

KONDENSAATORID KÜLMASEADMETELE.
KATSETINGIMUSED, HÄLBED JA TOOTJA TEHNILISTE
ANDMETE ESITLUS

Condensing units for refrigeration - Rating conditions,
tolerances and presentation of manufacturer's
performance data

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 13215:2016+A1:2020 sisaldab Euroopa standardi EN 13215:2016+A1:2020 ingliskeelset teksti.	This Estonian standard EVS-EN 13215:2016+A1:2020 consists of the English text of the European standard EN 13215:2016+A1:2020.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 12.08.2020.	Date of Availability of the European standard is 12.08.2020.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile standardiosakond@evs.ee.

ICS 27.200

Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:
Koduleht www.evs.ee; telefon 605 5050; e-post info@evs.ee

The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Homepage www.evs.ee; phone +372 605 5050; e-mail info@evs.ee

English Version

**Condensing units for refrigeration - Rating conditions,
tolerances and presentation of manufacturer's
performance data**

Unités de condensation pour la réfrigération -
Détermination des caractéristiques, tolérances et
présentation des performances du fabricant

Verflüssigungssätze für die Kälteanwendung -
Nennbedingungen, Toleranzen und Darstellung von
Leistungsdaten des Herstellers

This European Standard was approved by CEN on 24 September 2016 and includes Amendment 1 approved by CEN on 5 July 2020.

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. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents	Page
European foreword.....	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions	5
4 Symbols and abbreviations	6
5 Parameters for the presentation of performance data	7
6 General requirements	7
7 Performance data.....	8
7.1 General.....	8
7.2 Part load performance data	8
7.3 Tabular or graphical form	8
7.4 Determination of the power absorbed by the condensing unit	8
7.4.1 Condensing units including the compressor motor	8
7.4.2 Motors with a specific factory assembled or factory specified means for variable speed.....	9
7.4.3 Externally driven compressors without motor.....	9
8 Rating conditions	9
8.1 General.....	9
8.2 Standard reference points	9
8.3 Air cooled condensing units.....	10
8.3.1 General.....	10
8.3.2 Data for <i>SEPR</i> calculation	10
8.4 Water cooled condensing units.....	11
9 Tolerances	11
10 Correction factors	11
10.1 Superheat.....	11
10.2 Compressors speed	12
Annex A (normative) Calculation of <i>SEPR</i>	13
A.1 General.....	13
A.2 Condensing unit without capacity control	13
A.3 Condensing unit with stepwise capacity control	13
A.4 Calculation of <i>SEPR</i>	14
Annex B (normative) Determination of evaporating temperature with refrigerant mixtures	18
Annex ZA (informative) Relationship between this European Standard and the eco-design requirements of Commission Regulation (EU) No 2015/1095	20
Bibliography	21

Tables

Table 1 — Symbols and abbreviations.....	6
Table 2 — Indices	7
Table 3 — Parameters for the presentation of performance data	7
Table 4 — Standard reference points.....	9
Table 5 — Actual performance in relation to published data	11
Table A.1 — Required input for <i>SEPR</i> calculation.....	14
Table A.2 — Ambient temperatures and duration for <i>SEPR</i> determination	15
Table ZA.1 — Correspondence between this European Standard and Commission Regulation (EU) No 2015/1095 of 5 May 2015 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for professional refrigerated storage cabinets, blast cabinets, condensing units and process chillers and Commission's standardization request M/495 (Ecodesign).....	20

European foreword

This document (EN 13215:2016+A1:2020) has been prepared by Technical Committee CEN/TC 113 “Heat pumps and air conditioning units”, the secretariat of which is held by AENOR.

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 February 2021, and conflicting national standards shall be withdrawn at the latest by February 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 5 July 2020.

This document supersedes **EN 13215:2016**.

The start and finish of text introduced or altered by amendment is indicated in the text by tags **EN 13215:2016** and **EN 13215:2016**.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annex ZA which is an integral part of this document.

The main changes with respect to the previous edition are listed below:

- a) part load conditions according to M/495 “Standardisation mandate to CEN, CENELEC and ETSI under Directive 2009/125/EC relating to harmonised standards in the field of Ecodesign” are taken into account;
- b) inclusion of the calculation of seasonal energy performance ratio (*SEPR*).

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.

1 Scope

This European Standard specifies the rating conditions, tolerances and presentation of manufacturer's performance data for condensing units for refrigeration with compressors of the positive-displacement type. These include single stage compressors and single and two stage compressors having an integrated means of fluid sub cooling. This is required so that a comparison of different condensing units can be made. The data relate to the refrigerating capacity and power absorbed and include requirements for part-load performance where applicable.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. 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 13771-2:2017, *Compressors and condensing units for refrigeration - Performance testing and test methods - Part 2: Condensing units*

ISO 817, *Refrigerants — Designation and safety classification*

3 Terms and definitions

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

3.1

condensing unit

combination of one or more compressors, condensers/gas coolers and, where applicable, liquid receivers and the regularly furnished accessories

3.2

evaporating temperature

t_0

temperature between the evaporating dew point and the evaporator inlet temperature of the refrigerant at the pressure of the condensing unit inlet, as calculated according to Annex B

Note 1 to entry: For refrigerants without glide the evaporating temperature is equal to the dew point temperature at the condensing unit inlet pressure.

3.3

refrigerating capacity

Q

product of the mass flow of refrigerant through the condensing unit and the difference between the specific enthalpy of the refrigerant at the condensing unit inlet, the refrigerant being superheated above the suction dew point temperature to the appropriate value (see Table 3), and the specific enthalpy of the liquid refrigerant at the condensing unit outlet

3.4

subcooling

difference between the bubble point temperature of the refrigerant corresponding to the pressure at the condensing unit outlet and the temperature of the liquid refrigerant at the condensing unit outlet