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PRECIDIUM™ MTI Non-Skid Testing Coefficient of Friction

Sample Preparation

Existing panels with PRECIDIUM™ MTI Non-Skid 100 and 75 Clear Coats were taken from the lab supply. Two more panels were sanded and then given new Non-Skid Clear Coats with 50 and 20. An additional panel was made with grit broadcast into black PRECIDIUM™ MTI 2100 Primer and top coated with black PRECIDIUM™ MTI Top Coat to create an extremely aggressive finish suitable for high inclined ramps, etc.

Panels were allowed to cure for a week at ambient conditions (23°C and 35% RH) prior to testing.

For comparison, a piece of rubber floor provided by a transit authority for color matching was tested as well. The sample was new and glossy, so both the front and back sides were tested.

After completion of testing, the panels were cut in half. Half was sent to Siemens for evaluation, and the other half was retained for our records and for future reference.

Test Method

The **ASTM C1028** is the Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method. The measurement made by this apparatus is believed to be one important factor relative to slip resistance. The static coefficient of friction is determined under both wet and dry conditions using Neolite heel assemblies (common footwear material).

Pre-test preparations were as follows:

1. Slip meter pulled across a piece of 400 grit silicon carbide sandpaper on a flat surface
2. Step one repeated another three times, for a total of four pulls
3. Slip meter rotated 90 degrees and another four sandings
4. Repeat for the two remaining directions
5. Clean the heel assemblies with a fine haired brush.
6. Suspend the slip meter from the calibration chain and adjust until reading is within 1% of 1.00.

Readings were taken in four different directions, and the resulting averages were recorded.

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Figure 1: Calibration of Dynamometer pull meter

Results

Results are summarized in Table 1.

Table 1: Summary of Results

Sample	Coefficient of Friction (Dry)	Coefficient of Friction (Wet)
NS 100	.92	.82
NS 75	.89	.86
NS 50	.97	.85
NS 20	.93	.76(1)
Grit Broadcast	1.23(2)	>1(3)
Rubber Topside	.52	.51
Rubber Backside	.60	.53

(1) – Non-skids were added at the same weight percentage, so the larger the non-skid the fewer number of particles per unit area were applied, which likely lead to the larger drop in wet COF. This could be countered by adding a higher weight percentage of non-skid.
(2) – Two of the pulls maxed the meter, completely deflecting the gauge before lifting the unit
(3) – Line filament broke under tension of testing the sample, so testing stopped after one reading

Conclusions

For most public walkway surfaces, the minimum COF (coefficient of friction) recognized as providing a non-hazardous surface is 0.50 (ASTM D2047, and the Slip and Fall Handbook, Stephen I. Rosen, Hanrow Press). Further, in the USA, the American Disabilities Act and the Architectural and Transportation Barriers Compliance Board recommend flooring and walkways to have a COF of 0.60 and 0.80 for ramps.

Based on these values, the COF for all the PRECIDIUM™ MTI Rail Floor samples meet and exceed the industry standard for providing a non-hazardous surface for pedestrian traffic.

In terms of overall performance we recommend using the smallest grade of non-skid that gets acceptable coefficient of friction. Larger non-skid particles stick further out of the film surface and thus are more prone to being worn off. They also make the floor harder to clean by creating more surface texture.

Note: Values obtained in this report are dependent on the procedure and apparatus used. These numbers may not be directly transferrable to another test method.