



BSI Standards Publication

Packaged refrigerating units for walk-in cold rooms — Classification, performance and energy consumption testing

National foreword

This British Standard is the UK implementation of [EN 17432:2021](#).

The UK participation in its preparation was entrusted to Technical Committee RHE/19, Commercial refrigerated food cabinets (cold room and display cases).

A list of organizations represented on this committee can be obtained on request to its committee manager.

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English Version

Packaged refrigerating units for walk-in cold rooms - Classification, performance and energy consumption testing

Groupe frigorifiques prêts à monter pour
chambres froides - Classification, performance
et essai de consommation d'énergie

Kälteaggregate für begehbare Kühlräume
- Klassifikation, Prüfung der Leistung
und des Energieverbrauchs

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Contents

Page

European foreword	iii
Introduction	iv
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Symbols and abbreviated terms	7
5 Classification	8
6 Test conditions	8
6.1 General	8
6.2 Testing conditions	8
6.3 Measurement uncertainty	9
7 Test setup	10
7.1 General	10
7.2 Calorimeter room	10
7.3 Arrangement of test and measurement equipment	10
7.4 Installation and preparation of a test unit	11
7.5 Measurement criteria	11
7.6 Calibration test of the calorimeter room	11
8 Performance testing	12
8.1 General	12
8.2 Steady-state conditions	12
8.3 Cooling capacity tests	13
8.3.1 Steady-state conditions	13
8.3.2 Data acquisition	13
8.3.3 Heat recovery capacity	13
8.4 Calculation of the cooling capacity	14
8.5 Measuring of electric power consumption	14
8.6 Calculation of EER	14
9 Test results	14
10 Test report	16
10.1 General information	16
10.2 Additional information	16
11 Information on the type plate	16
Annex A (informative) Examples for the test setup	17
Bibliography	20

European foreword

This document ([EN 17432:2021](#)) has been prepared by Technical Committee CEN/TC 44 “Commercial and Professional Refrigerating Appliances and Systems, Performance and Energy Consumption”, the secretariat of which is held by UNI.

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of an identical text or by endorsement, at the latest by March 2022, and conflicting national standards shall be withdrawn at the latest by March 2022.

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Introduction

This document was developed in order to provide a suitable method of performance testing of packaged refrigerating units for stationary cold room applications.

This is the first edition of this document. It includes testing only in so-called “dry conditions”. That means, the evaporator does not show any ice formation during the test. Although it is well-known, that such conditions do not represent the typical situation in the practical use of the packaged refrigerating units, this edition of the document focusses on the description of a test procedure providing reliable test results, which can be used to compare the performance of different models/types of packaged refrigerating unit.

In order to keep the test procedure in this document practically oriented, tests under so-called “wet conditions” as well as taking defrost periods into account will be a future Work Item of the responsible working group. The aim is to integrate such tests in a later revision of this document.

This document reflects the current market situation which shows that only refrigerating units without integrated pump for the heat transfer medium on the exterior heat exchanger are offered.

1 Scope

This document specifies classification criteria, test conditions and test procedures for performance testing of packaged refrigerating units for stationary cold room applications. This includes ductless units for cold storage applications at medium temperatures (MT) and low temperatures (LT) in either compact or split designs, fitted with electrically driven compressors, which work according to the vapour compression cycle.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

3.1

packaged refrigerating unit

functional unit incorporating a complete factory-made refrigerating system, mounted in a suitable frame and/or enclosure, that is fabricated and transported complete, or in two or more sections and in which no refrigerant-containing parts are connected on site other than by isolation valves, such as companion valves, and by interconnecting piping as defined by the manufacturer

Note 1 to entry: A packaged refrigerating unit incorporates at least one refrigerant circuit, and can incorporate one or more heat transfer circuits.

Note 2 to entry: The terms “factory-made” and “refrigerating system” are defined in [EN 378-1](#).

3.2

compact unit

packaged refrigerating unit, that has been assembled, filled ready for use, and is installed without the need for connecting any refrigerant-containing parts

3.3

split unit

packaged refrigerating unit, comprising one unit providing cooling to the cold room and one unit used for condensing the refrigerant

3.4

factory made

manufactured at a dedicated production location under control of a recognized quality system

NOTE Assembling in this context means manufacturing.

[SOURCE: EN 378-1:2016, 3.8.5, modified — The present Note 1 to entry was added.]

3.5

interior heat exchanger

heat exchanger in which liquid refrigerant is vaporized by absorbing heat from the interior heat transfer medium

NOTE For the applications regarded here, the interior heat exchanger is usually called “evaporator”.

3.6
exterior heat exchanger

heat exchanger in which the refrigerant is cooled down due to heat dissipation by the exterior heat transfer medium

NOTE For the applications regarded here, the exterior heat exchanger is usually called “condenser”.

3.7
heat transfer medium

medium (water, air, etc.) which transfers heat without undergoing phase changes

3.8
dry bulb temperature

temperature of air measured by a thermometer exposed to the air but shielded from radiation and moisture

3.9
calorimeter room

insulated enclosure which houses a heating device and the interior heat exchanger

3.10
test chamber

room in which the ambient air can be conditioned and kept in a steady state condition and in which the exterior heat exchanger as well as the calorimeter room are located

NOTE See [7.2](#) for further explanation.

3.11
cooling capacity

heat per unit of time transferred to the unit via heat transfer medium minus introduced heat of the fans installed at the interior heat exchanger

3.12
total power consumption

average electrical power consumption of the packaged refrigeration unit, including all electrical supplies needed for the cooling operation of the unit, over time

3.13
energy efficiency ratio

ratio of cooling capacity to total power consumption of the unit

3.14
operating limits

limitations in terms of maximum and minimum operating conditions (range of pressure, temperature, voltage, humidity, etc.)

NOTE The unit shall work as intended within the operating limits specified by the manufacturer.

3.15
nominal conditions

conditions that define a standard which reveals if a packaged refrigerating unit is working within those defined limits

3.16
support cold

independently working refrigerating unit to compensate heat losses through the calorimeter room envelope