



**SLOVENSKI STANDARD**  
**SIST EN 378-4:2017/oprA1:2017**  
**01-oktober-2017**

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**Hladilni sistemi in toplotne črpalke - Varnostnotehnične in okoljevarstvene zahteve  
- 4. del: Delovanje, vzdrževanje, popravilo in recikliranje**

Refrigerating systems and heat pumps - Safety and environmental requirements - Part 4:  
Operation, maintenance, repair and recovery

Kälteanlagen und Wärmepumpen - Sicherheitstechnische und umweltrelevante  
Anforderungen - Teil 4: Betrieb, Instandhaltung, Instandsetzung und Rückgewinnung

Systèmes frigorifiques et pompes à chaleur - Exigences de sécurité et d'environnement -  
Partie 4: Fonctionnement, maintenance, réparation et récupération

**Ta slovenski standard je istoveten z: EN 378-4:2016/prA1**

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**ICS:**

27.080	Toplotne črpalke	Heat pumps
27.200	Hladilna tehnologija	Refrigerating technology

**SIST EN 378-4:2017/oprA1:2017**      **en,fr,de**



EUROPEAN STANDARD  
NORME EUROPÉENNE  
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**DRAFT**  
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ICS 27.080; 27.200

English Version

## Refrigerating systems and heat pumps - Safety and environmental requirements - Part 4: Operation, maintenance, repair and recovery

Systèmes frigorifiques et pompes à chaleur - Exigences de sécurité et d'environnement - Partie 4: Fonctionnement, maintenance, réparation et récupération

Kälteanlagen und Wärmepumpen - Sicherheitstechnische und umweltrelevante Anforderungen - Teil 4: Betrieb, Instandhaltung, Instandsetzung und Rückgewinnung

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

This draft amendment A1, if approved, will modify the European Standard EN 378-4:2016. 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-CENELEC Management Centre has the same status as the official versions.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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

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**Contents**

Page

**European foreword..... 3**

**1 Modification of Annex D (informative), In-service inspection ..... 4**

## European foreword

This document (EN 378-4:2016/prA1:2017) 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 CEN Enquiry.

The main changes are:

- a) reference to national regulations;
- b) reference to regulations related to fluorinated greenhouse gases;
- c) recommended practices for CO<sub>2</sub> equivalents.

**EN 378-4:2016/prA1:2017 (E)**

## **1 Modification of Annex D (informative), In-service inspection**

*Replace the whole Annex D with the following one:*

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## Annex D (informative)

### In-service inspection

**D.1** During the operational life of the system, inspection and testing are carried out according to national regulations.

Information about in-service inspection given in this annex can be used where no similar criteria exist in national regulations.

**Table A.1 — In-service inspection**

Clause	Inspection		Test		
	External visual EN 378-2:2016, Annex G	Corrosion	Pressure test for system	Refrigerant <sup>a</sup> leakage indication system	Safety device check
D.2	X		X	X	
D.3	X		X	X	
D.4	X			X	
D.5				X	
D.6					X
D.7	X			X	
D.9		X <sup>b</sup>			

<sup>a</sup> The pressure of the system should be above atmospheric pressure for the tightness test.  
<sup>b</sup> Not for new equipment.

**D.2** In-service inspection is carried out after service work that is likely to affect strength, or when a change in use has occurred, or when changing to another refrigerant at a higher pressure, or after standstill for longer than two years. Components, which do not conform, are changed. Test pressures higher than appropriate for the design pressures of the components are not applied.

**D.3** In-service inspection is carried out after repair or significant alterations or extensions to the systems or components.

Testing should be restricted to the parts affected.

**D.4** In-service inspection is carried out after reinstalling on another site.

**D.5** Leak testing of the system is to be performed if serious suspicion of leaks is raised. For the purposes of this paragraph, "inspected for leakage" means that the equipment or system is examined primarily for leakage using direct or indirect measuring methods, focusing on those parts of the equipment or system most likely to leak. The system should be checked as required by the instructions from the manufacturer.

**EN 378-4:2016/prA1:2017 (E)**

In addition, systems may require regular inspection due to regulations related to fluorinated greenhouse gases

NOTE 1 Refer to Regulation (EU) 517/2014 on fluorinated greenhouse gases.

For systems where the frequency of inspection for leakage depends on the CO<sub>2</sub> equivalents of the system charge, the CO<sub>2</sub> equivalent of the system charge is calculated as the charge in kg multiplied by the GWP of the refrigerant used (see EN 378-1:2016, Annex E).

Table D.2 shows the frequencies prescribed:

**Table D.2 — prescribed frequency of inspection**

<b>Frequency</b>	<b>Hermetically sealed systems</b>	<b>Other systems</b>
At least once every 12 months	10 t of CO <sub>2</sub> equivalent to less than 50 t of CO <sub>2</sub> equivalent	5 t of CO <sub>2</sub> equivalent to less than 50 t of CO <sub>2</sub> equivalent
At least once every 6 months	50 t of CO <sub>2</sub> equivalent to less than 500 t of CO <sub>2</sub> equivalent	50 t of CO <sub>2</sub> equivalent to less than 500 t of CO <sub>2</sub> equivalent
At least once every 3 months	≥ 500 t of CO <sub>2</sub> equivalent	≥ 500 t of CO <sub>2</sub> equivalent

The systems should be re-inspected for leakage within one month after a leak has been repaired and the system has been put into service to ensure that the repair has been effective.

NOTE 2 The re-inspection is likely to be more effective if it is conducted after the system has been in operation for at least a week after the repair.

For applications containing 500 t of CO<sub>2</sub> equivalent or more of refrigerant, the operator should install leakage indication systems. These leakage indication systems should be inspected at least once every 12 months to ensure their proper functioning.

Where a properly functioning appropriate leakage indication system is in place, the frequency of the inspections may be halved.

High leakage rates are unacceptable. Action should be taken to eliminate every detected leak.

NOTE 3 Fixed refrigerant detectors are not leak detectors because they do not locate the leak.

For hermetically sealed systems containing 10 tonnes of CO<sub>2</sub> equivalent or more of refrigerant and for other systems containing 5 t or more of CO<sub>2</sub> equivalent the operator should maintain records on:

- the quantity and type of refrigerant installed;
- the quantities of refrigerant added during installation, maintenance or servicing or due to leakage;
- whether the quantities of installed refrigerant have been recycled or reclaimed, including the name and address of the recycling or reclamation facility and, where applicable, the certificate number;
- the quantity of refrigerant recovered;
- the identity of the undertaking which installed, serviced, maintained and where applicable repaired or decommissioned the equipment, including, where applicable, the number of its certificate;
- the dates and results of the inspections for leakage;
- if the equipment was decommissioned, the measures taken to recover and dispose of the refrigerant.