
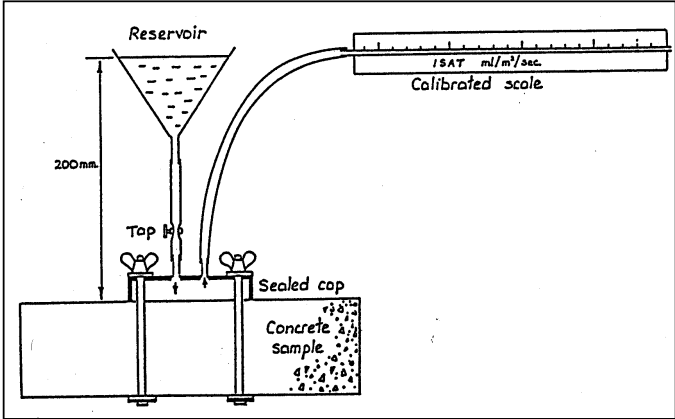


Appendix U.8.1 - ISAT

Generic Name of Test	Water NDT : Abrasion / Non Destructive Test								
Principle of Test	Water is absorbed into the surface at a measured rate								
Historic Development of Test	The <i>BS 1881 : Part 5 : 1970 Initial Surface Absorption Test</i> was developed for assessing the durability of precast concrete products.								
Apparatus and	The apparatus (shown in figure U.8.1.1 and U.8.1.2) consists of a cap which can be sealed to the concrete specimen, an inlet pipe connected to a reservoir and an outlet pipe connected to a capillary tube connected to a scale rule. [BS 1881 : Part 5 : 1970]								
<div style="display: flex; justify-content: space-around; align-items: center;">   </div> <p style="text-align: center;">Figure U.8.1.1 and U.8.1.2 Initial Surface Absorption Test apparatus [Left: Chaplin (1990) Right: C&CI Notes: NDT (1997)]</p>									
Test Method	The cap is clamped and sealed to the concrete surface and the reservoir filled. The tap is now opened, the chamber and outlet pipe filled, including the open capillary tube. The tap is now closed and measurements are made of the movement of water in the capillary tube over a fixed period of time following the closure of the tap between the cap and the reservoir. [BS 1881 : Part 5 : 1970]								
Surface Absorption	This is measured as $\text{mm/m}^2/\text{sec}$ [BS 1881 : Part 5 : 1970]								
References	<table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left; border-bottom: 1px solid black;">Author</th> <th style="text-align: left; border-bottom: 1px solid black;">Comment</th> </tr> </thead> <tbody> <tr> <td>BS 1881 : Part 5 : 1970</td> <td>Source document</td> </tr> <tr> <td>C&CI Notes: NDT (1997)</td> <td>Source document</td> </tr> <tr> <td>Sadegzadeh (1986)</td> <td>Source document</td> </tr> </tbody> </table>	Author	Comment	BS 1881 : Part 5 : 1970	Source document	C&CI Notes: NDT (1997)	Source document	Sadegzadeh (1986)	Source document
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APPENDIX U.8.1

Mechanisms according to Author

(i) BS 1881 : Part 201 : 1986: Initial surface absorption involves measurement of the rate of flow of water per unit area into a concrete surface subjected to a constant applied head.

(ii) Sadegzadeh (1986): There is a very close relationship between the abrasion resistance and the initial surface absorption. This is attributed to both tests being influenced by the micro-surface texture and the quality of the surface matrix.

(iii) Visual Effects: None

Mechanisms according to writer [R0 S0 I0]

This test is clearly a measure of the porosity of the surface which is generally influenced by cement content, w/b, power troweling, curing etc. Abrasion resistance is also related to surface porosity and is likewise influenced by these processes.

The test however is unable to measure certain other aspects that positively contribute to abrasion resistance such as hardness of the aggregates and the effect of liquid surface treatments etc.