

Australian Standard[®]

**CALIBRATION BLOCKS AND
THEIR METHODS OF USE IN
ULTRASONIC TESTING**

The following scientific, industrial and governmental organizations and departments were officially represented on the committee entrusted with the preparation of this standard:

Australian Atomic Energy Commission
Australian Gas Association
Australian Institute for Non-destructive Testing
Australian Welding Institute
Bureau of Steel Manufacturers of Australia
Confederation of Australian Industry
Department of Defence
Department of Industrial Relations and Technology, N.S.W.
Department of Labour and Industry, Victoria
Department of Productivity
Electricity Supply Association of Australia
Institute of Australian Foundrymen
National Association of Testing Authorities
Railways of Australia Committee
Society of Automotive Engineers-Australasia

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PREFACE

This edition of this standard was prepared by the Association's Committee on Non-destructive Testing of Metals and Materials to supersede the 1977 edition.

In preparing this edition of the standard the committee decided to include requirements for reference blocks and blocks for use in the measurement of thickness of metal by acoustic energy.

Methods included for the calibration of ultrasonic testing equipment are considered by the committee to be those based on accepted good practice and in widespread use, although the committee is aware that other methods are used.

Additional information on the use of ultrasonic testing equipment and on the frequency of testing the equipment is given in an appendix.

This standard requires reference to the following Australian standards:

AS 1733 Methods for the Determination of Grain Size in Metals

AS 1929 Glossary of Terms Used in Non-destructive Testing.

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STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard
for
**CALIBRATION BLOCKS AND THEIR METHODS OF USE
IN ULTRASONIC TESTING**

SECTION 1. SCOPE AND GENERAL

1.1 SCOPE. This standard specifies requirements for a range of calibration blocks and their methods of use in ultrasonic testing.

1.2 APPLICATION. Calibration blocks shall comply with the relevant requirements of Section 1 and with the specific requirements of the following Sections, as appropriate to the type of block:

Block No 1 (IIW)	Section 2
Block No 2 (IOW)	Section 3
Block No 3	Section 4
Block No 4	Section 5
Block No 5 (Miniature Block)	Section 6
Block No 6 (Resolution Block)	Section 7
Reference Blocks	Section 9
Block No 7 (Thickness Measurement)	Section 10.

The methods of use shall be as specified in the relevant Section.

1.3 DEFINITIONS. For the purpose of this standard, the terms and definitions given in AS 1929 apply.

1.4 CONSTRUCTION OF BLOCKS.

1.4.1 Material. Calibration blocks shall be manufactured from a normalized plain carbon steel of grain size No 5 or finer (refer to AS 1733).

Finished, machined test blocks, when tested across their minor dimension using a 4 MHz to 6 MHz, 10 mm diameter compression wave probe, shall not exhibit—

- (a) variations in attenuation of more than ± 3 dB; and
- (b) any discontinuities of reflectivity greater than 12 dB below that of a 1.5 mm diameter hole 15 mm from the surface.

NOTES:

1. Steel used for the manufacture of blocks should be checked for cleanliness and attenuation by ultrasonic testing.
2. Other materials may be used provided that the quality is suitable. It is recognized that dimensions for blocks given in this standard apply to the compression and shear wave velocities appropriate to the type of steel specified.

1.4.2 Dimensions. All dimensions of blocks shall be accurate to ± 0.1 mm of the specified value except where otherwise specified in this standard.

Faces of blocks shall be machined perpendicular or parallel to each other unless shown otherwise.

1.4.3 Surface Finish. The surface roughness of any block face shall not exceed $0.8 \mu\text{m } R_a$.

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