

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS- C-1060
		<i>Former Designation: TMS-1060</i>
TITLE: Stainless Steel Clad Aluminum Bumpers		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; Added Restricted Chemical Substances requirement; Editorial Changes		

1.0 APPLICATION

This specification covers stainless steel clad aluminum bumpers used on International Trucks.

NOTE: All new drawings must indicate material Type. All existing drawings which do not indicate a material Type shall be Type 1.

2.0 SCOPE

This specification covers construction, material, performance and finish requirements, dimensional tolerances, quality control and source approval, and packaging 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 Specifications, Standards, and Regulations are referenced in this specification.

Quality System Standard ISO 9001 or TS-16949	SAE/ASTM HS1086/DS56
CFR Title 29, Part 1910	ASTM A 370
NAVISTAR Manufacturing Std. MS-D-13	ASTM B 368
NAVISTAR Engineering Design Std A-16	SAE J405
NAVISTAR MPAPS B-50	SAE J454
CFR-Title 29, Section 1910	

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4.0 REQUIREMENTS

4.1 Construction

4.1.1 Type 1

Type 1 bumpers shall be manufactured from a clad material consisting of approximately 32% by thickness of an outer facing of stainless steel (UNS S30100) metallurgically bonded to approximately 68% by thickness of aluminum sheet (AA3003 or AA5052 ALCLAD).

4.1.1.1 The aluminum sheet (AA3003 or AA5052 ALCLAD) shall consist of UNS A93003 or a core of aluminum alloy, UNS A95052, clad on each face/side with approximately 6% by thickness of a 99% pure aluminum alloy such as UNS A91100.

4.1.1.2 The stainless steel face of the clad material will meet the chemical analysis limits of S30100 per SAE J405.

4.1.1.3 The aluminum core will meet the chemical analysis limits of A93003 or the core will meet A95052 as per SAE J454. The clad faces of the aluminum core will meet the chemical analysis limits of a 99% pure aluminum alloy.

4.1.1.4 Chemical composition will be determined using industry accepted chemical analysis techniques.

4.1.2 Type 2

Type 2 bumpers shall be manufactured from a clad material consisting of approximately 25% by thickness of an outer facing of stainless steel (UNS S30100) metallurgically bonded to approximately 75% by thickness of aluminum sheet (AA3003 or AA5052 ALCLAD).

4.1.2.1 The aluminum sheet (AA3003 or AA5052 ALCLAD) shall consist of UNS A93003 or a core of aluminum alloy, UNS A95052, clad on each face/side with approximately 6% by thickness of a 99% pure aluminum alloy such as UNS A91100.

4.1.2.2 The stainless steel face of the clad material will meet the chemical analysis limits of S30100 per SAE J405.

4.1.2.3 The aluminum core will meet the chemical analysis limits of A93003 or the core will meet A95052 as per SAE J454. The clad faces of the aluminum core will meet the chemical analysis limits of a 99% pure aluminum alloy.

4.1.2.4 Chemical composition will be determined using industry accepted chemical analysis techniques.

4.2 Performance Requirements

4.2.1 Mechanical Properties

The clad material shall meet the indicated minimum tensile requirements when tested in accordance with ASTM A 370 using a standard rectangular (sheet-type) tension test specimen.

	<u>Type 1</u>	<u>Type 2</u>
Tensile Strength	40 ksi	34 ksi
Yield Strength (0.2% offset)	20 ksi	17 ksi
% Elongation (2 inch gage length)	25%	25%

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