

# JIS

JAPANESE  
INDUSTRIAL  
STANDARD

Translated and Published by  
Japanese Standards Association

---

**JIS Z 2242** : 2023

(JISF)

**Method for Charpy pendulum impact test  
of metallic materials**

---

ICS 77.040.10

Reference number : JIS Z 2242 : 2023 (E)

PROTECTED BY COPYRIGHT

24 S

Z 2242 : 2023

Date of Establishment: 1952-03-08

Date of Revision: 2023-05-22

Date of Public Notice in Official Gazette: 2023-05-22

Developed by: The Japan Iron and Steel Federation

Investigated by: The Japan Iron and Steel Federation, Standardization  
Center

---

JIS Z 2242 : 2023, First English edition published in 2023-11

Translated and published by: Japanese Standards Association  
Mita MT Building, 3-13-12, Mita, Minato-ku, Tokyo, 108-0073 JAPAN

---

In the event of any doubts arising as to the contents,  
the original JIS is to be the final authority.

© JSA 2023

All rights reserved. Unless otherwise specified, no part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying and microfilm, without permission in writing from the publisher.

Printed in Japan

HN

PROTECTED BY COPYRIGHT

## Contents

	Page
Introduction .....	1
1 Scope .....	1
2 Normative references .....	1
3 Terms and definitions .....	1
3.1 Definitions pertaining to energy .....	2
3.2 Definitions pertaining to test piece .....	2
4 Symbols, units and designations .....	4
5 Principles of the test .....	6
6 Test pieces .....	6
6.1 General .....	6
6.2 Notch geometry .....	7
6.3 Tolerance of the test pieces .....	7
6.4 Preparation of test pieces .....	8
6.5 Marking of the test pieces .....	8
7 Test equipment .....	9
7.1 General .....	9
7.2 Installation and verification .....	9
7.3 Striker .....	9
8 Test procedure .....	10
8.1 General .....	10
8.2 Friction measurement .....	10
8.3 Test temperature .....	11
8.4 Test piece transfer .....	12
8.5 Exceeding machine capacity .....	12
8.6 Incomplete fracture .....	13
8.7 Test piece jamming .....	13
8.8 Post-fracture inspection .....	13
9 Test report .....	13
9.1 Mandatory information .....	13
9.2 Optional information that can be added upon agreement .....	14
Annex A (informative) Self-centring tongs .....	15
Annex B (normative) Lateral expansion .....	17
Annex C (normative) Fracture appearance .....	22
Annex D (normative) Determination of transition curve, fracture appearance	

	transition temperature and energy transition temperature .....	26
Annex E (informative)	Measurement uncertainty of an absorbed energy value, $K$ .....	29
Annex JA (informative)	Comparison table between JIS and corresponding International Standard .....	38

## Foreword

This Japanese Industrial Standard has been revised by the Minister of Economy, Trade and Industry based on the provision of Article 14, paragraph (1) of the Industrial Standardization Act applied mutatis mutandis pursuant to the provision of Article 16 of the said Act in response to a proposal for revision of Japanese Industrial Standard with a draft being attached, submitted by The Japan Iron and Steel Federation (JISF), an accredited standards development organization. This edition replaces the previous edition (**JIS Z 2242** : 2020), which has been technically revised.

This **JIS** document is protected by the Copyright Act.

Attention is drawn to the possibility that some parts of this Standard may conflict with patent rights, published patent application or utility model rights. The relevant Minister is not responsible for identifying any of such patent rights, published patent application or utility model rights.

Blank

# Method for Charpy pendulum impact test of metallic materials

## Introduction

This Japanese Industrial Standard has been prepared based on ISO 148-1 : 2016, Edition 3, with some modifications of the technical contents.

The vertical lines on both sides and dotted underlines indicate changes from the corresponding International Standard. A list of modifications with the explanations is given in Annex JA.

## 1 Scope

This Standard specifies the Charpy (V-notch and U-notch) pendulum impact test method for determining the energy absorbed in an impact test of metallic materials. This Standard does not cover instrumented impact testing, which is specified in JIS B 7755.

NOTE The International Standard corresponding to this Standard and the symbol of degree of correspondence are as follows.

ISO 148-1 : 2016 *Metallic materials — Charpy pendulum impact test — Part 1 : Test method* (MOD)

In addition, symbols which denote the degree of correspondence in the contents between the relevant International Standard and JIS are IDT (identical), MOD (modified), and NEQ (not equivalent) according to ISO/IEC Guide 21-1.

Editor's note : Note<sup>1)</sup> is omitted.

## 2 Normative references

Part or all of the provisions of the following standards, through reference in this text, constitute provisions of this Standard. The most recent editions of the standards (including amendments) indicated below shall be applied.

JIS B 7722 *Metallic materials — Charpy pendulum impact test — Verification of testing machines*

NOTE Corresponding International Standard : ISO 148-2 *Metallic materials — Charpy pendulum impact test — Part 2 : Verification of testing machines*

JIS G 0202 *Glossary of terms used in iron and steel (Testing)*

JIS Z 8401 *Rounding of numbers*

## 3 Terms and definitions

For the purpose of this Standard, the following terms and definitions, and those giv-