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Charpy pendulum impact test for metal—Instrumentation

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Contents

	Page
Introduction.....	1
1 Scope.....	1
2 Normative references	1
3 Terms and definitions	1
3.1 Characteristic values of force	2
3.2 Characteristic values of displacement.....	2
3.3 Characteristic values of impact energy.....	2
4 Symbols and abbreviated terms	3
5 Principle	4
6 Apparatus	4
6.1 Testing machine	4
6.2 Instrumentation and calibration.....	4
7 Test piece	7
8 Test procedure	7
9 Expression of results.....	7
9.1 General.....	7
9.2 Evaluation of the force-displacement curve	7
9.3 Determination of the characteristic values of force	8
9.4 Determination of the characteristic values of displacement	8
9.5 Determination of the characteristic values of impact energy.....	9
9.6 Determination of the proportion of ductile fracture surface	10
10 Test report	10
Annex A (informative) Designs of instrumented strikers and associated force-displacement curves	12
Annex B (informative) Example of support block for the calibration of a 2 mm striker	13
Annex C (informative) Formulae for the calculation of the proportion of ductile fracture surface	14
Bibliography	15

Foreword

This translation has been made based on the original Japanese Industrial Standard revised by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee as the result of proposal for revision of Japanese Industrial Standard submitted by Japan Testing Machinery Association (JTM)/Japanese Standards Association (JSA) with the draft being attached, based on the provision of Article 12 Clause 1 of the Industrial Standardization Law applicable to the case of revision by the provision of Article 14.

Consequently **JIS B 7755**:1993 is replaced with this Standard.

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Charpy pendulum impact test for metal— Instrumentation

Introduction

This Japanese Industrial Standard has been prepared based on the first edition of **ISO 14556** published in 2000 without modifying the technical contents. However, the contents in Amendment 1:2006 are exempt from the application because the shape of the test piece and the construction of anvils are different from those specified in **JIS B 7722**, and no practical examples have been seen in Japan.

1 Scope

This Standard specifies a method of instrumented Charpy V-notch pendulum impact testing on steel products and the requirements concerning the measurement and recording equipment.

This Standard can be applied to other metallic materials by agreement.

This test provides further information on the fracture behaviour of the tested product.

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

ISO 14556:2000 *Steel—Charpy V-notch pendulum impact test—Instrumented test method* (IDT)

The 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**.

2 Normative references

The following standards contain provisions which, 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 *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 test machines* (MOD)

JIS Z 2242 *Method for Charpy pendulum impact test of metallic materials*

NOTE : Corresponding International Standard: ISO 148-1 *Metallic materials—Charpy pendulum impact test—Part 1: Test method* (MOD)

3 Terms and definitions

For the purposes of this Standard, the terms and definitions given in **JIS Z 2242** and the following apply.

3.1 Characteristic values of force

NOTE : Characteristic values of force are expressed in newtons.

3.1.1 general yield force, F_{gy}

force at the transition point from the linearly increasing part to the curved increasing part of the force-displacement curve

NOTE : It represents a first approximation of the force at which yielding has occurred across the entire uncracked-test-piece ligament (see **9.3**).

3.1.2 maximum force, F_m

maximum force in the course of the force-displacement curve

3.1.3 crack initiation force, F_{iu}

force at the beginning of the steep drop in the force-displacement curve

NOTE : It characterizes the beginning of unstable crack propagation.

3.1.4 crack arrest force, F_a

force at the end (arrest) of unstable crack propagation

3.2 Characteristic values of displacement

NOTE : Characteristic values of displacement are expressed in metres.

3.2.1 general yield displacement, s_{gy}

displacement corresponding to the general yield force, F_{gy}

3.2.2 displacement at maximum force, s_m

displacement corresponding to the maximum force, F_m

3.2.3 crack initiation displacement, s_{iu}

displacement at the initiation of unstable crack propagation

3.2.4 crack arrest displacement, s_a

displacement at the end (arrest) of unstable crack propagation

3.2.5 total displacement, s_t

displacement at the end of the force-displacement curve

3.3 Characteristic values of impact energy

NOTE : Characteristic values of impact energy are expressed in joules.

3.3.1 energy at maximum force, W_m

partial impact energy from $s = 0$ to $s = s_m$

3.3.2 crack initiation energy, W_{iu}

partial impact energy from $s = 0$ to $s = s_{iu}$