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Non-destructive testing of welds — General rules for metallic materials

Essais non destructifs des assemblages soudés — Règles générales pour les matériaux métalliques

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Foreword

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This document was prepared by Technical Committee ISO/TC 44, *Welding and allied processes*, Subcommittee SC 5, *Testing and inspection of welds*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 121, *Welding and allied processes,* in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fourth edition cancels and replaces the third edition (ISO 17635:2016), which has been technically revised.

The main changes are as follows:

— references updated;

— phased-array ultrasonic technique (UT-PA) for thin-walled steel components added;

— ultrasonic technique using total focusing technique (UT-TFM) added;

— Table 1 and Table 3 modified;

— Annex C reintroduced based on a version in ISO 17635:2010 and a flowchart added.

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Non-destructive testing of welds — General rules for metallic materials

1 Scope

This document gives guidelines for the choice of non-destructive testing (NDT) methods for welds in metals and for the evaluation of the results for quality control purposes, based on quality requirements, material, weld thickness, welding process and extent of testing.

This document also specifies general rules and standards to be applied to the different types of testing, for the selection of the method, the techniques and the acceptance levels.

Acceptance levels cannot be a direct interpretation of the quality levels defined in ISO 5817 or ISO 10042. They are linked to the overall quality of the produced batch of welds.

The requirements specified in this document for acceptance levels for NDT conform with quality levels stated in ISO 5817 or ISO 10042 (moderate, intermediate, stringent) only on a general basis and not in detail for each indication.

Annex A gives correlations between quality levels, testing levels and acceptance levels for specific testing techniques.

Annex B gives an overview on specific testing techniques of standards linked to quality levels, acceptance levels and testing methods.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 3452-1, *Non-destructive testing — Penetrant testing — Part 1: General principles*

ISO 4761:2021, *Non-destructive testing of welds — Phased array ultrasonic testing (UT-PA) for thin-walled steel components — Acceptance levels*

ISO 5817:2023, *Welding — Fusion-welded joints in steel, nickel, titanium and their alloys (beam welding excluded) — Quality levels for imperfections*

ISO 9712, *Non-destructive testing — Qualification and certification of NDT personnel*

ISO 10042:2018, *Welding — Arc-welded joints in aluminium and its alloys — Quality levels for imperfections*

ISO 10675-1:2021, *Non-destructive testing of welds — Acceptance levels for radiographic testing — Part 1: Steel, nickel, titanium and their alloys*

ISO 10675-2:2021, *Non-destructive testing of welds — Acceptance levels for radiographic testing — Part 2: Aluminium and its alloys*

ISO 10863:2020, *Non-destructive testing of welds — Ultrasonic testing — Use of time-of-flight diffraction technique (TOFD)*

ISO 11666:2018, *Non-destructive testing of welds — Ultrasonic testing — Acceptance levels*

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