



JAPANESE
INDUSTRIAL
STANDARD

Translated and Published by
Japanese Standards Association

JIS Z 2343-3 : 2001

**Non-destructive testing—
Penetrant testing—
Part 3 : Reference test blocks**

ICS 19.100

Descriptors : non-destructive testing, penetration tests

Reference number : JIS Z 2343-3 : 2001 (E)

Foreword

This translation has been made based on the original Japanese Industrial Standard established by the Minister of Economy, Trade and Industry through deliberations at the Japanese Industrial Standards Committee in accordance with the Industrial Standardization Law. Consequently, **JIS Z 2343 : 1992** was withdrawn and replaced with **JIS Z 2343-1** to **JIS Z 2343-4**.

For the purpose of conformity to the International Standard, **JIS Z 2343-3 : 2001** has been prepared based on **ISO 3452-3 : 1998** *Non-destructive testing—Penetrant testing—Part 3 : Reference test blocks*.

JIS Z 2343 consists of the following parts with the title of “Non-destructive testing—Penetrant testing”.

- JIS Z 2343-1** *Part 1 : General principles—Method for liquid penetrant testing and classification of the penetrant indication*
- JIS Z 2343-2** *Part 2 : Testing of penetrant materials*
- JIS Z 2343-3** *Part 3 : Reference test blocks*
- JIS Z 2343-4** *Part 4 : Equipment*

Date of Establishment: 2001-04-20

Date of Public Notice in Official Gazette: 2001-04-20

Investigated by: Japanese Industrial Standards Committee
Divisional Council on Iron and Steel

JIS Z 2343-3:2001, First English edition published in 2002-01

Translated and published by: Japanese Standards Association
4-1-24, Akasaka, Minato-ku, Tokyo, 107-8440 JAPAN

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

© JSA 2002

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

Contents

	Page
Introduction	1
1 Scope	1
2 Normative references	1
3 Definitions	2
4 Description of reference blocks	2
5 Reference block design and dimensions	2
5.1 Type 1 reference block design and dimensions	2
5.2 Type 2 reference block design and dimensions	3
5.2.1 General	3
5.3 The shape and dimension of the type 3 reference block	6
5.3.1 General	6
6 Identification	6
Annex ZA (normative)	7
Annex (informative)	8

Non-destructive testing— Penetrant testing— Part 3 : Reference test blocks

Introduction JIS Z 2343-3 : 2001 has been prepared based on the first edition of ISO 3452-3 *Non-destructive testing—Penetrant testing—Part 3 : Reference test blocks* published in 1998 without modifying the technical contents, but some parts (type A and B reference blocks) which are not stated in the corresponding International Standard are added without modifying the contents of the former standard.

Portions with sidelines or dotted underlines are the items which modify the original International Standard. Annex (informative) explains deviation between both Standards.

1 Scope This Standard describes three types of reference blocks to be used in JIS Z 2343-1 and JIS Z 2343-2:

- Type 1 reference blocks are used to determine the sensitivity levels of both fluorescent and colour contrast penetrant product families;
- Type 2 and type 3 reference blocks are used for routine assessment of the performance of both fluorescent and colour contrast penetrant facilities and part-used containers. The reference blocks are used in the same conditions as the pieces to be tested according to JIS Z 2343-1 and JIS Z 2343-2.

Remarks : The International Standard corresponding to this Standard is as follows.

In addition, abbreviations 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.

ISO 3452-3 : 1998 *Non-destructive testing—Penetrant testing—Part 3 : Reference test blocks* (MOD)

2 Normative references The following standards contain provisions which, through reference in this Standard, constitute provisions of this Standard. If the indication of the year of coming into effect (or the year of publication) is given to these referred standards, only the edition of indicated year constitutes the provision of this Standard but the revision and amendment made thereafter are not applied. The normative references without the indication of the year of coming into effect (or the year of publication) apply limiting only to the most recent edition (including the amendment).

JIS G 0415 *Steel and steel products—Inspection documents*

JIS G 4305 *Cold rolled stainless steel plates, sheets and strip*

JIS H 4000 *Aluminium and aluminium alloy sheets and plates, strips and coiled sheets*

JIS Z 2244 *Vickers hardness test—Test method*

JIS Z 2300 *Glossary of terms used in nondestructive testing*

JIS Z 2343-1 *Non-destructive testing—Penetrant testing—Part 1 : General principles—Method for liquid penetrant testing and classification of the penetrant indication*

Remarks : Provisions cited from **EN 571-1 : 1997** *Non-destructive testing—Penetrant testing—Part 1 : General principles* are equivalent to the corresponding parts of the said standard.

JIS Z 2343-2 *Non-destructive testing—Penetrant testing—Part 2 : Testing of penetrant materials*

Remarks : **ISO 3452-2 : 2000** *Non-destructive testing—Penetrant testing—Part 2 : Penetrant testing materials* is identical with the said standard.

ISO 4967 *Steel designation : 90MnV8 according to EU96 at quenched and tempered condition or equivalent quality of hardness HRC53 to 62*

3 Definitions For the purposes of this Standard, definitions in **JIS Z 2300** apply.

4 Description of reference blocks

4.1 The type 1 reference block consists of a set of four nickel-chrome plated panels with 10, 20, 30 and 50 μm thickness of plating, respectively. The 10, 20 and 30 μm panels are used for determining the sensitivity of fluorescent penetrant systems. The sensitivity of colour contrast penetrant systems is determined using the 30 and 50 μm panels. Alternatively the reference block is cut into two pieces at right angles with the crack of 100 mm in length and 70 mm in width, and the two pieces can be used as one set.

4.2 The type 2 reference block consists of a single panel of which one half has been plated with electroless nickel and a thin layer of chromium and the other half prepared to achieve areas of specific roughness. The plated side exhibits five star-shaped discontinuities.

4.3 The type 3 reference block shall be prepared by making it produce quenching cracks and equally dividing it into two pieces at its central portion of one reference block or dividing it into the right and left segment at the slit for comparing the results.

5 Reference block design and dimensions

5.1 Type 1 reference block design and dimensions The type 1 panels are rectangular in shape with typical dimensions of 35 mm $\times$ 100 mm $\times$ 2 mm (see Fig. 1). Each panel consists of a uniform layer of nickel-chromium plated on to a brass base, the thickness of nickel-chromium being 10, 20, 30 and 50 μm respectively. Transverse cracks are made in each panel by stretching the panels in the longitudinal direction. The width to depth ratio of each crack should be approximately 1 : 20.