STRANGER THAN Friction

A new, industry-wide standard measuring the coefficient of friction for ceramic tile delivers better results and an improved measure of floor safety.

Architects and designers play a direct role in the specification of safe floors and flooring materials, which is why a dramatic new change to the standard governing coefficient of friction (COF) for ceramic tile means that specifiers need to get up to speed on the new testing methods to ensure their flooring specs remain up to par.

Unless you work in a lab, understanding how the COF—a measurement that relates to traction and tile slipperiness—is tested and documented is somewhat confusing. That's partly why the tile industry is making changes to the process of measuring slip resistance and why COF reporting will change in 2014: to improve the tile specification process, provide a readily accessible means for facility owners to check their floors, and ensure greater flooring safety.

The following is a primer on what you need to know about COF and how you can more easily choose the right tile for your next interiors project.

SETTING THE RECORD STRAIGHT

Until now, the value of 0.60 static coefficient of friction (SCOF), as determined by the ASTM C1028 test method, has been the most commonly specified and often misunderstood standard for ceramic tile. Specifiers routinely cite the 0.60 value as a requirement for Americans with Disabilities Act (ADA) compliance, which isn't entirely accurate.

Contrary to popular belief, the ADA did not set a requirement but rather referenced accessibility guidelines that *recommended* a value of 0.60 SCOF. According to the Tile Council of North America (TCNA), the law failed to specify a means of measurement. With over 10 devices in the marketplace all measuring COF differently and providing very different values, the recommended 0.60 SCOF value was effectively meaningless without a standardized test method.

When ADA accessibility guidelines and the guidelines for access to federal facilities covered by the Architectural Barriers Act (ABA) were updated in 2004, the 0.60 SCOF recommendation was withdrawn, but it continues to be cited in court cases involving slip and fall claims, despite the lack of a universal method for measuring COF.

Research at TCNA and in Europe eventually led to standardizing a new way of measuring COF that is more accurate and repeatable, and not influenced by the operator of the measurement device: the DCOF AcuTest℠.

SCOF VS. DCOF: WHAT'S THE DIFFERENCE?

While SCOF relates to the force required for a surface to *begin* sliding over another (divided by weight), dynamic coefficient of friction (DCOF) relates to the force needed to *keep* a surface in motion sliding over another (divided by weight). In other words, we're talking about objects or people already in motion versus those in a static position. (It's important to note that neither SCOF nor DCOF is a property of the flooring alone, but rather a relationship between the shoe sole and the flooring surface.)

When it comes to slip resistance, the difference between these two measurements is stark. Resistance between stationary and moving objects is vastly different, which makes direct comparisons between the SCOF and DCOF methods impossible. Other properties are different as well.

For example, the measurement of SCOF under wet conditions using the (now outdated) ASTM

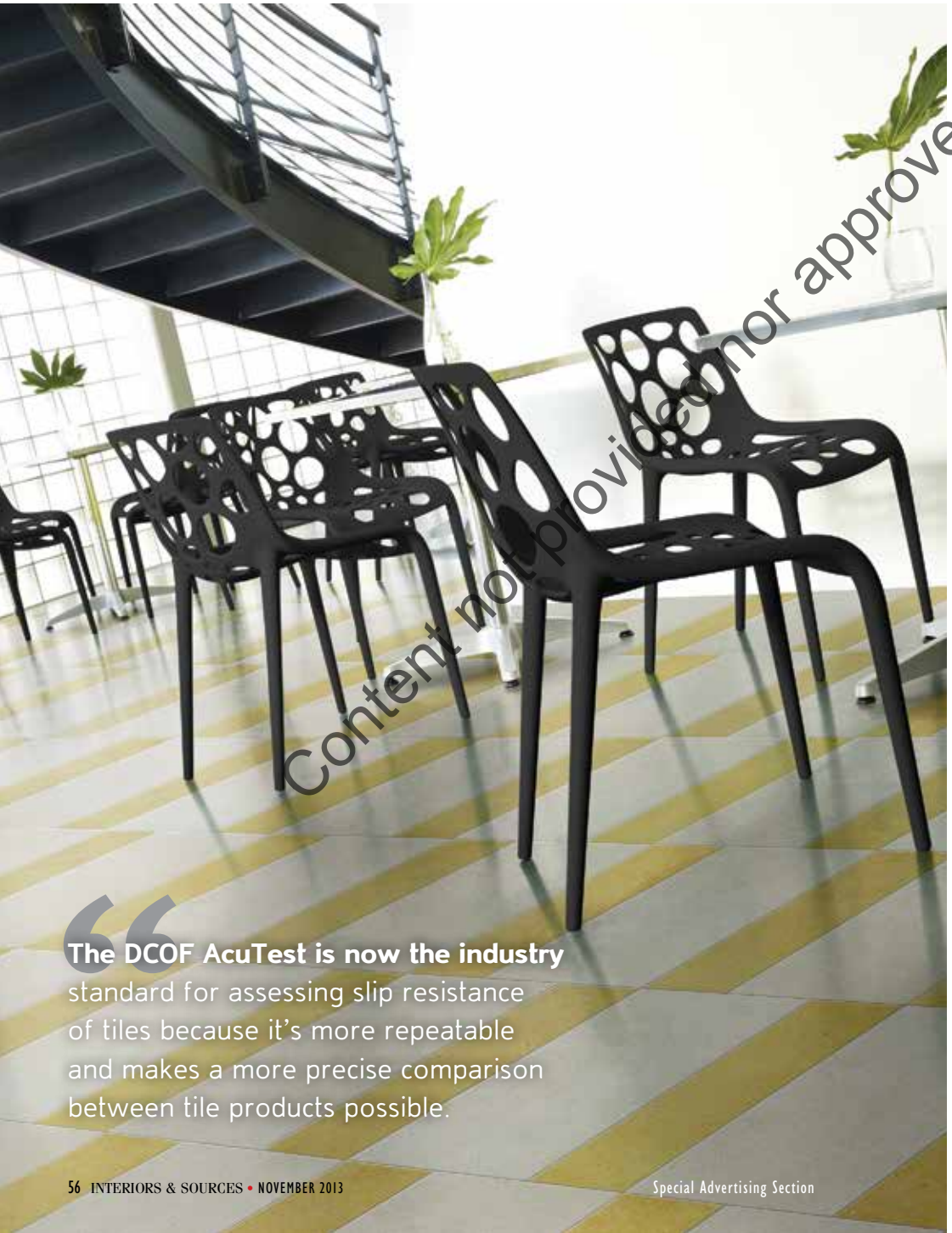
CONTINUED ON PAGE 56

The new DCOF AcuTest (shown above) allows technicians to take accurate and repeatable measurements of DCOF thanks to an automated device, known as BOT-3000. This test replaces the manual ASTM C1028 method for calculating SCOF (shown below), which allowed too many variables into the process.

C1028 test uses deionized water. The new DCOF test method uses slightly soapy water containing sodium lauryl sulfate (SLS), which is common in most floor cleaning agents and can leave a residual film that can re-emulsify when water is spilled or tracked in, creating slippery conditions. The latter scenario is far more likely to occur in real-life applications, and therefore, the new DCOF method is a more realistic and valuable test.

Furthermore, the DCOF AcuTest more accurately measures the COF of very smooth surfaces and is conducted with a portable device that can easily be used to take field measurements on installed tiles—the results of which are highly repeatable. DCOF is also used widely across the world and arguably relates better to slips occurring while a person is in motion, according to the TCNA.

It should be noted that neither SCOF nor DCOF measurements can ultimately prevent slips and falls, or predict when they will occur. However, the TCNA notes that DCOF AcuTest is not only the preferred method for assessing slip resistance of tiles for interior applications, it's now the industry standard in part because it's more repeatable and makes a more precise comparison between tile products possible.



"The DCOF AcuTest is now the industry standard for assessing slip resistance of tiles because it's more repeatable and makes a more precise comparison between tile products possible.

WHAT DOES IT MEAN FOR YOU?

With the formal adoption of the new DCOF AcuTest method by the ceramic tile industry, manufacturers will stop reporting the coefficient of friction using the C1028/SCOF method starting in 2014. In short, the 0.60 SCOF value is going by the wayside.

Architects, designers and specifiers should begin looking for the new minimum threshold of 0.42 DCOF, as measured by the DCOF AcuTest, when asking for product specifications from manufacturers. This means that tiles suitable for level interior spaces expected to be walked upon when wet should have a DCOF value of 0.42 or greater. (Keep in mind that the COF of installed tiles can change over time as a result of wear and surface contaminants, and may require periodic deep cleaning or traction-enhancing maintenance to maintain DCOF values.)

It's also important to note that now that there is a DCOF threshold requirement in the American National Standards Institute's (ANSI) A137.1 ceramic tile standard, any party involved in the chain of sales may be held responsible for knowing about the 0.42 requirement. The new ANSI A137.1-2012 contains a two-page section on COF (section 6.2.2.1.10), which many specifiers will find helpful in determining the right tile for the job.

THE BOTTOM LINE

The DCOF AcuTest method is now the "gold standard" for measuring COF for ceramic tile specifications, and should be referred to by designers specifying tile in areas that are expected to be walked upon when wet. That being said, the presence of water on installed tiles (including standing water that may exist on improperly sloped floors), oil, grease and/or any other elements that reduce traction may create slippery conditions where the risk of a slip cannot be completely eliminated. Tile installations with exposure to such elements require extra caution in product selection, use and maintenance.

The risk of a slip can be diminished—but not eliminated—in these particular scenarios by installing tiles with a structured or textured surface, mosaic tiles or certain extruded, unglazed quarry tiles. Of course, specifiers should always follow manufacturers' guidelines and recommendations when selecting these products.

By ensuring that any tile products specified for flooring applications meet the COF criteria in the ANSI A137.1 standard, and are maintained to continue to meet those criteria, designers, architects, building owners and facility managers can all breathe a collective sigh of relief, knowing that they've done their part to reduce the likelihood of slips and falls in residential and commercial interiors. I&S