



QUALITY CONTROL DOCUMENT,

ANODIZING PROCEDURE,

IRIDITE PROCEDURE

328 West 11th Street
Riviera Beach, FL 33404
Ph. 561-844-8848 FAX 562-844-0784

1.0 SCOPE

This document establishes an inspection system for all anodizing and/or chemical film (Alodine or Iriditing) services offered to our customer for acceptance. This document is to establish good commercial practices to meet the chemical processing requirements of those specifications identified in Paragraph 5.0 below.

2.0 PURCHASE ORDER REQUIREMENTS

This inspection system and Certificate of Compliance (when requested) documents shall insure that all services submitted to the customer shall conform to the purchase order requirements.

3.0 USE OF FCILITIES BY CUSTOMER

All necessary and applicable inspection equipment and facilities shall be made available to authorized customer personnel to determine product conformance.

4.0 AMENDMENTS AND REVISIONS

RMA will notify the customer in writing of any changes to this program and will work with the customer to meet specific needs that may not be covered by this document.

5.0 APPLICABLE DOCUMENTS

This document is to assure that the chemical and/or anodic processing methods identified in MIL-C-5541, MIL-A-8625 Type II & III, AMS 2469 and AMS 2471 are maintained.

6.0 PROCESS CONTROLS

- 6.1 Customer Purchase Order and Supplied Parts: Prior to racking the parts for processing, note to requested process and quantity of parts and write this information on a tag and fix the tag to the rack. Any differences in quantity are to be noted on the purchase order and management is to be notified, who will notify the customer.
- 6.2 Visual Inspection: As the parts are being racked, always visually inspect the parts for errors, i.e., hole configuration, holes that are tapped, de-burring, excessive oxidation, excessive oil, weld marks/splashes etc., and make appropriate notes on the purchase order copy and notify management.
- 6.3 Process Completion: After process is complete and the parts are dry, recount the parts and compare the count to the tag on the rack, package and notify management of any discrepancies and that the process is complete.

7.0 TEST EQUIPMENT

Use of the process test equipment is documented in "ANODIZING PROCEDURE".

August 2008 (Rev)

ANODIZING PROCEDURE

GENERAL:

This PROCEDURE is written as a guideline for anodizing aluminum. All parts must be cleaned, racked securely, counted, inspected when being racked, stripped and/or deoxidized, rinsed, anodized, rinsed, dyed (if requested), sealed, dried, counted and packed.

RACKING:

The parts must be securely fastened to the rack to assure conductivity throughout the anodizing process. Two (2) or more points are desired. There are circular racks, box racks and single spine racks. Use the rack that is most efficient for the parts being anodized. Always check the electrical continuity before proceeding. Care in handling the parts is extremely important to assure there is no mechanical damage to the part(s).

Accountability:

Always count the pieces **after** racking and compare the count to what the customer stated on their purchase order. Note discrepancies and advise management and/or customer. Upon completion of the process, recount and if any are missing, search the tanks. Mark on top of rack the quantity & process, i.e., clear anodize, clear hard anodize, black anodize, thickness requirements, etc. and the customer.

Visual Inspection:

As you are racking, **always** visually inspect the parts for errors, i.e., hole configuration, holes that are not tapped but are tapped on the rest, de-burring, excessive oxidation, excessive oil, weld marks/splashes, etc., notify customer if any such discrepancies are found. Tubing on rails must have at least two (2) holes for drainage. if not, call supervisor.

Anodizing: These steps are to be followed after racking:

- 1) "Soap" water rinse/clean: Place rack of parts in solution to remove oil or cleaning solvent used by machinist then rinse.
- 2) De-oxidation: Place rack in de-ox tank for 15 minutes to 30 minutes.
- 3) Rinse and place parts in etch tank, sodium hydroxide, to remove "mill scale" (15-45 minutes.) then rinse and place in de-ox tank for 10-15 minutes, rinse and go to anodizing tank. **In the event part(s) is machine finished or polished, or cast/jig plate do not place in etch tank, go directly to anodizing tank after manual cleaning & de-ox/rinse.**
- 4) Perform a visual water-break test prior to anodizing.
- 5) Parts that are to remain natural (clear) should be anodized at least 30-60 mins. @ 12v to 15v and the amps should not exceed 400 amps. If amps exceed 400, remove one or two rack (s) or lower the voltage. If lower voltage (less than 12v), anodize for an additional 15mins. For black or color, anodize for 1 hr., all else remains the same. Monitor gages during anodizing. Any sudden drops or spikes, check connections.
- 6) The parts that are to remain clear, rinse and put rack(s) in sealer for 5 minutes, rinse, dry and package. For colors, place rack(s) in appropriate dye tank. When color saturation (usually 15-30 mins.) is reached, rinse and place in sealer for 5 mins. rinse, dry & package.
- 7) Hard Anodizing set the volts to 25v and anodize for 1.5 hrs. The rest of process for clear & color are the same as regular anodizing except the dying will take longer. Check the thickness of the hard anodize using the Eddy Gage. Customer specifies desired thickness.

TESTING:

The following items are to be tested on a weekly basis unless otherwise noted:

- 1) pH Testing on the dyes and sealer tanks. Compare with recommendations of supplier and adjust if necessary. Performed by management and/or chemical engineer.
- 2) Perform titration on each anodizing tank. Record the data and make any necessary changes. Titration is to be performed by chemical engineer only to assure sulfuric acid concentration and aluminum content in solution meet the specification requirements.
- 3) Thickness: When a customer requests a certain thickness. note the thickness on top of rack prior to processing. Check thickness after 1/2 hour anodizing and anodize longer if necessary to gain thickness then re-check. Normal checking is to be performed on random parts several times during the week. Thickness for clear should be .0003 to .0006", pending desired finish. Color should be .0007 to .0010". Hard anodize. .0010 to .0020". The operator can perform thickness.
- 4) Temperature of each anodizing tank must be checked daily. Regular anodizing tank should be between 65 to 70 degrees F and the hard anodizing should be 40F or less to begin anodizing. (A problem can exist if tank gets too warm. i.e. 5-10 degrees above recommended temperature. Notify management immediately)

This procedure is for in house use only and is to be used as a guideline.

RMA 08/28/2008 (Rev)

ALODINE/IRIDITE PROCEDURE

GENERAL:

This PROCEDURE is written as a guideline for Alodine/Iridite treatment of aluminum. All parts must be cleaned, racked securely, counted, inspected when being racked, stripped and/or deoxidized, rinsed, alodined/iridited, rinsed, dried, counted and packed.

RACKING:

The parts must be securely fastened to the rack to assure stability throughout the process. Two (2) or more points is desired. There are circular racks, box racks and single spine racks. Use the rack that is most efficient for the parts being processed. Pending part configuration, the parts can be put into a basket

Accountability:

Always count the pieces after racking and compare the count to what the customer stated on their purchase order. Note discrepancies and advise management and/or customer. Upon completion of the process, recount and if any are missing, search the tanks. Mark on top of rack the process, i.e., gold/yellow or clear and the customer.

Visual Inspection:

As you are racking, always visually inspect the parts for errors, i.e., hole configuration, holes that are not tapped but are tapped on the rest, de-burring, excessive oxidation, excessive oil, weld marks/splashes, etc., notify customer if any such discrepancies are found.

Alodine/Iridite: These steps are to be followed after racking or placement into basket:

- 1) De-oxidation: Place rack/basket in de-ox tank for 15 minutes to 30 minutes.
- 2) Rinse and either place parts in etch tank to remove "mill scale" (15-30 minutes.) then rinse and place in de-ox tank for 10-15 minutes, rinse and go to chromate solution tank. In the event part(s) is machine finished or polished, or cast/jig plate do not place in etch tank, go directly to chromate solution tank after de-ox/rinse.
- 3) Parts that are to remain natural (clear) should be placed in the appropriate tank for 3 to 5 minutes then rinsed and dried. Test at least one or two parts using test kit to assure chem film treatment was successful.
- 4) The parts that are to gold or yellow, place in appropriate tank for 4 to 5 minutes until desired color coating as directed by the customer. Mil-A-5541 Class 1 is a heavier coat; therefore, darker and Class 3 is a thinner coat
- 5) During the drying process, care should be given to avoid drip or run marks on the parts.

pH Testing: Check the pH in each tank (clear and gold/yellow) each week. Adjust accordingly.

This procedure is for in house use only and is to be used as a guideline.