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Standards

Irish Standard  
I.S. EN 14276-1:2006+A1:2011

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

## I.S. EN 14276-1:2006+A1:2011

*Incorporating amendments/corrigenda/National Annexes issued since publication:*  
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## Pressure equipment for refrigerating systems and heat pumps - Part 1: Vessels - General requirements

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## Foreword

This document (EN 14276-1:2006+A1:2011) has been prepared by Technical Committee CEN/TC 182 "Refrigerating systems, safety and environmental requirements", the secretariat of which is held by DIN.

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of an identical text or by endorsement, at the latest by August 2011, and conflicting national standards shall be withdrawn at the latest by August 2011.

This document includes Amendment 1, approved by CEN on 2010-12-13.

This document supersedes EN 14276-1:2006.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1 A1.

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 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.

This document consists of the following parts under the general title "*Pressure equipment for refrigerating systems and heat pumps*":

— *Part 1: Vessels – General requirements*

— *Part 2: Piping – General requirements*

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

## Introduction

This standard recognises the unique nature of vessels for refrigerating systems or heat pumps and is intended to address the specific needs of the refrigeration and heat pump industry. This standard should be read in conjunction with the various parts of EN 13445.

When the text of this standard modifies or supplements a clause within EN 13445, then this standard should prevail. Where this standard does not modify or supplement the requirements of a clause, the requirements of EN 13445 should prevail.

The unique nature of a refrigerating system is defined as follows:

- a) the purpose of the refrigerating system is to extract and reject heat (this involves both cooling and heating);
- b) to operate the refrigerating system a pressure-imposing element (e.g. a compressor or an energy source) is necessary;
- c) the refrigerating system has a defined refrigerant charge in a closed circuit;
- d) the refrigerant has a chemical composition and purity defined in the relevant standards;
- e) the pressure of the refrigerant decreases when the temperature decreases (see typical curve in Annex A of this standard);
- f) due to the maximum temperature limit of 200 °C and the maximum pressure limit of 64 bar, the time dependant creep and fatigue due to pressure variation or vibrations are not significant design factors except for some materials such as aluminium, copper and titanium where the fatigue shall be taken into account;
- g) the risk of overpressure is due to:
  - the pressure imposing element;
  - an external heat source (e.g. fire or hot water);
  - improper operation.
- h) the refrigerating system is designed to minimise refrigerant emissions and the ingress of contaminants.

Only hermetic compressors are covered by this standard.

## 1 Scope

This European Standard specifies the requirements for material, design, manufacturing, testing and documentation for stationary pressure vessels intended for use in refrigerating systems and heat pumps. These systems are referenced in this standard as refrigerating systems as defined in EN 378-1.

This European Standard applies to vessels including welded or brazed attachments up to and including the nozzle flanges, screwed, welded or brazed connectors or to the edge to be welded or brazed at the first circumferential joint connecting piping or other elements.

This European Standard applies to pressure vessels with an internal pressure down to – 1 bar, to account for the evacuation of the vessel prior to charging with refrigerant.

This European Standard applies to both the mechanical loading conditions and thermal conditions as defined in EN 13445-3 associated with refrigerating systems. It applies to pressure vessels subject to the maximum allowable temperatures for which nominal design stresses for materials are derived using EN 13445-2 and EN 13445-3 or as specified in this standard. In addition vessels designed to this standard should have a maximum design temperature not exceeding 200 °C and a maximum design pressure not exceeding 64 bars. Outside of these limits, it is important that EN 13445 be used for the design, construction and inspection of the vessel. Under these circumstances it is important that the unique nature of refrigerating plant, as indicated in the introduction to this standard, also be taken into account.

It is important that pressure vessels used in refrigerating systems and heat pumps of category less than II as defined in Annex H comply with other relevant clauses of EN 378-2 for vessels.

This European Standard applies to pressure vessels where the main pressure bearing parts are manufactured from metallic ductile materials as defined in Clause 4 and Annex I of this standard.

This European Standard does not apply to vessels of the following types:

- vessels of riveted construction;
- multilayered, autofrettaged or prestressed vessels;
- vessels directly heated by a flame;
- « roll bond » heat exchangers.

## 2 Normative references

The following referenced documents are indispensable for the application 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 287-1:2004, *Qualification test of welders — Fusion welding — Part 1: Steels*

**[A<sub>1</sub>]** EN 378-1:2008+A1:2010, *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* **[A<sub>1</sub>]**

EN 764-1:2004, *Pressure equipment — Part 1: Terminology — Pressure, temperature, volume, nominal size*

EN 764-2:2002, *Pressure equipment — Part 2: Quantities, symbols and units*



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