

NAVISTAR, INC.		
TMS (TRUCK MATERIAL SPECIFICATION)		NUMBER: TMS-6004
TITLE: Pads, Rubber Plied		CURRENT REV No: 1310
		DATE: OCTOBER 2013
WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	SUPERSIDES: Rev. 1302 – FEBRUARY 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>		
Change Notice: Added Type V; editorial changes.		
Reference: File 30-16A	Keywords: Plied Rubber Pads	

1.0 APPLICATION

This specification pertains to a cured rubber material that is suitable for vibration damping, ride cushioning, and miscellaneous sound deadening applications. Types I and II are industrial belting type material that are sheet material made of several plies with cords alternately perpendicular to each other. Type III is a milled bias ply tire product often used in body mounts and exhaust hanger applications. Type IV is reserved. Type V is RMA Grade II Garlock or HYC material (RMS Standard is: CONVEYER BELT COVER CHARACTERISTICS AND CLASSIFICATIONS).

2.0 SCOPE

This specification covers material properties, dimensional tolerances, quality requirements, quality control and source approval, shipping and identification, and designation on drawings.

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 CEMS 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 <i>ISO 9001 or TS-16949</i>	ASTM D412	CEMS B-50
NAVISTAR Manufacturing Standard MS-D-13	ASTM D624	ASTM D575
CFR Title 29, Section 1910	ASTM D1149	

4.0 REQUIREMENTS

Material supplied to this specification shall meet the property requirements specified in the table on the next page.

4.1 Ozone/Weather Resistance - ASTM D 1149, Method B

70 hours at 50±5 MPa, (50 pphm ozone), at 38°C (100°F)

4.1.1 Required

No visible attack, cracks, crazing, or deformation under a magnification of 7x.

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Property	Type I	Type II	Type III	Type IV	Type V
Tensile Strength (Per ASTM D 412, Die A) Warp Direction, Minimum, MPa (psi)	34.5 (5000)	36.9 (5350)	8.0 (1160)	10.0 (1450)	14 (2000)
Tensile Strength (Per ASTM D 412, Die A) Weft Direction, Minimum, MPa (psi)	34.5 (5000)	21.0 (3050)	8.0 (1160)	10.0 (1450)	14 (2000)
Elongation, min. %	15%	25%	25%	300%	400%
Tear Strength (Per ASTM D 624, Die A or B) Warp Direction, Minimum, MPa (psi)	6.2 (900)	14.1 (2050)	5.0 (725)	26 kN/m	Report
Tear Strength (Per ASTM D 624, Die A or B) Weft Direction, Minimum, MPa (psi)	6.2 (900)	12.1 (1750)	5.0 (725)	26 kN/m	Report
Hardness, Shore A (points)	75-95	57 - 67	50-65	70	Report
Heat Aging [After 70 Hours at 67-73°C (153-163°F)]					
Change in Tensile Strength Warp Direction, max	-25%	-20%	-25%	-20%	-20%
Change in Tensile Strength Weft Direction, max	-25%	-20%	-25%	-20%	-20%
Change in Elongation, max	-25%	-10%	-25%	-10%	-10%
Change in Hardness, Shore A, max	± 10 Points	± 10 Points	±15 Points	± 10 Points	Report
Static Compression Deflection, kN ±20%	Report	Report	1.7	4.5	Report

4.2 Static Compression Deflection – ASTM D575 Method A

Bus Body mounts only. Compress pad to 50% of total thickness. Measure load at 4.0 mm deflection.

4.2.1 Required

See above Table.

4.3 Static Compression Loading

Compress bus body pad parts the same as 4.2 above to a maximum load of 80 kN or 98% of total thickness, whichever comes first.

4.3.1 Required

No visible cracks or checks. Report recovered thickness after resting for one hour.

4.4 Fatigue Testing

Fixture in a suitable test frame as done in 4.2 above. Apply a pre-load of 53 kN and cycle ± 1.4 kN at 4 Hz for 1,000,000 cycles.

4.4.1 Required

No visible cracks or checks. Parts shall recover 50% of original thickness after resting 24 hours after test.

4.5 Dimensional Tolerances

4.5.1 Thickness

4.5.1.1 Types I and II: Thickness in sizes up to 25.4 mm (1.0 in) shall be ± 0.8 mm ($\pm .030$ in) from the nominal dimension.

4.5.1.2 Type III and IV: Thickness 12-18 mm (.47-.71 in) shall be ± 0.8 mm (± 0.030 in)

4.5.1.3 Type V: Thickness should be specified on print per application. The engineer should contact the supplier at time of design and prior to any drawing release to determine standard gauges available that will fit the application.

4.5.2 Length and Width:

4.5.2.1 Types I, II and III tolerances are shown in the table below:

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