



Standard Guide for Ranking Footwear Bottom Materials on Contaminated Walkway Surfaces According to Slip Resistance Test Results¹

This standard is issued under the fixed designation F1240; 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 guide describes a method for ranking slip resistance test results of footwear bottom materials on contaminated walkway surfaces.

1.2 *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. Summary

2.1 Slip resistance test results of two or more footwear bottom materials are compared on a walkway surface after adding contaminants likely to be found on the walkway. For each contaminant, the footwear bottom material with the highest test result is ranked 1, the footwear bottom material with the next highest test result is ranked 2, and so forth. The rankings for each footwear bottom material are totaled.

2.2 The footwear bottom material with the lowest total ranking number can be regarded as the most slip-resistant under the conditions of the test.

3. Significance and Use

3.1 This guide provides a method for comparing footwear bottom materials based on their slip characteristics on contaminated surfaces.

3.2 In places where the presence of contamination is expected and in places where it is not feasible to keep walkway surfaces continually clean and dry, it may be appropriate to suggest footwear bottom materials with better slip resistance test results (that is, a lower total ranking number). Examples could include food preparation areas, rendering operations, places where machine oil is used, and cargo handling areas.

¹ This guide is under the jurisdiction of ASTM Committee F13 on Pedestrian/Walkway Safety and Footwear and is the direct responsibility of Subcommittee F13.30 on Footwear.

Current edition approved Jan. 15, 2009. Published March 2009. Originally approved in 1989. Last previous edition approved in 2001 as F1240 – 01. DOI: 10.1520/F1240-01R09.

3.3 This guide may be useful to safety professionals, union officials, and company management.

4. Procedure

4.1 Select two or more pieces of footwear bottom material for slip resistance testing. If testing the whole shoe bottom is not feasible, select a piece from the back of the heel bottom or from the center of the ball of the shoe bottom. Consideration should be given to both tread design and soling material. Footwear or soling suppliers, or both, can be a source of information for assisting with selection of appropriate bottom materials.

4.2 Select an appropriate method for slip resistance testing. Test methods under the jurisdiction of ASTM Committee F13 would be appropriate.

4.3 Select a walkway surface and contaminants based on the expected normal environmental exposure of the footwear.

4.4 Place an appropriate contaminant on the walkway surface and on the footwear bottom material. Describe the contaminant and the method for applying it, the walkway surface, and the test procedure in sufficient detail so others can reproduce the test procedure.

4.5 Test slip resistance of the bottom material on the walkway surface in accordance with the appropriate test method instructions.

4.6 Select another bottom material and place contaminant on it. Replenish the contaminant on the walkway surface. Continue as in 4.5.

4.7 Continue testing in this way until all the bottom materials have been tested.

4.8 Assign a rank of 1 to the bottom material that has the highest test result, 2 to the material with the next highest test result, and so on until all the materials have been ranked. When two or more slip resistance test results are equal, give each one the average of the rank values they otherwise would have had. For instance, if there is a tie for second and third, give each a value of 2.5. If there is a tie for second, third, and fourth, give each a value of 3.

4.9 Clean the walkway surface and bottom materials completely to prevent cross contamination, without damaging the bottom materials or walkway surface.

4.10 If desired, select another contaminant and continue as in 4.4-4.9 until all contaminants have been tested.

4.11 Tabulate the rank numbers using columns for contaminant and rows for footwear bottom material (see example in Table 1.)

4.12 Add the rankings for each bottom material. The lowest total rank value is assumed to be the most slip-resistant under the conditions of the test. A high total rank value does not necessarily indicate poor slip resistance, but may indicate that other materials perform better under the particular conditions of the test.

TABLE 1 Example: Ranking Footwear Bottom Materials Versus Contaminants

	Contaminant	Contaminant	Contaminant	Total
	A	B	C	
Bottom material A	1	2	1	4
Bottom material B	3	1	2	6
Bottom material C	2	4	3	9
Bottom material D	4	3	4	11

4.13 Perform all measurements in the same day, with the same operator, and the same test equipment.

5. Keywords

5.1 coefficient of friction; footwear; shoe bottom material; shoe heel; shoe soling; slip resistance

ASTM International takes no position respecting the validity of any patent rights asserted in connection with any item mentioned in this standard. Users of this standard are expressly advised that determination of the validity of any such patent rights, and the risk of infringement of such rights, are entirely their own responsibility.

This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM International Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, at the address shown below.

This standard is copyrighted by ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States. Individual reprints (single or multiple copies) of this standard may be obtained by contacting ASTM at the above address or at 610-832-9585 (phone), 610-832-9555 (fax), or service@astm.org (e-mail); or through the ASTM website (www.astm.org). Permission rights to photocopy the standard may also be secured from the ASTM website (www.astm.org/COPYRIGHT/).