



Designation: D 375 – 95 (Reapproved 2004)

Standard Specification for Asbestos Roving¹

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1. Scope

1.1 This specification covers asbestos roving having a minimum of 75 mass % asbestos fiber, excluding the mass of other inorganic reinforcing strands which may be present.

1.2 The following safety hazards caveat pertains only to the test methods, Section 13, described in this specification: *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.3 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

2. Referenced Documents

2.1 ASTM Standards:²

- D 76 Specification for Tensile Testing Machines for Textiles
- D 123 Terminology Relating to Textiles
- D 861 Practice for Use of the Tex System to Designate Linear Density of Fibers, Yarn Intermediates, and Yarns
- D 1118 Test Method for Magnetic Rating of Asbestos Fiber and Asbestos Textiles
- D 1918 Test Method for Asbestos Content of Asbestos Textiles
- D 2100 Specification for Asbestos Textiles Used for Electrical Insulating Purposes
- D 2260 Tables of Conversion Factors and Equivalent Yarn Numbers Measured in Various Numbering Systems
- D 2946 Terminology Relating to Asbestos

3. Terminology

3.1 For definitions of other textile terms used in this specification, refer to Terminology D 123. For asbestos terms, refer to Terminology D 2946.

¹ This specification is under the jurisdiction of ASTM Committee C17 on Fiber-Reinforced Cement Products and is the direct responsibility of Subcommittee C17.03 on Asbestos-Cement Sheet Products and Accessories.

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² For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website.

3.2 Definitions:

3.2.1 *asbestos fiber, n*—the hydrous magnesium silicate serpentine mineral designated as chrysotile and having the empirical formula $\text{Mg}_3\text{Si}_2\text{O}_5(\text{OH})_4$.

3.2.2 *asbestos roving, n*—an assemblage of carded asbestos, with or without other fibers, rubbed into a single strand without twist.

3.2.3 *asbestos roving construction number, n*—a system designed to show the construction, namely, the cut of the single roving and whether reinforcements are present.

3.2.3.1 *Discussion*—Rovings up to 9-cut, inclusive, have 3-digit construction numbers: the first digit indicates the cut, the second digit, the number of plies (always 1), and the third digit, the number of reinforcements. Rovings of 10-cut and over have 4-digit construction numbers; the first 2 digits indicate the cut, the third digit, the number of plies (always 1), and the fourth digit, the number of reinforcements.

Rovings containing reinforcements are designated by the roving construction number followed by the description of the reinforcing strand.

Examples:

- | | |
|-----------------|--|
| No. 1010 roving | 10-cut, no reinforcement |
| No. 1011 roving | 10-cut, 1 reinforcement (as specified) |

When wire is the reinforcement, the cut indicates the linear density of asbestos roving only (mass of the wire not included). When the reinforcement is other than wire, the cut indicates the linear density of the complete assembly.

3.2.4 *atmosphere for testing asbestos textiles, n*—air maintained at a relative humidity of $50 \pm 2\%$ at $21 \pm 1^\circ\text{C}$.

3.2.5 *cut, n*—in asbestos, the number of 201.6 lengths per kilogram (100-yd lengths per pound) 453.6 g (7000 grains) of asbestos roving.

3.2.5.1 *Discussion*—The term “cut” represents a length-per-unit-mass unit, and is derived by cutting (dividing) 7000 grains (453.6 g) by the mass of 10 yd in grains or the mass of 201.6 m in kilograms of a single roving. The number of such units expresses the number of the cut, and when multiplied by 100, indicates the nominal yards per pound.

Example 1—If 5 30-m skeins of single roving, or 150 m, weight 45.2 g, then 201.6 m weigh 60.7 g.

Cut = $1 \text{ kg}/60.7 \text{ g}$
= 16.47, or 16.47-cut, which is 16 cut on the light side; and $16 \times 201.6 = 3226 \text{ m/kg}$, nominal.

Example 2—If five 30-yd skeins of single roving, or 150 yd, weigh 637.5 grains, then 100 yd weigh 425 grains.



Cut = 7000/425
 = 16.47, or 16.47-cut, which is 16-cut on the light side; and $16 \times 100 = 1600$ yd/lb, nominal.

The term "cut" as applied to asbestos may be defined differently in countries other than the USA.

3.2.6 *reinforced asbestos roving, n*—asbestos roving containing a reinforcement of one or more strands of other fibers or wire.

4. Classification and Grade

4.1 Classes of asbestos roving are based on their structural components as follows:

4.1.1 *Class A*—Roving consisting of asbestos fiber or asbestos and other staple fiber(s).

4.1.2 *Class C*—Asbestos roving containing organic reinforcing strand(s) as specified in 6.2.

4.1.3 *Class D*—Asbestos roving containing nonmetallic inorganic reinforcing strand(s) as specified in 6.3.

4.1.4 *Class E*—Asbestos roving containing a combination of the reinforcing strands used in Classes C through D.

4.2 *Grade*—The grades of asbestos roving are based on the percentage of asbestos content by mass as stated in Table 1.

4.3 Electrical Insulation Classification:

4.3.1 Asbestos roving as made for the electrical industry is furnished in three types, classified on the basis of magnetic rating determinations, determined by Test Method D 1118, as follows:

4.3.2 *Type II (Magnetic Rating 0.75 Maximum)* is intended only for special applications where the asbestos is of primary importance as electrical insulation used on magnet wire and when used primarily as a dielectric.

4.3.3 *Type IV (Magnetic Rating 2.00 Maximum)* is intended for use where the asbestos is of secondary importance as electrical insulation and where it is applied in combination with other materials of comparably higher dielectric strength, as in the construction of heat and flame resistant electrical insulating walls over unit conductors of electric cables.

4.3.4 *Type VI (Magnetic Rating 4.00 Maximum)* is intended for use where the asbestos is of minor importance as a dielectric, as in the construction of filler or heat and flame resistant walls of electric cables or when used as a lining for control enclosures subject to exposure to electric arcs (arc chutes).

5. Ordering Information

5.1 Asbestos roving is normally purchased on the basis of roving construction number, class, type, and grade (see 16.1).

TABLE 1 Grades of Asbestos Roving

Grade	Asbestos Content, mass %
Commercial	75 up to but excluding 80
Underwriters'	80 up to but excluding 85
A	85 up to but excluding 90
AA	90 up to but excluding 95
AAA	95 up to but excluding 99
AAAA	99 to 100 inclusive

6. Materials and Manufacture

6.1 *Fibers*—Asbestos roving shall be uniformly carded from a specified blend of staple fibers.

6.2 *Organic Reinforcements*—The organic reinforcement(s) may be cotton, nylon, rayon, or other spun or filament yarn(s) as specified in the order.

6.3 *Nonmetallic Inorganic Reinforcements*—The inorganic reinforcement(s) may be glass, or other ceramic or vitreous spun or filament yarn(s) as specified in the order.

7. Chemical Composition

7.1 *Reinforcements*—The chemical properties of the reinforcements shall meet the specifications for such materials as agreed upon by the purchaser and the seller.

7.2 *Asbestos Content*—The asbestos content of the particular grade specified shall be within the limits in Table 1.

8. Physical Properties

8.1 *Reinforcements*—Physical properties of the reinforcements shall meet the specifications for such materials as agreed upon by the purchaser and the seller.

8.2 *Electromagnetic Properties*—Roving to be used for electrical insulating purposes shall conform to the requirements of Specification D 2100.

9. Mechanical Properties

9.1 *Tensile (Breaking) Strength*—The tensile strength (breaking load) of asbestos roving shall be as agreed upon by the buyer and the seller.

10. Dimensions, Mass, and Permissible Variations

10.1 *Roving Number (Cut)*—The linear density in metres per kilogram (or yards per pound) of single asbestos roving shall conform to the limits in Table 2.

TABLE 2 Requirements for Length per Unit Mass of Standard Asbestos Roving

Cut Number	Nominal Length per Unit Mass		Permissible Variation in Average Length per Unit Mass			
	m/kg	yd/lb ^A	m/kg	yd/lb ^A	in a 30-m (30-yd) skein	
					m/kg	yd/lb
5-cut	1000	500	±81	±40	±150	±75
6-cut	1200	600	±97	±48	±180	±90
7-cut	1400	700	±113	±56	±210	±150
8-cut	1600	800	±129	±64	±240	±120
9-cut	1800	900	±145	±72	±270	±135
10-cut	2000	1000	±161	±80	±300	±150
12-cut	2400	1200	±194	±96	±360	±180
14-cut	2800	1400	±230	±112	±420	±210
16-cut	3200	1600	±260	±128	±480	±240
18-cut	3600	1800	±290	±144	±540	±270
20-cut	4000	2000	±320	±160	±600	±300
22-cut	4400	2200	±350	±176	±670	±330
24-cut	4800	2400	±390	±192	±730	±360
26-cut	5200	2600	±420	±208	±790	±390
28-cut	5600	2800	±450	±224	±850	±420
30-cut	6000	3000	±480	±240	±910	±450
35-cut	7100	3500	±560	±280	±1100	±525
40-cut	8100	4000	±650	±320	±1200	±600
45-cut	9100	4500	±730	±360	±1400	±675
50-cut	10100	5000	±810	±400	±1500	±750

^A To determine tex numbers, divide 496050 by yards-per-pound. A tex unit is equal to the mass in grams of 1 km of yarn. See Tables D22 and D23 for conversion factors.