INCREMENTAL CHANGE Release Notification Date: 03/08/2023

SPM 70-45-06 THIN FILM SULFURIC ACID ANODIZING

DISCLAIMER

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HIGHLIGHTS

HIGHLIGHT REFERENCE	DESCRIPTION OF CHANGE
tk70-45-06-330-801	Technical Change: Changed name of consumable C03-127 from Superseal 2S to Surtec 345 Hardwall throughout the procedure.
tk70-45-06-330-801	Technical Change: Added special procedure for the thin film sulfuric acid anodizing.

TASK 70-45-06-330-801

1. General.

CAUTION: FOR THE PARTS WHICH HAVE BOTH THIN FILM SAA AND HARD ANODIZATION, MASKING IS REQUIRED ON TF SAA COATED SURFACES AT HARD ANODIZATION STEP TO AVOID POTENTIAL ATTACK. IF MASKING IS NOT USED, SEALING SYSTEMS BA AND BB ALTERNATIVES SHOULD BE PREFERRED.

A. This method is used for thin film sulfuric acid anodizing on aluminum and aluminum alloys. This process has been used typically to increase corrosion resistance and to provide surfaces that will promote adherence of paint and other organic finishes.

B. Unless specified differently, AMS 2470 can be used as alternative to TASK 70-45-06-330-801 (70-45-06, Thin Film Sulfuric Acid Anodizing). AMS 2470 contains hexavalent chromium.

C. It is important to have good control practices for effective anodizing. To successfully anodize parts, attention must be paid to the proper preparation, masking and electrical hookup of the part.

NOTE: All fabrication-type operations, such as forming, shot peening, brazing, welding, perforating, machining, and heat treatment, should be completed before parts are anodized.

NOTE: When the thickness or coating weight is not specified, the repair facility must demonstrate that the coating obtained is comparable to the coating produced in accordance with AMS 2490.

D. It is important to have good post anodizing de-masking and part cleaning procedures. All masking residues (wax, lacquer, tape, and tape adhesive residue) must be completely and thoroughly removed.

E. It is recommended as good shop practice that a procedure be developed and documented for each part. This procedure will ensure that all parts will be masked, anodized, and cleaned to the same procedure by the different operators in the shop.

2. Equipment.

Subtask 70-45-06-350-001

A. Equipment requirements should be controlled per AMS 2490.

B. The following equipment is required for the application of hexavalent chromium free sealing method;

(1) Use dedicated tanks made from PVC/PVDC/PP/INOX 316L stainless steel for the Socosurf TCS (S1219) and Lanthane 613.3 (S1222) baths. Use dedicated tanks made from PVC/PVDC/PP for the Socosurf PACS (S1220) bath. Use dedicated tanks made from stainless steel (AISI 316L quality) for Surtec 345 Hardwall tank.

(2) The heating coil protectors must be made of Teflon or PVDF.

(3) Socosurf TCS (S1219) bath: Filtration is recommended (0.1 to 2 renewals/hour depending on the size of the tank. Pore size < 25 m).

(4) Socosurf PACS (S1220) bath: A bath cooling system is recommended when outside temperatures are high to keep the bath temperature below 30°C (86°F).

(5) The water rinse tank used after processing in sealing bath shall be made of steel lined with high density polyethylene or polypropylene.

(6) The hot water rinse tank shall be made of polypropylene lined steel and complete with a controllable electric heater capable of heating the bath at 60°C (140°F).

(7) Lanthane 613.3: Filtration of 2 turnovers/hour at 20 m is recommended. Agitation for Lanthane 613.3, mechanical or bubbling.

(8) Surtec 345 Hardwall bath: In order to avoid smut and dust on sealed aluminum, continuous filtration of the sealing bath through 5 or 10 micron filter is mandatory, with a flow rate able to complete the whole filtration of the tank minimum 3 times per hour.

It is mandatory to install water spray rinses over the Surtec 345 Hardwall tank. The spray should run when the material comes out from the Surtec 345 Hardwall tank.

3. Materials.

Subtask 70-45-06-350-002

Table 1. Hexavalent Chromium Free Sealants

Solution	No	Operating Temperature	
Socosurf TCS (C03-124)	S1219	96.8-104 (°F)	36-40 (°C)
Socosurf PACS (C03-125)	S1220	59-77 (°F)	15-25 (°C)
Lanthane 613.3 Part-A (C03-128), Part-B (C03-129)	S1222	100.4-107.6 (°F)	38-42 (°C)
Surtec 345 Hardwall (C03-127)	S1221	206.6-212.0 (°F)	97-100 (°C)

4. Procedure.

Subtask 70-45-06-350-003

A. Apply degreasing, deoxidizing, and anodizing thin film sulfuric acid anodizing steps in accordance with AMS 2490.

B. Alternative Procedure Available. Seal the part by using hexavalent chromium free sealing method first step as S1219 and second step as S1220.

WARNING: REFER TO THE PRODUCT LABEL AND THE MANUFACTURER'S (MATERIAL) SAFETY DATA SHEET (SDS) FOR INSTRUCTIONS ON THE HAZARDS, STORAGE, SAFE HANDLING AND PROPER USE OF CONSUMABLE PRODUCTS.

WARNING: OPERATOR SHOULD WEAR FACE SHIELD, GLOVES, PROTECTIVE CLOTHING, AND PROTECTIVE SHOES.

(1) Gently agitate the Socosurf TCS and Socosure PACS sealing solution baths prior to immersing the part and as follows:

(a) Avoid creating bubbles and turbulence.

(b) Recirculation is recommended.

(2) Immerse the part in Socosurf TCS sealing solution (S1219) and maintain at the specified temperature listed in Subtask 70-45-06-350-002 (paragraph 3., Materials), Table 1, for 10 to 15 minutes.

NOTE: Rinse under running water is permitted prior to rinsing by immersion.

(3) Rinse the part by immersion in water for 3 minutes with following conditions:

(a) pH: (25°C) 5.0-7.0

(b) Conductivity: 20 S/cm

(4) Immerse the part in Socosurf PACS sealing solution (S1220) and maintain at the specified temperature listed in Subtask 70-45-06-350-002 (paragraph 3., Materials), Table 1, for 3 to 10 minutes.

(5) Remove masking if previously applied.

NOTE: Rinse under running water is permitted prior to rinsing by immersion.

(6) Rinse the part by immersion in water for 3 minutes with following conditions:

(a) pH (25°C) 5.0-7.0

(b) Conductivity: 20 S/cm

(7) Dry with clean and dry air.

B. Alternative Procedure. Seal the part by using hexavalent chromium free sealing method first
A. step as S1222 and second step as S1221.

(1) Gently agitate the Lanthane 613.3 and Surtec 345 Hardwall sealing solution baths prior to immersing the part and as follows:

(2) Immerse the part in Lanthane 613.3 sealing solution (S1222) and maintain at the specified temperature listed in Subtask 70-45-06-350-002 (paragraph 3., Materials), Table 1 for 10 to 15 minutes.

NOTE: Rinse under running water is permitted prior to rinsing by immersion.

(3) Rinse the part by immersion in water for 3 minutes with following conditions:
(a) pH: (25°C) 5.0-7.0
(b) Conductivity: 20 S/cm
(4) Immerse the part in Surtec 345 Hardwall sealing solution (S1221) and maintain at the specified temperature listed in Subtask 70-45-06-350-002 (paragraph 3., Materials), Table 1 for 20 to 25 minutes.
(5) Remove masking if previously applied.
NOTE: Rinse under running water is permitted prior to rinsing by immersion.
(6) Rinse the part by immersion in water for 3 minutes with following conditions:
(a) pH: (25°C) 5.0-7.0
(b) Conductivity: 20 S/cm
(7) Dry with clean and dry air.

B. Alternative Procedure. Seal the part by using hexavalent chromium free sealing method first
B. step as S1219 and second step as S1220 and third step as S1221.
(1) Gently agitate the Socosurf TCS and Socosure PACS and Surtec 345 Hardwall sealing solution baths prior to immersing the part and as follows:
(a) Avoid creating bubbles and turbulence.
(b) Recirculation is recommended.
(2) Immerse the part in Socosurf TCS sealing solution (S1219) and maintain at the specified temperature listed in Subtask 70-45-06-350-002 (paragraph 3., Materials), Table 1 for 10 to 15 minutes.
NOTE: Rinse under running water is permitted prior to rinsing by immersion.
(3) Rinse the part by immersion in water for 3 minutes with following conditions:
(a) pH: (25°C) 5.0-7.0
(b) Conductivity: 20 S/cm
(4) Immerse the part in Socosurf PACS sealing solution (S1220) and maintain at the specified temperature listed in Subtask 70-45-06-350-002 (paragraph 3., Materials), Table 1 for 3 to 10 minutes.
NOTE: Rinse under running water is permitted prior to rinsing by immersion.
(5) Rinse the part by immersion in water for 3 minutes with following conditions:
(a) pH: (25°C) 5.0-7.0
(b) Conductivity: 20 S/cm
(6) Immerse the part in Surtec 345 Hardwall sealing solution (S1221) and maintain at the specified temperature listed in Subtask 70-45-06-350-002 (paragraph 3., Materials), Table 1 for 20 to 25 minutes.
(7) Remove masking if previously applied.
NOTE: Rinse under running water is permitted prior to rinsing by immersion.
(8) Rinse the part by immersion in water for 3 minutes with following conditions:
(a) pH: (25°C) 5.0-7.0
(b) Conductivity: 20 S/cm
(9) Dry with clean and dry air.

5. Quality Assurance.

Subtask 70-45-06-350-004

A. Anodic coating shall be continuous, smooth, adherent, and uniform in appearance, and shall be free from powdery areas, loose films, discontinuities such as breaks or scratches (except at contact points), or other damage or imperfections detrimental to usage of the coating.
B. Quality Assurance Provisions shall be followed in accordance with AMS 2490.