SLOVENSKI STANDARD
oSIST prEN 15218:2022

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Klimatske naprave in enote za tekočinsko hlajenje s kondenzatorjem, ohlajenim z izhlapevanjem, in električnimi kompresorji za hlajenje prostora - Izrazi, definicije, preskusni pogoji, preskusne metode in zahteve

Air conditioners and liquid chilling packages with evaporatively cooled condenser and with electrically driven compressors for space cooling - Terms, definitions, test conditions, test methods and requirements

Luftkonditionierer und Flüssigkeitskühlsätze mit verdunstungsgekühltem Verflüssiger und elektrisch angetriebenen Verdichtern für die Raumkühlung - Begriffe, Prüfbedingungen, Prüfverfahren und Anforderungen

Climatiseurs et groupes refroidisseurs de liquide à condenseur refroidi par évaporation et compresseur entraîné par moteur électrique pour la réfrigération des locaux - Termes, définitions, conditions d'essai, méthodes d'essai et exigences

Ta slovenski standard je istoveten z: **prEN 15218**

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23.120	Zračniki. Vetrniki. Klimatske naprave	Ventilators. Fans. Air-conditioners
91.140.30	Prezračevalni in klimatski sistemi	Ventilation and air-conditioning systems

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
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January 2022

ICS 27.200; 91.140.30

Will supersede EN 15218:2013

English Version

Air conditioners and liquid chilling packages with evaporatively cooled condenser and with electrically driven compressors for space cooling - Terms, definitions, test conditions, test methods and requirements

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This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 113.

If this draft becomes a European Standard, 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.

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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.

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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 (prEN 15218:2022) has been prepared by Technical Committee CEN/TC 113 “Heat pumps and air conditioners”, the secretariat of which is held by UNE.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 15218:2013.

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

For relationship with EU Directive(s) / Regulation(s), see informative Annexes ZA and ZB, which are integral parts of this document.

1 Scope

This document specifies the terms, definitions, test conditions, test methods and requirements for rating the performance of air conditioners and liquid chilling packages, with electrically driven compressors and with evaporatively cooled condenser when used for space cooling. The evaporatively cooled condenser is cooled by air and by the evaporation of external additional water. This additional external water is fed by a specific water supply circuit or by a water tank.

This document does not apply to air-to-air and air-to-water air conditioners with a condenser cooled by air and by the evaporation of water condensed on their evaporator.

This document applies to units equipped with a water tank or with a continuous water circuit supply that can also operate without water feeding. However, this document only concerns the testing of these units with water feeding.

This document applies to factory-made units which can be ducted.

This document applies to factory-made units of either fixed capacity or variable capacity by any means.

Packaged units, single split and multisplit systems are covered by this document.

With regard to units consisting of several parts, this document applies only to those designed and supplied as a complete package.

For evaporatively cooled condenser units that can also operate in heating mode, their performance in this mode is determined according to EN 14511 (all parts).

Installations used for industrial processes cooling are not within the scope of this document.

This document specifies the conditions for which performance data will be declared for compliance to the Ecodesign Regulation 206/2012 and to the Energy Labelling Regulation 626/2011 of air conditioners with evaporatively cooled condenser in cooling mode.

NOTE All the symbols given in this text can be used regardless of language.

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.

prEN 14511-1:2021, *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling — Part 1: Terms and definitions*

prEN 14511-2:2021, *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling — Part 2: Test conditions*

prEN 14511-3:2021, *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling — Part 3: Test methods*

prEN 14511-4:2021, *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling — Part 4: Requirements*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in prEN 14511-1:2021 and the following 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
evaporatively cooled condenser
heat exchanger that condenses refrigerant vapour by rejecting heat to a water and air mixture causing the water to evaporate and increase the enthalpy of air

Note 1 to entry: Desuperheating and sub-cooling of the refrigerant may also occur.

3.2
water tank
tank designed as an integral part of the unit to contain external additional water which is fed to the evaporatively cooled condenser

3.3
continuous supply water circuit
circuit designed as an integral part of the unit to feed continuously the evaporatively cooled condenser with water from an external water source

3.4
effective power input
P_E
average electrical power input of the unit within a defined interval of time obtained from:

— power input for operating the compressor;

— power input for all control and safety devices of the unit;

— power input of the circulating pump which provides water to the evaporatively cooled condenser, if any;

— proportional power input of the conveying devices (e.g. fans, pumps) for ensuring the transport of the heat transfer media inside the unit, expressed in watt

Note 1 to entry: For the purposes of this document, the present definition replaces the one in prEN 14511-1:2021 and is used to calculate the *EER* and EER_{rated}.

3.5
cleaning cycle
interval of time during which water is sprayed on the evaporatively cooled condenser in order to remove fouling and scale buildup

3.6
functioning cycle
interval of time elapsed between the start of two successive cleaning cycles for evaporatively cooled condenser units with a continuous water supply

4 Classification

If the heat transfer medium for the indoor heat exchanger is water, the unit shall be denominated as evaporatively cooled condenser liquid chilling package.

If the heat transfer medium for the indoor heat exchanger is air, the unit shall be denominated as evaporatively cooled condenser air conditioner.

5 Test conditions

5.1 Environmental conditions and electrical power supply requirements

The tests shall be carried out under the environmental conditions specified in Table 1 or Table 2 based on the location of the unit.

For all units, electrical power voltage and frequency shall be given by the manufacturer.

Table 1 — Environmental conditions for units designed for indoor installation

Type	Measured quantities	Rating test
Evaporatively cooled condenser liquid chilling packages with duct connection on the air inlet and outlet side	Dry bulb temperature	15 °C to 30 °C
Evaporatively cooled condenser liquid chilling packages without duct connection on the air inlet side	Dry bulb temperature Wet bulb temperature	As air inlet temperatures, see Table 5 or Table 6
Evaporatively cooled condenser air conditioners with duct connection on the indoor air inlet and outlet side	Dry bulb temperature	15 °C to 30 °C
Evaporatively cooled condenser air conditioners without duct connection on the indoor air inlet and outlet side	Dry bulb temperature Wet bulb temperature	As air inlet temperatures, see Table 3 or Table 4

Table 2 — Environmental conditions for units designed for outdoor installation

Type	Measured quantities	Rating test
Evaporatively cooled condenser liquid chilling packages	Dry bulb temperature Wet bulb temperature	As air inlet temperatures, see Table 5 and Table 6
Evaporatively cooled condenser air conditioners with duct connection on the indoor air inlet and outlet side	Dry bulb temperature Wet bulb temperature	As inlet temperatures, see Table 3 and Table 4

5.2 Rating conditions

For the rating tests, the appropriate test conditions apply in accordance with Table 3 and Table 4 for evaporatively cooled condenser air conditioners or with Table 5 and Table 6 for evaporatively cooled condenser liquid chilling packages.

Table 3 — Evaporatively cooled condenser air conditioner with continuous water supply circuit

		Evaporatively cooled condenser			Indoor heat exchanger	
		Air		Water		
		Inlet dry bulb temperature ° C	Inlet wet bulb temperature ° C	Inlet temperature ° C	Inlet dry bulb temperature ° C	Inlet wet bulb temperature ° C
Standard rating conditions	Outdoor air / recycled air [a]	35	24	15	27	19
	Exhaust air / recycled air	27	19	15	27	19
	Exhaust air / outdoor air	27	19	15	35	24
	Single duct [b, c]	35	24	15	35	24
	Control cabinet	35	24	15	35	24
	Close control	35	24	15	24	17
Application rating conditions	Outdoor air / recycled air [a]	27	19	15	21	15
	Single duct [b, c]	27	19	15	27	19
	Outdoor air / recycled air [a]	46	24	15	29	19
	Control cabinet	50	30	15	35	24
	Close control	27	19	15	21	15

[a] For example, window, double duct, split units.

[b] When using the calorimeter room method, pressure equilibrium between indoor and outdoor compartments shall be obtained by introducing into indoor compartment, air at the same rating temperature conditions.

[c] The pressure difference between the two compartments of the calorimeter room shall not be greater than 1,25 Pa. This pressure equilibrium can be achieved by using an equalising device or by creating an open space area in the separation partition wall, which dimensions shall be calculated for the maximum airflow of the unit to be tested. If an open space is created in the partition wall, an air sampling device or several temperature sensors shall be used to measure the temperature of the air from the outdoor compartment to the indoor compartment

The external additional water supply on the evaporatively cooled condenser shall be set as specified in 6.2.2.

Table 4 — Evaporatively cooled condenser air conditioner with a water tank

		Evaporatively cooled condenser			Indoor heat exchanger	
		Air		Water		
		Inlet dry bulb temperature ° C	Inlet wet bulb temperature ° C	Inlet temperature ° C	Inlet dry bulb temperature ° C	Inlet wet bulb temperature ° C
Standard rating conditions	Outdoor air / recycled air [a]	35	24	35	27	19
	Exhaust air / recycled air	27	19	27	27	19
	Exhaust air / outdoor air	27	19	27	35	24
	Single duct [b, c]	35	24	35	35	24
	Control cabinet	35	24	35	35	24
	Close control	35	24	35	24	17
Application rating conditions	Outdoor air / recycled air [a]	27	19	27	21	15
	Single duct [b, c]	27	19	27	27	19
	Outdoor air / recycled air [a]	46	24	46	29	19
	Control cabinet	50	30	50	35	24
	Close control	27	19	27	21	15

[a] For example, window, double duct, split units.

[b] When using the calorimeter room method, pressure equilibrium between indoor and outdoor compartments shall be obtained by introducing into indoor compartment, air at the same rating temperature conditions.

[c] The pressure difference between the two compartments of the calorimeter room shall not be greater than 1,25 Pa. This pressure equilibrium can be achieved by using an equalising device or by creating an open space area in the separation partition wall, which dimensions shall be calculated for the maximum airflow of the unit to be tested. If an open space is created in the partition wall, an air sampling device or several temperature sensors shall be used to measure the temperature of the air from the outdoor compartment to the indoor compartment.

Table 5 — Evaporatively cooled condenser liquid chilling package with a continuous water supply circuit

		Evaporatively cooled condenser			Indoor heat exchanger	
		Air		Water		
		Inlet dry bulb temperature ° C	Inlet wet bulb temperature ° C	Inlet temperature ° C	Inlet temperature ° C	Outlet temperature ° C
Standard rating conditions	Water (for intermediate temperature heating applications)	35	24	15	12	7
	Brine	35	24	15	0	–5
	Water (for low temperature heating applications)	35	24	15	23	18
Application rating conditions	Water (for intermediate temperature heating applications)	27	19	15	[a]	7
	Water (for low temperature heating applications)	27	19	15	[a]	18
	Water (for intermediate temperature heating applications)	46	24	15	[a]	7
	Brine	27	19	15	[a]	–5

[a] The test is performed with the fixed flow rate or with the Δ_T obtained during the test at the corresponding standard rating conditions for units with variable flow rate. If the resulting flow rate is below the minimum flow rate then this minimum is used with the outlet temperature.

The external additional water supply on the evaporatively cooled condenser shall be set as specified in 6.2.2.