

STP 1424

# *Metrology of Pedestrian Locomotion and Slip Resistance*

*Mark I. Marpet and Michael A. Sapienza, editors*

ASTM Stock Number: STP1424



ASTM International  
100 Barr Harbor Drive  
PO Box C700  
West Conshohocken, PA 19428-2959

Printed in the U.S.A.

# Contents

Overview

vii

## BIOMECHANICS OF AMBULATION

- Influence of Age and Gender on Utilized Coefficient of Friction during Walking at Different Speeds**—JUDITH M. BURNFIELD AND CHRISTOPHER M. POWERS 3
- Assessment of Slip Severity Among Different Age Groups**—THURMON E. LOCKHART, JEFFREY C. WOLDSTAD, AND JAMES L. SMITH 17
- A Critical Analysis of the Relationship Between Shoe-Heel Wear and Pedestrian/Walkway Slip Resistance**—IN-JU KIM AND RICHARD SMITH 33

## WALKWAY-SAFETY TRIBOMETRY

- Variable Inclinable Stepmeter: Using Test Subjects to Evaluate Walkway Surface/Footwear Combinations**—H. MEDOFF, R. BRUNGRABER, C. HILFERTY, J. PATEL, AND K. MEHTA 51
- An Analysis of the Sliding Properties of Worker's Footwear and Clothing on Roof Surfaces**—HISAO NAGATA 58
- Comparison of Slip Resistance Measurements between Two Tribometers Using Smooth and Grooved Neolite®-Test-Liner Test Feet**—H. MEDOFF, D. H. FLEISHER, AND S. DI PILLA 67
- Examination of Sticktion in Wet-Walkway Slip-Resistance Testing**—ROBERT H. SMITH 73

**What is Needed to Gain Valid Consensus for Slip Resistance Standards—**

ANN E. FENDLEY

89

**Issues in the Development of Modern Walkway-Safety Tribometry Standards:  
Required Friction, Contextualization of Test Results, and Non-  
Proprietary Standards—**

MARK I. MARPET

96

**Implications for the Development of Slip-Resistance Standards Arising from  
Rank Comparisons of Friction-Test Results Obtained Using Different  
Walkway-Safety Tribometers Under Various Conditions—**

RICHARD BOWMAN, CARL J. STRAUTINS, PETER WESTGATE, AND  
GEOFF W. QUICK

112