AS 1544.2—2003
Reconfirmed 2017



Australian Standard™

# Method for impact tests on metals

# Part 2: Charpy V-notch

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.

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Australasian Railway Association

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STANDARDS AUSTRALIA

**RECONFIRMATION**

**OF**
**AS 1544.2—2003**
**Methods for impact tests on metals**
**Part 2: Charpy V-notch**

# 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.

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

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NOTES

Australian Standard™

# Method for impact tests on metals

# Part 2: Charpy V-notch

Originated as AS B188.2—1962.
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# PREFACE

This Standard was prepared by the Standards Australia Committee MT-006, Mechanical Testing of Metals, to supersede AS 1544.2—1989, *Methods for impact tests on metals,* Part 2: *Charpy V-notch.*

The objective of this Standard is to specify a method for testing toughness in metals by impact testing.

This Standard is Method 2 of a series of Standards on the methods for impact testing of metals. The series comprises the following methods:

| AS | |
|---|---|
| 1544 | Method 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 test machine |
| 1544.5 | Part 5: Assessment of fracture surfaces appearance of steel |

Research indicates that significant differences in absorbed energy are obtained using machines fitted with 2 mm radius strikers and 8 mm radius strikers at absorbed energy values exceeding 100 joules.

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 Charpy V-notch Impact Test is a pendulum-type single-blow impact test in which the test piece, V-notched in the middle and supported at both ends as a simple beam, is broken by a falling pendulum which strikes the test piece opposite the notch. The energy absorbed is determined from the subsequent rise of the pendulum.

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
# Method for impact tests on metals

## Part 2: Charpy V-notch

## 1 SCOPE

This Standard specifies the conditions for performing the Charpy V-notch impact test on metals. It also includes requirements for the installation of the testing machine, its initial and periodic calibration, and recommendations for its maintenance by the user.

## 2 REFERENCED DOCUMENTS

The following documents below are referred to in this Standard:

| | |
|---|---|
| AS | |
| 1544 | Method for impact tests on metals |
| 1544.4 | Part 4: Calibration of the testing machine |
| 1544.5 | Part 5: Assessment of fracture surface appearance of steel |
| ISO | |
| 148 | Steel—Charpy impact test (V-notch) |
| ASTM | |
| E23 | Methods for notched bar impact testing of metallic materials |

## 3 DEFINITIONS

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

### 3.1 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.

### 3.2 Initial potential energy

The energy theoretically available in a pendulum-type impact testing machine when the pendulum is returned from its striking position to its initial release position.

### 3.3 Length of pendulum

The distance from the axis of rotation of the pendulum to the impact point of the pendulum, on a standard test piece.

### 3.4 Point of impact

The midpoint of the line of contact between the striking edge and the test piece.

### 3.5 Sample

A portion of material or a group of items selected from a batch or consignment by a sampling procedure.

### 3.6 Secondary standard test pieces

Charpy test pieces having an assigned impact value obtained from tests performed upon a verified testing machine.