

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS G-19 Part III
		<i>Former Designation: CEMS G-19 Part III</i>
TITLE: Nickel-Nickel/Chromium-Chromium Plating – Coatings for Engineering Standard Parts		CURRENT REV No.: 1412
		DATE: Dec. 2014
WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	SUPERSEDES: CEMS G-19 Part III - April 2002
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<i>This specification may involve hazardous materials, equipment, and procedures. This specification does not purport to address all of the safety issues associated with its use. The user is responsible to consult appropriate safety and health practices and to determine the applicability of regulatory limits prior to use.</i>		
Change Notice: Changed to new MPAPS format; editorial changes.		

1.0 APPLICATION

This specification applies to decorative bright and dull multi-layer electroplated coatings for use with decorative fasteners and other parts described in Navistar Engineering Standard Parts (ESP) specifications.

2.0 SCOPE

This specification covers the basic requirements for the thinner coatings of nickel or nickel/chromium finishes that are used on Navistar Engineering Standard Parts.

2.1 Restricted Chemical Substances

Effective January 1, 2007, all product supplied to the requirements of this specification must comply with the requirements of the MPAPS B-50 specification.

3.0 REFERENCE DOCUMENTS

Unless otherwise specified, the latest issue of all referenced standards shall apply. The following Specifications, Standards, and Regulations are referenced in this specification.

Quality System Standard ISO 9001 or TS-16949	ASTM B117
NAVISTAR Manufacturing Std. MS-D-13	ASTM B487
NAVISTAR Engineering Design Std A-16	ASTM B555
NAVISTAR MPAPS B-50	
CFR Title 29, Part 1910	

4.0 REQUIREMENTS

Chrome coatings used for standard parts are classified by their thickness.

4.1 Pre-Plated Surface

The articles to be plated will be thoroughly cleaned and free from rust, scale, oil and other foreign matter detrimental to the final finish. The surface will have a sufficiently fine texture to assure the desired final plating quality. The cleaning operation will be controlled to prevent hydrogen embrittlement, especially in those parts that are hardened, cold worked or subject to high service stresses. See the General Information section at the end of this document for more information.

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Navistar Designation					Minimum Thickness on Significant Surfaces**						Neutral Salt Spray, hours
Class		Obsolete Engrg Std Parts Spec									
bright finish	dull finish	finish	finish abbreviation	code	Nickel		Chromium		Total*		
					mils	µm	mils	µm	mils	µm	
25CRB	25CRD	Chromium (Bright) (Dull)	CRB CRD	100	0.4	10	0.01	0.3	1.0	25	32
13CRB	13CRD			50	0.2	5	0.01	0.3	0.5	13	16
8CRB	8CRD			30	0.2	5	0.01	0.3	0.3	8	8
5CRB	5CRD			20	0.2	5	0.01	0.3	0.2	5	--
3CRB	3CRD			10	0.1	3	0.01	0.3	0.1	3	--
25NIB	25NID	Nickel (Bright) (Dull)	NIB NID	100	1.0	25	--	--	1.0	25	32
13NIB	13NID			50	0.5	13	--	--	0.5	13	16
8NIB	8NID			30	0.3	8	--	--	0.3	8	8
5NIB	5NID			20	0.2	5	--	--	0.2	5	--
3NIB	3NID			10	0.1	3	--	--	0.1	3	--

* The use of a copper layer beneath the nickel is optional. Copper is not to be substituted for nickel in the minimum requirements for the nickel layer. The total plating thickness is obtained by the use of copper or additional nickel (when necessary).

**Significant surfaces will be defined as those surfaces which are visible and subject to wear or corrosion or both, or surfaces on which the coating is otherwise functionally necessary. Generally, it may be defined as those parts of the visible surface that can be touched with a 0.75 inch (19 mm) ball on the product; however, all surfaces will be visibly coated.

4.2 Thickness

The thickness of plating is shown in the above table. Measurements will be made on significant surfaces.

4.2.1 The test for thickness of coatings on threaded fasteners such as bolts, nuts, screws, etc., will be made on the shank or other smooth surfaces as nearly adjacent to the thread as practicable.

4.2.2 Special requirements for chromium or nickel plating used on ANSI Class 2A externally threaded fasteners

4.2.2.1 Class 3 is required for ANSI Class 2A threads on steel or brass fasteners having 28 threads per inch and finer. Maximum plating thickness permitted is 0.0003 inch (8 µm).

4.2.2.2 Class 5 is required for ANSI Class 2A threads on steel fasteners having 24 to 13 threads per inch. Class 5 is also required for ANSI Class 2A threaded brass fasteners having 24 threads per inch and coarser. Maximum plating thickness permitted is 0.0004 inch (10 µm).

4.2.2.3 Class 8 is required for ANSI Class 2A threads on steel fasteners having 12 threads per inch and coarser. Maximum plating thickness permitted is 0.0006 inch (15 µm).

4.3 Corrosion

Base metal corrosion will not exceed one spot per square inch (6.5 µm²) of significant surface and such spots that are visible to the unaided eye and will not exceed 0.06 inch (1.5 µm) in any dimension.

4.3.1 Salt spray requirements do not apply to internal threads except by agreement between supplier and purchaser.

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