საქართველოს სტანდარტი

სსკ: 01.040.27; 27.080; 27.200

სამაცივრო სისტემები და თბური ტუმბოები - უსაფრთხოებისა და გარემოსდაცვითი მოთხოვნები - ნაწილი 1: ძირითადი მოთხოვნები, განმარტებები, კლასიფიკაცია და შერჩევის კრიტერიუმები

სსტ ენ 378-1:2016+A1:2020/2023

საინფორმაციო მონაცემები

1 მიღებულია და დაშვებულია სამოქმედოდ: სსიპ-საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს გენერალური დირექტორის 09/10/2023 წლის № 83 განკარგულებით

2 მიღებულია „თავფურცლის“ თარგმნის მეთოდით: სტანდარტიზაციის ევროპული კომიტეტის (სენ) სტანდარტი ენ 378-1:2016+A1:2020 ,,სამაცივრო სისტემები და თბური ტუმბოები - უსაფრთხოებისა და გარემოსდაცვითი მოთხოვნები - ნაწილი 1: ძირითადი მოთხოვნები, განმარტებები, კლასიფიკაცია და შერჩევის კრიტერიუმები“

3 პირველად

4 რეგისტრირებულია: სსიპ-საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს რეესტრში: 09/10/2023 წლის №268-1.3-030995

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 378-1:2016+A1

October 2020

ICS 01.040.27; 27.080; 27.200

Supersedes EN 378-1:2016

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

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

This European Standard was approved by CEN on 3 September 2016 and includes Amendment 1 approved by CEN on 17 August 2020.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

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Ref. No. EN 378-1:2016+A1:2020 E

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European foreword

This document (EN 378-1:2016+A1:2020) 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of an identical text or by endorsement, at the latest by April 2021, and conflicting national standards shall be withdrawn at the latest by April 2021.

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 17 August 2020.

This document supersedes A1 EN 378-1:2016 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 1 with respect to the previous edition are listed below:

— harmonization as far as possible with ISO 5149:2014 and ISO 817:2014;

— adapt definitions for the purpose of harmonizing EN 378-2:2016 with PED.

Following detailed changes are worth noting:

— modification of the term “special machinery room” to “separate refrigeration machinery room” and adapt the definition in view of combustion equipment;

— modifications/inclusion of definitions for “part of the refrigerating system” (3.1.8), “pressure equipment” (3.1.20) and “pressure vessels” (3.4.8) in view of PED;

— movement of the location classification from Annex C to 5.3;

— rewording of the system examples in 5.3 to make the relation clear with location classification;

— replacement of Annex F (safety group) classifications by 5.2;

— modification of the approach to determine the refrigerant charge of a refrigeration system. The charge limit requirement is decided based on the most stringent refrigerant charge that results from the calculation based on toxicity and the calculation based on flammability. To this purpose,

the tables in Annex C are modified. Table C.1 contains requirements based on toxicity classes, Table C.2 contains requirements based on flammability classes;

— addition of the refrigerant classes as determined in ISO 817 to toxicity classes A, B and flammability classes 1, 2L, 2, 3;

— modification of the charge limits for refrigerants of flammability class 3, for location classification III;

— addition of C.3, alternative risk management;

— addition of refrigerants in Annex E that have been approved for publication in ASHRAE 34 in January 2015 (not those approved for public review in January 2015);

— inclusion in Annex E of GWP values for refrigerants in view of REGULATION (EU) No 517/2014 (F-gas).

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.

Introduction

This European Standard relates to safety and environmental requirements in the design, manufacture, construction, installation, operation, maintenance, repair and disposal of refrigerating systems and appliances regarding local and global environments. It does not related 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 G. In addition, machinery should comply as appropriate with EN ISO 12100 for hazards which are not covered by this European Standard.

Commonly used refrigerants except R-717 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 shall be 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 EN ISO 14040- series 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.