

KÜLMUTUSSÜSTEEMID JA SOOJUSPUMBAD. OHUTUS- JA
KESKKONNANÕUDED. OSA 4: TALITLUS, KORRASHOID,
REMONT JA UTILISEERIMINE

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

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 378-4:2016+A1:2019 sisaldab Euroopa standardi EN 378-4:2016+A1:2019 ingliskeelset teksti.	This Estonian standard EVS-EN 378-4:2016+A1:2019 consists of the English text of the European standard EN 378-4:2016+A1:2019.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 25.09.2019.	Date of Availability of the European standard is 25.09.2019.
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ICS 27.080, 27.200

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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 European Standard was approved by CEN on 3 September 2016 and includes Amendment 1 approved by CEN on 26 August 2019.

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

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

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European foreword

This document (EN 378-4:2016+A1:2019) 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of an identical text or by endorsement, at the latest by March 2020, and conflicting national standards shall be withdrawn at the latest by March 2020.

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 includes Amendment 1 approved by CEN on 26 August 2019.

This document supersedes A1 EN 378-4:2016 A1.

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

EN 378 consists of the following parts under the general title “Refrigerating systems and heat pumps — Safety and environmental requirements”:

- *Part 1: Basic requirements, definitions, classification and selection criteria;*
- *Part 2: Design, construction, testing, marking and documentation;*
- *Part 3: Installation site and personal protection;*
- *Part 4: Operation, maintenance, repair and recovery.*

The main changes in part 4 with respect to the previous edition are listed below:

- *harmonisation as far as possible with ISO 5149:2014;*
- *addition of vacuum procedure in 5.3.8;*
- *addition of moisture test in 6.2.3.*

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies the requirements for the safety of persons and property, provides guidance for the protection of the environment and establishes procedures for the operation, maintenance and repair of refrigerating systems and the recovery of refrigerants.

The term “refrigerating system” used in this European Standard includes heat pumps.

This standard applies:

- a) to refrigerating systems, stationary or mobile, of all sizes including heat pumps;
- b) to secondary cooling or heating systems;
- c) to the location of the refrigerating systems;
- d) to parts replaced and components added after adoption of this standard if they are not identical in function and capacity.

This standard does not cover “motor vehicle air conditioners” constructed according to product standards such as ISO 13043.

Systems using refrigerants other than those listed in EN 378-1:2016, Annex E are not covered by this standard unless they have been assigned to a safety class according to ISO 817.

This standard does not apply to goods in storage.

This standard is not applicable to refrigeration systems and heat pumps which were manufactured before the date of its publication as a European Standard except for extensions and modifications to the system which were implemented after publication.

This standard is applicable to new refrigerating systems, extensions or modifications of already existing systems, and for existing stationary systems, being transferred to and operated on another site.

This standard also applies in the case of the conversion of a system to another refrigerant type, in which case conformity to the relevant clauses of parts 1 to 4 of the standard shall be assessed.

This Part 4 of the European Standard specifies requirements for safety and environmental aspects in relation to operation, maintenance, and repair of refrigerating systems and the recovery, reuse and disposal of all types of refrigerant, refrigerant oil, heat-transfer fluid, refrigerating system and part thereof.

These requirements are intended to minimise risks of injury to persons and damage to property and the environment resulting from improper handling of the refrigerants or from contaminants leading to system breakdown and resultant emission of the refrigerant.

Subclauses 4, 5.1.1 to 5.1.4, 5.2, 5.3.1, 5.3.3 and 6.6 of this European Standard are not applicable to unitary systems having a power cord, being factory sealed, and in conformance with EN 60335 series.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 378-1:2016, *Refrigerating systems and heat pumps — Safety and environmental requirements - Part 1: Basic requirements, definitions, classification and selection criteria*

EN 378-2:2016, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 2: Design, construction, testing, marking and documentation*

EN 378-3, *Refrigerating systems and heat pumps — Safety and environmental requirements — Part 3: Installation site and personal protection*

ISO 11650, *Performance of refrigerant recovery and/or recycling equipment*

ISO 13043, *Road vehicles — Refrigerant systems used in mobile air conditioning systems (MAC) — Safety requirements*

IEC 60335-2-104, *Household and similar electrical appliances — Safety — Part 2-104: Particular requirements for appliances to recover and/or recycle refrigerant from air conditioning and refrigeration equipment*

3 Terms, definitions and abbreviated terms

For the purposes of this document, the terms, definitions and abbreviated terms given in EN 378-1:2016 apply.

4 General requirements

4.1 Operating instructions

4.1.1 Before a new refrigerating system is put into service, the person responsible for placing the system in operation shall ensure that the operating personnel are instructed according to 4.1.2.

NOTE It is advisable that the operating personnel are present during evacuation, charging with refrigerant and adjustment of the refrigerating system as well as, if possible, during assembly on site.

4.1.2 Care shall be taken to ensure that the personnel charged with the operation, supervision and maintenance of the refrigerating system are adequately instructed and competent with respect to their tasks, as well as the safety measures to be observed, and the properties and handling of the refrigerant used. Typical in-service inspection requirements are shown in Annex D.

4.2 Documentation

The logbook shall be updated following any maintenance or repair. The logbook shall either be kept in the machinery room, or the data shall be stored digitally by the operator with a printout in the machinery room, in which case the information shall be accessible to the competent person when servicing or testing.

5 Maintenance and repair

5.1 General

5.1.1 Each refrigerating system shall be subjected to preventive maintenance in accordance with the instruction manual (see EN 378-2).

NOTE The frequency of such maintenance depends on the type, size, age, use, etc. of the system. In many cases more than one maintenance service is required in the course of one year in accordance with legal requirements.

5.1.2 The operator of the refrigerating system shall ensure that the system is inspected, regularly supervised and maintained.