

# WHAT IS DCOF?

DCOF, or dynamic coefficient of friction, is the primary product performance measure used by the North American tile industry to identify suitable applications for a floor product. When it comes to choosing the right tile for an area, DCOF is a main consideration, especially when selecting tiles for areas that may be subjected to water, oil, or grease exposure.

ANSI A137.1 requires tile flooring products to have a DCOF of 0.42 or greater if recommended for use in a level interior space intended to be walked upon when wet. This specification is based on wet DCOF measurement performed according to ANSI A326.3.

ANSI A326.3 Wet DCOF measurements are based on specific standard practices under controlled conditions. These measurements provide useful information for comparison of product performance, but measurements should not be considered as an indicator of whether a slip can occur.

Friction is the innate force that resists the sliding motion of one surface against another. The DCOF of a surface is a measurement of the force necessary to keep a surface already in motion sliding over another surface and it is likened to the frictional forces a person experiences when walking.

# PUTTING SAFETY FIRST

Marazzi was among the first in 2012 to join the Tile Council of North America in testing our products for DCOF per the test method now defined in ANSI A326.3. This method is the most widely accepted measurement of dynamic coefficient of friction (DCOF) for hard surface flooring, not just on ceramic tile.

In addition to recommendations for appropriate applications, product DCOF specifications are listed on the Marazzi website.

The chart below details Marazzi's recommended DCOF for various types of application.

# DCOF RECOMMENDED APPLICATIONS

Marazzi recommends that the following guidelines shall be utilized together with a regular cleaning / maintenance program.

Information in *italics* correspond to relevant ANSI A326.3 Section 4 - "Product Use Categories".

<b>Product Use Classification</b>	<b>Example Area</b>	<b>DCOF <i>per ANSI A326.3</i></b>
<b>Dry &amp; Level Interior</b>  <i>Interior Dry (ID)</i>	Level public areas that are DRY and contaminant free. Some examples are (but not limited to): hotel lobbies, apartments, public buildings, shopping centers (excluding food areas), hospitals, elevator lobbies, interior hallways, cafeterias, retail stores, theatre lobbies and other dry health service areas.	$\geq 0.42$ Dry
<b>Wet &amp; Level Interior</b>  <i>Interior Wet (IW)</i>	Level public areas that are likely to be walked on when WET. Some examples are (but not limited to): Entry foyers of hotels, offices and other public buildings, supermarkets (entry areas, food preparation, produce, or any area where water may occasionally be present), shopping center food courts, and toilet facilities, and production areas not involving oil or fats.	$\geq 0.42$ Wet
<b>Pool Decking (and other wet areas with minimal footwear)</b>  <i>Interior Wet + (IW+)</i>	Level Service or recreation areas involving constant water where light or no footwear is used. Some examples are (but not limited to): public showers, steam rooms, swimming pool decks, and locker rooms.	$\geq 0.60$ Wet
<b>Exterior Applications</b>  <i>Exterior Wet (EW)</i>	Level Pedestrian areas that could be exposed to water (excluding ice), but are otherwise reasonably maintained, where footwear is typically used. Some examples are (but not limited to): walkways, gazebos, or patio areas.	$\geq 0.60$ Wet
<b>Oils</b>  <i>Oils / Greases (O/G)</i>	Level Service or production areas involving oils, greases, and/or fats. Some examples are (but not limited to): automotive fluids, catering areas, areas involving deep-fry and grill equipment, other food preparation areas involving grease or oil. BOH (Back of the house) quick service or family style restaurants or delicatessens. Any area where combined grease and water accumulation may be present.  Marazzi recommends Quarry tile and treaded paver products for this application.	$\geq 0.60$ Wet

<b>Ramps &amp; Inclines</b>	Inclined areas or ADA compliant ramps. Some examples are (but not limited to): Stairs and stair treads/nosings, wheelchair ramps, workshop bays (where no oil is present), sidewalks, and driveways where pedestrian traffic is normally present.	$\geq 0.65$ Wet
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Additional considerations relating to product selection:

1. Absent exceptions listed on this page indicating otherwise, ceramic and porcelain tiles should not be used in floor applications where there is a consistent surface presence of water, oil, or grease. This includes outdoor areas.
2. Proper maintenance is critical. Improper maintenance and improper maintenance products can result in a build-up on the surface of the tile causing the tile to be slippery. See maintenance recommendations.
3. Test Methods - there are many different test methods related to slip resistance. Marazzi recommends that customers have tile independently tested to determine if the Marazzi product meets the requirements of the customer's preferred test method. Marazzi and the tile industry recognize *ANSI A326.3 - American National Standard Test Method for Measuring Dynamic Coefficient of Friction of Hard Surface Flooring Materials*. Marazzi does not warrant that any of its products will meet any testing parameter other than that measured per ANSI A326.3.
4. ANSI A137.1 requires that tiles suitable for interior level spaces expected to be walked upon when wet have a minimum, wet DCOF of 0.42.
5. No floor tile is "slip proof."
6. Slippery conditions can be reduced by limiting foot traffic in contaminated conditions, use of appropriate footwear, prompt removal of contaminants, effective drainage, and proper maintenance. Installations and end use conditions can vary. The end user must evaluate the tile to be used with their specific end use conditions, maintenance program(s), and footwear selection to determine compatibility.
7. Tile size can be a factor for slip resistance in wet areas. Smaller sizes allow for more drainage through an increased number of grout joints and easier sloping. Planar variations on larger formats could result in a higher probability of standing water and increase the risk for hydroplaning.
8. Polished and semi polished surfaces create a very smooth surface. Marazzi does not recommend polished surfaces in any areas that may be subjected to water, oil, or grease exposures.