



Standard Test Method for Magnetic Rating of Asbestos Fiber and Asbestos Textiles¹

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1. Scope

1.1 This test method covers the procedure for the determination of the magnetic rating of asbestos fiber and asbestos textile products. This test method is used primarily for testing asbestos insulating materials.

1.2 The values stated in inch-pound units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *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.*

2. Referenced Documents

2.1 ASTM Standards:

D 123 Terminology Relating to Textiles²

D 2100 Specification for Asbestos Textiles Used for Electrical Insulating Purposes³

D 2590 Test Method of Sampling Chrysotile Asbestos³

D 2946 Terminology Relating to Asbestos³

D 2947 Test Method for Screen Analysis of Asbestos Fibers³

D 3879 Test Method for Amphibole Asbestos Sampling³

E 11 Specification for Wire-Cloth Sieves for Testing Purposes⁴

3. Terminology

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

3.2 Definitions:

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

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² Annual Book of ASTM Standards, Vol 07.01.

³ Annual Book of ASTM Standards, Vol 04.05.

⁴ Annual Book of ASTM Standards, Vol 14.02.

3.2.2 *atmosphere for testing textiles, n*—for asbestos, air maintained at a relative humidity of $50 \pm 2\%$ at $70 \pm 2^\circ\text{F}$ ($21 \pm 1^\circ\text{C}$).

3.2.3 *magnetic rating (MR), n*—an empirical value reflecting the effect of the magnetic particles, such as magnetic iron compounds, in asbestos material as measured by a magnetic effect analyzer. It is not a quantitative measure of the magnetic particles in the material. — Magnetic rating is affected by the quantity, concentration, particle size, shape, and orientation of the magnetic particles in the material.

3.2.4 *unit magnetic rating (1 MR), n*—a calibrating standard with an MR of one is defined as containing 0.18 g of U.S. National Institute of Standards and Technology standard sample No. 29(a) or iron ore (magnetite) uniformly distributed over the space specified for a 10-g test specimen [19 mm (0.75 in.) diameter by 73 mm (2.875 in.) long], by dispersion in a magnetically inert material. A 10-g specimen has one unit magnetic rating when it produces a magnetic effect equivalent to that of 0.18 g of standard magnetite as described above. Conversely, a 10-g specimen producing a magnetic effect such that the resulting induced current in the magnetic analyzer galvanometer is k times that of the 0.18 g of standard magnetite as described above, would have a magnetic rating (MR) of k .

4. Summary of Test Method

4.1 The unknown electromagnetic effects of a sample of asbestos-containing material is compared with those of a reference standard in a magnetic analyzer. The inductive imbalance caused by the magnetic particles in the asbestos samples is amplified and measured with the magnetic analyzer.

5. Significance and Use

5.1 This test method for the determination of magnetic rating is considered satisfactory for acceptance testing of commercial shipments of asbestos fibers, papers, felts, yarns, rovings, textile products, rigid sheet products, and granular or powdered products.

5.2 Magnetic rating is one of the measurements used for determining the suitability of an asbestos material for electrical insulation.

5.3 The electrical insulating properties of asbestos materials vary inversely with the magnetic rating. Therefore, a low magnetic iron content is required for good electrical insulating.

5.4 The types of asbestos textiles classified by magnetic

