

Australian Standard[®]

**Methods for the determination of
transverse tensile properties of round
steel pipe**

STANDARDS
Australia



This Australian Standard® was prepared by Committee MT-006, Mechanical Testing of Metals. It was approved on behalf of the Council of Standards Australia on 21 December 2007.

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The following are represented on Committee MT-006:

- Bureau of Steel Manufacturers of Australia
 - Materials Australia
 - National Association of Testing Authorities Australia
 - National Measurement Institute
-

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PREFACE

This Standard was prepared by Standards Australia Committee MT-006, Mechanical Testing of Metals to supersede AS 1855—1976, *Methods for the determination of transverse tensile properties of round steel pipe*.

The objective of this edition is to revise the method of test for transverse tensile properties of steel pipes. This Standard specifies the use of an expansion test as a means of determining the circumferential strength of a pipe.

The test is based on AS 1391, *Metallic materials—Tensile testing at ambient temperature* and ASTM A370, *Standard test methods and definitions for mechanical testing of steel products*.

ASTM A370 only permits the use of short-length test pieces. This Standard includes provision for the long-length test pieces which may also be used for the performance of a pressure proving test demonstrating that a length of pipe has a yield strength above a specified minimum without the result being influenced by test piece preparation.

This Standard is one of a series of Standards covering the range of tensile testing methods. The series comprises the following:

AS

- | | |
|------|--|
| 1391 | Metallic materials—Tensile testing at ambient temperature |
| 1545 | Methods for the calibration and grading of extensometers |
| 1855 | Methods for the determination of transverse tensile properties of round steel pipe (this Standard) |
| 2193 | Calibration and classification of force-measuring systems |
| 2291 | Metallic materials—Tensile testing at elevated temperatures |
| 2403 | Method for the measurement of the plastic strain ratio 'r' of sheet and strip metals. |

The terms 'informative' has been used in this Standard to define the application of the appendix to which it applies. An 'informative' appendix is only for information and guidance.

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STANDARDS AUSTRALIA

Australian Standard**Methods for the determination of transverse tensile properties of round steel pipe****1 SCOPE**

This Standard specifies methods by which transverse (circumferential) tensile properties of a section of a round steel pipe (tube) may be determined or proven to be above specified values.

The methods permit the use of both short-length and long-length pipe test pieces, but they preclude spirally welded pipe.

2 APPLICATION

The methods cover the testing of steel pipe in the size range 150–1 000 mm in diameter, having a thickness/diameter ratio of less than 0.06.

The methods can be used for the determination of, or as a proof test for—

- (a) yield strength;
- (b) proof strength; and
- (c) permanent set strength.

The methods cannot be used to measure properties associated with fracture in standard tensile tests because fracture of pipe is not achieved during the test.

3 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS	
1391	Metallic materials—Tensile testing at ambient temperature
1545	Methods for the calibration and grading of extensometers
2193	Calibration and classification of force-measuring systems
ASTM	
A370	Standard test methods and definitions for mechanical testing of steel products

4 DEFINITIONS

For the purpose of this Standard, the following definitions apply:

4.1 Elongation

Increase in the original gauge length (L_0) at any moment during the test.

4.2 Extension

The increase of the extensometer gauge length.

4.3 Nominal strain

The increase of length at any moment during the test divided by the original gauge length.