

Australian Standard™

Methods for impact tests on metals

**Part 4: Calibration of the testing
machine**

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 15 August 2003 and published on 19 September 2003.

The following are represented on Committee MT-006:

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Australian Aluminium Council
Australian Industry Group
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CSIRO Measurement Laboratory
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STANDARDS AUSTRALIA

RECONFIRMATION

OF

AS 1544.4—2003

Methods for impact tests on metals

Part 4: Calibration of the testing machine

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NOTES

Australian Standard™

Methods for impact tests on metals

Part 4: Calibration of the testing machine

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PREFACE

This Standard was prepared by Standards Australia Committee MT-006, Mechanical Testing of Metals, to supersede AS 1544.4—1989, *Methods for impact tests on metals, Part 4: Calibration of the testing machine*.

This Standard is Part 4 of a series of Standards on the methods for impact testing of metals. The series comprises the following methods:

AS

- 1544 Methods for impact tests on metals
- 1544.1 Part 1: Izod
- 1544.2 Part 2: Charpy V-notch
- 1544.3 Part 3: Charpy U-notch and keyhole notch
- 1544.4 Part 4: Calibration of the testing machine
- 1544.5 Part 5: Assessment of fracture surface appearance of steel

This edition introduces a requirement for verification of the calibration procedure by dynamic testing of standardized test pieces. These test pieces are obtained from sources which are nationally recognized. The principal known recognized source is the USA through ASTM, although standardized test pieces are becoming more widely available from other countries.

These verification requirements are not as stringent as those in ASTM E23, *Methods for notched bar impact testing of metallic materials*.

The term 'normative' has been used in this Standard to define the application of the appendix to which it applies. A 'normative' appendix is an integral part of a Standard.

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FOREWORD

The satisfactory operation of a pendulum impact testing machine is dependent on factors which include the design, the foundation, the accuracy of construction of machine components, the degree of wear, and the friction-free movement of the pendulum.

During a test, all the absorbed energy indicated by the machine is attributed to the fracturing of the test piece. However, it is known that there are other mechanisms by which small amounts of energy may be absorbed. It is suspected that items such as test piece supports, the machine foundation and frame work, the pendulum and striker, ejection and drag of the broken test piece cause some degree of energy absorption. This energy is not determined, as suitable methods and apparatus have not yet been developed for measuring energy absorption by these individual items.

STANDARDS AUSTRALIA

Australian Standard Methods for impact tests on metals

Part 4: Calibration of the testing machine

SECTION 1 SCOPE AND GENERAL

1.1 SCOPE

This Standard specifies methods for the static calibration of the energy-measuring systems of machines used for impact tests on metals in accordance with AS 1544, Parts 1, 2 and 3. This Standard also specifies additional dynamic verification requirements applied to Charpy machines. It deals with complete calibration and with partial calibration of the machines.

This Standard applies to testing machines which indicate in terms of the SI unit of energy, the joule (J), and also to machines which use other units.

1.2 REFERENCED DOCUMENTS

The following documents are referred to in this Standard:

AS

- 1544 Methods for impact tests on metals
- 1544.1 Part 1: Izod
- 1544.2 Part 2: Charpy V-notch
- 1544.3 Part 3: Charpy U-notch and keyhole notch

ISO

- 148 Steel—Charpy impact test (V-notch)

ASTM

- E23 Methods for notched bar impact testing of metallic materials

1.3 DEFINITIONS

For the purpose of this Standard, the definitions given below apply.

1.3.1 Calibrating authority

Any approved person or organization qualified and equipped to perform the tests set out in Section 2 or Section 3, or both.

NOTE: There are organizations registered with the National Association of Testing Authorities, Australia (NATA), for performing calibrations in accordance with this Standard.

1.3.2 Calibration

All the operations for the purpose of determining the compliance of the machine with the requirements of this Standard.

1.3.3 Centre of percussion

That point in a pendulum at which a blow, delivered in a tangential direction, will cause no reaction at the centre of rotation.