

SINGAPORE STANDARD

Testing concrete

– Part B6 : Recommendations for determination of strain in
concrete

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

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TESTING CONCRETE

PART B6 : RECOMMENDATIONS FOR DETERMINATION
OF STRAIN IN CONCRETE

FOREWORD

This Part of SS 78 B series standards has been prepared under the direction of the Building Materials Product Standards Committee. All aspects of testing concrete are being included as parts of SS 78 A and B series standards, from sampling fresh concrete to assessing concrete in structures. Except for changes, where applicable, in test environment, this Standard is based on BS 1881 : Part 206 : 1990 and reproduced by permission of BSI, 2 Park Street, London, W1A 2BS, England. SS 78 : Part B1 gives general guidance on the choice of non-destructive test methods.

This Part describes several well-tried and accepted methods of measuring strain in concrete. There are other methods of measuring strain, some of which were described in BS 4408 : Part 2. These include semiconductor element electrical resistance; piezoresistance semiconductor; photoelastic gauges, fibre optics; micrometers, etc. While these methods may have special applications, they are not suitable to general use with concrete and so are not discussed in this standard.

There is a tendency for results obtained from a strain gauge to be accepted without question. The warning applies generally that it is often necessary to measure stress induced strains of the same order as those produced by changes in ambient temperature. Consideration should be given to the characteristics and limitations of the various devices and systems to ensure valid results.

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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1. SCOPE

This Part of SS 78 B series standards gives recommendations on methods and devices which can be used to determine strain in concrete. Some devices measure a property directly related to strain in the gauge (e.g. electrical resistance gauges) whereas others actually measure displacement, which can be used to determine strain using a known base length (e.g. displacement transducers). References to strain gauges in this Part include both types of device.

The use of the following devices is described:

- (a) Mechanical (including mechanical/optical);
- (b) Electrical resistance (metal and alloy elements);
- (c) Vibrating wire (acoustic);
- (d) Electrical displacement transducers.