

FLOR-SIL[™]

Lithium Densifier

Testing Performance Report

Product Description

FLOR-SIL[™] Lithium Densifier is an economical cost effective chemical treatment used to enhance the grinding and polishing process (metal and resin bonded abrasives) of architectural polished concrete surfaces. FLOR-SIL[™] rapidly produces a harder, denser surface that is easily profiled and polished. Its deep penetrating, non-soluble properties provide longer life and higher reflectivity.

General Conditions

In 1997, Law Engineering of Atlanta, Georgia, tested Flor-Sil[™] for flexural strength, water permeability, water vapor transmission, and staining resistance. The Mix consisted of 517 lbs. Portland cement, 1800 lbs coarse aggregate, 1230 lbs. fine aggregate, 275 lbs. water, with 5.5% air content. The water-cement ratio was 0.51. This mix has a compressive strength of 3500-4000 psi. For water vapor transmission testing, a cement-sand mortar was used. Proportions were prepared according to ASTM C 109: 23.6% cement, 65% sand, and 11.4% water, by weight. Samples were cured in lime-saturated water for seven days at 73° F, then air-cured for 21 days at 73 degrees F and 50% relative humidity before coatings were applied. The mortar samples for vapor testing were cured the same way.

Flexural Strength

Results are expressed in pounds per square inch (psi) and carried out per ASTM C-78-94 "Standard Method for Flexural Strength of Concrete (Using Simple Beam with Third-Point Loading).

Un-treated sample	430
Treated with Flor-Sil	635

Water Permeability

Performed in accordance with CRD-C 48-73 "Method of Test for Water Permeability of Concrete," showing Flor-Sil to reduce the permeability of concrete over the control.

Untreated	4.8E-10 (cm/sec)
Treated with Flor-Sil	7.5E-11

Technical Data

Protection C
Irritant
V.O.C. Content 50 < gms/L
Health 1
Flammability 0
Reactivity 0



Water Vapor Transmission

Performed in accordance with ASTM E-96-94, "Standard Test Methods for Water Vapor Transmission of Materials." These figures are reported in grains/hour per square foot and show reduced vapor transmission

Untreated	1.40
Treated with Flor-Sil	1.13

Stain Resistance

All samples were exposed to the listed materials then scrubbed with water, a non-abrasive cleaner, and an abrasive cleaner. Values listed are for abrasive cleaners only with 0 representing no change in stain and 10 indicating the stain is completely gone.

	Untreated	Flor-Sil
Tomato Paste	3	8
Gum	3	8
Coffee	8	10
Tea	8	10

Hardness / Abrasion

Mohs' Hardness testing was conducted by Arrow Testing Laboratories of Provo, Utah in January of 2001 using the Arrow protocol and apparatus. 3000 psi steel-troweled concrete that has been in place 10 years was tested. The Mohs' hardness scale is a comparative scale. The absolute scale of hardness equivalent is given in parentheses following the Mohs number.

Untreated	3.5 (9)
Treated with Flor-sil	7.0 (100)

Rilem Tube Test / Water Penetration

In January of 2001, Arrow Testing Laboratories of Provo, Utah used a water cylinder, and 3000 psi steel-troweled concrete that has been in place for 10 years. The slab was tested through a 30 minute soak-in period. The cylinder is graduated in inches, the figures below represent column inches absorbed over the test period.

Untreated	0.7
Treated with Flor-sil	0.2