Slip Resistance of Polished Concrete

CPC Position Statement #2

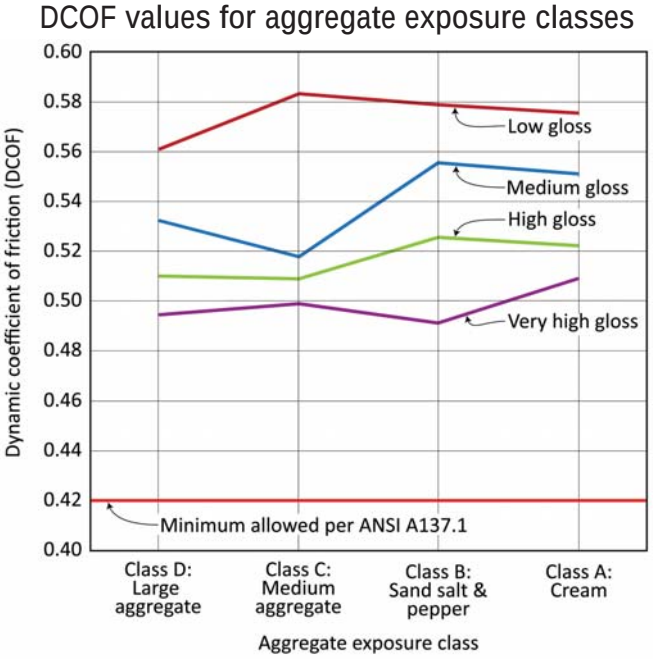
Polished concrete provides a smooth surface that is durable, light reflective, and easy to maintain. Typical uses for polished concrete include schools, airports, retail spaces, casinos, restaurants, hospitals and medical facilities, public libraries, and other public use areas subject to high foot traffic. Because of its smooth and glossy surface, however, owners and architects have asked about the slip resistance of polished concrete. To answer that question, the Concrete Polishing Council (CPC) (then the Concrete Polishing Association of America) contracted with the Tile Council of North America (TCNA) to determine dynamic coefficient of friction (DCOF) values for polished concrete surfaces, using the test method in Section 9.6 of ANSI A137.1, American National Standards Specifications for Ceramic Tile. That standard specifies a minimum dynamic coefficient of friction of 0.42 for tiles in level indoor areas that may get wet in use.

In 2015, CPC polishing contractors placed a 20 x 45 ft (6 x 14 m) concrete slab in the TCNA laboratory. Thirty-three days of curing, grinding and polishing were performed to create 48 test sections, each 3 x 4 ft (0.9 x 1.2 m). As listed in the table, four aggregate exposure classes were produced with four different gloss levels. Thus, a total of 16 finish types were produced. Each finish type was produced in triplicate, resulting in a total of 48 test sections.

Three randomly selected 1 ft (0.3 m) square sample areas were tested on each 3 x 4 ft test section. Each sample area was tested under wet conditions in four directions using a calibrated BOT 3000E machine. A total of 576 tests were completed on the 48 test sections.

The graph shows the average of all measurements for each gloss level, in order of decreasing aggregate class. Note that the slip resistance is not affected by the aggregate exposure class but does vary based on the gloss level. All test results significantly exceeded the required DCOF of 0.42, even at very high gloss levels. The test results were presented at the 2015 World of Concrete Polishing Luncheon and published in Concrete Décor, August/ September 2015 ("CPAA Adopts New Position on Measurement of Polishing Concrete Floors' Slip-Resistance"). The January 29, 2015, 27-page report by TCNA is available on the CPC website at www.ascconline.org/concretepolishing-council/resources.

CPC polishing contractors provide a slip-resistant polished concrete surface to owners and architects as documented in this test program. If you have any questions, contact your CPC polishing contractor or the CPC Technical Hotline at (888) 483-5288 or at cpchotline@ascconline.org.



Laboratory testing of 48 test sections *	
Aggregate exposure class	Gloss level
Class A: Cream	Level 1: Low gloss
Class B: Sand salt and pepper	Level 2: Medium gloss
Class C: Medium aggregate	Level 3: High gloss
Class D: Large aggregate	Level 4: Very high gloss

* The DCOF testing was completed in 2015. The chart (above) represents the Aggregate Exposures and Gloss Levels recognized at that time. The CPC has since revised both charts. They can be found online at https://www.ascconline.org/concrete-polishing-council/technical-documents.

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