

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS- G-4108
		Former Designation: <i>TMS-4108</i>
Screws, Corrosion Resistant		CURRENT REV No.: 1604
		DATE: April 2016
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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: Released as MPAPS and Editorial Changes		

1.0 APPLICATION

This specification covers three types of coatings applied to standard stainless steel fasteners used in the exterior and interior of vehicles. Included are the machine, thread forming, and thread cutting screws specified in International Standard Parts or screws made from material equivalent to 410 stainless steel. Options for a bright finish (chrome plate), black finish (black oxide), and joint sealing (wax), which may be required singly or in combination for specific applications are provided.

2.0 SCOPE

This specification covers processing and property requirements for the three options, quality, corrosion resistance, source approval and quality control, and shipping and identification requirements.

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 standards, specifications and regulations are referenced in this specification.

Quality System Standard ISO 9001 or TS-16949	ASTM A 219
CFR Title 29, Part 1910	ASTM B 368
NAVISTAR Manufacturing Std. MS-D-13	
NAVISTAR Engineering Design Std. A-16	
NAVISTAR MPAPS B-50	

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4.0 REQUIREMENTS

4.1 Processing

4.1.1 Option A: Bright Chrome Plate

(Note: This coating applies to designs previously specifying TMS-1030 with wax coating omitted.)

Plating

Minimum Thickness (2)

	<u>microns</u>	<u>inch</u>
Copper (1)	--	---
Bright Nickel (3)	10.16	0.0004
Chromium (4)	0.26	0.000010

- (1) Copper may be used under the bright nickel, but the thickness of the copper layer shall not be substituted for any of the required layers.
- (2) Plating thickness shall be determined using ASTM A 219. The thickness is measured on significant visible surfaces and threads, holes and recesses are excluded.
- (3) Bright nickel is defined as a nickel electrodeposit containing 0.04% min sulfur.
- (4) Conventional chromium.

4.1.2 Option B: Black Oxide Coating

(Note: This coating is applicable to designs previously specifying TMS-4001.)

4.1.2.1 Coating Process

The coating shall be applied after all forming, machining, or heat treatment operations have been performed. Parts shall be rinsed in warm water at 60-90°C (140-190°F) before coating. The coating shall be applied from an alkaline oxidizing bath under controlled time (15-30 minutes) and temperature [120-130°C (250-265°F)] conditions. Parts shall be rinsed in cold water. Equipment including solutions or baths shall be properly maintained and free from dirt and other contamination.

4.1.2.2 Color

The coating shall be a uniform, adherent black color, and the base metal shall be completely covered. There shall be no evidence of a reddish-brown or green smut when wiped with a clean, dry white cloth. Coated parts showing smut shall be reprocessed.

4.2 Stress Relief

All cold formed parts or those containing residual stresses from machining shall be stress relieved at 220-230°C (425-450°F) for one hour.

4.3 Cleaning

Prior to the coating operation parts shall be cleaned. The cleaned surfaces shall be free from rust, scale, grease, oil, paint, or any other foreign material which will interfere with the coating adherence or color. The cleaning shall be performed without abrading, eroding, or otherwise cold working the surface.

4.4 Preservative

Unless otherwise specified parts shall be dipped in a light engine oil after coating.

4.4.1 Option C: Wax

Note: This option is applicable to obsolete designs specifying TMS-1030 with chrome plating omitted.

4.4.2 Coating – Thread Cutting Screws

A compounded or thermoplastic self-sealing wax material completely resistant to moisture shall be applied to 50-75% of the thread length. The applied coating shall not exceed the diameter of the head of the fastener. The coating shall be Bi-Wax or equivalent, and it shall be applied to thread cutting type screws only.

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