



Performance Plastics - Mantua Plant

10585 Main Street
Mantua, Ohio 44255

Title: **PRODUCT STANDARD**
4245 Nylon 12 Tubing

Product: **4245**
Revision: 6/20/05
Page No.: 1 of 7

PRODUCT STANDARD
4245
NYLON 12 TUBING

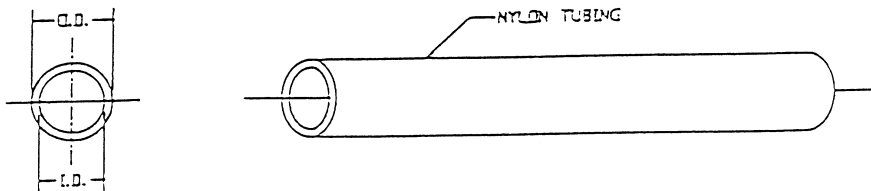
Title: **PRODUCT STANDARD**
4245 Nylon 12 Tubing

Product: **4245**
Revision: 6/20/05
Page No.: 2 of 7

1. PRODUCT DESCRIPTION:

1.1 The product consists of a single wall extrusion of 100% virgin, heat and light stabilized nylon 12 (polyamide). It is smooth and seamless. The core is free from obstructions or foreign materials.

2. PRODUCT DRAWING:



3. PRODUCT IDENTIFICATION:

A marking text is printed longitudinally on the tubing for identification. An example of the marking text is given below.

3.1 Product that has been qualified and does meet the requirements of SAE J844, Type A will be marked as the following example indicates. This marking conforms with the requirements of SAE J844, Type A and SAE J1344.

3.2 The product tubing, (when applicable) is also identified longitudinally with a DOT layline that is located below the marking as the following example indicates. This marking is in compliance with FMVSS No. 106. Brake Hoses, 49 CFR 571.106.

Example of marking text to SAE & DOT requirements:

SYNFLEX[®] 4245-041 AIR BRAKE SAE J844 TYPE A)PA12(1/4" O.D. MADE IN U.S.A. EATON xxxxxx
DOT 1913 (mo/yr) 1/4" O.D. A DOT 1913 (mo/yr) 1/4" O.D. A DOT 1913 (mo/yr) 1/4" O.D. A

3.3 The product which has not been qualified per SAE J844, Type A will be marked as shown in the following example. This marking does not conform with the requirements of SAE J844, Type A.

SYNFLEX[®] 4245-045 N2 NYLON TUBING (GROUP 1) 1/4 O.D. x .040 WALL MADE IN U.S.A. EATON xxxxx

The group number in the marking text will be either "1" or "11" depending on the burst rating ("1" indicates 1000 psi burst and "11" indicates 2000 psi burst). There will not be a group number in the marking text if neither one of the above burst ratings is applicable.



Title: **PRODUCT STANDARD**
4245 Nylon 12 Tubing

Product: **4245**
Revision: 6/20/05
Page No.: 3 of 7

3.4 In addition to the marking text, the product is lot numbered for manufacturing traceability.

3.5 The color of the marking will be black except on the black hose..

4. PRODUCT DIMENSIONAL INFORMATION¹:

TABLE 1

Product Part Number 4245-(No)	Nom. Tubing Size (O.D. x Wall)	<u>OUTSIDE DIAMETER</u>		Inside Diameter Basic	<u>WALL THICKNESS</u>
		Maximum	Minimum		
-022	1/8 x .023	.128	.122	.079	.023 +/- .003
-023	1/8 x .031	.128	.122	.063	.031 +/- .003
-025 ²	5/32 x .032	.159	.153	.092	.031 +/- .003
-033 ^{2,3}	3/16 x .035	.190	.184	.117	.035 +/- .003
-041 ^{2,3}	1/4 x .040	.253	.247	.170	.040 +/- .003
-042	1/4 x .030	.253	.247	.190	.030 +/- .003
-043	1/4 x .035	.253	.247	.180	.035 +/- .003
-044	1/4 x .062	.253	.247	.126	.062 +/- .003
-045	1/4 x .040	.253	.247	.178	.040 +/- .003
-052 ^{2,3}	5/16 x .040	.315	.309	.232	.040 +/- .003
-062	3/8 x .050	.379	.371	.275	.050 +/- .003
-084	1/2 x .040	.505	.495	.420	.040 +/- .003

¹Unless otherwise noted, all dimensions presented throughout this standard are given in inches.

²This product conforms with the requirements of SAE J844, Type A Standard.

³This product conforms with requirements of DOT FMVSS 106.



Title: **PRODUCT STANDARD**
4245 Nylon 12 Tubing

Product: **4245**
Revision: 6/20/05
Page No.: 4 of 7

TABLE 2

Product Part Number 4245-(No)	Nom. Tubing Size (O.D. x Wall)	Min. Burst Pressure at 75°F (PSI)	SAE or Group No. Marking	Min. Bend Radius	*Weight Per 100 Feet (Lbs)
-022 ²	1/8 x .023	1000	I	1/4	.33
-023	1/8 x .031	2000	II		.41
-025 ²	5/32 x .032	1000	I		
-033 ^{2,3}	3/16 x .035	1000	I		.71
-041 ^{2,3}	1/4 x .040	1200	SAE	1.0	1.19
-042	1/4 x .030	840	N/A		.93
-043	1/4 x .035	1000	I	7/8	1.06
-044	1/4 x .062	2000	II		1.65
-045	1/4 x .040	1200	I	1.0	1.19
-052 ^{2,3}	5/16 x .040	1000	I	1-1/8	1.54
-062	3/8 x .050	1000	I	1-1/8	2.30
-084	1/2 x .040		N/A		2.60

*The quantities given are calculated and based on nominal product dimensions.

²This product conforms with the requirements of SAE J844, Type A Standard.

³This product conforms with requirements of DOT FMVSS 106.

5. PERFORMANCE REQUIREMENTS:

The product's conformance to the following performance tests is assured by continuous or periodic qualification of all products that are manufactured.

5.1 As indicated in Table 1, there are certain sizes of the product that meet the performance requirements of SAE J844, para. 9. Performance Requirements. All of these performance tests are listed below.

- para 9.1) Leak Test
- para 9.2) Moisture Absorption
- para 9.3) Ultraviolet Resistance
- para 9.4) Cold Temperature Flexibility
- para 9.5.a) Heat Aging, Phase 1
- para 9.5.b) Heat Aging, Phase 2
- para 9.5.c) Heat Aging, Phase 3
- para 9.6) Resistance to Zinc Chloride
- para 9.7) Resistance to Methyl Alcohol
- para 9.8) Stiffness
- para 9.9) Boiling Water Stabilization and Burst Test
- para 9.10) Burst
- para 9.11) Cold Temperature Impact



Title: **PRODUCT STANDARD**
4245 Nylon 12 Tubing

Product: **4245**
Revision: 6/20/05
Page No.: 5 of 7

para.9.14) Collapse Resistance Test Procedure

5.2 The product also meets the requirements of SAE J1131, Performance Requirements for SAE J744 Nonmetallic Tubing and Fitting Assemblies Used in Automotive Air Brake Systems, when used in conjunction with fittings that conform to SAE J246. These are listed below.

- para. 2. Tension Tests
- para. 3. Vibration Test
- para. 4. Proof and Burst Pressure Test
- para. 5. Serviceability Test
- para. 6. Fitting Compatibility Test

5.3 The -025, -033, -041 and -052 sizes of the product line also conform to the requirements of FMVSS No. 106, as stipulated in 49 CFR, Section 571.106. where the applicable sections of paragraphs S7 and S8 apply.

5.4 Application Requirements:

- 5.4.1 Temperature Range - the product is designed to operate in the temperature range of -40°F to 200°F.
- 5.4.2 Pressure Range - the product is designed to operate at a working pressure equal to 25% of the rated minimum burst pressure.
- 5.4.3. Functions - the product is designed to be used in portions of the automotive air brake and fuel systems.
- 5.4.4 Chemical Resistance - the product is resistant to attack by gasoline, diesel fuel, Methyl Alcohol and Zinc Chloride. These compounds are usually present in the operating environment of an automotive vehicle. The product is not to be used in an area that is subject to attack by battery acid.
- 5.4.5 Tube Colors - the product is manufactured in several different colors, thus permitting the color coding of an air system on a vehicle (which in itself is an aid in assembling and trouble shooting operations).

The product is available in the following standard colors;

Black	Orange	Blue	Brown
White	Yellow	Natural	Purple
Red	Green	Gray	Tan



Title: **PRODUCT STANDARD**
4245 Nylon 12 Tubing

Product: **4245**
Revision: 6/20/05
Page No.: 6 of 7

6. FITTINGS:

The product is designed for use with compression tube fittings commonly used in truck fuel and air brake systems that conform to SAE J246 requirements. The decision of which fitting to use is left to the responsibility of the user.

7. REFERENCED STANDARDS:

This standard uses the following Test Procedures and Standards in whole or in part for evaluation of the product.

SAE J246	Spherical and Flanged Sleeve (Compression) Tube Fittings
SAE J844	Nonmetallic Air Brake System Tubing
SAE J1131	Performance Requirements for SAE J844 Nonmetallic Tubing and Fitting Assemblies used in Automotive Air Brake Systems
SAE J1344	Marking of Plastic Parts



Title: **PRODUCT STANDARD**
4245 Nylon 12 Tubing

Product: **4245**
Revision: 6/20/05
Page No.: 7 of 7

WARNING
FOR USERS OF SYNPLEX
AIR BRAKE TUBING

Abuse of this tubing product may directly or indirectly affect your personal safety.

The following warnings pertain to the more common abuses of this tubing and assemblies.

1. **DO NOT** use this tubing in excess of its maximum recommended working pressure.
2. **DO NOT** kink this tubing or exceed its minimum recommended bend radius.
3. **DO NOT** expose this tubing to heat in excess of its maximum temperature rating.
4. **DO NOT** use fittings or methods of attachment of fittings to this tubing other than those that conform to the requirements of SAE J246 and SAE J1131.
5. **DO NOT** use this tubing assembly as a strength member such as, for example, to pull or lift equipment.
6. **DO NOT** convey fluids through this tubing assembly or expose the jacket or any other part of this tubing to fluid which have not been priory approved by Eaton Corporation, Mantua Division either through its literature pertaining to this hose or, if absent therefrom, by express approval of authorized personnel of Eaton Corporation concerning the fluid or fluids in question.
7. **INSPECT** this tubing periodically.
8. **REPLACE** this tubing immediately if the jacket of this tubing appears abnormal or you have reason to believe it may be abnormal; or if the tube fittings or jacket of this tubing are damaged or leak fluids; or where the reinforcement of this hose is visible through the jacket.