AS 1544.4—2003
Reconfirmed 2017

Australian Standard™

Methods for impact tests on metals

Part 4: Calibration of the testing machine

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 15 August 2003 and published on 19 September 2003.

The following are represented on Committee MT-006:

Australasian Railway Association

Australian Aluminium Council

Australian Industry Group

Bureau of Steel Manufacturers of Australia

CSIRO Measurement Laboratory

CSIRO Telecommunications and Industry Physics

Institute of Materials Engineering Australasia

Keeping Standards up-to-date

Standards are living documents which reflect progress in science, technology and systems. To maintain their currency, all Standards are periodically reviewed, and new editions are published. Between editions, amendments may be issued. Standards may also be withdrawn. It is important that readers assure themselves they are using a current Standard, which should include any amendments which may have been published since the Standard was purchased.

Detailed information about Standards can be found by visiting the Standards Australia web site at www.standards.com.au and looking up the relevant Standard in the on-line catalogue.

Alternatively, the printed Catalogue provides information current at 1 January each year, and the monthly magazine, *The Global Standard*, has a full listing of revisions and amendments published each month.

We also welcome suggestions for improvement in our Standards, and especially encourage readers to notify us immediately of any apparent inaccuracies or ambiguities. Contact us via email at mail@standards.com.au, or write to the Chief Executive, Standards Australia International Ltd, GPO Box 5420, Sydney, NSW 2001.

This Standard was issued in draft form for comment as DR 03163.

STANDARDS AUSTRALIA

RECONFIRMATION

OF
AS 1544.4—2003
Methods for impact tests on metals
Part 4: Calibration of the testing machine

RECONFIRMATION NOTICE

Technical Committee MT-009 has reviewed the content of this publication and, in accordance with Standards Australia procedures for reconfirmation, it has been determined that the publication is still valid and does not require change.

Certain documents referenced in the publication may have been amended since the original date of publication. Users are advised to ensure that they are using the latest versions of such documents as appropriate, unless advised otherwise in this Reconfirmation Notice.

Approved for reconfirmation in accordance with Standards Australia procedures for reconfirmation on 20 March 2017.

The following are represented on Technical Committee MT-009:

Australasian Institute of Surface Finishing
Australian Chamber of Commerce and Industry
Australian Industry Group
Australian Steel Institute
Bureau of Steel Manufacturers of Australia
Galvanizers Association of Australia
Galvanizing Association of New Zealand
New Zealand Metal Roofing Manufacturers

NOTES

Australian Standard™

Methods for impact tests on metals

Part 4: Calibration of the testing machine

Originated as AS B188.4—1966.
Previous edition AS 1544.4—1989.
Third eidition 2003.

Published by Standards Australia International Ltd
GPO Box 5420, Sydney, NSW 2001, Australia

ISBN 0 7337 5044 3

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.

CONTENTS

Page

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.