Designation: F 1860 – 03

Standard Specification for Rubber Sheet Floor Covering With Backing[1]

This standard is issued under the fixed designation F 1860; 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.

1. Scope

1.1 This specification covers the requirements for the compound and physical characteristics of rubber sheet floor covering having a rubber wear layer with backing. Products may also contain intermediate layers.

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

1.3 The following precautionary statement pertains only to the test method portion, Section 10, of this specification: *This standard does not purport to address all 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 The following documents if the issue in effect on the date of the material purchase form a part of this specification to the extent referenced herein:

2.2 *ASTM Standards:*

D 412 Test Method for Rubber Properties in Tension[2]

D 883 Terminology Relating to Plastics[3]

D 1566 Terminology Relating to Rubber[2]

D 2240 Test Method for Rubber Property - Durometer Hardness[2]

F 141 Terminology Relating to Resilient Floor Coverings[4]

F 387 Test Method for Measuring Thickness of Resilient Floor Covering With Foam Layer[4]

F 410 Test Method for Wear Layer Thickness of Resilient Floor Coverings by Optical Measurement[4]

F 710 Practice for Preparing Concrete Floors and Other Monolithic Floors to Receive Resilient Flooring[4]

F 925 Test Method for Resistance to Chemicals of Resilient Flooring[4]

F 970 Test Method for Static Load Limit[4]

F 1482 Guide for Wood Underlayment Products Available for Use Under Resilient Flooring[4]

F 1514 Test Method for Measuring Heat Stability of Resilient Vinyl Flooring by Color Change[4]

F 1515 Test Method for Measuring Light Stability of Resilient Vinyl Flooring by Color Change[4]

2.3 *ANSI Standards:*

ANSI/ASQC Z1.4-1993 Sampling Procedures and Tables for Inspection by Attributes[5]

3. Terminology

3.1 *Definitions*—For definitions of other terms used in this standard, see Terminology F 141.

4. Classification

4.1 Rubber sheet floor covering covered by this specification shall conform to the following types:

4.1.1 *Type I*—Homogeneous rubber sheet floor covering with backing:

4.1.1.1 Fibrous backing, and

4.1.1.2 Foamed rubber backing.

4.1.2 *Type II*—Layered rubber sheet floor covering with backing:

4.1.2.1 Fibrous backing, and

4.1.2.2 Foamed rubber backing.

4.2 The above may have either smooth, embossed, or molded pattern surfaces.

4.3 These products shall not contain asbestos.

5. Ordering Information

5.1 Purchasers shall state whether this specification is to be used, select the preferred options permitted herein and include the following information in the invitation to bid or purchase order:

5.1.1 Title, number, and date of this specification,

5.1.2 Type, color, and surface (see Section 4 and Section 6),

5.1.3 Quantity, in square feet, square yards, or square metres,

5.1.4 Thickness required. (see 8.3),

5.1.5 Overall thickness, if molded pattern flooring is specified (see 8.1),

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[2] *Annual Book of ASTM Standards*, Vol 09.01.

[3] *Annual Book of ASTM Standards*, Vol 08.01.

[4] *Annual Book of ASTM Standards*, Vol 15.04.

[5] Available from American National Standards Institute, 25 W. 43rd St., 4th Floor, New York, NY 10036.

5.1.6 Width required (see 8.4),

5.1.7 Length required (see 8.5),

5.1.8 Resistance to chemicals, (see 7.4),

5.1.9 Lot information, if other than as specified in ANSI/ASQC Z1.4-1993. (see 10.1 and 11.1),

5.1.10 Sampling, if other than as specified in ANSI/ASQC Z1.4-1993 (see 10.1 and 11.1),

5.1.11 Statement requesting certification, if certification of compliance is required (see 12.1),

5.1.12 Packing requirements, if other than as specified (see 14.1),

5.1.13 Palletization, if required,

5.1.14 Marking required, if other than specified (see 13.1), and

5.1.15 Other requirements.

6. Materials and Manufacture

6.1 *Homogeneous Rubber Sheet Floor Covering*—The product shall consist of a wear layer and backing. The surface coloring or mottling shall be uniform throughout the entire thickness of the wear layer. The backing shall be fibrous or foamed rubber and thoroughly bonded to the wear layer so as not to delaminate under normal use.

6.2 *Layered Rubber Sheet Floor Covering*—The product shall consist of a wear layer, intermediate layer(s), and a backing. The surface coloring or mottling shall be uniform throughout the entire thickness of the wear layer, but need not extend through the intermediate layer(s). The backing shall be fibrous or foamed rubber. The wear layer, intermediate layer(s) and backing shall be thoroughly bonded so as not to delaminate under normal use.

6.3 *Wear Layer*:

6.3.1 The polymeric binder of the wear layer shall satisfy the definition of rubber in Terminology D 1566, and have been vulcanized, as defined in Terminology D 1566 (under vulcanization), such that it becomes thermoset as defined in Terminology D 883. The wear layer made from this compound shall be resistant to neutral pH cleaners.

6.3.2 The wear layer must have a minimum thickness of 0.040 in. (1.0 mm) when measured in accordance with Test Method F 410.

6.3.3 The appearance of the rubber sheet floor covering after removing 0.020 in. (0.51 mm) of the wear layer thickness, shall compare favorably in appearance with the sheet flooring's original appearance. The removal of the wear layer may be accomplished by any suitable method.

6.3.4 The wear layer may have a smooth, embossed, or molded pattern surface.

6.4 *Intermediate Layers*—The layer(s) may consist of, but not be limited to, rubber, foamed rubber, or other materials, which are intended to improve the performance characteristics of the product.

6.5 *Backings*—The composition of the backings shall be fibrous or foamed rubber and may contain other ingredients provided the resultant backing is suitable for installation on floors above-, on-, or below-grade when installed according to manufacturer's installation recommendations.

6.6 *Color, Pattern, and Wearing Surface*—The color, pattern, and wear layer surface, as applicable, shall be as specified in the contract or order (see 5.1).

NOTE 1—The colors and patterns that are available are indicated in individual manufacturer's current catalogs. As manufactured, colors may vary somewhat in hue or shade from the catalog.

NOTE 2—Where color match is a concern, samples from the manufacturer shall be obtained to verify color acceptability.

7. Performance Requirements

7.1 *Hardness*—The rubber sheet floor covering shall have a durometer hardness of not less than 85 (Shore, Type A) when tested in accordance with Test Method D 2240. The backing material shall be removed prior to testing and may be accomplished by any suitable method.

7.2 *Modulus at 10 % Elongation*—When tested in accordance with Test Method D 412 at a rate of 6 in. (152.4 mm)/min, using a 1 in. (25.4 mm) by 5 in. (127 mm) gage length rectangular specimen, the modulus shall not be less than 300 psi (2.07 MPa). For molded pattern rubber sheet floor covering, the raised pattern shall be removed by any suitable method. Prior to testing, the backing material shall be removed and may be accomplished by any suitable method.

7.3 *Static Load Limit*—When tested in accordance with Test Method F 970, with an applied load of 125 lb (56.7 kg), the residual indentation shall not be greater than 0.003 in. (0.076 mm).

7.4 *Resistance to Chemicals*—When tested in accordance with Test Method F 925, the rubber sheet floor covering shall have no more than a slight change in surface dulling, surface attack, or staining when exposed to the flowing chemicals:

7.4.1 White vinegar (5 % acetic acid),

7.4.2 Rubbing alcohol (70 % isopropyl alcohol),

7.4.3 Sodium hydroxide solution (5 % NaOH),

7.4.4 Hydrochloric acid solution (5 % HCl),

7.4.5 Sulfuric acid solution (5 % H_2SO_4),

7.4.6 Household ammonia solution (5 % NH_4OH),

7.4.7 Household bleach solution (5.25 % NaOCl),

NOTE 3—These basic chemicals are representative of those likely to be found in domestic, commercial, and institutional use. Many proprietary compounds contain one or more of these basic chemicals. Should the flooring for an unusual application need to be resistant to a specific chemical, this additional requirement should become part of the procurement document, (see 5.1.8).

NOTE 4—Since standard SBR rubber flooring is not recoommended for installation where the product will be exposed to animal fats, vegetable oils, and petroleum-based reagents, mineral oil, olive oil, kerosene, and gasoline have been removed from the standard chemical list to eliminate any confusion regarding product selection.

7.5 *Resistance to Heat*—When tested in accordance to Test Method F 1514, the color change of the rubber sheet floor covering shall have an average ΔE not greater than 8.0 after seven days exposure to 158°F (70°C).

7.6 *Resistance to Light*—When tested in accordance to Test Method F 1515, the color change of the rubber sheet floor covering shall have an average ΔE not greater than 8.0 after 300 h of exposure to light, simulated by a properly fitted xenon-arc radiant energy source.