ILNAS

Institut luxembourgeois de la normalisation
de l'accréditation, de la sécurité et qualité
des produits et services

ILNAS-EN 13445-10:2021

Unfired pressure vessels - Part 10: Additional requirements for pressure vessels of nickel and nickel alloys

Unbefeuerte Druckbehälter - Teil 10: Zusätzliche Anforderungen an Druckbehälter aus Nickel und Nickellegierungen

Récipients sous pression non soumis à la flamme - Partie 10: Exigences complémentaires pour les récipients sous pression en nickel et alliages de

05/2021

National Foreword

This European Standard EN 13445-10:2021 was adopted as Luxembourgish Standard ILNAS-EN 13445-10:2021.

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EUROPEAN STANDARD
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English Version

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This European Standard was approved by CEN on 24 February 2021.

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This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

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Contents

European foreword

This document (EN 13445-10:2021) has been prepared by Technical Committee CEN/TC 54 “Unfired pressure vessels”, the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by November 2021, and conflicting national standards shall be withdrawn at the latest by November 2021.

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 13445-10:2015.

This document has been prepared under a standardization request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

list of all parts in the EN 13445 series can be found on the CEN website.

Although these Parts may be obtained separately, it should be recognised that the Parts are inter-dependant. As such the manufacture of unfired pressure vessels requires the application of all the relevant Parts in order for the requirements of the Standard to be satisfactorily fulfilled.

Corrections to the standard interpretations where several options seem possible are conducted through the Migration Help Desk (MHD). Information related to the Help Desk can be found at http://www.unm.fr (en13445@unm.fr). A form for submitting questions can be downloaded from the link to the MHD website. After subject experts have agreed an answer, the answer will be communicated to the questioner. Corrected pages will be given specific issue number and issued by CEN according to CEN Rules. Interpretation sheets will be posted on the website of the MHD.

Amendments to this new edition may be issued from time to time and then used immediately as alternatives to rules contained herein. It is intended to deliver a new Issue of EN 13445:2021 each year, starting with the precedent as Issue 1, consolidating these Amendments and including other identified corrections.

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.

1 Scope

This Part 10 of this document specifies requirements for unfired pressure vessels and their parts made of nickel and nickel alloys (see 3.1) in addition to the general requirements for unfired pressure vessels under EN 13445-1:2021, EN 13445-2:2021, EN 13445-3:2021, EN 13445-4:2021 and EN 13445-5:2021.

NOTE Cast materials are not included in this version. Details regarding cast materials will be subject to an amendment to or a revision of this document.

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.

EN 764-5:2014, *Pressure equipment — Part 5: Inspection documentation of metallic materials and compliance with the material specification*

EN 10204:2004, *Metallic products — Types of inspection documents*

EN 13445-1:2021 *Unfired pressure vessels — Part 1: General*

EN 13445-2: 2021 *Unfired pressure vessels — Part 2: Materials*

EN 13445-3:2021, *Unfired pressure vessels — Part 3: Design*

EN 13445-4:2021, *Unfired pressure vessels — Part 4: Fabrication*

EN 13445-5:2021, *Unfired pressure vessels — Part 5: Inspection and testing*

EN ISO 9606-4:1999, *Approval testing of welders — Fusion welding — Part 4: Nickel and nickel alloys* (ISO 9606-4:1999)

EN ISO 14732. 2013, *Welding personnel — Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials* (ISO 14732:2013)

CEN ISO/TR 15608:2013, *Welding — Guidelines for a metallic materials grouping system* (ISO/TR 15608:2013)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13445-1:2021, EN 13445-2:2021, EN 13445-3:2021, EN 13445-4:2021 and EN 13445-5:2021 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
nickel alloys
those alloys which contain a minimum of 30 % nickel and contain more nickel than iron

4 General information

The general information given in EN 13445-1:2021 on the scope of the standard as well as terms, definitions, quantities, symbols and units shall apply.

5 Materials

5.1 General

The general requirements of EN 13445-2:2021 shall apply with the following additions/exclusions in 5.2 – 5.4.

There are presently no European Standards specifically for nickel or nickel alloys for pressure purposes. However, some materials in Table A.2 can also be classified as stainless steels and are included in some harmonised standards. This part 10 of EN 13445 is therefore limited to European Approval of Materials (EAM) or the use of Particular Materials Appraisal (PMA). except when materials are sourced in accordance with a Harmonised standard.

All materials shall meet the requirements in 5.1 to 5.4 of this part 10 of EN 13445.

5.2 Material grouping system

Annex A of EN 13445-2:2021 is not applicable to pressure vessels of nickel and nickel alloys and is replaced by Annex A of this part 10 of EN 13445.

The grouping system for nickel and its alloys is shown in Table A.1 of this part 10 of EN 13445.

Only material having a minimum elongation after fracture greater than 25 % shall be used for construction of pressure vessels.

Materials which have mechanical properties enhanced by precipitation hardening are excluded from this part of EN 13445, unless they are to be used for bolting applications.

5.3 Material documentation

Materials for pressure bearing parts compliant with the requirements of this document shall be accompanied by inspection documentation in accordance with EN 10204:2004.

The type of inspection document shall be in accordance with EN 764-5:2014 and include a declaration of compliance to the material specification.

5.4 Prevention of brittle fracture

There are no general requirements for nickel and nickel alloys at temperatures down to −196 °C. However, the specific requirements of individual EAMs/PMAs shall be taken into account.