

საქართველოს სტანდარტი

არაგაცხელებადი წნევის ჭურჭელი-ნაწილი 8: დამატებითი მოთხოვნები
ალუმინისა და ალუმინის შენადნობების მაღალი წნევის ჭურჭელზე

საქართველოს სტანდარტებისა და მეტროლოგიის
ეროვნული სააგენტო
თბილისი

საინფორმაციო მონაცემები

1 დამტკიცებულია და შემოღებულია სამოქმედოდ საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს 2015 წლის 27 ოქტომბრის № 69 და 2015 წლის 09 ივლისის № 46 განკარგულებებით

2 მიღებულია გარეკანის თარგმნის მეთოდით სტანდარტიზაციის ევროპული კომიტეტის სტანდარტი ენ 13445-8:2014 „არაგაცხელებადი წნევის ჭურჭელი-ნაწილი 8: დამატებითი მოთხოვნები ალუმინისა და ალუმინის შენადნობების მაღალი წნევის ჭურჭელზე“

3 პირველად

4 რეგისტრირებულია საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს რეგისტრში: 2015 წლის 27 ოქტომბერი №268-1.3-7993

აკრძალულია ამ სტანდარტის გადაცემა მესამე პირებისათვის ან/და მისი სხვა ფორმით გავრცელება

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13445-8

September 2014

ICS 23.020.30

Supersedes EN 13445-8:2009

English Version

**Unfired pressure vessels - Part 8: Additional requirements for
pressure vessels of aluminium and aluminium alloys**

Récepteurs sous pression non soumis à la flamme - Partie 8:
Exigences complémentaires pour les récepteurs sous
pression en aluminium et alliages d'aluminium

Unbefeuerte Druckbehälter - Teil 8: Zusätzliche
Anforderungen an Druckbehälter aus Aluminium und
Aluminiumlegierungen

This European Standard was approved by CEN on 19 August 2014.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

	Page
Foreword	4
1 Scope	6
2 Normative references	6
3 Terms, definitions, symbols and units	7
4 General requirements	7
5 Materials	7
5.1 General	7
5.2 Elongation after fracture	7
5.3 Prevention of brittle fracture	7
5.4 Lamellar tearing	8
5.5 Chemical composition	8
5.6 Material grouping system	8
6 Design	9
6.1 General	9
6.2 Design temperature and properties	9
6.3 Time-independent nominal design stress	9
6.4 Thick walled, small bore piping for shells	9
6.5 Fatigue design	10
6.6 Lapped joints, joggle joints, permanent backing strips	10
6.6.1 General	10
6.6.2 Lapped joints	10
6.6.3 Joggle joints	10
6.6.4 Joints with permanent backing strips	11
6.7 Flat ends	11
6.8 Design by experiment	11
6.9 Port-hole-extruded tubes	11
7 Manufacture	a
7.1 General	a
7.2 Materials	a
7.3 Tolerances	a
7.4 Welding procedure specification (WPS)	a
7.5 Qualification of welding procedure specifications (WPQR)	a
7.6 Qualification of welders and welding operators	12
7.7 Joint preparation	12
7.8 Preheat	12
7.9 Production test, reference criteria	12
7.10 Extent of testing	13
7.11 Performance of test and acceptance criteria	13
7.12 Forming procedures	13
7.13 Heat treatment after forming	13
7.14 Sampling of formed products	15
7.15 Tests	15
7.15.1 Base material	15
7.15.2 Butt welds	16
7.16 Post weld heat treatment (PWHT)	16
8 Inspection and testing	16
8.1 General	16
8.2 Non-destructive testing of welded joints	16
8.2.1 General	16
8.2.2 Demonstration of satisfactory experience for testing group 2	17
8.2.3 Symbols	18

8.3	Determination of extent of non destructive testing	18
8.4	Applicable non-destructive testing techniques	21
8.4.1	NDT methods	21
8.4.2	Acceptance criteria for radiographic testing (RT).....	22
8.4.3	Acceptance criteria for visual and surface penetrant testing.....	22
8.4.4	Acceptance criteria for penetrant testing (PT)	23
8.5	Selection of non-destructive testing methods for internal imperfections.....	23
8.6	Standard hydrostatic test	24
8.7	Pneumatic testing.....	24
9	Inspection and testing of serially produced pressure vessels — Model approval.....	24
9.1	General.....	24
9.2	Inspection and testing of pressure vessels subject to cyclic loads	24
	Annex A (normative) Allowable design strength values.....	24a
	Annex Y (informative) History of EN 13445-8	25
	Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of the EU Pressure Equipment Directive 97/23/EC	26
	Bibliography	27

Foreword

This document (EN 13445-8:2014) 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 December 2014, and conflicting national standards shall be withdrawn at the latest by December 2014.

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

This document has been prepared under a mandate 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.

This European Standard consists of the following Parts:

- Part 1: *General*.
- Part 2: *Materials*.
- Part 3: *Design*.
- Part 4: *Fabrication*.
- Part 5: *Inspection and testing*.
- Part 6: *Requirements for the design and fabrication of pressure vessels and pressure parts constructed from spheroidal graphite cast iron*.
- CR 13445-7, *Unfired pressure vessels — Part 7: Guidance on the use of conformity assessment procedures*.
- Part 8: *Additional requirements for pressure vessels of aluminium and aluminium alloys*.
- CEN/TR 13445-9, *Unfired pressure vessels — Part 9: Conformance of EN 13445 series to ISO 16528*

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.

This document supersedes EN 13445-8:2009. This new edition incorporates the Amendments which have been approved previously by CEN members, and the corrected pages up to Issue 5 without any further technical change. Annex Y provides details of significant technical changes between this European Standard and the previous edition.

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 13445:2014 each year, consolidating these Amendments and including other identified corrections. . Issue 2 (2015-07) includes the corrected pages listed in Annex Y.

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.