INTERNATIONAL STANDARD

ISO 3452-3

Second edition
2013-11-15

Non-destructive testing — Penetrant testing —

Part 3: Reference test blocks

Essais non destructifs — Examen par ressuage —

Partie 3: Pièces de référence

Reference number
ISO 3452-3:2013(E)

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Published in Switzerland

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Foreword

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The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2. www.iso.org/directives

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 135, *Non-destructive testing*, Subcommittee SC 2, and by Technical Committee CEN/TC 138, *Non-destructive testing* in collaboration.

This second edition cancels and replaces the first edition (ISO 3452-3:1998), which has been technically revised. It also incorporates the Technical Corrigendum, ISO 3452-3:1998/Cor 1:2001.

ISO 3452 consists of the following parts, under the general title *Non-destructive testing — Penetrant testing*:

— *Part 1: General principles*

— *Part 2: Testing of penetrant materials*

— *Part 3: Reference test blocks*

— *Part 4: Equipment*

— *Part 5: Penetrant testing at temperatures higher than 50 °C*

— *Part 6: Penetrant testing at temperatures lower than 10 °C*

Non-destructive testing — Penetrant testing —

Part 3: Reference test blocks

1 Scope

This International Standard describes two types of reference blocks:

— Type 1 reference blocks are used to determine the sensitivity levels of both fluorescent and colour contrast penetrant product families;

— Type 2 reference blocks are used for routine assessment of the performance of both fluorescent and colour contrast penetrant testing.

The reference blocks are to be used in accordance with part 1 of this International Standard.

2 Normative references

The following referenced documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 10088-1, *Stainless steels — Part 1: List of standard stainless steels*

EN 10204, *Metallic products — Types of inspection documents*

ISO 4957, *Tool steels*

ISO 10474, *Steel and steel products — Inspection documents*

ISO 15510, *Stainless steels — Chemical composition*

3 Description of reference blocks

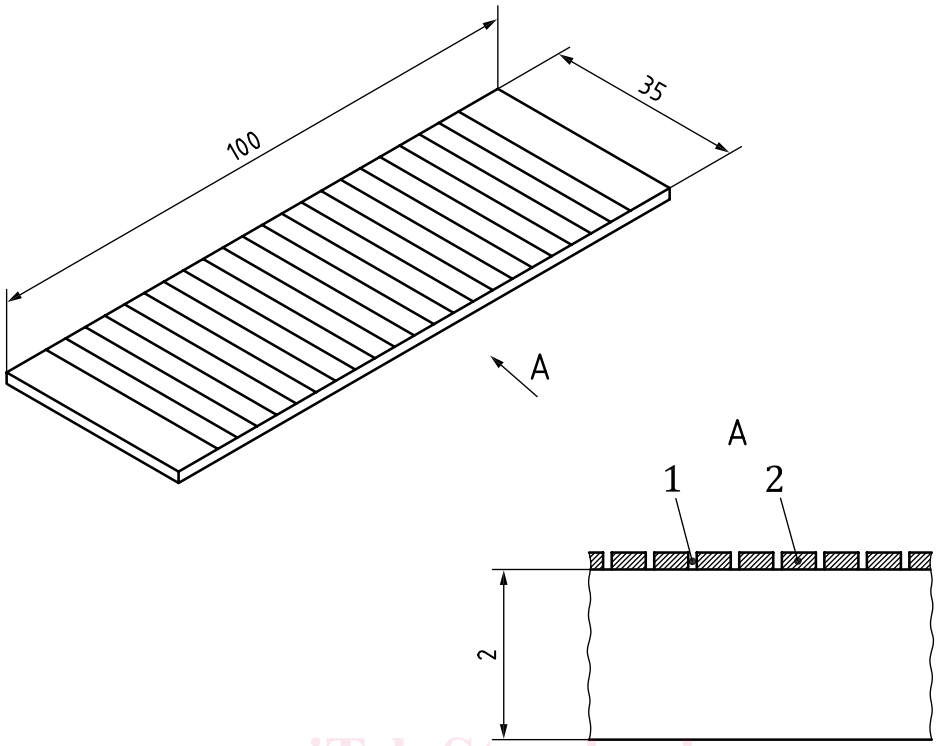
The Type 1 reference block consists of a set of four nickel-chrome plated panels with 10 µm, 20 µm, 30 µm and 50 µm thickness of plating, respectively. The 10 µm, 20 µm, 30 µm and 50 µm panels can be used for determination of the sensitivity of fluorescent penetrant systems. The sensitivity of colour contrast penetrant systems is determined using the 30 µm and 50 µm panels.

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 Type 1 reference block design and dimensions

The Type 1 panels are rectangular in shape with typical dimensions of 35 mm × 100 mm × 2 mm (see Figure 1). Each panel consists of a uniform layer of nickel-chromium plated on to a brass base, the thickness of nickel-chromium being 10 µm, 20 µm, 30 µm 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.

Dimensions in millimetres



Key

1 Transverse cracks

2 Nickel chromium plating, thickness 10 µm, 20 µm, 30 µm or 50 µm

Figure 1 — Test panel, reference block Type 1 (schematic)

5 Type 2 reference block design and dimensions

5.1 Design

5.1.1 General

The test panel (see Figure 2) is rectangular in shape with dimensions of 155 mm × 50 mm × 2,5 mm.

NOTE All dimensional tolerances are ± 10 % unless otherwise stated.

The base material is a stainless steel type X2 Cr Ni Mo 17-12-3 according to EN 10088-1 and ISO 15510 with initial hardness of HV 20 = 150 ± 10 or equivalent.