



# SLOVENSKI STANDARD

## kSIST-TS FprCEN/TS 17606:2020

01-december-2020

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**Vgradnja opreme za hlajenje, klimatizacijo in toplotno črpalko, ki vsebuje vnetljiva hladilna sredstva, za dopolnitev obstoječih standardov**

Installation of refrigeration, air conditioning and heat pump equipment containing flammable refrigerants, complementing existing standards

Installation von Kälte-, Klima- und Wärmepumpenanlagen, die brennbare Kältemittel enthalten, zur Ergänzung bestehender Normen

Installation d'équipements de réfrigération, de climatisation et de pompes à chaleur contenant des réfrigérants inflammables, en complément des normes existantes

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**Ta slovenski standard je istoveten z: FprCEN/TS 17606**

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**ICS:**

23.080	Črpalke	Pumps
27.200	Hladilna tehnologija	Refrigerating technology
91.140.30	Prezračevalni in klimatski sistemi	Ventilation and air-conditioning systems

**kSIST-TS FprCEN/TS 17606:2020**

**en,fr,de**

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TECHNICAL SPECIFICATION  
SPÉCIFICATION TECHNIQUE  
TECHNISCHE SPEZIFIKATION

**FINAL DRAFT**  
**FprCEN/TS 17606**

October 2020

ICS 23.080; 27.200; 91.140.30

English Version

Installation of refrigeration, air conditioning and heat  
pump equipment containing flammable refrigerants,  
complementing existing standards

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Wärmepumpenanlagen, die brennbare Kältemittel  
enthalten, zur Ergänzung bestehender Normen

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

CEN members are the national standards bodies of 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 United Kingdom.

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.

**Warning** : This document is not a Technical Specification. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a Technical Specification.



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 (FprCEN/TS 17606:2020) has been prepared by Technical Committee CEN/TC 182 “Refrigerating systems, safety and environmental requirements”, the secretariat of which is held by DIN.

This document is currently submitted to the Vote on TS.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

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**FprCEN/TS 17606:2020 (E)****Introduction**

The adoption of refrigerants with low Global Warming Potential, in response to concerns about the effect of some fluorocarbons on climate, has raised the profile of fluids which were previously limited in their use due to flammability. As the industry moves towards greater use of low GWP flammable refrigerants, in particular from flammability class A3, it is important to ensure that installation methods also change to support this technology transition.

The purpose of this document is to provide information to ensure acceptable risk levels applying flammable refrigerants.

This document therefore provides technical information to the companies and individuals directly involved in activities at the worksite; the owner of the system and the company and individuals that install equipment.

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## 1 Scope

This document provides technical information for the installation of refrigeration, air conditioning and heat pump equipment containing flammable refrigerants, in particular from class A3, complementing existing standards. The term “refrigerating system” used in this document includes air conditioners and heat pumps.

Refrigerants from toxicity class B are excluded from this scope.

This document includes risk mitigation measures not yet addressed in existing standards for specific refrigerant classes, or not fully reflecting the state of the art, and establishes complementary technical specifications related to the installation of equipment.

The following aspects are considered:

- explosive atmosphere workplace and equipment;

NOTE Further information can be found in Directive 99/92/EC (ATEX Workplace Directive) and Directive 2014/34/EU (ATEX Equipment Directive).

- design and structural specifications for the installation site;
- marking and labelling of equipment parts and installation site;
- good practice for installing equipment, including tools and personal protection;
- risk mitigation methods and related refrigerant charge limits;
- risk assessments;
- competence of personnel;
- safety testing of systems and equipment.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 378-1:2016, *Refrigerating systems and heat pumps - Safety and environmental requirements - Part 1: Basic requirements, definitions, classification and selection criteria*

EN 378-2, *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*

prEN ISO 22712:2018, *Refrigerating systems and heat pumps - Competence of personnel (ISO/DIS 22712:2018)*

ISO 31000 series, *Risk management*

## FprCEN/TS 17606:2020 (E)

### 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 378-1:2016, prEN ISO 22712:2018 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp>

#### 3.1

##### **installation**

<process> process of installing equipment in the location in which it will be operated

#### 3.2

##### **installation**

<result> completed assembly of equipment, ready for operation

#### 3.3

##### **installer**

company that performs the act of installing

#### 3.4

##### **equipment**

single apparatus or set of devices or apparatuses, or the set of main devices of an installation, or all devices necessary to perform a specific task

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[Source: IEV 151-11-25]

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#### 3.5

##### **risk analysis**

systematic use of available information to identify *hazards* and to estimate the *risk*

#### 3.6

##### **risk assessment**

overall process comprising a *risk analysis* and a *risk evaluation*

#### 3.7

##### **risk evaluation**

procedure based on the *risk analysis* to determine whether *tolerable risk* has been exceeded

#### 3.8

##### **risk mitigation measure**

action or means to eliminate *hazards* or reduce *risks*

EXAMPLE: *Inherently safe design*; protective devices; personal protective equipment; information for use and installation; organization of work; training; application of equipment; supervision.

#### 3.9

##### **safety**

freedom from *risk* which is not tolerable



### 3.10

#### tolerable risk

level of *risk* that is accepted in a given context based on the current values of society

Note 1 to entry: For the purposes of this document, the terms “acceptable risk” and “tolerable risk” are considered to be synonymous.

## 4 General

NOTE 1 The legal responsibilities of all parties apply as laid down in the ‘Blue Guide’ on the implementation of EU products rules 2016 and DECISION No 768/2008/EC on a common framework for the marketing of products.

Equipment shall be installed according to the manufacturer’s instructions or according to an alternative approach following Clause 5. In the latter case the installer assumes the responsibility as the manufacturer of the assembly. The installer of the equipment shall provide installation and operating instructions taking into account all specific aspects related to the installation site as appropriate.

NOTE 2 National regulations could apply.

Where the installer has not declared that an alternative approach has been adopted and does not provide a customised operating manual, the installer shall be responsible for ensuring that the requirements laid down by the equipment manufacturer are fulfilled. In this case the manufacturer remains responsible for the safe design of the installation, operation, and maintenance of the equipment, in particular with regards to respecting the charge size limits and associated risk mitigation measures.

The following documents contain useful information (standard.iteh.ai)

- IEC 60335-2-40:2018 provides information on procedures additional to usual information for air conditioning and heat pump equipment installation procedures when an appliance with flammable refrigerants is affected.
- EN 378-3 provides information regarding the installation site and personal protection;
- EN 60079-14 contains the specific requirements for the design, selection, erection and initial inspection of electrical installations in, or associated with, explosive atmospheres;
- EN 60079-17 covers factors directly related to the inspection and maintenance of electrical installations within hazardous areas only, where the hazard could be caused by flammable gases, vapours, mists, dusts, fibres or flyings.

The employer of the installation personnel shall carry out a risk assessment.

NOTE 3 Further information can be found in Directive 99/92/EC .

It is the responsibility of the employer to ensure the safety and health of workers in every aspect related to the work. The employer shall provide instructions and training to enable workers to work safely with flammable refrigerants, in particular A3 refrigerants.

Persons working on refrigerating systems containing flammable refrigerants shall have competence in safety aspects of flammable refrigerant handling. The personnel installing the refrigerating system shall be 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.

NOTE 4 The parties involved are the companies and individuals directly involved in activities at the worksite; the owner of the system and the company and individuals providing installation services.

Examples for checklists can be found in Annex A of COM(2003)515 of 25 August 2003.