



ELECTROPLATING, BRIGHT OR LOW GLOSS DECORATIVE OVER FERROUS SURFACES, SEVERE DUTY, EXTERIOR

WSS-M1P78-B5

1. SCOPE

This specification defines performance requirements for finished coatings of nickel and chromium for the decoration and protection of ferrous surfaces.

2. APPLICATION

This specification was released originally where a bright or low gloss decorative and protective metallic finish is required on ferrous surfaces, such as chromium plated steel bumpers.

2.1 LIMITATIONS

Based upon field survey and accelerated laboratory testing experience, plated parts not designed for plating may not be capable of consistently meeting the requirements of these specifications on a production basis without the use of extraordinary processing techniques, e.g., use of auxiliary anodes, reduction in the parts per rack ratio, etc.

If the requirements of this specification cannot be met due to part design, the supplier will inform the responsible product engineering office.

3. REQUIREMENTS

All requirements identified for this specification must be met to achieve acceptable field durability.

All part testing requirements apply to those areas of the part identified as a significant surface per paragraph 4.1 unless otherwise specified on the engineering drawing.

Parts shall be free from the effects of hydrogen embrittlement or other factors which result in part brittleness. The requirements of WSS-M99A3-A apply to parts plated to this specification.

3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.2 FINISHED PARTS

Testing must be done on production parts or a section of the parts. Where part dimensions limit equipment access, representative panels or plaques may be substituted for production parts with approval from the responsible Design Engineer.

Testing for Design Verification (DV), Process Validation (PV), and in process sampling frequency can be found in Table 1, unless otherwise agreed to by responsible Design Engineer.

Date	Action	Revisions	Rev. 0
2013 07 12	Released		



3.3 APPEARANCE

The plated parts shall be free from surface imperfections, including, but not limited to, peeling, flaking, lifting, or discoloration of the electroplate. Parts shall match the approved Styling Master sample for appearance from Color & Trim and the approved boundary samples.

3.4 PLATING ADHESION

- 3.4.1 Grind-Saw
(ASTM B571, The saw blade shall have 16 to 18 teeth/inch.)

No peeling, flaking, or lifting of the electroplate from the substrate or between layers.

- 3.4.2 Bend Test
(ASTM B571)

No peeling, flaking, or lifting of the electroplate from the substrate or between layers.

- 3.4.3 Stone Chip
(SAE J400, 45 PSI, 23°C and -29°C 1.4 L,
followed by 66 hours CASS per paragraph 3.6)

Rating 5B

Submit photograph of stone chip panels to Product Design Engineer and Supplier Technical Assistance Engineer for review. Supplier to retain original for comparison to in process sampling frequency per Table 1.

3.5 PLATING THICKNESS

(ASTM B487, ASTM B556, ASTM B504, Plating Thickness Reference per Section 4.3)

It is the supplier's responsibility to identify the plating thickness distribution for each unique part design and rack design by mapping the plating racks and plated parts and to employ any special processing techniques, i.e. the use of auxiliary anodes and/or shields, reducing the number of parts per rack etc., which may be required to consistently meet the specified minimum plating thicknesses on all significant surfaces.

The optical measurement of nickel deposits on significant surfaces shall be considered the standard thickness test method ASTM B487.

The chromium plate thickness on significant surfaces shall be checked by the spot test as described in ASTM B556 or by the Coulometric method, ASTM B504. In case of difference, ASTM B504 shall be the umpire method.

Exceptions to the minimum plating thickness are to be shown as a detail on the part drawing by indicating in an appropriate view the area(s) with deviated thickness(es). These exceptions must meet all other requirements of the specification and the areas of deviated thickness must be approved by the responsible Design Engineer.

The plating thickness requirements identified below represent minimum values unless otherwise stated and apply to all areas of significant surfaces.

Semibright Nickel	25 µm
High Sulfur Nickel	present
Bright Nickel	8 µm
Total Nickel Thickness	33 µm
Microporous Chromium	0.18 µm
