
Obratovanje, servisiranje, vzdrževanje, popravilo in razgradnja opreme za hlajenje, klimatizacijo in toplotne črpalke, ki vsebuje vnetljiva hladilna sredstva, za dopolnitev obstoječih standardov

Operation, servicing, maintenance, repair and decommissioning of refrigeration, air conditioning and heat pump equipment containing flammable refrigerants, complementing existing standards

Betrieb, Wartung, Instandhaltung, Reparatur und Außerbetriebnahme von Kälte-, Klima- und Wärmepumpenanlagen, die brennbare Kältemittel enthalten, zur Ergänzung bestehender Normen

Exploitation, entretien, maintenance, réparation et mise hors service d'équipements de réfrigération, de climatisation et de pompes à chaleur contenant des réfrigérants inflammables, en complément des normes existantes

Ta slovenski standard je istoveten z: CEN/TS 17607:2021

ICS:

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

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en,fr,de

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TECHNICAL SPECIFICATION
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CEN/TS 17607

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English Version

Operation, servicing, maintenance, repair and
decommissioning of refrigeration, air conditioning and
heat pump equipment containing flammable refrigerants,
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This Technical Specification (CEN/TS) was approved by CEN on 1 February 2021 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

CEN members are required to announce the existence of this CEN/TS in the same way as for an EN and to make the CEN/TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force (in parallel to the CEN/TS) until the final decision about the possible conversion of the CEN/TS into an EN is reached.

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

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European foreword

This document (CEN/TS 17607:2021) has been prepared by Technical Committee CEN/TC 182 “Refrigerating systems, safety and environmental requirements”, the secretariat of which is held by DIN.

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.

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CEN/TS 17607:2021 (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 operation, service and decommissioning practices also change to support this technology transition.

The need for technical specifications for all stakeholders in operation and service is particularly important.

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

This document therefore provides technical specifications to the companies and individuals directly involved in activities at the worksite; the owner, his operational staff that provide routine maintenance, subcontractors that undertake specialist service work of various types and decommissioning contractors.

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1 Scope

This document provides technical specifications for the operation, servicing, maintenance, repair and decommissioning of refrigeration, air conditioning and heat pump equipment containing flammable refrigerants, in particular from class A3, complementing existing standards.

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 for the operation, servicing, maintenance, repair and decommissioning.

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).

- good practice for the operation, servicing, maintenance, repair and decommissioning, including tools and personal protection;
- risk mitigation methods;
- risk assessments;
- competence of personnel;
- health and safety of personnel;
- location of the equipment.

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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+A1:2020, *Refrigerating systems and heat pumps - Safety and environmental requirements - Part 1: Basic requirements, definitions, classification and selection criteria*

EN 378-4:2016+A1:2019, *Refrigerating systems and heat pumps - Safety and environmental requirements - Part 4: Operation, maintenance, repair and recovery*

EN ISO 22712:—¹, *Refrigerating systems and heat pumps - Competence of personnel (ISO/DIS 22712)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 378-1:2016+A1:2020, EN ISO 22712:—¹ and the following apply.

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

¹ Under preparation: Stage at the time of publication: prEN ISO 22712:2018.

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

3.1 maintenance

act of keeping a piece of equipment in good condition by checking or repairing it regularly

3.2 servicing

act of checking and repairing a piece of equipment to keep it in good condition

3.3 repair

act of fixing a piece of equipment that is broken or damaged

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

[Source: IEV 151-11-25]

3.5 risk analysis

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

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3.6 risk assessment

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

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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.

3.11**operator**

natural or legal person exercising actual power over the technical functioning of products and equipment; the owner can be designated as being responsible for the operator's obligations

4 General

The instructions shall be followed for the operation, servicing, maintenance, repair and decommissioning of refrigeration, air conditioning and heat pump equipment.

The manufacturer and the installer of the equipment transfer the responsibilities for the equipment to the operator, according to the contract conditions between those parties.

The operator also assumes the responsibilities of the manufacturer when:

- the intended function of the equipment, already placed on the EU market, is modified; or
- the technical details are modified, in particular with regards to respecting charge size limits and associated risk mitigation measures; or
- the compliance is impacted because the instructions provided for the equipment were not followed.

The following documents contain useful information:

- EN 378-2 provides information on instructions regarding operation and maintenance;
- EN 60335-2-40:2003 provides information on procedures additional to usual information for air conditioning and heat pump equipment repair, maintenance and decommission procedures when an appliance with flammable refrigerants is affected. (EN 60335-2-40:2003, Annex A);
- EN 378-4 provides information regarding the operation, maintenance, repair and recovery;
- 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 worker shall carry out a risk assessment.

NOTE 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, training, and personal protective equipment to enable workers to work safely with flammable refrigerants.

Persons working on refrigerating systems containing flammable refrigerants shall have competence in safety aspects of flammable refrigerant handling. The personnel charged with the operation, supervision and maintenance of the refrigerating system shall be adequately instructed and competent with respect to their tasks, as well as the risk mitigation measures to be observed, and the properties and handling of the refrigerant used. (See EN 378-4:2016+A1:2019, 4.1.2).

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

CEN/TS 17607:2021 (E)**5 Operation**

Operation of refrigerating equipment shall be undertaken in accordance with instructions.

NOTE National regulations apply.

Where instructions are not adequate, the operator is responsible for providing adequate operating instructions.

The operating instructions shall provide adequate details for safely operating equipment with flammable refrigerants, including aspects related to the location of the equipment.

The operator of the equipment shall ensure that the equipment and the location are regularly inspected, supervised and maintained.

6 Maintenance, servicing, and repair

Maintenance, servicing, and repair can be executed on-site or off-site in a dedicated repair shop. For equipment using flammable refrigerants, the personnel shall follow the manual provided for the equipment.

The employer of the worker shall carry out a risk assessment.

NOTE 1 See Directive 99/92/EC for further information.

NOTE 2 National laws and regulations take precedence.

All equipment and risk mitigation measures shall be subjected to preventive maintenance in accordance to the instructions provided for the equipment. For safety reasons, each refrigerating equipment shall be subjected to periodic leak checking, where relevant.

NOTE 3 EN 378-4 provides information regarding leak checking.

Circuit maintenance includes breaking into the refrigerating circuit. All other maintenance is defined as general maintenance.

Before starting circuit maintenance work, a method statement shall be written, and a task risk assessment shall be carried out.

For this risk assessment, the following preventive and protective measures should be considered:

- A portable refrigerant detector should be positioned where the flammable refrigerant will most likely pool in the case of a leakage. The detector should be switched on before starting the work. Potential ventilation should be taken into account when the position is selected. The detector should be switched off when the work is terminated.
- Non-sparking hand tools should be used as appropriate for the flammable refrigerant.
- Protective clothing and shoes should be electrostatic dissipative to avoid incendiary discharges, as appropriate for the flammable refrigerant used.
- All potential ignition sources should be kept away from the site of servicing and maintenance. Prior to work taking place, the hazardous area (zoning) around the equipment should be surveyed to make sure that there are no flammable hazards or ignition risks.
- Hot works such as brazing and grinding should be considered as a specific task in the risk assessment.

NOTE 4 EN 378-4:2016+A1:2019, Annex E provides information.