

AEROSPACE STANDARD

SAE AS7108/2

REV.
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Superseded by PRI AC7108/2

National Aerospace and Defense Contractors
Accreditation Program
Requirements for Etch Processes
(Macrostructure, Nital, Temper, Blue Etch Anodize)

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1. SCOPE:

This Aerospace Standard (AS) establishes the requirements for suppliers for Etching Processes to be accredited by the National Aerospace and Defense Contractors Accreditation Program (NADCAP). These requirements may be supplemented by additional requirements specified by NADCAP Chemical Processing Task Group. Using the audit checklist (AC7108/2) will ensure that accredited Chemical Processing suppliers meet all of the requirements in this standard and all applicable supplementary standards.

2. REFERENCES:

2.1 Definition of Terms:

CONTROL LIMITS: Calculated operating limits resulting from statistical analysis of solution constituent data.

DEIONIZED WATER: 50,000 ohm.cm resistivity minimum.

ETCH INSPECTION: The process may also be known by other terms, such as temper etch, acid etch, or nital etch. These are all terms for inspection processes for detection of surface anomalies caused by either abusive machining or grinding of parts or improper macrostructure of alloy.

PROCEDURE: A detailed "how to", step-by-step revision controlled document used to enforce or implement company policy.

POLICY: A written company philosophy on how something should be done in very broad generic terms. The existence of a procedure shall satisfy the requirements for a policy.

% RIPPLE: Root Mean Square voltage divided by the DC voltage x 100.

SHOP TARGET LIMITS: The processor-set operating limits (for solution control parameters) that aid in not exceeding the manufacturer's recommended, or customer specification limits.

TECHNICAL BULLETIN LIMITS: The specification or manufacturer-set limits beyond which the process must be shut down.

3. JOB DOCUMENTATION:

3.1 Shop paper/traveler, which accompanies each job, shall contain as a minimum the following information:

a. A step for each process performed with applicable internal process/or inspection procedure numbers Including as applicable:

- 1) Incoming inspection
- 2) Pre-process cleaning method(s)
- 3) Fixturing, racking
- 4) Masking
- 5) Etch
- 6) Post-process cleaning methods
- 7) Post-process thermal treatment
- 8) In-process and final tests and inspections, including disposition
- 9) Rework

b. Specific process parameters which are controlled by the operator are recorded for the first batch of parts processed, including:

- 1) Masking material used
- 2) Temperature, time, voltage (as applicable) for anodize, etching
- 3) Pre/post thermal treatments, racking, and fixturing

4. PROCESS EQUIPMENT CONTROL AND MAINTENANCE:

4.1 General:

4.1.1 Tanks shall be labeled to include identification number, contents, and temperature ranges.

4.1.2 The air supply shall be clean, dry, and filtered.

4.2 Maintenance Procedures:

4.2.1 Tanks and/or other equipment shall be equipped with sufficient filtration as required to remove contamination.

4.2.2 Records shall indicate that maintenance has been performed in accordance with a procedure and to a defined frequency.

4.2.3 Maintenance procedures shall be written with preventative maintenance as a goal and based on prior maintenance records.

4.3 Process Line Equipment:

4.3.1 Tanks and work surfaces shall be maintained sufficiently free of corrosion and chemical spillage.

4.3.2 Immersion and spray rinse tanks shall be clean, clear, free-running or monitored for contamination levels, and situated in a sequence to prevent cross contamination of process tanks and to assure adequate neutralization and/or removal of process chemicals.

4.3.2.1 If processing titanium, deionized water shall be used for final rinsing and the total halogen (i.e. total bacterial chlorine and chloride ion) level monitored/controlled as required by customer specifications.

4.3.3 Lifting systems (hoists) shall be labeled as to capacity and shall be available to quickly move hardware from one tank to another.

4.3.4 Process and rinse tanks shall be situated such that hardware can be maintained wet, from final cleaning throughout the process to final rinse, without interruption.

4.3.5 Parts shall be rapidly transferred from etch to rinse tanks so as to preclude local overetching.

4.3.6 Parts shall be positioned during etching so as to minimize/preclude air or evolving gas entrapment in pockets or other recessed areas.