

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS L-6601
		Former Designation: TMS-6601
Sound Deadener, Polymeric Molded & Sheet		CURRENT REV No.: 1709
		DATE: Sep. 2017
WRITTEN/EDITED BY: J. Jamison	APPROVED BY: R. Goluch	SUPERSEDES: Rev 1306 – June 2013
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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>		

1.0 APPLICATION

This specification applies to flat or formed polymeric sheet material that is suitable as a barrier for the purpose of reduction of transmitted sound, or as an extensional (or constrained-layer) mass-damper treatment.

2.0 SCOPE

This specification covers the general requirements, property and performance requirements, quality, qualification, source approval, and quality control for six weights of polymeric sheet materials that can be used as a sound deadener coupled with an underlayment of foam or shoddy. The type of underlayment is to be specified in an appropriate specification. Other applications may include vibration dampers for treatment of vehicle substrate material.

2.1 Type I: minimum weight is 2.44 kg/m² or 0.50 Lb/ft²

2.2 Type II: minimum weight is 3.90 kg/m² or 0.80 Lb/ft²

2.3 Type III: minimum weight is 4.88 kg/m² or 1.00 Lb/ft²

2.4 Type IV: minimum weight is 6.10 kg/m² or 1.25 Lb/ft²

2.5 Type V: minimum weight is 7.81 kg/m² or 1.60 Lb/ft²

2.6 Type VI: minimum weight is 1.7 kg/m² or 0.35 Lb/ft²

2.7 Type VII: minimum weight is 1.2 kg/m² or 0.25 Lb/ft² (Door water shield applications)

2.7 Type VIII: minimum density of 1600 kg/m³. Parts must be a minimum of 3 mm thick. Exceptions will be made down to 1 mm minimum thickness where the material must accommodate isolated geometric restraints.

2.8 Type I, II, III, IV, V, VI, or VIII Sound Deadeners will be further divided into Grade A, B, C, D, E, F or G dependent on Property and Performance values listed in Section 4.2.

Note: If Grade is not specified, then Grade A shall apply.

2.9 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.

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SEPTEMBER 2017

NUMBER: MPAPS L-6601	TITLE Sound Deadener, Polymeric Molded & Sheet	REVISION: 1709
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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	CFR Title 29, Part 1910	ASTM D 624
NAVISTAR Eng. Design Std. A-16	ASTM C 177	ASTM D 1149
NAVISTAR Supplier Packing and Shipping Std. D-13	ASTM C 518	ASTM D 2240
CFR Title 49, Part 571.302 (FMVSS-302)	ASTM D 412	ASTM D 4158
MPAPS L-6505	ASTM D 573	ASTM E 756
MPAPS P-9544	MPAPS B-50	ASTM G 154
SAE J1637		

4.0 REQUIREMENTS

4.1 General Requirements

4.1.1 Material

Parts supplied to this specification are typically made from PVC, PVC/Nitrile Blend, EPDM, SBR, EVA, PVA, Urethane, or natural rubber. The types of underlayment are to be broken down further into grade classifications and are to be called out on appropriate drawings and/or specifications. Materials listed below are typical materials for that grade. Other materials may be acceptable with consultation and approval from Materials Engineering.

MPAPS L-6601 Grade	Description	minimum composite loss factor, η , on actual substrate (minimum values at 400, 630, and 1000 Hz)		
		0 °C	20 °C	40 °C
F	Low-performance	0.05	0.15	0.05
H	Middle-performance	0.06	0.20	0.10
B	High-performance	0.07	0.30	0.20
I	Very-high performance	0.07	0.40	0.30
J	-	0.03	0.17	0.25

- Composite loss factor requirements apply to the actual (vehicle) substrate material, with damping layer including production adhesive.
- Values shall be determined directly by using the Oberst bar method of SAE J1637 or estimated indirectly from the material loss factors and material Young's moduli using the method of ASTM E 756.
- The overall size of the Oberst bar shall be nominally 12.7 x 200 mm
- Composite loss factors are to be an average of at least three samples each from three different production lots.
- Values at specified frequencies shall be determined by linear interpolation of adjacent modal points and shall meet or exceed the tabulated values.
- Deviations from test method and analysis requirements will be reviewed and judged by the NAVISTAR Product Validation, Vehicle Acoustics Group, .

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SEPTEMBER 2017

NUMBER: MPAPS L-6601	TITLE <i>Sound Deadener, Polymeric Molded & Sheet</i>	REVISION: 1709
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Grade A consists of a flat or formed polymeric sheet material used as a sound barrier that may be coupled with an underlayment of foam or shoddy.

Grade B consists of a damping sheet with PSA backing for applications requiring high damping performance.

Grade C consists of a limp PVC barrier coupled with a 0.25" open cell polyurethane foam.
Foam density = 2.0 lb/ft³

Grade D consists of a limp PVC barrier coupled with a 1.0" open cell polyurethane foam.
Foam density = 1.5 lb/ft³

Grade E consists of a limp PVC barrier coupled with a 0.25" layer of open cell polyurethane foam and a 3.2 mm PVA damping sheet. Foam density = 2.0 lb/ft³. Foam underlayment shall meet MPAPS L-6505, Type I. The damping sheet shall meet the material loss factor and Young's modulus ratio requirements stated for MPAPS L-6601, Grade B.

Grade F consists of damping sheet with PSA backing for applications requiring lower extensional damping performance.

Grade G consists of a 3.2 mm PVA damping sheet with a 0.005" aluminum constraining layer on one side and PSA backing on the opposite side.

Grade H consists of a damping sheet with PSA backing for applications requiring middle-performing damping.

Grade I consists of a damping sheet with PSA backing for applications requiring very-high extensional damping performance.

Grade J consists of a damping sheet with PSA backing for special applications.

Grade K consists of a damping sheet with a foamed hot melt PSA used for door water shield applications.

Grade L consists of high temperature cast in place (CIP) polyurethane skin used as a sound barrier that may be coupled with an underlayment of foam or shoddy.

4.1.2 Finish

Parts shall be free of pin holes, blow holes, bubbles, mold flash and have an otherwise acceptable appearance. Color, grain and finish shall match standard samples specified by Navistar Industrial Design Group.

4.1.3 Color

Parts shall be black unless otherwise designated on the engineering drawing. Material can be natural as well with prior engineering approval.

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