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Standard Specification for Asbestos Roving[1]

This standard is issued under the fixed designation D375/D375M; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

ε[1] NOTE—Units information was corrected editorially in March 2010.

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 values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

1.3 **Warning—**Breathing of asbestos dust is hazardous. Asbestos and asbestos products present demonstrated health risks for users and for those with whom they come into contact. In addition to other precautions, when working with asbestos-cement products, minimize the dust that results. For information on the safe use of chrysoltile asbestos, refer to "Safe Use of Chrysotile Asbestos: A Manual on Preventive and Control Measures."[2]

1.4 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. For specific safety hazard warning, see 1.3.*

2. Referenced Documents

2.1 *ASTM Standards:*[3]

D76 Specification for Tensile Testing Machines for Textiles

D123 Terminology Relating to Textiles

D861 Practice for Use of the Tex System to Designate Linear Density of Fibers, Yarn Intermediates, and Yarns

D1118 Test Method for Magnetic Rating of Asbestos Fiber and Asbestos Textiles

D1918 Test Method for Asbestos Content of Asbestos Textiles

D2100 Specification for Asbestos Textiles Used for Electrical Insulating Purposes

D2260 Tables of Conversion Factors and Equivalent Yarn Numbers Measured in Various Numbering Systems

D2946 Terminology for Asbestos and Asbestos–Cement Products

3. Terminology

3.1 For definitions of other textile terms used in this specification, refer to Terminology D123. For asbestos terms, refer to Terminology D2946.

3.2 *Definitions:*

3.2.1 *asbestos fiber, n*—the hydrous magnesium silicate serpentine mineral designated as chrysotile and having the empirical formula $Mg_3Si_2O_5$ $(OH)_4$.

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.

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

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[2] Available from The Asbestos Institute, http://www.chrysotile.com/en/sr_use/manual.htm.

[3] 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.

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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 ± 2 % at 21 ± 1°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 kg/60.7 g
= 16.47, or 16.47-cut, which is 16 cut on the light side; and 16× 201.6 = 3226 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× 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:*

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

4.3.1 Asbestos roving as made for the electrical industry is furnished in three types, classifed on the basis of magnetic rating determinations, determined by Test Method D1118, 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).

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 D2100.

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.

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