Use	Yearly	Calibrated once per year.
1.9	2.14								Viscosity Measurement	Hourly	Monthly	Once per month.
1.10	2.14								Thermocouple	N/A	2x/Year	
MINIMUM REQUIRED TESTING CAPABILITY												
2.1	2.14	X							Salt Spray Cabinet		Controller calibrated 2/year	Within calibration period.
2.2	2.14								Water Immersion Tank			
2.3	2.14								Environmental Chamber			
2.4	2.14								Cure Testing (chemical rubbing)			
2.5	2.14								Adhesion Testing			
2.6	2.14								Thickness Testing			
2.7	2.14								Microscope (when applicable)			
2.8	2.14								Freezer (plastic substrate)			
2.9	2.14								Lab Oven			