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**Non-destructive testing — Penetrant
testing —**

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

Essais non destructifs — Examen par ressuage —

Partie 6: Examen par ressuage à des températures inférieures à 10 °C



Reference number
ISO 3452-6:2008(E)

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Foreword

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International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 3452-6 was prepared by the European Committee for Standardization (CEN) Technical Committee CEN/TC 138, *Non-destructive testing*, in collaboration with ISO Technical Committee TC 135, *Non-destructive testing*, Subcommittee SC 2, *Surface methods*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

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*

This corrected version incorporates the following corrections:

- in the Introduction, reference to EN 571-1 has been replaced with reference to ISO 3452-1;
- the normative reference ISO 3452-1 carries a footnote stating its equivalency to EN 571-1;
- in 3.2, list item d), the phrase “this standard temperature range” has been replaced with “the working temperature range”;
- in 3.4, the second sentence of the first paragraph, the phrase “materials testing” has been replaced with “testing materials”;
- 4.1, list items c) and d), are made requirements, and the last sentence of item d) reworded for greater clarity;
- in 4.2.3, the four occurrences of the word “cloth” have been replaced with “cloths”;

- in the second paragraph of 5.1, the requirement that the degreaser be water soluble has been replaced by the statement “the degreaser has to be soluble in water”;
- minor editorial corrections are made in 4.2.2 and 5.4.2.

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Introduction

Temperatures lower than 10 °C can affect the properties of penetrant test materials. The use of penetrant materials and the testing of penetrant materials within the temperature range 10 °C to 50 °C are the subject of ISO 3452-1 and ISO 3452-2. This part of ISO 3452 addresses materials and their use at lower temperatures than 10 °C.

This part of ISO 3452 introduces the concept of process times being linked to working temperatures and accordingly users are recommended to ensure that testing products are correctly associated with process parameters in written instructions (procedures).

Testing products may be specifically developed and qualified for low temperature use but testing products qualified for use at normal temperatures, in some cases, may also be suitable for lower temperature use.

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Non-destructive testing — Penetrant testing —

Part 6:

Penetrant testing at temperatures lower than 10 °C

1 Scope

This part of ISO 3452 specifies the testing requirements particular to applications at low temperatures (lower than + 10 °C) as well as the method for qualification of suitable testing products. It applies only to materials qualified for the relevant temperature range used in accordance with the manufacturer's instructions.

2 Normative references

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

ISO 3059, *Non-destructive testing — Penetrant testing and magnetic particle testing — Viewing conditions*

ISO 3452-1, *Non destructive testing — Penetrant testing — Part 1: General principles*¹⁾

ISO 3452-2, *Non-destructive testing — Penetrant testing — Part 2: Testing of penetrant materials*

ISO 3452-3, *Non-destructive testing — Penetrant testing — Part 3: Reference test blocks*

3 Low temperature penetrant testing

3.1 General principles

The general principles of ISO 3452-1 shall apply unless otherwise stated in this part of ISO 3452 or in the manufacturer's instructions.

Qualification tests are carried out by the manufacturer and if products are used within the stated range, no further tests are needed on site.

3.2 Technical principles

Depending on the temperature range, some specific problems might be encountered:

- a) moisture, or even ice, on the test object;
- b) lower evaporation rate of solvents and of non-aqueous wet developers than at higher temperatures;

1) ISO 3452-1 is equivalent to EN 571-1.