

Finish Specification

100-337-00

Approvals:

Department	Approved.	Date
Engineering	Joe Otto	09/24/2019
Manufacturing	Chad Loughman	09/24/2019
Quality	Drew Ware	09/24/2019
Material Control	Brandon Bailey	09/25/2019
Purchasing	Karen Dusenbury	09/24/2019

Change History

Rev	Description	By	Date
-	Initial Release	DHR	10/02/81
A	ECO #1732	JCO	01/14/91
B	Added -08	JCO	07/02/93
C	Added -09	JCO	07/20/93
D	Redrawn and Revised	JCO	09/20/97
E	Redrawn and Revised	JCO	01/12/98
F	Redrawn and Revised	JCO	07/15/98
G	ECO 1965	JCO	09/25/98
H	ECO 2277	JCO	01/26/05
I	Paragraph 3.12.1 was: Electroless nickel plate per SAE-AMS-C-26074, 0.0002" minimum thickness.	JCO	08/16/06
J	See ECN	JCO	09/07/07
K	See redline document	JCO	02/13/08
L	Added -14. See redline document.	JCO	01/21/09
M	Added -15. See outline document.	JCO	08/03/09
N	See redline document.	JCO	01/14/11
P	Converted from drawing to process See redline document.	JCO	06/27/12
Q	Paragraphs 3.15.1 and 3.15.2, step 3: 0.001" was 0.0001"	JCO	06/23/14
R	Added paragraph 3.16	JCO	8/20/14
S	See redline document	JCO	3/10/17
T	See redline revision S document	JCO	2/1/19
U	See redline revision U document	JCO	9/25/19

1. Scope

This document details the plating specifications used by Captor Corporation.

2. Reference Documents

The following specifications and standards form a part of this specification to the extent specified herein.

Specifications, Military

MIL-DTL-5541 Chemical Conversion Coatings on Aluminum and Aluminum Alloys.

Standards, Military

MIL-STD-202 Test Methods for electronic and electrical component parts.

Standards, ASTM

ASTM B253 Standard Guide for Preparation of Aluminum Alloy for Electroplating

ASTM B 339 Tin, Pig, Grade A

ASTM B 545 Standard Specification for Electrodeposited Coating of Tin

ASTM B 579 Standard Specification for Electrodeposited coatings of Tin-Lead Alloy Solder Paste

ASTM B700 Standard Specification for Electrodeposited Coatings of Silver for Engineering use

Standards, SAE

AMS-QQ-290 Nickel Plating (Electrodeposited)

AMS 2404 Plating, Electroless Nickel

AMS 2418 Plating, Copper

AMS-C-26074 Coatings, Electroless Nickel, Requirements For

AMS-P-81728 Plating, Tin-Lead (Electrodeposited)

3. General Requirements

Table 1 provides a listing of the standard plating used by Captor Corporation.

3.1. 100-337-01 CHEMICAL CONVERSION COATING: Aluminum.

1. Chemical conversion coating per MIL-DTL-5541, class 3, Type 1 (Color yellow/gold).

3.2. 100-337-02, BRIGHT ELECTRO TIN-LEAD (Threaded and Bulk parts): Brass, Copper, Steel.

1. Copper flash per AMS 2418, 0.000020" minimum thickness.
2. Bright electro tin plate per SAE-AMS-P-81278, except must contain 10% lead minimum, 0.0001" to 0.0003" thickness.
3. Solderability to be per paragraph 4.2 herein.
4. Parts must meet thread class requirements and dimensional requirements after plating.

3.3. 100-337-03, HOT TIN DIP: Brass, Copper, Steel.

1. Hot tin dip per ASTM B 339, except must contain 3% lead minimum, 0.0003" minimum thickness.
2. Solderability to be per paragraph 4.2 herein.

3.4. 100-337-04, ELECTRO TIN (Threaded parts): Brass, Copper, Steel.

1. Copper flash per AMS 2418, 0.000020" minimum thickness.
2. Electro tin plate per ASTM B 545, except must contain 3% lead minimum, 0.0001" to 0.0003" thickness.
3. Solderability to be per paragraph 4.2 herein.
4. Parts must meet thread class requirements and dimensional requirements after plating.

3.5. 100-337-05, ELECTRO TIN: Stainless Steel.**3.5.1. 100-337-05, ELECTRO TIN: Stainless Steel.**

1. Nickel strike per AMS-QQ-N-290, 0.000020" minimum thickness.
2. Copper plate per AMS 2418, 0.0001" minimum thickness.
3. Electro tin plate per ASTM B 545, except must contain 3% lead minimum, 0.0003" minimum thickness.
4. Solderability to be per paragraph 4.2 herein.

3.5.2. 100-337-05II, ELECTRO TIN REFLOWED: Stainless Steel.

1. Nickel strike per AMS-QQ-N-290, 0.000020" minimum thickness.
2. Copper plate per AMS 2418, 0.0001" minimum thickness.
3. Electro tin plate per ASTM B 545, except must contain 3% lead minimum, 0.0003" minimum thickness.
4. Reflow (fuse) electro tin plating.
5. Solderability to be per paragraph 4.2 herein.

3.6. 100-337-06, ELECTRO TIN: Brass, Copper, Steel.**3.6.1. 100-337-06I, ELECTRO TIN: Brass, Copper, Steel.**

1. Copper plate per AMS 2418, 0.0001" minimum thickness.
2. Electro tin plate per ASTM B 545, except must contain 3% lead minimum, 0.0003" minimum thickness.
3. Solderability to be per paragraph 4.2 herein.

3.6.2. 100-337-06II, ELECTRO TIN REFLOWED: Brass, Copper, Steel.

1. Copper plate per AMS 2418, 0.0001" minimum thickness.
2. Electro tin plate per ASTM B 545, except must contain 3% lead minimum, 0.0001" to 0.0003" thickness.
3. Reflow (fuse) electro tin plating.
4. Solderability to be per paragraph 4.2 herein.

3.7. 100-337-07, ELECTRO TIN: Aluminum.**3.7.1. 100-337-07, ELECTRO TIN: Aluminum.**

1. Electroless nickel flash per AMS-C-26074, 0.0001" nominal thickness.
2. Copper plate per AMS 2418, 0.0001" minimum thickness.
3. Electro tin plate per ASTM B 545, except must contain 3% lead minimum, 0.0003" minimum thickness.
4. Solderability to be per paragraph 4.2 herein.

3.7.2. 100-337-07II, ELECTRO TIN REFLOWED: Aluminum.

1. Electroless nickel flash per AMS-C-26074, 0.0001" nominal thickness.
2. Copper plate per AMS 2418, 0.0001" minimum thickness.
3. Electro tin plate per ASTM B 545, except must contain 3% lead minimum, 0.0003" minimum thickness.
4. Reflow (fuse) electro tin plating.
5. Solderability to be per paragraph 4.2 herein.

3.8. 100-337-08, ELECTRO TIN-LEAD: Brass, Copper, Steel.**3.8.1. 100-337-08I, ELECTRO TIN-LEAD: Brass, Copper, Steel.**

1. Copper plate per AMS 2418, 0.0001" minimum thickness.
2. Electro tin-lead plate per AMS-P-81728, 0.0001" to 0.0003" thickness.
3. Solderability to be per paragraph 4.2 herein.

3.8.2. 100-337-08II, ELECTRO TIN-LEAD REFLOWED: Brass, Copper, Steel.

1. Copper plate per AMS 2418, 0.0001" minimum thickness.
2. Electro tin-lead plate per AMS-P-81728, 0.0001" to 0.0003" thickness.
3. Reflow (fuse) electro tin-lead plating.
4. Solderability to be per paragraph 4.2 herein.

3.9. 100-337-09, ELECTRO TIN-LEAD: Aluminum.**3.9.1. 100-337-09I, ELECTRO TIN-LEAD: Aluminum.**

1. Electroless nickel flash per AMS-C-26074, 0.0001" nominal thickness.
2. Copper plate per AMS 2418, 0.0001" minimum thickness.
3. Electro tin-lead plate per AMS-P-81728, 0.0001" to 0.0003" thickness.
4. Solderability to be per paragraph 4.2 herein.

3.9.2. 100-337-09II, ELECTRO TIN-LEAD REFLOWED: Aluminum.

1. Electroless nickel flash per AMS-C-26074, 0.0001" nominal thickness.
2. Copper plate per AMS 2418, 0.0001" minimum thickness.
3. Electro tin-lead plate per AMS-P-81728, 0.0001" to 0.0003" thickness.
4. Reflow (fuse) electro tin-lead plating.
5. Solderability to be per paragraph 4.2 herein.

3.9.3. 100-337-09IIA, ELECTRO TIN-LEAD REFLOWED: Aluminum.

1. Electroless nickel flash per AMS-C-26074, class 4, 0.0001" nominal thickness.
2. Copper plate per AMS 2418, 0.0001" minimum thickness.
3. Electro tin-lead plate per AMS-P-81728, 0.0001" to 0.0003" thickness.
4. Reflow (fuse) electro tin-lead plating.
5. Solderability to be per paragraph 4.2 herein.

3.10. 100-337-10, SEE DETAILED DRAWING.

This procedure is for special plating requirements, refer to the specified detail drawing.

3.11. 100-337-11 (REMOVED).

3.12. 100-337-12, ELECTROLESS NICKEL, MID PHOSPHORUS: Aluminum, Brass, Steel.

1. Electroless nickel plate per AMS-C-26074, 0.0002" to 0.0004" thickness.
2. Must contain 6% to 9% phosphorous by weight.
3. Solderability to be per paragraph 4.2 herein.

3.13. 100-337-13, ELECTRO TIN-LEAD: Stainless Steel.

3.13.1. 100-337-13I, ELECTRO TIN-LEAD: Stainless Steel.

1. Nickel strike per AMS-QQ-290, 0.000020" minimum thickness.
2. Copper plate per AMS 2418, 0.0001" minimum thickness.
3. Electro tin-lead plate per AMS-P-81728, 0.0001" to 0.0003" thickness.
4. Solderability to be per paragraph 4.2 herein.

3.13.2. 100-337-13II, ELECTRO TIN-LEAD REFLOWED: Stainless Steel.

1. Nickel strike per AMS-QQ-290, 0.000050" nominal thickness.
2. Copper plate per AMS 2418, 0.0001" minimum thickness.
3. Electro tin-lead plate per AMS-P-81728, 0.0001" to 0.0003" thickness.
4. Reflow (fuse) electro tin-lead plating.
5. Solderability to be per paragraph 4.2 herein.

3.14. 100-337-14, ELECTRODEPOSITED SILVER: Aluminum.

1. Electroless nickel strike per AMS-C-26074, 0.0001 to 0.0003" thickness.
2. Silver plate per ASTM B700, Type III, Grade D, Class S, 0.0001 to 0.0003" thickness.
3. Solderability to be per paragraph 4.2 herein.

3.15. 100-337-15, ELECTRO TIN-LEAD (SOLDER): Aluminum.

3.15.1. 100-337-15I, ELECTRO TIN-LEAD, MATTE (SOLDER): Aluminum.

1. Zincate and copper strike per ASTM B253. (Preparation for electroplating)
2. Copper plate per AMS 2418, 0.0001" minimum thickness.
3. Electroless nickel plate per AMS 2404 Class 4, 0.001" minimum thickness.
4. Electro tin-lead plate per ASTM B579, 0.0001" to 0.0003" thickness.
5. Solderability to be per paragraph 4.2 herein.

3.15.2. 100-337-15II, ELECTRO TIN-LEAD REFLOWED (SOLDER): Aluminum.

1. Zincate and copper strike per ASTM B253. (Preparation for electroplating)
2. Copper plate per AMS 2418, 0.0001" minimum thickness.
3. Electroless nickel plate per AMS 2404 Class 4, 0.001" minimum thickness.
4. Electro tin-lead plate per ASTM B579, 0.0001" to 0.0003" thickness.
5. Reflow (fuse) electro tin-lead plating.
6. Solderability to be per paragraph 4.2 herein.

3.16. 100-337-16, ELECTRO TIN-LEAD: Steel, Stainless Steel.

1. Nickel strike per AMS-QQ-N-290, 0.0001" to 0.0003" thickness.
2. Electroless nickel plate per AMS-C-26074 Grade B, 0.001" to 0.0015" thickness.
3. Copper plate per AMS 2418 Class 3, 0.0002" to 0.0005" thickness.
4. Tin-lead plate per AMS-P-81728, 0.0002" to 0.0005" thickness.
5. Within 48 hours of plating completion, bake plated parts at 120°F to 150°F for a minimum of 12 hours.
6. Remove all plating residues.
7. Solderability to be per paragraph 4.2 herein.

4. Quality Assurance Provisions.

4.1. Appearance

Unless otherwise specified, the finish shall have a uniform texture and appearance and shall be free of blisters, pinholes, and other defects that may affect the protective value of the coating.

4.2. Solderability

Soldering operations will be applied to the finish. The finish shall be capable of meeting the solderability requirements of MIL-STD-202, Method 208, less steam aging. Actual testing is not required but the material shall be rejected if the finish does not readily accept solder.

5. Packaging

5.1. Shipment to finish facility

The items shall be packaged in a manner to prevent damage to the item during routine handling and transport.

5.2. Return shipment from finish facility

The items shall be packaged in a manner to prevent damage to the item or the finish during routine handling and transport.

6. Notes

6.1. Order of precedence.

In the event of conflicting finish specifications, the following order of precedence shall apply.

1. The finish listed in the ERP Bill of Material.
2. The finish listed on the detailed drawing.
3. Industry standards.

6.2. Finish Specifications.

Table 1 is a listing of standard finishes for the specific base materials.

Table 1, Standard Finishes		
Dash #	Description	Base Material
-01	Chemical Conversion Coat	Aluminum
-02	Bright electro Tin-Lead (Threaded and Bulk Parts)	Brass, Copper, Steel
-03	Hot Tin Dip	Brass Copper Steel
-04	Electro Tin (Threaded parts)	Brass, Copper, Steel
-05	Electro Tin	Stainless Steel
-05II	Electro Tin Reflowed	Stainless Steel
-06	Electro Tin	Brass, Copper, Steel
-06I	Electro Tin, Matte	Brass, Copper, Steel
-06II	Electro Tin, Reflowed	Brass, Copper, Steel
-07	Electro Tin	Aluminum
-07II	Electro Tin, Reflowed	Aluminum
-08	Electro Tin-Lead	Brass, Copper, Steel
-08I	Electro Tin-Lead, Matte	Brass, Copper, Steel
-08II	Electro Tin-Lead, Reflowed	Brass, Copper, Steel
-09	Electro Tin-Lead	Aluminum
-09I	Electro Tin-Lead, Matte	Aluminum
-09II	Electro Tin-Lead, Reflowed	Aluminum
-09IIA	Electro Tin-Lead, Reflowed	Aluminum
-10	See detailed drawing	Any
-11	(Removed)	(Removed)
-12	Electroless Nickel	Aluminum, Brass, Steel
-13	Electro Tin-Lead	Stainless Steel
-13I	Electro Tin-Lead	Stainless Steel
-13II	Electro Tin-Lead, Reflowed	Stainless Steel
-14	Electrodeposited Silver	Aluminum
-15	Electro Tin-Lead (Solder)	Aluminum
-15I	Electro Tin-Lead, Matte (Solder)	Aluminum
-15II	Electro Tin-Lead, Reflowed (Solder)	Aluminum
-16	Electro Tin-Lead	Steel, Stainless Steel