

SINGAPORE STANDARD

Testing concrete

– Part B1 : Guide to the use of non-destructive methods of test for hardened concrete

Confirmed 2013

Published by

Enterprise
Singapore

SS 78 : Part B1 : 1992 (2018)
(ICS 91.100.30)

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ISBN 9971-67-421-1

SS 78 : Part B1 : 1992

This Singapore Standard having been approved by the Building Materials Product Standards Committee was endorsed by the Standards Council on 10 February 1992.

First published, 1992

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Acknowledgement is made to A/Prof Tam Chat Tim of the National University of Singapore who undertook the revision study of SS 78 Parts 1 to 6 : 1972.

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SINGAPORE STANDARD

TESTING CONCRETE

PART B1 : GUIDE TO THE USE OF NON-DESTRUCTIVE
METHODS OF TEST FOR HARDENED CONCRETE

FOREWORD

This Part of SS 78 A and B series standards has been prepared under the direction of the Building Materials Products Standards Committee. All aspects of testing concrete are being included as parts of SS 78 A and B series standards and this Part forms a general introduction to those on non-destructive testing. Non-destructive testing of a body of hardened concrete as cast, whether in a structure or as a component, offers advantages of speed, cost and lack of damage in comparison with test methods which require the removal of a sample. The range of properties that can be measured in this way is considerable, and much valuable information may be obtained if the available methods are used with an understanding of what they can, and cannot, achieve. This Standard is based on BS 1881 : Part 201: 1986 and reproduced by permission of BSI, 2 Park Street, London, W1A 1BS, England.

This guide presents information on test methods of this type which will assist with the planning of investigations and the selection of methods which are most appropriate to the circumstances. It summarizes the principal features of currently available techniques together with their advantages, limitations and most reliable applications. Many of the methods will be described in detail in other parts of SS 78 B series standards, Parts B2 onwards, while other techniques which are not yet so well established are also included with appropriate references. Additional guidance is given concerning the value of combinations of test methods.

The use of tests to assess strength is covered in greater detail in BS 6089. Strain gauges suitable for monitoring the behaviour of concrete structures in service, or under test load conditions, will be dealt with in Part SS 78 : Part B6 of this standard. For details of methods which are not covered in these British Standards, reference should be made to specialist literature as indicated.

It is hoped that the guidance given in the Part will encourage the wider use of non-destructive testing in a worthwhile and economical manner; it is not intended to supplant engineering judgement or to inhibit the development and use of other test methods.

Attention is drawn to the possibility that some of the elements of this Singapore Standard may be the subject of patent rights. Enterprise Singapore shall not be held responsible for identifying any or all of such patent rights.

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SECTION ONE

GENERAL

1.1 SCOPE

This Part of SS 78 B series standards gives guidance on the tests that are available for non-destructive testing of hardened concrete which forms a laboratory specimen or part of a structure, structural component or other type of engineering construction. Some tests cause varying degrees of localized damage or defacement and may therefore be considered partially destructive; these methods are all defined as non-destructive. All the tests can be performed on the concrete as cast and do not require the removal of samples for subsequent analysis or testing.

Methods of testing hardened concrete which require sample extraction are either dealt with in other Parts of SS 78 B series standards or elsewhere [1,2].

NOTE 1. Damage caused by the extraction of small-diameter cores may not be significantly greater than that due to some of the near-to-surface methods included here, provided that reinforcement is not cut during extraction. In cases where strength determination is required they may offer similar or better accuracy with fewer calibration problems [3].

NOTE 2. The titles of the publications referred to in this standard are listed at the end of the standard.