

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS L-6609
		<i>Former Designation: TMS-6609</i>
TITLE: Molded Fiberglass, Cab Insulator		CURRENT REV No.: 1702
		DATE: Feb. 2017
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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>		

NOTE: THIS SPECIFICATION REPLACES TMS-7027

1.0 APPLICATION

This specification outlines the requirements for molded, resin bonded fiberglass which is used as a thermal and acoustical liner for under cab applications. Three levels of sound transmission loss are available.

1.1 Type I: No sound transmission loss requirement, this is the minimum requirement for edge coating of all grades.

1.2 Type II: Medium sound loss requirements, this is the default requirement.

1.3 Type III: High sound loss requirements.

1.4 Type IV: High sound loss requirements with foil surface and composite sound barrier.

1.5 Type V: Medium sound loss requirements with foil surface, no composite sound barrier required.

1.6 For existing engineering drawings which reference this specification but do not specify a Type (I, II, III, IV, or V), Type II will be supplied.

2.0 SCOPE

This specification covers the general requirements, property and performance requirements, quality, quality, qualification, source approval, and quality control for 5 types of cab insulators.

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*
 NAVISTAR Supplier Packing and Shipping Std. D-13
 NAVISTAR Eng. Design Std. A-16
 NAVISTAR MPAPS B-50
 NAVISTAR MPAPS C-10

CFR Title 29, Part 1910
 ASTM B 117
 ASTM D 624
 ASTM D 751
 ASTM C 177

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4.0 GENERAL REQUIREMENTS

4.1 Fiberglass Composite (Fiberglass Insulation)

4.1.1 Fiber

The average fiber diameter of the glass fiber shall be (.00023" - .00043"). The glass fibers shall be bonded with 10.5% - 17.5% phenolic binder (thermosetting resin) by weight.

4.1.2 Aluminum Foil (Type IV and V only)

Aluminum alloy 1100-O or 1235-O foil per MPAPS C-10 will be used on the hot side of the engine cover insulator. This will be a thickness of 0.00285" +/- 5%.

4.1.3 Internal Composite Sound Barrier (Type IV only)

Black colored Moldable EVA or PVC sound barrier material will be used as an internal composite ingredient. The boundary of the internal sound barrier must extend under the edge of the periphery seal.

Type IV requirements for sound barrier material

Mass	4.88 kg/m ² minimum
Specific Gravity	1.2 – 2.8
Tensile Strength	1350 kPa minimum
Tear Strength	4500 N/m minimum
Elongation	45% minimum
Shore A Hardness	85 +/- 10

4.1.4 Thickness

The cab insulator shall have a nominal thickness of 2.5 cm (1 in) except for designated areas on the drawing where the thickness is reduced to afford higher strength or clearance. (Thickness of some part families may vary depending upon die plate requirements.)

4.1.5 Density

The cab insulator will have a nominal per part weight of 114-228 grams/foot² (3-6 lbs/ft³) of cured fiberglass (mineral wool), with a tolerance of -20% + 25% of the nominal weight.

4.2 Thermal Insulation Efficiency

4.2.1 Method: ASTM C 177

4.2.2 Requirement

Shall be 0.033 watt/meter deg K (0.23 BTU in/hr ft² deg. F) at 24°C (75°F) min.

4.3 Coating (Types I, II, III, IV, V)

4.3.1 Material

The engine side surface shall be coated with an oil resistant elastomeric compound (chloroprene or a modified nitrile) providing protection from the environment and thermal and acoustical protection. The standard coating shall be filled with aluminum to enhance radiant heat performance. A black coating is available though not recommended. The coating weight varies by sound transmission loss requirements:

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Type	Minimum Coating Weight	Minimum Coating Thickness*		
	<u>g/m²</u>	<u>g/ft²</u>	<u>mm</u>	<u>inches</u>
I	540	50	.50	.020
II	860	80	.80	.031
III	1830	170	1.68	.066
IV	No coating – This cab insulator will have aluminum foil on the hot side and an internal composite barrier			
V	No Coating – The exhaust insulator will have aluminum foil facing on the hot and cold side			

*Coating thickness is provided for reference only; thickness may vary to meet weight requirements. Thin spots in the coating are not considered acceptable when fiberglass is visible.

4.4 Tensile Strength

4.4.1 Method: ASTM D 751 Grab Method, Glass fiber blanket only.

4.4.2 Required: Minimum of 22N, machine and against machine direction when using a 25 x 75mm jaw front and back.

4.5 Tear Strength

4.5.1 Method: ASTM D 624 Die C, 500 mm/min crosshead speed (for sound barrier material only)

4.5.2 Required: (Type I, II and III here refer to sound material designations.)

4.5.2.1 Type I: 4500 N/m min

4.5.2.2 Type II: 4500 N/m min

4.5.2.3 Type III: 18000 N/m min

4.5.2.4 Type V: 2000 N/m min

4.6 Property And Performance Requirements

4.6.1 Heat Resistance

4.6.1.1 Method: (Type I, II III)

Place 10 x 10 cm (4 x 4 in) test specimen coated surface in contact with a typical aluminum or steel panel, expose to 120°C (248°F) for 336 hours. Cool and separate specimen from test panel.

4.6.1.2 Method: (Type IV & V only)

For under hood or exhaust area use, the material must withstand 336 hours at 150°C in an air circulating oven.

4.6.1.3 Required: (Type I, II, III)

Shall show no visible evidence of fusing of the surface coating to the metal panel.

4.6.1.4 Required: (Type IV & V only)

Shall show no visible evidence of increase in thickness, delamination, deterioration or any other undesirable effect that may affect performance.

4.6.2 Flexibility

4.6.2.1 Method:

Bend a 10x20 cm specimen around a 5cm mandrel to achieve a 90° bend

4.6.2.2 Required: The specimen shall not delaminate or exhibit other deleterious effect in non-compressed areas.

4.6.3 Puncture Resistance

4.6.3.1 Method:

Condition a 25.4 mm (1 in) thick specimen for 5 hours at -29 C (-20 F). While in this atmosphere using a 19 mm (0.75 in) diameter ball, compress coated side of sample to 15.9 mm (0.63 in).

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