STANDARD SPECIFICATION FOR
ELECTRODEPOSITED COATINGS OF NICKEL

1.0 Scope

1.1 This specification defines performance requirements for IMMI components which require an electrodeposited nickel finish.

2.0 Purpose

2.1 To define a standard specification for electrodeposited nickel.

3.0 References

3.1 Standard Practice for Preparation of High Carbon Steel for Electroplating, ASTM B-242.

3.2 Standard Practice for Preparation of Low Carbon Steel for Electroplating, ASTM B-183.


3.4 Federal Specification for Nickel Plating (Electrodeposited), QQ-N-290A

3.7 ASTM B-117 Standard method of salt spray testing.

4.0 Requirements

4.1 All of the following requirements must be met to achieve acceptable field durability. No one requirement, exclusive of others, is capable of insuring satisfactory performance. Any deviation to the requirements of these specifications may be subject to additional performance requirements.

4.2 All part testing requirements apply to those areas of the part identified as a significant surface per Paragraph 6.1 unless otherwise specified on the engineering drawing.

4.3 The following significant characteristics will be measured and kept on file by the supplier.
4.3.1 Cleaning Prior to Electroplating

4.3.1.1 Steel parts containing 0.35% carbon or more at the surface, or heat treated from Rockwell C 30 to 39, shall be cleaned using the principles defined in ASTM B 242, “Preparation of High Carbon Steel for Electroplating”.

4.3.1.2 Steels containing less than 0.35% carbon at the surface or lower than Rockwell C 30 in hardness, shall be cleaned using principles defined in ASTM B 183, “Preparation of Low Carbon Steel for Electroplating”. Steel parts heat treated to Rockwell C 41 or higher shall not be electroplated.

4.3.1.3 Steel parts containing greater than 0.35% carbon at the surface, or heat treated greater than Rockwell C39, will, in exceptional cases, be electroplated, subject to approval in an appropriate design review. In this case the parts shall be cleaned using the principles defined in ASTM B 242, “Preparation of High Carbon Steel for Electroplating”.

4.3.2 Plating Adhesion (ASTM B 571)

4.3.2.1 Bend Testing (Bend the part or sections of the part) - No peeling, flaking, or lift-off of the electroplate from the substrate or between the layers of the electroplate is permitted.

4.3.2.2 Grind Saw Test - No lifting or peeling of the electroplate from the substrate or between layers of the electroplate is permitted following this test.

4.3.3 Plating Thickness (ASTM B 487)

4.3.3.1 It is the supplier’s responsibility to measure and control the minimum thickness for each plating layer. Unique part design and rack design may require mapping the plating racks and other special processing techniques to consistently meet plating specifications.
4.3.3.2 The plating thickness on significant surfaces shall be checked at locations specified on the drawing. Total nickel applied.003 typical thickness.

4.3.4 Post Plating Treatment

4.3.4.1 Baking, as a preventive to hydrogen embrittlement, when specified on the part drawing must begin within one hour after plating.

4.3.4.2 Baking must be done in accordance with Section 7 (Heat Treatment After Electroplating) of ASTM B 242.

4.3.4.3 Conform to the time and temperature requirement specified on part drawing.

4.3.5 Corrosion Protection

4.3.5.1 These components must meet corrosion requirements of salt spray test (50 or 25 hour as indicated on the component drawing. Test methods shall be performed in accordance with ASTM B-117. After exposure, samples will be evaluated per current IMMI Corrosion Audit Testing (QA-819).

5.0 Process Controls

Control of the plating process is the sole responsibility of the vendor.

6.0 General

6.1 Significant Surfaces

6.1.1 Unless otherwise specified on the Engineering Drawing, significant surfaces are defined as those surfaces of the finished part that are directly visible or visible by reflection when the finished part is assembled and/or can be the source of corrosion products directly visible, visible by reflection or that can be transferred to webbing or occupant clothing by contact resulting from use.
6.2 Sampling and Inspection

6.2.1 Sampling and inspection will be as required in Quality Assurance Procedure QA 62 and consistent with all appropriate design specifications.

6.2.2 Lots that do not meet the criteria of plating thickness and corrosion protection will be rejected.

6.2.3 Specific acceptance criteria that is related to the component or the application will be identified on the IMMI 5 digit drawing. Plating adhesion is an example of this type of criteria.