AC·TECH
Allied Construction Technologies, Inc.
When Performance Counts!

Technical Bulletin; 1

Substrate Requirements, Compressive and Cohesive Testing

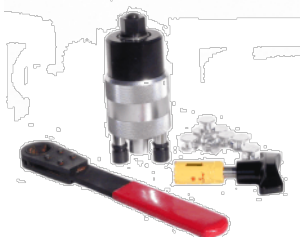
ACT 2170™ Substrate Requirements; Concrete Must Be:

1) Sound;
   a) 2,000 psi compressive minimum; *Schmidt Hammer test*
   b) 200 psi cohesive; pull-off; *Elcometer test*
   c) Absorptive, *water drop test*
   d) Comply with ACI 201 *Overall conclusion*

2) The concrete must be mechanically prepared;
   a) The concrete must be mechanically prepared to an ICRI SP value of 3 – 4
   b) Dust free, *visual inspection*
   c) Stain-free condition

3) Shot blasting is the preferred mechanical method for preparation.

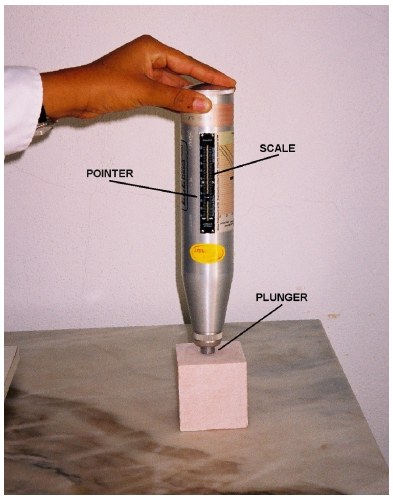
Schmidt Hammer



Elcometer; hand-crank operated

<u>Schmidt Hammer</u> for ***Compressive Testing***: Remove all coatings and adhesives prior to testing. Follow and observe all instructions that came with the hammer, wear eye protection. This device can measure both horizontal and vertical concrete structures.

1) All old coatings removed;
2) Scale is set to zero;
3) Place plunger on surface to be tested;
4) Push down on hammer until it trips;
5) Read pointer on side scale;
6) ~ Compressive strength



Scmidt hammer in use.

Elcometer™ : ***Cohesive Test*** for testing cohesive strength of hardened concrete:

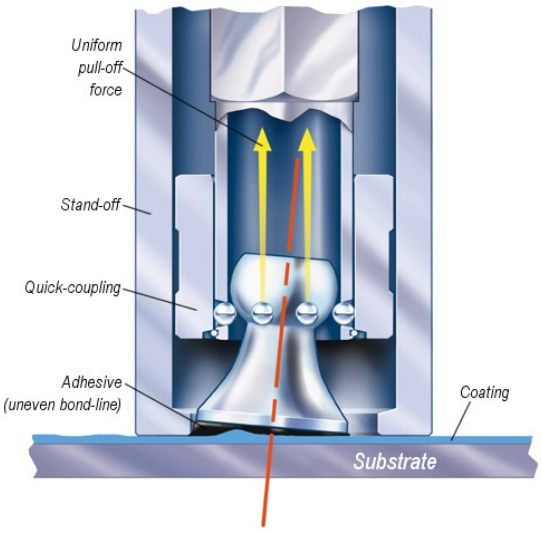
ASTM D7234 - 12 Standard Test Method for Pull-Off Adhesion Strength of Coatings on Concrete Using Portable Pull-Off Adhesion Testers:

Abstract: This test method covers procedures for evaluating the pull-off adhesion strength of a coating on concrete. The test determines the greatest perpendicular force (in tension) that a surface area can bear before a plug of material is detached. Failure will occur along the weakest plane within the system comprised of the test fixture, adhesive, coating system, and substrate, and will be exposed by the fracture surface.

Hydraulic hand pump-operated Elcometer

How it works: Either by hand or hydraulic unit:

1. Glue "dolly" to substrate or coating per instructions;
2. Let glue cure;
3. Use saw cylinder to cut coating;
4. Attach "stand-off" to dolly;
5. Gently wind or pump device;
6. Stop when dolly "pops";
7. Read digital or pointer on scale.
8. Record the psi reading.



Force must be exerted in a 90° pull

The Elcometer can be used for coatings adhesion testing and for testing the cohesive failure rate of the concrete cap.

Schematic of various Failure Modes for dolly separation.

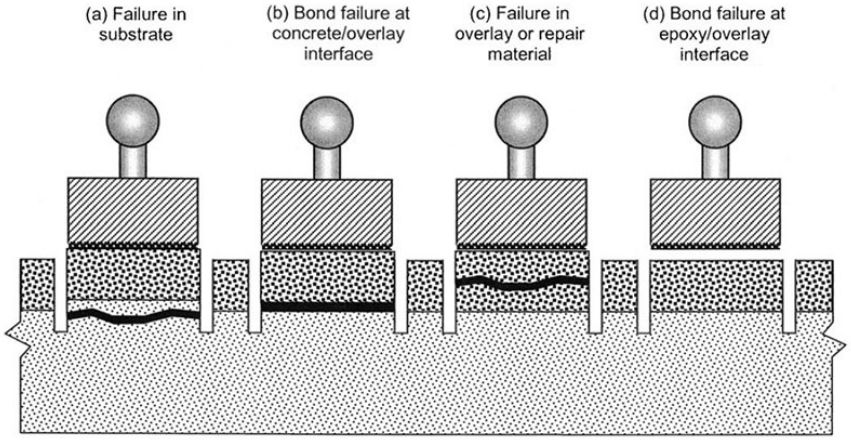
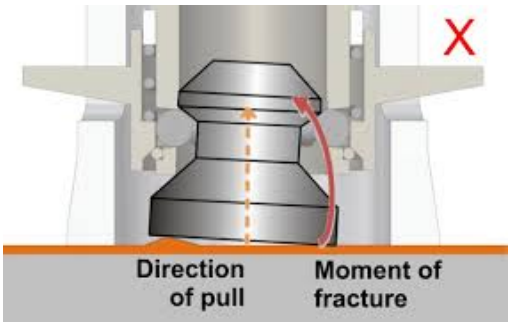


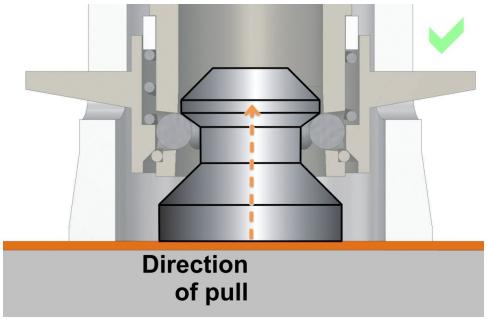
FIG. 3 Schematic of Failure Modes

The preferred outcome is the first on the left where a section of concrete is pulled up with the dolly, which represents a cohesive failure of the substrate and not the coating or the very top of the concrete cap.

Wrong way to use Elcometer!



Correct way to use Elcometer!



The "pull" for correct readings on the Elcometer must be made at a 90° angle to the deck as shown in the drawing on the right. Use 5-minute epoxy glue for dolly adhesion.

Elcometer Inspection Equipment: http://www.elcometer.com
USA: Elcometer, Inc.; 1893 Rochester Industrial Dr.; Rochester Hills, Michigan 48309; Tel: +1-248-650-0500; The Elcometer 106/6 Adhesion Tester (picture right) has been specifically designed to measure coatings on concrete; *Supports ASTM D7234.

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phone:1-888-544-8250; 1-708-456-6300; Fax:1-708-456-0137
Schmidt Hammer, Type N; H-2975
*Type N supports the following standards: ASTM C805, ASTM D5873,