



Standard Test Method for Using a Variable Incidence Tribometer (VIT)¹

This standard is issued under the fixed designation F 1679; 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 approval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method covers the operational procedures for using a variable incidence tribometer² (VIT) for determining the slip resistance of planar walkway surfaces or walkway surrogates (test surfaces) and can be used for footwear bottom materials and surrogates (test feet) in either the laboratory or field under dry, wet, or contaminated conditions. This test method does not address all methodological issues (for example, test surface and test foot material selection and preparation, experimental design, or report preparation).

1.2 The values stated in inch-pound units are to be regarded as the standard.

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:

F 1646 Terminology Relating to Safety and Traction for Footwear³

3. Terminology

3.1 *Definitions*—For definitions of terms, refer to Terminology F 1646.

¹This test method is under the jurisdiction of ASTM Committee F13 on Pedestrian/Walkway Safety and Footwear and is the direct responsibility of Subcommittee F13.10 on Traction.

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²The English XL is covered by a patent held by William English. The sole source of supply of the apparatus known to the committee at this time is William English, Inc., 20500 North River Rd., Alva, FL 33920. If you are aware of alternative suppliers, please provide this information to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee¹, which you may attend.

³For 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.

4. Significance and Use

4.1 The VIT is designed to determine the slip resistance of walkway surfaces or surrogates and footwear bottom materials or surrogates under field or laboratory conditions so that their slip-resistant properties may be evaluated.

4.2 The measurement made by this apparatus relates to slip resistance. Other factors such as environmental conditions can affect slip resistance. When this test method is used in field tests, relevant factors shall be described.

5. Apparatus

5.1 *Mast Assembly*—A rigid metal frame attached to the chassis with a hinge joint permitting its inclination to any angle from vertical to 45°. A hand wheel is attached between the mast assembly and the chassis to adjust the angle of the mast. The top of the mast assembly consists of a round metal handle that can be used to carry the tester or to apply a downward force while testing to prevent slippage. A pointer on the mast assembly indicates the slip index value for each inclination of the mast.

5.2 *Actuating Cylinder*—A pneumatic cylinder mounted to the mast assembly by a hinged joint to permit the test foot assembly to swing when a slip occurs.

5.3 *Test Foot Assembly*—The combination of (1) the actuating cylinder, (2) the piston, (3) a round aluminum shoe that screws onto a nylon nut holding it on the piston ball joint, (4) the test foot that is glued onto the shoe, and (5) a spring that holds the shoe perpendicular to the piston.

5.4 *Pressure System*—The pneumatic system that drives the actuating cylinder consists of a 12-g carbon dioxide cylinder, tubing that runs to a variable pressure regulator, and tubing that runs to the actuating valve. Pressing the actuating valve pressurizes the actuating cylinder and drives the test foot onto the surface being tested.

6. Test Foot Preparation and Test Surfaces

6.1 Test Foot Preparation: