PLATING, CHROMIUM, DECORATIVE EXTERIOR, ALUMINUM **WSS-M1P73-C1**

1. SCOPE

This specification defines performance requirements for exterior chromium plating systems on aluminum substrates.

2. APPLICATION

This specification was released originally to define a decorative and/or protective metallic finish for aluminum alloy road wheels.

3. REQUIREMENTS

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

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 APPEARANCE

3.2.1 Buffing of Plating

Because of the potential adverse effect on corrosion resistance, buffing of final chromium plating on exterior parts is not permitted. Brushing or other approved mechanical treatment on nickel or copper coatings are permitted provided that minimum plating thickness requirements are met after treatment.

3.3 PLATING ADHESION
(ASTM B571)

Adhesion of the electroplate to the base metal and between layers of plating must conform to the requirements of the following test methods per ASTM B 571 unless otherwise indicated:

3.3.1 Bend Tests

No peeling, flaking, or lift-off of the electroplate from the substrate or between layers of the electroplate is permitted.

Date	Action	Revisions	Rev. 01
2013 01 29	Revised	See Summary of Revisions	C. Mracna, NA
2009 01 21	Activated		C. Mracna, ENA

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3.3.2 Grind-Saw Test

No lifting or peeling of the electroplate from the substrate or between layers of the electroplate is permitted.

3.3.3 Scribe-Grid Test <5% Plating Removal

Lightly hand sand plated surface (10 double rubs, moderate pressure) with P600 paper until dull, before scribe operation.

Scribe eight lines in a rectangular grid in 0.5 cm increments.
Use 3M No. 898 pressure sensitive tape.

No peeling, flaking, or lift-off of the electroplate from the substrate or between layers of the electroplate is permitted.

3.4 DUCTILITY
(ASTM B490)

Although this is considered a portion of the process control and not a requirement of part performance, the ductility of the electrodeposit on a finished part is considered acceptable when foils plated in the individual nickel baths meet or exceed the following values:

Semi-bright Nickel	80%
Bright Nickel	20%

3.5 PLATING THICKNESS
(ASTM B487, ASTM B556, ASTM B504)

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, e.g., 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 copper and 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 B 556 or by the electronic deplating test, ASTM B504, Determination of Thickness of Chromium Plate. In case of dispute, ASTM B504 shall be the umpire method.

The plating thickness requirements identified below represent minimum values in micrometers and apply to all areas of significant surfaces.

	Thickness
Copper	15
Semi-bright Nickel (a)	30
Bright Nickel (b) plus Special Nickel (c) or Low Gloss Nickel (d)	10
Total Nickel (e)	40
Microporous Chromium (f)	0.18

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