SLOVENSKI STANDARD
oSIST prEN 378-1:2025

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Hladilni sistemi in toplotne črpalke - Varnostnotehnične in okoljevarstvene zahteve - 1. del: Osnovne zahteve, definicije, razvrstitev in kriteriji za izbiro

Refrigerating systems and heat pumps - Safety and environmental requirements - Part 1: Basic requirements, definitions, classification and selection criteria

Kälteanlagen und Wärmepumpen - Sicherheitstechnische und umweltrelevante Anforderungen - Teil 1: Grundlegende Anforderungen, Begriffe, Klassifikationen und Auswahlkriterien

Systèmes frigorifiques et pompes à chaleur - Exigences de sécurité et d'environnement - Partie 1 : Exigences de base, définitions, classification et critères de choix

Ta slovenski standard je istoveten z: **prEN 378-1**

ICS:

01.040.27	Prenos energije in toplote (Slovarji)	Energy and heat transfer engineering (Vocabularies)
27.080	Toplotne črpalke	Heat pumps
27.200	Hladilna tehnologija	Refrigerating technology

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EUROPEAN STANDARD

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EUROPÄISCHE NORM

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ICS 01.040.27; 27.080; 27.200

Will supersede EN 378-1:2016+A1:2020

English Version

Refrigerating systems and heat pumps - Safety and environmental requirements - Part 1: Basic requirements, definitions, classification and selection criteria

Systèmes frigorifiques et pompes à chaleur - Exigences de sécurité et d'environnement - Partie 1 : Exigences de base, définitions, classification et critères de choix

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

If this draft becomes a European Standard, 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.

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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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European foreword

This document (prEN 378-1:2025) 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.

This document will supersede [1].

prEN 378-1:2025 includes the following significant technical changes with respect to [1]:

— Clause 5 was restructured.

— The examples of systems were removed from Clause 5,

— Clause 6 and Clause 7 were combined to a new Clause 6.

— Annex C (Location and refrigerant charge limitations) was converted into a new Clause 7 of the main body of the standard (Determining the releasable quantity of refrigerant and the refrigerant quantity safety limit).

— The concept of releasable quantity of refrigerant was introduced in a new subclause 7.2.

— Options for calculation of refrigerant quantity safety limits were introduced in a new subclause 7.5.

— Additional requirements for spaces below ground are introduced in new subclause 7.6.

— Annex E was converted into a new [2].

— Annex H with examples related to Annex C were converted to and informative Annex F with examples related to 7.5.

— Examples related to Clause 5 were given in a new Annex C.

— Annex F and Annex G were named Annex D and Annex E.

— New informative Annex G for assumed mass flow rates.

— New informative Annex H for test and calculation methods for determining releasable charge m_{rc}.

— New normative Annex I for refrigerant quantity safety limit or minimum room area determination using surrounding concentration test.

— New normative Annex J for calculations for refrigerant-containing parts are within an enclosure with openings.

— New normative Annex K for stagnation effect with of higher molar mass refrigerants

[3] 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 5: Safety classification and information about refrigerants.*

[4] applies for operation, maintenance, repair and recovery.

Introduction

This document relates to safety and environmental requirements in the design, manufacture, construction, installation, operation, maintenance, repair and disposal of refrigerating systems regarding local and global environments. It does not relate to the final destruction of the refrigerants.

It is intended to minimize possible hazards to persons, property and the environment from refrigerating systems and refrigerants. These hazards are associated with the physical and chemical characteristics of refrigerants and the pressures and temperatures occurring in refrigeration cycles.

Attention is drawn to hazards such as excessive temperature at compressor discharge, liquid slugging, erroneous operation and reduction in mechanical strength caused by corrosion, erosion, thermal stress, liquid hammer or vibration. Corrosion deserves special consideration as conditions peculiar to refrigerating systems arise due to alternate frosting and defrosting or the covering of equipment by insulation.

The extent to which hazards are covered is indicated in Annex E. In addition, machinery should comply as appropriate with [5] for hazards which are not covered by this document.

Commonly used refrigerants except R717 are heavier than air. Care should be taken to avoid stagnant pockets of heavy refrigerant vapours by proper location of ventilation inlet and exhaust openings. Refrigerants and their combinations with oils, water or other substances, can affect the system chemically and physically. They can, if they have detrimental properties, endanger persons, property and the environment when escaping from the refrigerating system. Refrigerants are selected with due regard to their potential influence on the global environment (ODP, GWP) as well as their possible effects on the local environment. Evaluation of the environmental performance requires a life cycle approach. With regard to global climate change the **T**otal **E**quivalent **W**arming **I**mpact approach is generally used as the basis (see Annex B). Reference should be made to the [6] to address other environmental aspects. Many factors influence environmental impacts such as:

— location of the system;

— energy efficiency of the system;

— type of refrigerant;

— service frequency;

— refrigerant leaks;

— sensitivity of charge on efficiency;

— minimization of heat load;

— control methods.

Additional investments may be directed towards reducing leaks, increasing energy efficiency or modifying the design in order to use a different refrigerant. A life cycle approach is necessary to identify where additional investments will have the most beneficial effects.