



Standard Specification for Vinyl Sheet Floor Covering Without Backing¹

This standard is issued under the fixed designation F 1913; 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 sheet floor covering having a vinyl wear layer without backing. Products also may contain a clear specialty performance top layer(s).

1.2 This type of floor covering is intended for use in commercial and light commercial buildings. General information and performance characteristics, which determine serviceability and recommended use, are included in this specification.

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

1.4 *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:

F 137 Test Method for Flexibility of Resilient Flooring Materials With Cylindrical Mandrel Apparatus²

F 141 Terminology Relating to Resilient Floor Coverings²

F 386 Test Method for Thickness of Resilient Flooring Materials Having Flat Surfaces²

F 410 Test Method for Wear Layer Thickness of Resilient Floor Coverings by Optical Measurement²

F 925 Test Method for Resistance to Chemicals of Resilient Sheet Flooring²

F 1514 Test Method for Measuring Heat Stability of Resilient Vinyl Flooring by Color Change²

F 1515 Test Method for Measuring Light Stability of Resilient Vinyl Flooring by Color Change²

2.2 Federal Standard:

FED-STD 501a (Notice 1) Federal Test Method Standard for Floor Covering, Resilient, Nontextile, Sampling, and Testing³

2.3 ANSI/ASQC Standard:

ANS/ASQC Z1.4 Sampling Procedures and Tables for Inspection by Attributes⁴

3. Terminology

3.1 *Definitions*—Terms used in this specification are defined in accordance with Terminology F 141.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *wear layer, n*—the portion of a resilient floor covering that contains the pattern effect.

3.2.1.1 *Discussion*—The wear layer thickness and total thickness of through pattern unbacked sheet vinyl flooring are the same. A clear specialty performance top layer may be used to enhance specific properties and to protect the pattern effect and shall be counted as part of the wear layer. The wear layer does not include temporary finished or maintenance coatings.

4. Significance and Use

4.1 The information in this specification is for use by specifiers as a reference when selecting unbacked resilient sheet vinyl flooring for areas within commercial and light commercial buildings.

5. Classification

5.1 Sheet Vinyl floor covering shall conform to the following.

5.1.1 The blinder content of the PVC-pattern portion of the wear layer (vinyl resins, plasticizers, and stabilizers) shall be a minimum of 50 %. A clear specialty performance layer(s) used as the top layer is not described by binder limits.

PVC Binder Content	PVC Wear Layer Description
Minimum %	
50 %	The material shall be a vinyl compound consisting of a blended composition of pigments stabilized against heat and light deterioration. The design, color and pattern extends throughout the thickness of the wear layer.

5.1.1.1 All flooring may have a clear specialty performance top layer(s) with an average minimum total thickness of 0.0004 in. The specialty performance top layer(s) may consist of a single layer or multiple layers, which do not delaminate under normal use. Top layer(s) thinner than 0.0004 in. may be used but cannot be counted as part of the clear specialty performance top layer.

⁴ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

¹ This specification is under the jurisdiction of ASTM Committee F-6 on Resilient Floor Coverings and is the direct responsibility of Subcommittee F06.80 on Specifications.

Current edition approved Aug. 10, 1998. Published January 1999.

² Annual Book of ASTM Standards, Vol 15.04.

³ Available from Specification Services, General Services Administration, 7th and D Streets, SW, Room 6654, Washington, DC 20407.

5.1.2 That total thickness is the sum of the PVC wear layer and the clear specialty top layer(s). The total thickness average minimum is 0.075 in. (1.9 mm).

6. Ordering Information

6.1 Sheet vinyl floor covering without backing shall be ordered according to characteristics important to the purchaser for the intended use as indicated by Table 1.

6.2 *Intended Use*—The following is a partial list providing generic guidance on typical applications of product use. For specific applications, refer to the manufacturers product recommendations.

6.2.1 *LC (Light Commercial)*:

6.2.1.1 Multi-family Dwelling—Common Areas.

6.2.1.2 Hotel/Motel Guest Rooms.

6.2.2 *C (Commercial)*:

6.2.2.1 Educational/Institutional.

6.2.2.2 Hospital/Health Care.

6.2.2.3 Retail/Mercantile.

6.2.2.4 Office

6.2.2.5 Hospitality.

6.3 The purchaser may wish to specify the following items.

6.3.1 Manufacturer.

6.3.2 Style name and number.

6.3.3 Minimum roll width (see 9.1).

6.3.4 Surface texture (see 7.1.3).

6.3.5 Variation in list of chemicals used to demonstrate chemical resistance (see 12.6).

7. Material

7.1 *Wear Layer*:

7.1.1 The wear layer shall have a vinyl plastic binder and may include pigments, fillers, extenders, and other ingredients; and shall be stabilized against heat and light deterioration (see 12.7.1 and 12.7.2).

7.1.2 The binder of the wear layer shall consist of one or more vinyl resins, plasticizers, and stabilizers. Each resin shall be polyvinyl chloride or a copolymer of vinyl chloride not less than 85 % of which is vinyl chloride. The vinyl resin(s) shall be not less than 60 % by weight of the binder.

7.1.3 The composition shall be uniform and extend throughout the full thickness of the pattern portion of the wear layer.

7.2 *Specialty Performance Top Layer*—A clear specialty performance top layer(s) of a product can be a PVC or non PVC layer(s), which may constitute part of the total thickness up to a maximum 0.005 in. and is not removable by normal maintenance procedures.

8. Physical Requirements

8.1 Sheet vinyl floor covering shall meet the requirements in Table 2.

9. Dimensions

9.1 Common roll widths are 49-in. (1.25-m), 59-in. (1.5-m), 72-in. (1.83-m), and 78-in. (2-m) widths (minus 0 in.). Other

widths may be available.

9.2 The floor covering shall be furnished in a minimum average overall thickness of 0.075 in. (1.9 mm).

10. Workmanship, Finish and Appearance

10.1 Materials furnished under this specification shall be an acceptable match to an approved sample(s) in pattern, color, and surface appearance. The product shall be free of defects, which would adversely affect performance or appearance.

11. Sampling

11.1 Sampling for testing physical characteristics listed in Table 2 shall be done in accordance with the provisions set forth in ANSI/ASQC Z1.4. The inspection level shall be special inspection level S-1 as noted in Table 1 and the acceptable quality level (AQL) shall be 6.5 defects/100 units as noted in Table II-A or as otherwise specified in 11.3. The lot size shall be expressed in units. A unit represents a single, manufactured, inventoried, finished roll.

11.2 Samples shall be obtained in the required length from the outside end of the roll and shall encompass the total width of the material.

11.3 Sampling for testing physical characteristics listed in Table 2 shall be agreed upon by the purchaser and the manufacturer as part of the procurement documents.

12. Test Methods

12.1 *Wear Layer Binder Content*—The wear layer binder content shall be determined by statement of formula (manufacturer's certificate of compliance).

12.2 *Clear Specialty Performance Top Layer Thickness*—The specialty performance top layer thickness shall be determined in accordance with Test Method F 410 except the thickness of the sample shall be the average of the measurements on three specimens taken 12 in. (305 mm) in from each edge and the center of the sample.

12.3 *Overall Thickness*—The overall thickness, when measured, shall be determined in accordance with Test Method F 386 except that the presser foot shall exert a total force of 1 ± 0.1 oz (28.3 ± 2.8 g) on the specimen. The thickness of the sample should be the average of the measurements on three specimens taken 12 in. (305 mm) in from each edge and the center of the sample.

12.4 *Residual Indentation*—Residual indentation shall be determined in accordance with FED-IST 501a, Method 3231 as follows: 1 h after 75-lb load/0.250 in. diameter flat tip/15 min (34-kg load/6-4 mm diameter flat tip/15 min.).

12.5 *Flexibility*—The flexibility shall be determined in accordance with Test Method F 137. The flexibility shall be such that the wear surface will not crack or break when bent face out and face in over a 1½ in. (3.81 cm) diameter mandrel.

12.6 *Resistance to Chemicals*—The chemical resistance of sheet flooring shall be determined in accordance with Test Method F 925 when exposed to the following chemicals.

12.6.1 *White Vinegar*, (5 % acetic acid).

12.6.2 *Rubbing Alcohol*, (70 % isopropyl alcohol).

12.6.3 *White Mineral Oil*, (medicinal grade).

12.6.4 *Sodium Hydroxide Solution*, 5 % NaOH.

12.6.5 *Hydrochloric Acid Solution*, 5 % HCl.

TABLE 1 Total Thickness

Average Minimum in. (mm)	Intended Use
0.075 (1.9)	LC/C