CrownTech™ - Technical Bulletin No. 4

Coefficient of Friction

CONTENT

INTRODUCTION

The American Disabilities Act (ADA) has set enforceable standards for slip-resistance on pedestrian surfaces. The current coefficient of friction required by ADA is 0.6 on level surfaces and 0.8 on ramps, wet or dry. Crown Polymers recommends the use of slip-resistant mineral or synthetic aggregate in all coatings or flooring systems, especially when exposed to wet, oily or greasy conditions. Crown Polymers recommends the BOT 3000E for in situ field testing.

SLIPS, TRIPS AND FALLS

The Consumer Product Safety Commission reports that more than one million people seek medical attention from a hospital emergency room for “slip-trip-and-fall accidents” each year and more than 12,000 people die.

The National Safety Council claims that 25,000 disabling work place accidents are due to fifteen percent of the estimated 3.8 million disabling workplace injuries each year which are caused by slips, trips, or falls. The average direct cost for one disabling injury now approaches $ 28,000 In the case of a death on the job, the average cost has recently been estimated at $ 940,000.00.

Property owners, end-users and their insurance companies are often found to be responsible for slip or trip, as well as fall injuries that occur on their property, especially if they are reoccurring or fail to meet ADA standards.

NON-SLIP MYTH

There are dozens of manufacturers who claim to offer non-slip products, however they do NOT exist. Nothing is non-slip. Slip-resistant products and skid-resistant products, however, do exist, and offer various degrees of slip-resistance or skid inhibition.

AVOIDING COSTLY LITIGATION

Slips, trips and falls result from various causes. To avoid costly litigation at multi-residential, commercial, industrial, institutional and governmental facilities it is recommended to institute proactive Pre-ventative Accident Programs, validated for ADA (Americans with Disabilities Act) compliance by a Safety Committee or Third-Party Slip Resistance Testing.

Crown Polymers recommends a Proactive Preventative Accident Program, validated by an in-house Safety Committee or a Third Party, which usually should reduce the litigation claims that slip, trip and fall incidents, were caused by negligence. Documenting that the floors and wearing surfaces are periodically tested by a safe committee or Third Party, and taking the appropriate remedy to eliminate potential hazards that are detected, demonstrates good faith. This should reduce or eliminate litigation and mitigation when it comes to slip, trip, and fall incidents.

PREVENTATIVE ACCIDENT PROGRAM

Preventative Accident Program(s) can be an important part in defending against costly slip, trip, and fall settlements. A single claim can cost you or your firm tens of thousands of dollars. While many claims are legitimate, plenty of others are fraudulent. Either way, if you can demonstrate that a thorough floor and wearing surface care program exits, you will likely fare better in court or negotiated settlements than if you had no such program.

One of the things the courts like to see is that you have a Preventative Accident Program, with good records, showing a diligent effort to guard against slip, trip, and fall accidents. It’s important to stress to businesses the importance of documenting their Preventative Accident Programs and the actions taken to maintain their floors and wearing surfaces.

Having proactive Preventative Accident Programs for floor and wearing surface policies in place and staying with it on a regular basis is extremely important in minimizing incidents and legal action.

IN SITU TEST (FIELD) EQUIPMENT

Recently, ASTM (American International, formerly American Society of Testing and Materials) withdrew ASTM C1028 Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter

Method and ASTM F1679 Standard Test Method for Using a Variable Incident Tribometer. These standards used portable test equipment and before being withdrawn, they were the most popular field tests for static coefficient of friction available. However, neither test offered a dynamic test.

EQUIPMENT for DETERMINING DCOF

Establishing a dynamic (DCOF) coefficient of friction, wet and dry measurements and readings program, as part of Preventative Accident Programs is a proactive means of reducing slip, trip, and fall. The frequency of the test should be established based on "real" data collected on the floor, its frequency of use and potential incidents of slip, trip, and fall. It may be weekly, monthly, or longer, depending on environmental use and seasonal changes in use, such as an outdoor pool.

The industry standards have been re-written among the professionals to conform to American National Standards Institute (ANSI) procedures.

Properly maintained floors should have a DCOF (dynamic coefficient of friction) of 0.42 or better, depending on the "environment," when measured per American National Standards Institute ANSI A137.1, which is now integrated into ANSI A326.3 Test Method for Measuring Dynamic Coefficient of Friction of Hard Surface Flooring Materials.

The ANSI A326.3 test involves measuring dynamic coefficient of friction (DCOF) using a trace amount of wetting agent which contains sodium lauryl sulfate (SLS), which is a common surfactant in most floor cleaning agents. The sodium lauryl sulfate is used to represent normal "real life" conditions where a residual film can be re-emulsified when water is spilled or tracked in, creating a slippery condition. It was written by the Tile Council of North America and is now incorporated by reference in the 2012 International Building Code.

The DCOF test accurately measures the coefficient of friction of very smooth surfaces, which may be conducted with the portable BOT 3000E device that can be used to take in situ (job site) measurements with a high-level repeatability.

The BOT 3000E can be used on the following floors:	
Acrylate Overlayments	MMA Coating and Flooring
Ceramic Tile	Pavers
Ceramic Tile, Polished	Porcelain Tile
Concrete	Porcelain Tile, Polished
Concrete, Polished	Polyaspartic
Concrete, Sealer	Polyurea
Concrete, Stained	Polyurethane
Epoxy Coating and Flooring	Terrazzo, without Sealer
Granite	Terrazzo, with Sealer
Granite, Polished	Travertine, without Sealer
Marble	Travertine, with Sealer
Marble, Polished	Vinyl and Vinyl Tile
Marble, Synthetic or Cultured	Urethane Cement Mortar

The American National Standards Institute (ANSI) has three pedestrian floor and wearing surface friction standards involving tests using the BOT-3000E digital tribometer, intended for testing floors and wearing surfaces for indoor use. Why do they have three standards, and what's the difference between them? They all have different test methods and different minimum coefficient of friction values (0.42, 0.43, and 0.60).

CONTAMINATION

Most floor and wearing surfaces are tested immediately after installation and found to be compliant or not compliant with current acceptable standards for static coefficient of friction and dynamic coefficient of friction, wet and dry. slip, trip, and fall incidents occurring at a later date often involve the presence of surface contaminates.

CONCLUSION

Proactive Preventative Accident Programs, validated by a Safety Committee or Third-Party Slip Resistance Testing should reduce litigation and mitigation costs associated with slip, trip, and fall at your facility.

11111 Kiley Dr., Huntley, IL 60142 • 13827 Carmenita Rd. Ste D, Santa Fe Springs, CA 90670
Ph: 847-659-0300 • info@crownpolymers.com • www.crownpolymers.com