Australian Standard®

Methods of testing concrete

Method 24: Determination of the tensile bond strength of concrete—Repairs and strengthening systems

1 SCOPE

This Standard describes a procedure for the determination of the tensile bond strength of concrete repairs, which use mortars, grouts, concretes and other products. This method also applies for the determination of the tensile bond strength of concrete strengthening systems such as fibre reinforced polymer (FRP) composites.

2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS
1580 Paints and related materials—Methods of test
1580.408.5 Method 408.5: Adhesion—Pull-off test

3 PRINCIPLE

The method requires the exertion of a tensile force on a steel dolly bonded to the surface of the repair material or strengthening system. The test area is defined by coring through the surface of the repair material or strengthening system and into the concrete substrate below. The strength of the bond at the interface of the repair material or strengthening system and the concrete substrate is measured and the type of failure reported.

The test method is based on the broad processes used in AS 1580.408.5.

4 APPARATUS

4.1 Pull off test equipment

A commercially available pull off adhesion tester (as per AS 1580.408.5—2006, Clause 5.1). A capacity of 10 kN is sufficient to cause tensile bond failure of the specimen for most applications.

The pull-off tester shall be calibrated at zero load and over the range of interest, and shall be accurate within ±10% of the set reading and with a pulling capacity sufficient to cause tensile bond failure of the specimen. The measurement device shall retain the reading of maximum force exerted.

NOTE: The pull-off equipment may be provided with a measurement device that displays the exerted force by an analogue or digital system.