Steel and iron castings — Radiographic testing

National foreword

This British Standard is the UK implementation of ISO 4993:2024. It supersedes BS ISO 4993:2015, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee ISE/111, Steel Castings and Forgings.

A list of organizations represented on this committee can be obtained on request to its committee manager.

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This document was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 11, *Steel castings*.

This fourth edition cancels and replaces the third edition (ISO 4993:2015), which has been technically revised.

The main changes are as follows:

— Annex A was rewritten to include a table for the various testing arrangements;

— term “examination” being replaced with testing.

Any feedback or questions on this document should be directed to the user’s national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Radiography can be used to detect internal discontinuities in castings. The discontinuities can have higher or lower densities than the parent metal.

Steel and iron castings — Radiographic testing

1 Scope

This document specifies the general requirements for the radiography of steel and iron castings by means of X-rays or gamma-rays.

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 5579, *Non-destructive testing — Radiographic testing of metallic materials using film and X- or gamma rays — Basic rules*

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

ISO 19232-1, *Non-destructive testing — Image quality of radiographs — Part 1: Determination of the image quality value using wire-type image quality indicators*

ISO 19232-2, *Non-destructive testing — Image quality of radiographs — Part 2: Determination of the image quality value using step/hole-type image quality indicators*

ISO 19232-3, *Non-destructive testing — Image quality of radiographs — Part 3: Image quality classes*

ISO 19232-4, *Non-destructive testing — Image quality of radiographs — Part 4: Experimental evaluation of image quality values and image quality tables*

ISO 19232-5, *Non-destructive testing — Image quality of radiographs — Part 5: Determination of the image unsharpness and basic spatial resolution value using duplex wire-type image quality indicators*

ASTM E186, *Standard Reference Radiographs for Heavy-Walled (2 to 4 1/2 in. [50,8 to 114 mm]) Steel Castings*

ASTM E192, *Standard Reference Radiographs for Investment Steel Castings for Aerospace Applications*

ASTM E280, *Standard Reference Radiographs for Heavy-Walled (4 1/2 to 12 in. [114 to 305 mm]) Steel Castings*

ASTM E446, *Standard Reference Radiographs for Steel Castings up to 2 in. (50,8 mm) in Thickness*

ASTM E689, *Standard Reference Radiographs for Ductile Iron Castings*

ASTM E802, *Standard Reference Radiographs for Gray Iron Castings up to 4 1/2 in. (114 mm) in Thickness*

ASTM E2660, *Standard Digital Reference Images for Investment Steel Castings for Aerospace Applications*

ASTM E8268, *Standard Digital Reference Images for Steel Castings up to 2in. (50.8 mm) in Thickness*

ASTM E3030, *Standard Digital Reference Images for Heavy-Walled (2 to 412 In. (50.8 to 114 mm)) Steel Castings*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 5579 apply.