

NAVISTAR, INC.		
Material, Parts, and Process Specifications (MPAPS)		NUMBER: MPAPS F-7006
		Former Designation: TMS-7006
TITLE:	Thermoplastic Tubing, Air Brake	CURRENT REV No.: 1402
		DATE: February 2014
WRITTEN/EDITED BY: Materials Engineering	APPROVED BY: Materials Engineering	SUPERSEDES: TMS-7006 - Dec 2012
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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: Changed format. Modified Section 1.0, Application, and Section 2.0, Scope. Editorial changes.		

1.0 APPLICATION

This specification outlines the minimum requirements for non-metallic tubing that may be used in certain portions of the air brake systems (see Restrictions in SAE J844 and J1394), in the secondary air system (such as air horns, air shift lines, air wipers, and air seats). This tubing is restricted to a maximum working pressure of 1034 kPa (150 psi). Contact Materials Engineering for guidance on temperature limitations.

2.0 SCOPE

This specification covers the general requirements, property and performance requirements, quality control and KCC requirements for two types of non-metallic tubing.

2.1 Type A: This is non-reinforced tubing for use in secondary air system applications outside of the primary braking system.

2.2 Type B: This is reinforced tubing that may be used in the primary braking system as well as other air system applications and in the fuel system.

NOTE 1: These tubing types should not be used for compressor discharge lines or pressures exceed 1034 kPa (150 psi).

NOTE 2: Some existing engineering drawings may refer to TMS-7006, Type C – in these applications, tube provided will meet the requirements of TMS-7134, Type A.

NOTE 3: Some existing engineering drawings may refer to TMS-7006, Type D – in these applications, tube provided will meet the requirements of TMS-7134, Type B.

2.3 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 TMS-9543	SAE J844
CFR Title 29, Part 1910	NAVISTAR TMS-7106	
NAVISTAR Manufacturing Std. MS-D-13	NAVISTAR TMS-7134	SAE J1131
NAVISTAR Engineering Design Std A-16	ASTM D 471	SAE J1394

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4.0 GENERAL REQUIREMENTS

The tubing for these applications shall meet the performance requirements of SAE J844 (SAE J1394 for Metric Equivalents) Air Brake Tubing and SAE J1131 (Performance Requirements) and any additional requirements outlined in this specification.

4.1 Material

The tubing shall be constructed as indicated for the type:

4.1.1 Type A Construction: A solid extrusion, virgin polyamide or polyamide alloy.

4.1.2 Type B Construction: Seamless, polyamide (nylon 11, or nylon 12, or PA-612) or polyamide composite core tube wrapped with a polyester fiber reinforcement, and then covered with a smooth outer sheath of polyamide (nylon 11, or nylon 12, or PA-612) or polyamide composite with the outermost layer being polyamide (nylon 11, or nylon 12, or PA-612) bonded to the core tube.

4.2 Appearance

The tubing shall compare to and be equivalent in surface finish and color to the original samples approved by NAVISTAR. Tubing supplied to this specification shall be smooth and uniform, free from any visible defects, foreign matter, kinks, seams or any other condition that would impair the performance.

4.3 Color

Tubing color formulation shall be consistent in hue and of uniform saturation. Type A tubing shall be solid black in color, unless otherwise specified. Type B tubing shall have a black cover, unless otherwise specified, and the core tube shall be of a contrasting color.

4.4 Tolerances

Tubing provided will meet the OD and wall thickness tolerances for the type and size tube as indicated:

Tubing Type	Tube Outside Diameter		Tube Wall Thickness		O.D. and Wall Tolerance	
	mm	in	mm	in	mm	in
A	3.18	0.125	0.58	0.023	±0.08	±0.003
A	3.97	0.156	0.58	0.023	±0.08	±0.003
A	6.35	0.250	1.02	0.040	±0.08	±0.003
A	7.93	0.312	1.02	0.040	±0.10	±0.004
B	9.53	0.375	1.57	0.062	±0.10	±0.004
B	12.70	0.500	1.57	0.062	±0.10*	±0.004*
B	15.88	0.625	2.34	0.092	±0.13	±0.005
B	19.05	0.750	2.34	0.092	±0.13	±0.005

*For wall only; O.D. tolerance = ±0.13 mm or 0.005 in

4.5 Property And Performance Requirements - Tubing Only

Tubing furnished to this specification shall meet requirements of SAE J844 (SAE J1394 for Metric Equivalents), Air Brake Tubing, SAE J1131 (Performance Requirements), all applicable requirements of FMVSS-106 and, in addition, the following requirements.

4.5.1 Fuel Resistance

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