

FED. SUPPLY CLASS

MFFP

1.0 SCOPE

- 1.1 This specification defines the performance requirements for hard anodic coatings on aluminum and aluminum alloy parts.

2.0 APPLICABLE SPECIFICATIONS

MIL-A-8625 Anodic Coatings for Aluminum and Aluminum Alloys
FED-STD-151 Metals; Test Methods

Copies can be obtained from the Department of Defense Single Stock Point (DODSSP). <http://dodssp.daps.dla.mil>

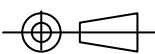
3.0 REQUIREMENTS

- 3.1 The hard anodic coating shall comply with MIL-A-8625, Type III and the following:
- 3.1.1 Thickness. Unless otherwise specified on the engineering drawings, the thickness of the hard anodic coatings shall be $.002 \pm .0002$ inches on all significant surfaces except (1) blind holes or recesses where the depth is greater than twice the diameter of the opening, and (2) surfaces of open holes which are deeper than seven times the diameter of the opening.
- 3.1.2 Corrosion Resistance. Hard anodic coatings shall show no evidence of corrosion after exposure to a salt spray test for a period of 240 hours when tested in accordance with 4.2.2.
- 3.1.3 Adhesion. Hard anodic coatings shall show no evidence of delamination, peeling, or flanking on the tension side when submitted to the bend test described in 4.2.3. Delamination or spalling on the compression side and crazing on the tension side shall not be cause for rejection.
- 3.1.4 Workmanship. Hard anodic coatings shall be substantially smooth and uniform in thickness except in small holes, fillets, radii, and deep recesses. When observed visually with the aid of a 5X magnifying glass, surfaces shall be free from scratches, chips, breaks and burned areas. Damage to the base metal by handling shall not be cause for rejection unless it is of such severity as to cause discontinuities in the surface of the hard anodic film. The coatings shall be uniform in appearance and range in color from light amber or light grey to jet black (depending upon the alloy and the coating thickness), but shall not exhibit a chalky appearance. Small irregularities at points of electrical contact will be permitted.

4.0 QUALITY ASSURANCE PROVISIONS

- 4.1 Test Specimens and Panels
- 4.1.1 Preparation. The test specimens or panels specified herein shall be of the same alloy and surface finish as the production work whenever possible. They shall be processed simultaneously with the production work, but in all instances the test specimen or panels shall have a coating thickness of $.002 \pm .0002$ inches. The frequency of specimen preparation and test shall be as specified by the procuring activity.
- 4.2 Test Procedures
- 4.2.1 Coating Thickness. The thickness of hard anodic coatings shall be determined on representative parts or specimens per MIL-A-8625. When micrometer measurements are used, the results so obtained shall be calibrated against microscopic measurements on comparable specimens.

③ COMPLETELY REVISED

THIRD ANGLE PROJECTION		CUSTODIAN NATIONAL AEROSPACE STANDARDS COMMITTEE	REVISION 3
PROCUREMENT SPECIFICATION NONE	TITLE PERFORMANCE SPECIFICATION FOR HARD ANODIC COATINGS ON ALUMINUM ALLOYS	CLASSIFICATION SPECIFICATION	NAS1192 SHEET 1 OF 2

AEROSPACE INDUSTRIES ASSOCIATION OF AMERICA, INC.
1000 WILSON BLVD.
ARLINGTON, VA 22209

THIS DRAWING SUPERSEDES ALL ANTECEDENT STANDARD DRAWINGS FOR THE SAME
PRODUCT AND SHALL BECOME EFFECTIVE NO LATER THAN SIX MONTHS FROM THE LAST
REVISION DATE.

FORM 09-01

REVISION DATE: JULY 31, 2012

ISSUE DATE: APRIL 1959

- 4.2.2 Corrosion Resistance. Resistance to corrosion shall be determined by salt spray tests conducted in accordance with MIL-A-8625. Test specimens shall consist of representative samples or panels. Panels shall be .063 inches thick by 10 inches long by 3 inches wide, with the long dimension transverse to the direction of rolling. Three specimens shall be used for each test. Panels shall be exposed for only 240 hours.
- 4.2.3 Adhesion. The adhesion of hard anodic coatings shall be evaluated by the following bend test. Specimens shall be .063 inches thick by 10 inches long by 1.0 inch wide, with the long dimension transverse to the direction of rolling. Three specimens shall be used for each test. Each specimen shall be bent 90 degrees around a Ø.5 inch rod and the tension side examined for compliance with 3.1.3.
- 5.0 PREPARATION FOR DELIVERY**
- There are no applicable requirements.
- 6.0 GENERAL NOTES**
- 6.1 Intended Use. Hard anodic coatings covered in this specification are extra thick coatings intended to provide a hard, wear resistant, and corrosion resistant surface for aluminum and aluminum alloy parts. These coatings may be used on structural members, if it is recognized that hard anodizing has an adverse effect on their ductility and may seriously reduce the fatigue strength of such parts. These coatings also may be used to provide electrical insulation but because of large variations in their electrical insulation properties, it is believed that individual tests should be conducted to determine the suitability of these coatings for each application.
- 6.2 Coating Thickness. A coating thickness of .002 inches is suitable for most applications. However, depending on functional requirements, coatings may be specified with thicknesses from .0005 inches to approximately .010 inches and having a tolerance of ± 10 percent.
- 6.3 Dimensional Changes. Dimensional growth of parts due to anodic coatings will be approximately 50 percent of the total coating thickness. Likewise, stripping of hard anodized coatings will result in a dimensional loss of the base metal equal to half of the applied coating thickness.
- 6.4 Supplementary Treatments. This specification provides for no supplementary treatments. After hard anodizing, parts should be thoroughly rinsed in clean cold water and dried. Supplementary treatments such as dyes or sealing with oil, hot water, hot air or dichromates may be used for special purposes, if it is recognized that such treatments lower the resistance of the coatings to abrasive wear.
- 6.5 Electrical Contacts. Depending upon dimensions and configuration, an adequate number of non-critical areas should be located on the engineering drawing to be used for electrical contact points, since the contact clamps usually produce white spots. When parts are to be selectively coated, the electrical contact should be made on a surface not requiring an anodic coating.
- 6.6 Inserts. Aluminum parts containing inserts of other metals may be hard anodized with the inserts in place, if these inserts are properly masked prior to anodizing.
- 6.7 Processing. The hard anodizing processes are generally not approved for use on assemblies where there is the possibility of entrapment of anodizing solutions, or on parts which have already been coated with other chemical films. Generally, aluminum alloys such as 6061 and 7075, with low copper contents are more readily anodized than alloys such as 2024 and 2014, which have high copper contents. The rate of coating formation is dependent on the surface condition of the material in addition to its composition. Generally, the rate of deposition on a machined surface is faster than on a cast or wrought surface.
- 6.8 Corrosion Resistance Requirement. If alloys 2024 or 2014 are hard anodized, the corrosion resistance requirement of Paragraph 3.1.2 is waived.

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