

Report of Tests Results
on
Solid Surface
Shower

Tested In Accordance With
ASTM F-462 Slip Resistance

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I. PURPOSE

Griform Innovations, Inc. submitted a Solid Surface Shower for evaluation in accordance with the ASTM F-462 Slip Resistance Standard.

The finished surfaces of bathing fixtures may be exceedingly slippery when wet. Therefore, many manufacturers have devised textured surfaces in order to prevent slipping. The purpose of this test is to measure the static coefficient of friction (resistance to slipping) of a given "slip resistant" surface to determine if it meets a minimum performance requirement.

The standard procedure for evaluating the slip resistance of slip resistant bath fixture is defined in the ASTM F-462 Standard Consumer Safety Specification for Slip Resistant Bathing Facilities. The slip resistance test involves the use of a device known as a Brungraber Slip Resistance Tester. Measurements are taken in nine different "measurement zones" (different locations on the slip resistant surface) with the Brungraber tester. Two measurements are taken in each measurement zone, and the resulting data is used to calculate μ_s values. The two values μ_s obtained from each measurement zone are averaged, resulting in nine μ_s values for the entire surface.

After completion of the calculations, the resulting coefficients are compared to the performance requirement of the ASTM F-462 standard. Conformance to the standard requires that each of the nine tested locations yield an average μ_s value of no less than 0.04.

II. BACKGROUND

Griform Innovations contacted the NAHB Research Center on June 14, 2004, to request performance of testing in accordance with the ASTM F-462 standard.

The unit was received by the Research Center on June 24, 2004, and slip resistance testing was conducted June 25, 2004. The model number of the unit, as supplied by Griform, was RC3838 textured. The slip resistant surface of the material consisted of a textured surface.

III. TEST METHODOLOGY

ASTM F-462

Test Preparation:

Prior to testing, the surface of the unit is thoroughly cleaned with a non-abrasive compound. The unit is then leveled and the drain is sealed. The unit is subsequently filled with a soap solution, as described in Section 8.3 of the ASTM F-462 standard, to a minimum depth of 1/2".

Test Method:

Nine different locations on the slip resistant surface are tested. These locations are defined as "measurement zones" in the ASTM F-462 standard. The Brungraber Slip Resistance Tester is then applied to the surface. Two measurements are taken in each measurement zone.

The Brungraber Slip Resistance Tester is designed to measure the static coefficient of friction between a representative foot surface and a surface for walking or standing. This is accomplished when the operator applies a predetermined vertical force through vertical shafts and an articulated shaft to the sensor shoe.

At the start of the test, the carriage is brought forward to a stop position such that the articulated shaft is not vertical but set at a slight angle towards the back of the tester. This is accomplished by either introducing an initial position stop at the front of the carriage or by using the tester in an "uphill" mode on a surface inclined to an angle of at least 1 degree. This establishes an unbalanced lateral force against the carriage. At the instant that the handle is released and the vertical load is applied, the carriage begins to move back along the travel bars, inducing an increasing lateral load on the shoe as the angle between the articulated shaft and the vertical shaft increases. The tangent of this angle at the instant that slip occurs is directly related to the static coefficient of friction. This angle is measured by the recording shaft, which is magnetized and drawn along by the attachment of the attraction plate as the carriage moves backwards. When slip occurs, the sensor shoe hits the trigger so that the recorder clamp grips the recording shaft, retaining the shaft in the position assumed at the time of slip. The measurement of slip resistance is read opposite a notch in the indicator tube at the front of the recorder clamp from a linear-graduated scale imprinted along the length of the recorder shaft. This value is directly translated to the static coefficient of friction by use of the calibration chart or table supplied with the tester.

After all measurements have been completed, the two measurements for each measurement zone are averaged. These average static coefficients of friction are the reported values for each measurement zone.

Performance Requirement:

Section 9.2 of the ASTM F-462 standard states that the average static coefficient of friction for all measurement zones shall be no less than 0.04.

IV. TEST RESULTS - ASTM F-426

Measurement Zone	Average Static Coefficient of Friction	Test Result
1	0.14	Pass
2	0.17	Pass
3	0.11	Pass
4	0.11	Pass
5	0.07	Pass
6	0.17	Pass
7	0.19	Pass
8	0.21	Pass
9	0.18	Pass

V. DISCUSSION OF RESULTS

For the ASTM F-462 testing, the measured average static coefficients of friction for all nine of the measurement zones was greater than the minimum performance requirement of 0.04.

The sample was not damaged during shipping and it did not appear that it was tampered with prior to arrival. These tests were performed under the direct and continuous supervision of laboratory personnel.

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