

**ANALYSIS ON THE RELIABILITY OF SCLEROMETER TEST**

**RESULTS**

**by**

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## ABSTRACT

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The difficulties of core cutting, and indeed the entire procedure of making, curing and testing of standard test specimens could be avoided if concrete were tested in situ in a manner harmless to the part tested. Various attempts to devise non-destructive tests have been made but few have been successful. One testing method that has found practical application within a limited scope is the rebound hammer test, devised by Ernst Schmidt. It is also known as the impact hammer or sclerometer test. Some researchers concluded that this test depicted the surface hardness only and non direct correlation against the crushing strength of the test sample could be derived from the results. This is particularly true on samples more than 1 month old. Hitherto, rebound hammer results are always taken with a pinch of salt and other supporting test results are hence forth consulted.

# CHAPTER ONE

## INTRODUCTION

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### 1.0 INTRODUCTION

The word concrete comes from the Latin term "concretus" which means to grow together[S. Mindess and J. F. Young, 1981]. It is a composite material composed of coarse granular material (the aggregate or filler) embedded in a hard matrix of material (the cement or binder) that fills the space between the aggregate particles and glues them together.

The cement, coarse aggregate, fine aggregate and water are mixed together according to standard mixing procedures and this plastic state mix can to be moulded into any desired shape. Subsequently after the mixing process, the cement and water undergo a chemical reaction, generally referred to as a hydration process, which results in solidification, and gradual hardening.

One of the many factors connected with the quality of concrete is its hardness. Efforts to measure the surface hardness of a mass of concrete were first recorded in the 1930s; tests were based on impacting the concrete surface with a specified mass activated by a standard amount of energy. Early methods involved measurement of the size of indentation caused by a steel ball either fixed to a pendulum or spring hammer, or fired from a standardised testing pistol. Later, however, the height of rebound of the mass from the surface was measured. Although it is difficult to justify a theoretical relationship between the measured values from any of these