



SLOVENSKI STANDARD
SIST EN 14276-1:2007/kprA1:2010
01-november-2010

Tlačna oprema za hladilne sisteme in toplotne črpalke - 1. del: Posode - Splošne zahteve

Pressure equipment for refrigerating systems and heat pumps - Part 1: Vessels - General requirements

Druckgeräte für Kälteanlagen und Wärmepumpen - Teil 1: Behälter - Allgemeine Anforderungen

Équipements sous pression pour systèmes de réfrigération et pompes à chaleur - Partie 1: Récipients - Exigences générales

Ta slovenski standard je istoveten z: EN 14276-1:2006/FprA1

ICS:

23.020.30	Tlačne posode, plinske jeklenke	Pressure vessels, gas cylinders
27.080	Toplotne črpalke	Heat pumps
27.200	Hladilna tehnologija	Refrigerating technology

SIST EN 14276-1:2007/kprA1:2010 **en,fr,de**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

FINAL DRAFT
EN 14276-1:2006

FprA1

August 2010

ICS 23.020.30; 27.080; 27.200

English Version

Pressure equipment for refrigerating systems and heat pumps - Part 1: Vessels - General requirements

Équipements sous pression pour systèmes de réfrigération
et pompes à chaleur - Partie 1: Récipients - Exigences
générales

Druckgeräte für Kälteanlagen und Wärmepumpen - Teil 1:
Behälter - Allgemeine Anforderungen

This draft amendment is submitted to CEN members for unique acceptance procedure. It has been drawn up by the Technical Committee CEN/TC 182.

This draft amendment A1, if approved, will modify the European Standard EN 14276-1:2006. If this draft becomes an amendment, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration.

This draft amendment was established by CEN 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 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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

Warning : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....	3
1 Modification of Clause 2, Normative references	4
2 Modification of Clause 3, Terms and definitions	5
3 Modification of 4.3.1.2	5
4 Modification of 4.3.2, Cladding	5
5 Modification to 4.3.3.4	6
6 Modification of 4.4.1, General	6
7 Modification of 4.4.2, Material requirements	6
8 Modification of 4.5, Material documentation	6
9 Modification of 5.2.1, Refrigerants	6
10 Modification of 5.2.2, Other fluids	6
11 Modification of 6.2.2, Internal corrosion	7
12 Modification of 6.2.3, External corrosion	7
13 Modification of 6.5, Maximum allowable pressure PS	7
14 Modification of 6.8, Design temperature t_d	7
15 Modification of 6.13.2, Corrosive fluids	7
16 Modification of 6.14.1, General	7
17 Modification of 6.14.2.1, General	8
18 Modification of 6.14.2.2.1, Fixed tubesheet not uniformly perforated	8
19 Modification of 6.14.2.2.2, Fixed tubesheet with tube brazed or welded into the tubesheet	8
20 Modification of 7.3, Manufacturing tolerances	8
21 Modification of 7.4.4.1, Acceptable weld details	8
22 Modification of 7.4.7, Non permanent joints	8
23 Modification of 8.8, Subcontracted elements Non permanent joints	8
24 Modification of A.3, Determination of lowest application temperatures for stress cases min $t_{0.75}$, min $t_{0.50}$ and min $t_{0.25}$	9
25 Modification of A.4.2, Heat treatment after welding	9
26 Modification of B.4.3, Tensile test	9
27 Modification of B.5.4.6, Filler material	9
28 Modification of C.1.2.5, Pneumatic test	10
29 Modification of C.3, Acoustic emission examination	10
30 Modification of E.1.7, Material properties	10
31 Modification of E.4.2, Test pressure	10
32 Modification of the Bibliography	11

Foreword

This document (EN 14276-1:2006/FprA1:2010) has been prepared by Technical Committee CEN/TC 182 "Refrigerating systems, safety and environmental requirements", the secretariat of which is held by DIN.

This document is currently submitted to the Unique Acceptance Procedure.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to support Essential Requirements of EU Directive 97/23/EC concerning Pressure Equipment.

For relationship with EU directive 97/23/EC see informative Annex ZA, which is an integral part of this document.

EN 14276-1:2006/FprA1:2010 (E)**1 Modification of Clause 2, Normative references**

Replace references EN 378-1:2000, EN 378-2:2000 and EN 378-4:2000 with the following:

"EN 378-1:2008, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 1: Basic requirements, definitions, classification and selection criteria*

EN 378-1:2008/prA1:2008, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 1: Basic requirements, definitions, classification and selection criteria*

EN 378-2:2008+A1:2009, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 2: Design, construction, testing, marking and documentation*

EN 378-4:2008, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 4: Operation, maintenance, repair and recovery*".

Replace reference EN 1005-2:2003 with the following:

"EN 1005-2:2003+A1:2008, *Safety of machinery — Human physical performance — Part 2: Manual handling of machinery and component parts of machinery*".

Replace reference EN 1173:1995 with the following:

"EN 1173:2008, *Copper and copper alloys — Material condition designation*".

Replace references EN 10111:1998 and EN 10130:1991 + A1:1998 with the following:

"EN 10111:2008, *Continuously hot-rolled low carbon steel sheet and strip for cold forming — Technical delivery conditions*

EN 10130:2006, *Cold-rolled low carbon steel flat products for cold forming — Technical delivery conditions*".

Replace reference EN 12517:1998 + A1:2002 + AC :2003 with the following:

"EN 12517-2:2008, *Non-destructive examination of welds — Part 2: Evaluation of welded joints in aluminium and its alloys by radiography — Acceptance levels*".

Replace references EN 13445-2:2002, EN 13445-3:2002, EN 13445-4:2002, EN 13445-5:2002 + A2:2005, EN 13445-6:2002 + A1:2004 and prEN 13445-8:2003 with the following:

"EN 13445-2:2009, *Unfired pressure vessels — Part 2: Materials*

EN 13445-3:2009, *Unfired pressure vessels — Part 3: Design*

EN 13445-4:2009, *Unfired pressure vessels — Part 4: Fabrication*

EN 13445-5:2009, *Unfired pressure vessels — Part 5: Inspection and testing*

EN 13445-6:2009, *Unfired pressure vessels — Part 6: Requirements for the design and fabrication of pressure vessels and pressure vessel parts constructed from spheroidal graphite cast iron*

EN 13445-8:2009, *Unfired pressure vessels — Part 8: Additional requirements for pressure vessels of aluminium and aluminium alloys*".

Replace reference EN ISO 4063:2000 with the following:

"EN ISO 4063:2009, *Welding and allied processes — Nomenclature of processes and reference numbers (ISO 4063:2009)*".

Delete the following reference:

"EN 1044, *Brazing — Filler metals*".

*and add the following "FprEN ISO 17672:2010, *Brazing — Filler metals (ISO/FDIS 17672:2010)*".*

Delete the following reference:

"EN 10002-1:2001, *Metallic materials — Tensile testing — Part 1: Method of test at ambient temperature*"

and add

"EN ISO 6892-1:2009, *Metallic materials — Tensile testing — Part 1: Method of test at room temperature (ISO 6892-1:2009)*"

2 Modification of Clause 3, Terms and definitions

Replace the existing introduction with the following:

"For the purposes of this document, the terms and definitions given in EN 378-1:2008, EN 764-1:2004, EN 764-2:2002, EN 764-3:2002, EN 764-4:2002, EN 764-5:2002, ISO 857-1:1998 and the following apply."

Replace term and definition 3.1.3 with the following:

"3.1.3

safety data sheet

document which gives all necessary information for prevention, safety, storage, transportation, labelling, use and disposal of substances and preparations which have a risk for health, safety or environment".

3 Modification of 4.3.1.2

Replace the first intent with the following: "

— EN 10130, all grades excluding DC 01".

4 Modification of 4.3.2, Cladding

Replace the 2nd paragraph with the following:

"The requirements of EN 13445-2:2009, Annex D shall apply when the strength of the cladding material is included in the design calculation."

EN 14276-1:2006/FprA1:2010 (E)**5 Modification to 4.3.3.4**

Replace the text with the following:

"When the gauge length is different from $L_0 = 5,65 \sqrt{S_0}$ and for a non-proportional gauge length, the requirements of EN ISO 6892-1 shall apply to determine the minimum value of elongation after fracture."

6 Modification of 4.4.1, General

Replace the first paragraph with the following:

"For pressure vessels the allowed stress at the minimum design temperature is applied as per EN 13445-2:2009, Annex B or Annex A of this European Standard."

7 Modification of 4.4.2, Material requirements

Replace the first paragraph with the following:

"For steel materials listed in 4.3.1.1 the test temperature and the minimum value of the impact test energy measured on an ISO V notch bending test specimen are determined in accordance with EN 13445-2:2009, Annex B or Annex A of this European Standard."

8 Modification of 4.5, Material documentation

Replace the text with the following:

"The material of the main pressure bearing parts of vessels of categories II, III, IV shall be delivered with a specific product control document as defined in EN 10204:2004 (e.g. 3.1, 3.2).

The materials for other pressure bearing parts, and for vessels where the category is I or lower, Filler materials used for welding and brazing shall be delivered with a test report 2.2 as defined in EN 10204:2004."

9 Modification of 5.2.1, Refrigerants

Replace the text with the following:

"EN 378-1:2008/prA1:2008, Annex E gives the classification of the refrigerant within Group 1 (dangerous fluid) or Group 2 (non dangerous fluid)."

10 Modification of 5.2.2, Other fluids

Replace the text of the first indent with the following:

"Fluids and mixtures other than refrigerants shall be classified as Group 1 or 2.

NOTE Regulation CLP 1272/2008 gives the classification of chemical products and mixtures."

11 Modification of 6.2.2, Internal corrosion

Replace the first paragraph with the following:

"For surfaces in contact with HFC's type refrigerants listed in EN 378-1:2008/prA1:2008, Annex E, internal corrosion is negligible and the minimum corrosion allowance may be taken to be 0 mm. Other values, greater than zero, may be selected by the manufacturer."

12 Modification of 6.2.3, External corrosion

Replace the existing first intent with the following: "

- 0 mm for pressurised parts, if appropriate protection (e.g.: paint, zinc plating, vapour barriers, non corrosive materials) is applied prior to putting into service, and the protection is properly maintained by the end user during the operational lifetime and checked at least according to EN 378-2:2008+A1:2009 (Annexes D and G) and EN 378-4;".

13 Modification of 6.5, Maximum allowable pressure *PS*

Replace the existing first paragraph with the following:

"The design temperature of the pressurised refrigerant containing parts shall not be less than the fluid temperature given in EN 378-2:2008+A1:2009, Table 2. For fluids other than refrigerants the design temperature shall be determined according to the relevant clauses of EN 13445-3:2009."

14 Modification of 6.8, Design temperature t_d

1st paragraph, replace "Table 1 of EN 378-2:2000" with "EN 378-2:2008+A1:2009, Table 2".

15 Modification of 6.13.2, Corrosive fluids

Replace the existing text with the following:

"Where corrosive fluids have been specified, the requirements of EN 13445-5:2009, Annex C apply unless alternative technical inspection has been indicated in the manufacturer's documentation."

16 Modification of 6.14.1, General

Replace the existing text with the following:

"The basic design method is the design by formula (DBF) method. In addition two other methods can be used to either supplement or replace DBF:

- a) Design by analysis (DBA):
The rules are given in EN 13445-3:2009, Annexes B and C;
- b) Experimental techniques:
The rules are given in Annex E of this European Standard.

The minimum required thickness is defined in EN 13445-3:2009, 5.2.3."