

	SARA SAE ENGINEERING SPECIFICATION	
	Section: SES 26 – 741	
	Issue: "A"	Rev No: "2"
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## **SPECIFICATION FOR SILVER PLATING THICKNESS INSPECTION**

Rev	Reason of Change	Date	Made By	Reviewed By	Approved By	Status
2		13-03-2013	USR	J Gulati	KKD	Released

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## **SPECIFICATION FOR SILVER PLATING THICKNESS INSPECTION**

### **1.0 PURPOSE**

- 1.1 This procedure specifies the standard methods and locations for silver plating test and reporting of SARA SAE products.
- 1.2 This specification describes the system for inspection of silver plated material from suppliers to ensure that received material is of required specifications,
- 1.3 This material specification is intended to aid the Quality control / production department in out sourcing and the vendor to comply the requirements of silver plating of a material which needs to meet its intended age, and the quality control department in the inspection and release of incoming material.

### **2.0 SCOPE**

- 2.1 This specification covers requirements for silver plating to meet requirements of as specified in the standard or customer requirement.
- 2.2 All measurements shall have compliance as specified in the specification.

### **3.0 VENDOR APPROVAL**

- 3.1 Prior to outsourcing the process, prospective vendors shall be assessed for their capabilities for silver plating,
- 3.2 Prior to silver plating of bulk the prospective vendor shall submit first article samples of the product duly plated as per procedure for evaluation & approval.
- 3.3 After approval vendor shall not make any changes in process without the written permission of SARA SAE and re-approval of first article sample, if desired by SARA SAE.
- 3.4 In case of any change in the process re-approval of first article sample, by SARA SAE is required.

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## 4.0 GENERAL REQUIREMENTS

**4.1 Properties :** The deposited silver shall conform to the following requirement:

- a) Thickness shall be determined on representative parts or test coupon in accordance with this specification or other method agreed upon by the purchaser and vendor.
- b) Silver as plated should not be less than 99.9% pure. The process of plating should be controlled to produce this purity.

**4.2 Preparation:** The sample preparation shall be as described below:

- a) Electrolyte** - The electrolyte shall be made as mentioned below:
  - I. SN 10 Solution: 180 grams Potassium Thiocyanate shall be mixed in 1 liter of distilled water. The solution shall be agitated properly before use.
- b) Cleaning:**
  - I. Etching tank shall be clean by distilled water before pouring electrolyte. After each & every test it shall be cleaned.
  - II. It is necessary that the surface of the sample under test is cleaned properly using the typewriter eraser. This ensures the surface is free of contamination prior to etching of top layer.
- c) Measurement:**
  - I. The measuring device should be calibrated once before & once after a measurement, with known test sample, unless repeated experience indicates otherwise.
  - II. When making calibration and coating measurements, both should be made by the same operator, the stage micrometer and the coating should be centered in the field, and each measurement at a point should be made at least twice and averaged.

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## 5.0 ACCEPTANCE

- 5.1 Plate thickness should be 0.0002 to 0.002" (0.005 to 0.050 mm).
- 5.2 The sample shall be checked as defined in the SARA / DOC / 0042.
- 5.3 The plating thickness shall be within the limits at any point of material.
- 5.4 Silver plating should be sound, smooth & continuously bonded to the base material.
- 5.5 Plating shall be uniform in appearance , not coarsely crystalline and free from pin holes , porosity , cracks , flakes , blisters , nodules , pits and other imperfection detrimental to the performance of the plating.
- 5.6 General adhesion of the finished plating should be tested by attaching a section of scotch tape. Temperature of the surface to be tested should not exceed 120°F.
- 5.7 Pull the tape off the surface. No plating material should be adhering to the tape.
- 5.8 Intermediate layers may be tested on non critical surfaces.
- 5.9 All the above tests will be qualified for acceptance through a QTC plated under similar conditions from each lot.
- 5.10 QTC will be marked with traceability of the lot and will be preserved in bond for future references.
- 5.11 Records will be logged in QC register.
- 5.12 Identification tags removed from the gaskets during plating shall be reattached after completion of inspection.

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## 6.0 SAFETY PRECAUTIONS:

- 6.1 Don't touch electrolyte solutions with naked hand. Contact with skin or eye should be avoided.
- 6.2 Proper care is taken while handling rubber gasket and glass dropper of destructive thickness machine.
- 6.3 Avoid mixing of different electrolyte solutions with each other.
- 6.4 Clean etching tank after every operation as well as changing coat/base combination.

## 7.0 PACKING

- 7.1 Plated material shall be supplied in packages that protect against damages during shipment.

## 8.0 DOCUMENTATION REQUIRED

Each shipment shall be accompanied by certifications for each lot of silver plated material.

### 8.1 IN CASE OF OUTSOURCED VENDOR

- a) Plating thickness report.
- b) Certificate of procedure compliance with detailed process.
- c) The batch no. of chemical shall be recorded in the certificate.
- d) QTC traceable to the lot.

### 8.2 INHOUSE PLATING FACILITY

- a) Plating thickness of the sampled pieces (as per sampling plan Sara/doc/0042) shall be recorded in the QC register.

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## **9.0 TESTING TO BE CARRIED OUT BY SARA SAE**

- 9.1 Silver plating thickness will be checked as per sampling plan SARA/DOC/0042 before picking up the lot.
- 9.2 The sample under rest shall be provided with the batch material.
- 9.3 Tape test will be carried out on the QTC provided by the vendor.