ICS 23.040.10, 77.040.20, 77.140.75

SLOVENSKÁ TECHNICKÁ NORMA

September 2019

STN	**Nedeštruktívne skúšanie oceľových rúr Časť 7: Digitálne rádiografické skúšanie zvarových spojov zváraných oceľových rúr na zisťovanie nedokonalostí (ISO 10893-7: 2019)**	**STN EN ISO 10893-7** 01 5061

Non-destructive testing of steel tubes - Part 7: Digital radiographic testing of the weld seam of welded steel tubes for the detection of imperfections (ISO 10893-7:2019)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 08/19

Obsahuje: EN ISO 10893-7:2019, ISO 10893-7:2019

Oznámením tejto normy sa ruší
STN EN ISO 10893-7 (01 5061) z októbra 2011

128972

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN ISO 10893-7

March 2019

ICS 23.040.10; 77.040.20; 77.140.75 Supersedes EN ISO 10893-7:2011

English Version

Non-destructive testing of steel tubes - Part 7: Digital radiographic testing of the weld seam of welded steel tubes for the detection of imperfections (ISO 10893-7:2019)

Essais non destructifs des tubes en acier - Partie 7: Contrôle par radiographie numérique du cordon de soudure des tubes en acier soudés pour la détection des imperfections (ISO 10893-7:2019)

Zerstörungsfreie Prüfung von Stahlrohren - Teil 7: Digitale Durchstrahlungsprüfung der Schweißnaht geschweißter Stahlrohre zum Nachweis von Unvollkommenheiten (ISO 10893-7:2018)

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Ref. No. EN ISO 10893-7:2019 E

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European foreword

This document (EN ISO 10893-7:2019) has been prepared by Technical Committee ISO/TC 17 "Steel" in collaboration with Technical Committee CEN/TC 459/SC 10 “Steel tubes, and iron and steel fittings” the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2019, and conflicting national standards shall be withdrawn at the latest by September 2019.

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

This document supersedes EN ISO 10893-7:2011.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 10893-7:2019 has been approved by CEN as EN ISO 10893-7:2019 without any modification.

INTERNATIONAL STANDARD

ISO 10893-7

Second edition
2019-02

Non-destructive testing of steel tubes —

Part 7: Digital radiographic testing of the weld seam of welded steel tubes for the detection of imperfections

Essais non destructifs des tubes en acier —

Partie 7: Contrôle par radiographie numérique du cordon de soudure des tubes en acier soudés pour la détection des imperfections

Reference number
ISO 10893-7:2019(E)

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Published in Switzerland

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 17, *Steel*, Subcommittee SC 19, *Technical delivery conditions for steel tubes for pressure purposes*.

This second edition cancels and replaces the first edition (ISO 10893-7:2011), which has been technically revised. The main changes compared with the previous edition are as follows:

a) some terms and definitions from ISO 17636-2 have been included;

b) a safety warning for X and gamma rays has been added at the end of Clause 4;

c) Figure 2 has been aligned with ISO 17636-1 up to 1 000 kV;

d) the symbols for mathematical formula have been changed in accordance with the ISO/IEC Directives;

e) it has been clarified in 4.7 when the detector size is smaller than the applicable weld length;

f) “contact technique” has been deleted from the test method in Clause 6;

g) a reference to ISO 17636-2 has been added in 6.8 for additional details related to spatial resolution;

h) the requirements for duplex wire IQI position have been added in Clause 7;

i) a reference to ISO 17636-2 for the calibration of DDAs has been added in Clause 8;

j) Figure 4 and the figures in Annex A have been revised.

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.

Introduction

Digital radiography has been used for the testing of longitudinal weld seams in submerged arc-welded steel tubes for some years. Digital radiography can be automated, and is considered to be more environmentally friendly than film-based radiographic techniques.

Digital radiography maintains the levels of security and availability afforded by X-ray film testing, which have been in place for many years. Images can be made available in a fraction of the time previously taken by film-based techniques, and usually at a lower exposure level and increased detector unsharpness when compared to film.

The storage and handling of digital images maintain the same levels of integrity available from film-based techniques, yet gain all the benefits associated with comprehensive data storage and retrieval systems.

Imaging systems are constantly under development, and an important aspect of this document is to qualify the use of those alternative systems currently available. This document describes the steps required to deliver these benefits.

INTERNATIONAL STANDARD **ISO 10893-7:2019(E)**

Non-destructive testing of steel tubes —

Part 7:
Digital radiographic testing of the weld seam of welded steel tubes for the detection of imperfections

1 Scope

This document specifies the requirements for digital radiographic X-ray testing by either computed radiography (CR) or radiography with digital detector arrays (DDAs) of the longitudinal or helical weld seams of automatic fusion arc-welded steel tubes for the detection of imperfections. This document specifies acceptance levels and calibration procedures.

It can also be applicable to the testing of circular hollow sections.

NOTE As an alternative, see ISO 10893-6 for film-based radiographic X-ray testing.

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 5576, *Non-destructive testing — Industrial X-ray and gamma-ray radiology — Vocabulary*

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

ISO 11484, *Steel products — Employer's qualification system for non-destructive testing (NDT) personnel*

ISO 17636-2:2013, *Non-destructive testing of welds — Radiographic testing — Part 2: X- and gamma-ray techniques with digital detectors*

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 19232-5, *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*