BS EN 14511-2:2013

BSI Standards Publication

# Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling

Part 2: Test conditions

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**National foreword**

This British Standard is the UK implementation of EN 14511-2:2013. It supersedes BS EN 14511-2:2011 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee RHE/17, Testing of air conditioning units.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.



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**Compliance with a British Standard cannot confer immunity from legal obligations.**

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English Version

# Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling - Part 2: Test conditions

Climatiseurs, groupes refroidisseurs de liquide et pompes à chaleur avec compresseur entraîné par moteur électrique pour le chauffage et la réfrigération des locaux - Partie 2: Conditions d'essai

Luftkonditionierer, Flüssigkeitskühlsätze und Wärmepumpen mit elektrisch angetriebenen Verdichtern für die Raumbeheizung und -kühlung - Teil 2: Prüfbedingungen

This European Standard was approved by CEN on 30 May 2013.

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.

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

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# Contents

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# Foreword

This document (EN 14511-2:2013) 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 2014 and conflicting national standards shall be withdrawn at the latest by February 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 14511-2:2011.

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

a) the addition of an Annex ZA related to the Commission Regulation (EC) n°206/2012.

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.

Although this document has been prepared in the frame of the commission regulation (EU) No 206/2012 implementing Directive 2009/125/EC with regard to ecodesign requirements for air conditioners and comfort fans, it is also intended to support the essential requirements of the European Directive 2010/30/CE.

EN 14511 comprises the following parts under the general title *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling*:

— *Part 1: Terms, definitions and classification*,

— *Part 2: Test conditions*,

— *Part 3: Test methods*,

— *Part 4: Operating requirements, marking and instructions.*

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, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

# 1 Scope

**1.1** The scope of EN 14511-1 is applicable.

**1.2** This European Standard specifies the test conditions for the rating of air conditioners, liquid chilling packages and heat pumps, using either, air, water or brine as heat transfer media, with electrically driven compressors when used for space heating and/or cooling.

**1.3** This European Standard specifies the conditions for which performance data shall be declared for single duct and double duct units for compliance to the Ecodesign regulation 206/2012 and Energy labelling regulation 626/2011.

# 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 14511-1:2013, *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling — Part 1: Terms, definitions and classification*

EN 14511-4:2013, *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling — Part 4: Operating requirements, marking and instructions*

# 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 14511-1:2013 apply.

# 4 Test conditions

## 4.1 Environmental conditions and electrical power supply requirements

The tests shall be carried out under the environmental conditions specified in Table 1 or Table 2 depending 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 installation indoors**

| Type | Measured quantities | Rating test |
|---|---|---|
| Water-to-water and brine-to-water units | Dry bulb temperature | 15 °C to 30 °C |
| Air-to-water units with duct connection on the air inlet and outlet side | Dry bulb temperature | 15 °C to 30 °C |
| Air-to-water units without duct connection on the air inlet side | Dry bulb temperature<br>Wet bulb temperature | 15 °C to 30 °C |
| Water-to-air and brine-to-air units with duct connection on the air inlet and outlet side | Dry bulb temperature | 15 °C to 30 °C |
| Water-to-air and brine-to-air units without duct connection on the air inlet and outlet side | Dry bulb temperature<br>Wet bulb temperature | Inlet temperature (see Table 5 or Table 6) |
| Air-to-air units with duct connection on the outdoor air inlet and outlet side | Dry bulb temperature | 15 °C to 30 °C |
| Air-to-air units without duct connection on the outdoor air inlet and outlet side | Dry bulb temperature<br>Wet bulb temperature | As inlet temperature see Table 3 or Table 4 |

**Table 2 — Environmental conditions for units designed for installation outdoors**

| Type | Measured quantities | Rating test |
|---|---|---|
| Air-to-water units | Dry bulb temperature<br>Wet bulb temperature | Inlet temperature (see Tables 12 to 15 and Table 16) |
| Water-to-air and brine-to-air units without duct connection on the air inlet side | Dry bulb temperature<br>Wet bulb temperature | Inlet temperature (see Table 5 and Table 6) |
| Water-to-water and brine-to-water operating in cooling mode | Dry bulb temperature | 15 °C to 30 °C |
| Water-to-water and brine-to-water operating in heating mode | Dry bulb temperature | 0 °C to 7 °C |
| Air-to-air units with duct connection on the indoor air inlet and outlet side | Dry bulb temperature<br>Wet bulb temperature | Inlet temperature (see Table 3 and Table 4) |

## 4.2 Rating conditions

For the rating tests, the appropriate test conditions shall be applied in accordance with:

— Table 3 for air-to-air units in heating mode;

— Table 4 for air-to-air units in cooling mode;

— Table 5 for water-to-air and brine-to-air units in heating mode;

— Table 6 for water-to-air and brine-to-air units in cooling mode;

— Tables 7 to 10 for water-to-water and brine-to-water units in heating mode, depending on the temperature applications;

— Table 11 for water-to-water, brine-to-water, water-to-brine and brine-to-brine units in cooling mode;

— Tables 12 to 15 for air-to-water in heating mode, depending on the temperature applications;

— Table 16 for air-to-water and air-to-brine units in cooling mode;

— Table 17 for liquid chilling packages with remote condenser;

— Table 18 for liquid chilling packages for heat recovery condenser;

— Table 19 for air-cooled multisplit systems and modular air-cooled multisplit systems in the heating mode;

— Table 20 for air-cooled multisplit systems and modular air-cooled multisplit systems in the cooling mode;

— Table 21 for modular heat recovery air-cooled multisplit systems;

— Table 22 for water-cooled multisplit systems and modular water-cooled multisplit systems in the heating mode;

— Table 23 for water-cooled multisplit systems and modular water-cooled multisplit systems in the cooling mode.

For units with brine, the test shall be carried out with the brine specified by the manufacturer, see EN 14511-4:2013, 7.2.1.

NOTE 1 For air-to-water, brine-to-water and water-to-water units, the manufacturer may declare the water temperatures levels (lower, medium, high and very high) applicable to the heating mode.

NOTE 2 For comparison purposes between reverse cycle and non reverse cycle units, the conditions on the water side are given by the inlet and outlet water temperatures, possibly leading to different water flow rates in heating and cooling modes.

The rating tests in heating mode also apply for units having evaporatively cooled condenser, which performance in cooling mode is determined in accordance with EN 15218, and which can operate in heating mode.

The standard rating conditions, extracted from EN 14511-2:2013, Table 3 for heating mode and specified in Table ZA.1 shall be used to determine the rated capacity ($P_{rated}$), the rated power input ($P_{COP}$), the rated coefficient of performance ($COP_{rated}$) and the electricity consumption ($Q_{DD}$, $Q_{SD}$) in heating mode.

**Table 3 — Air-to-air units - Heating mode**

| | | **Outdoor heat exchanger** | | **Indoor heat exchanger** | |
|---|---|---|---|---|---|
| | | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C |
| Standard rating conditions | Outdoor air / recycled air (e.g. window, double duct, split units) | 7 | 6 | 20 | 15 max |
| | Exhaust air / recycled air (e.g. single duct heat pump) | 20 | 12 | 20 | 12 |
| | Exhaust air / outdoor air | 20 | 12 | 7 | 6 |
| Application rating conditions | Outdoor air / recycled air (e.g. window, double duct, split units) | 2 | 1 | 20 | 15 max. |
| | Outdoor air / recycled air (e.g. window, double duct, split units) | - 7 | - 8 | 20 | 15 max. |
| | Outdoor air / recycled air (e.g. window, double duct, split units) | - 15 | - | 20 | 15 max. |
| | Outdoor air / recycled air (e.g. window, double duct, split units) | 12 | 11 | 20 | 15 max. |
| | Exhaust air / outdoor air | 20 | 12 | 2 | 1 |
| | Exhaust air / outdoor air | 20 | 12 | - 7 | - 8 |

**Table 4 — Air-to-air units - Cooling mode**

| | | Outdoor heat exchanger | | Indoor heat exchanger | |
|---|---|---|---|---|---|
| | | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C |
| Standard rating conditions | Comfort (outdoor air / recycled air) (e.g. window, double duct, split units) | 35 | 24 [a] | 27 | 19 |
| | Comfort (exhaust air / recycled air) | 27 | 19 | 27 | 19 |
| | Comfort (exhaust air / outdoor air) | 27 | 19 | 35 | 24 |
| | Single duct [b, c] | 35 | 24 | 35 | 24 |
| | Control cabinet | 35 | 24 | 35 | 24 |
| | Close control | 35 | 24 | 24 | 17 |
| Application rating conditions | Comfort (outdoor air / recycled air) (e.g. window, double duct, split units) | 27 | 19 [a] | 21 | 15 |
| | Single duct [b, c] | 27 | 19 | 27 | 19 |
| | Comfort (outdoor air / recycled air) (e.g. window, double duct, split units) | 46 | 24 [a] | 29 | 19 |
| | Control cabinet | 50 | 30 | 35 | 24 |
| | Close control | 27 | 19 | 21 | 15 |

[a] The wet bulb temperature condition is not required when testing units which do not evaporate condensate.

[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 — Water-to-air and brine-to-air units - Heating mode**

| | | Outdoor heat exchanger | | Inlet heat exchanger | |
|---|---|---|---|---|---|
| | | **Inlet temperature** °C | **Outlet temperature** °C | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C |
| Standard rating conditions | Water [a] | 10 | 7 | 20 | 15 max. |
| | Brine | 0 | -3 | 20 | 15 max. |
| | Water loop | 20 | 17 | 20 | 15 max. |
| Application rating conditions | Water | 15 | [b] | 20 | 15 max. |
| | Brine | 5 | [b] | 20 | 15 max. |

[a] The term “water” includes indifferently water from a river or a lake, ground water or water in a close water loop.

[b] The test is performed at the flow rate obtained during the test at the corresponding standard rating conditions

**Table 6 — Water-to-air and brine-to-air units - Cooling mode**

| | | Outdoor heat exchanger | | Indoor heat exchanger | |
|---|---|---|---|---|---|
| | | **Inlet temperature** °C | **Outlet temperature** °C | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C |
| Standard rating conditions | Cooling tower | 30 | 35 | 27 | 19 |
| | Ground coupled (water or brine) | 10 | 15 | 27 | 19 |
| | Control cabinet | 15 | 20 | 35 | 24 |
| | Close control | 30 | 35 | 24 | 17 |
| Application rating conditions | Cooling tower | 40 | [a] | 27 | 19 |
| | Ground coupled (water or brine) | 15 | [a] | 27 | 19 |
| | Close control | 15 | [a] | 21 | 15 |
| | Close control | 40 | [a] | 24 | 17 |

[a] The test is performed at the water flow rate obtained during the test at the corresponding standard rating conditions.

**Table 7 — Water-to-water and brine-to-water units - Heating mode (Low temperature)**

| | | Outdoor heat exchanger | | Indoor heat exchanger low temperature applications | |
|---|---|---|---|---|---|
| | | **Inlet temperature** °C | **Outlet temperature** °C | **Inlet temperature** °C | **Outlet temperature** °C |
| Standard rating conditions | Water [a] | 10 | 7 | 30 | 35 |
| | Brine | 0 | -3 | 30 | 35 |
| Application rating conditions | Water | 15 | [b] | [b] | 35 |
| | Brine | 5 | [b] | [b] | 35 |
| | Brine | -5 | [b] | [b] | 35 |

[a] The term “water” includes indifferently water from a river or a lake, ground water or water in a close water loop.

[b] The test is performed at the flow rate obtained during the test at the corresponding standard rating conditions.

**Table 8 — Water-to-water and brine-to-water units - Heating mode (Medium temperature)**

| | | Outdoor heat exchanger | | Indoor heat exchanger medium temperature applications | |
|---|---|---|---|---|---|
| | | **Inlet temperature** °C | **Outlet temperature** °C | **Inlet temperature** °C | **Outlet temperature** °C |
| Standard rating conditions | Water [a] | 10 | 7 | 40 | 45 |
| | Brine | 0 | -3 | 40 | 45 |
| Application rating conditions | Water | 15 | [b] | [b] | 45 |
| | Brine | 5 | [b] | [b] | 45 |
| | Brine | -5 | [b] | [b] | 45 |

[a] The term “water” includes indifferently water from a river or a lake, ground water or water in a close water loop.

[b] The test is performed at the flow rate obtained during the test at the corresponding standard rating conditions.

**Table 9 — Water-to-water and brine-to-water units - Heating mode (High temperatures)**

| | | **Outdoor heat exchanger** | | **Indoor heat exchanger High temperature applications** | |
|---|---|---|---|---|---|
| | | **Inlet temperature** °C | **Outlet temperature** °C | **Inlet temperature** °C | **Outlet temperature** °C |
| Standard rating conditions | Water [a] | 10 | 7 | 47 | 55 |
| | Brine | 0 | -3 | 47 | 55 |
| Application rating conditions | Water | 15 | [b] | [b] | 55 |
| | Brine | 5 | [b] | [b] | 55 |
| | Brine | -5 | [b] | [b] | 55 |

[a] The term “water” includes indifferently water from a river or a lake, ground water or water in a close water loop.

[b] The test is performed at the flow rate obtained during the test at the corresponding standard rating conditions.

**Table 10 — Water-to-water and brine-to-water units - Heating mode (Very high temperature)**

| | | **Outdoor heat exchanger** | | **Indoor heat exchanger Very high temperature applications** | |
|---|---|---|---|---|---|
| | | **Inlet temperature** °C | **Outlet temperature** °C | **Inlet temperature** °C | **Outlet temperature** °C |
| Standard rating conditions | Water [a] | 10 | 7 | 55 | 65 |
| | Brine | 0 | -3 | 55 | 65 |
| Application rating conditions | Water | 15 | [b] | [b] | 65 |
| | Brine | 5 | [b] | [b] | 65 |
| | Brine | -5 | [b] | [b] | 65 |

[a] The term “water” includes indifferently water from a river or a lake, ground water or water in a close water loop.

[b] The test is performed at the flow rate obtained during the test at the corresponding standard rating conditions.

**Table 11 — Water-to-water units - Cooling mode**

| | | Outdoor heat exchanger | | Indoor heat exchanger | |
|---|---|---|---|---|---|
| | | **Inlet temperature** °C | **Outlet temperature** °C | **Inlet temperature** °C | **Outlet temperature** °C |
| Standard rating conditions | Water-to-water (for medium temperature cooling applications heating applications) from cooling tower | 30 | 35 | 12 | 7 |
| | Water-to-water (for low temperature heating applications) from cooling tower | 30 | 35 | 23 | 18 |

**Table 12 — Air-to-water and air-to-brine units - Heating mode (Low temperatures)**

| | | Outdoor heat exchanger | | Indoor heat exchanger Low temperature applications | |
|---|---|---|---|---|---|
| | | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C | **Inlet temperature** °C | **Outlet temperature** °C |
| Standard rating conditions | Outdoor air | 7 | 6 | 30 | 35 |
| | Exhaust air | 20 | 12 | 30 | 35 |
| Application rating conditions | Outdoor air | 2 | 1 | [a] | 35 |
| | Outdoor air | - 7 | - 8 | [a] | 35 |
| | Outdoor air | - 15 | - | [a] | 35 |
| | Outdoor air | 12 | 11 | [a] | 35 |

[a] The test is performed at the flow rate obtained during the test at the standard rating conditions.

**Table 13 — Air-to-water and air-to-brine units - Heating mode (Medium temperatures)**

| | | Outdoor heat exchanger | | Indoor heat exchanger<br>Medium temperature applications | |
|---|---|---|---|---|---|
| | | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C | **Inlet temperature** °C | **Outlet temperature** °C |
| Standard rating conditions | Outdoor air | 7 | 6 | 40 | 45 |
| | Exhaust air | 20 | 12 | 40 | 45 |
| Application rating conditions | Outdoor air | 2 | 1 | [a] | 45 |
| | Outdoor air | -7 | -8 | [a] | 45 |
| | Outdoor air | -15 | - | [a] | 45 |
| | Outdoor air | 12 | 11 | [a] | 45 |

[a] The test is performed at the flow rate obtained during the test at the standard rating conditions.

**Table 14 — Air-to-water and air-to-brine units - Heating mode (High temperatures)**

| | | Outdoor heat exchanger | | Indoor heat exchanger<br>High temperature applications | |
|---|---|---|---|---|---|
| | | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C | **Inlet temperature** °C | **Outlet temperature** °C |
| Standard rating conditions | Outdoor air | 7 | 6 | 47 | 55 |
| | Exhaust air | 20 | 12 | 47 | 55 |
| Application rating conditions | Outdoor air | 2 | 1 | [a] | 55 |
| | Outdoor air | - 7 | - 8 | [a] | 55 |
| | Outdoor air | - 15 | - | [a] | 55 |
| | Outdoor air | 12 | 11 | [a] | 55 |

[a] The test is performed at the flow rate obtained during the test at the standard rating conditions.

**Table 15 — Air-to-water and air-to-brine units - Heating mode (Very high temperatures)**

| | | Outdoor heat exchanger | | Indoor heat exchanger<br>Very high temperature applications | |
|---|---|---|---|---|---|
| | | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C | **Inlet temperature** °C | **Outlet temperature** °C |
| Standard rating conditions | Outdoor air | 7 | 6 | 55 | 65 |
| | Exhaust air | 20 | 12 | 55 | 65 |
| Application rating conditions | Outdoor air | 2 | 1 | [a] | 65 |
| | Outdoor air | - 7 | - 8 | [a] | 65 |
| | Outdoor air | - 15 | - | [a] | 65 |
| | Outdoor air | 12 | 11 | [a] | 65 |

[a] The test is performed at the flow rate obtained during the test at the standard rating conditions.

**Table 16 — Air-to-water units- Cooling mode**

| | | Outdoor heat exchanger | | Indoor heat exchanger | |
|---|---|---|---|---|---|
| | | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C | **Inlet temperature** °C | **Outlet temperature** °C |
| Standard rating conditions | Water (for medium temperature heating applications) | 35 | - | 12 | 7 |
| | water (for low temperature heating applications) | 35 | - | 23 | 18 |
| Application rating conditions | Water (for medium temperature heating applications) | 27 | - | [a] | 7 |
| | Water (for low temperature heating applications) | 27 | - | [a] | 18 |
| | Water (for medium temperature heating applications) | 46 | - | [a] | 7 |

[a] The test is performed at the water flow rate obtained during the test at the corresponding standard rating conditions.

**Table 17 — Liquid chilling packages with remote condenser**

| | | Indoor heat exchanger | | Refrigerant side | |
|---|---|---|---|---|---|
| | | **Inlet temperature** °C | **Outlet temperature** °C | **Saturated vapour/ bubble point temperature** [a] °C | **Liquid temperature** °C |
| Standard rating conditions | Water | 12 | 7 | 45 | 40 |
| | Brine | 0 | - 5 | 45 | 40 |
| Application rating conditions | Water | [b] | 7 | 35 | 30 |
| | Brine | [b] | - 5 | 35 | 30 |

[a] The bubble point is defined from the pressure measured at the discharge of the compressor.

[b] The test is performed at the flow rate obtained during the test at the corresponding standard rating conditions.

**Table 18 — Liquid chilling packages with heat recovery condenser**

| | Condenser | | Evaporator [c] | | Heat recovery water heat exchanger | |
|---|---|---|---|---|---|---|
| Standard rating conditions | **Air inlet dry bulb temperature** [a] °C | **Water inlet temperature** [b] °C | **Water outlet temperature** °C | **Brine outlet temperature** °C | **Inlet temperature** °C | **Outlet temperature** °C |
| | 35 | 30 | 7 | -5 | 40 | 45 |

[a] If the air-cooled condenser is ducted then the test shall be conducted at the minimum flow rate specified by the manufacturer.

[b] At the minimum flow rate specified by the manufacturer.

[c] With the flow rate as determined during the test at the corresponding standard rating conditions (see Table 11 or Table 16).

**Table 19 — Heating capacity conditions for air-cooled multisplit systems**

| | Outdoor heat exchanger | | Indoor heat exchanger | |
|---|---|---|---|---|
| | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C |
| Standard rating conditions | 7 | 6 | 20 | 15 max. |
| Application rating conditions | 2 | 1 | 20 | 15 max. |
| | - 7 | - 8 | 20 | 15 max. |
| | 12 | 11 | 20 | 15 max. |
| | -15 | - | 20 | 15 max. |

**Table 20 — Cooling capacity conditions for air-cooled multisplit systems**

| | Outdoor heat exchanger | | Indoor heat exchanger | |
|---|---|---|---|---|
| | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C |
| Standard rating conditions | 35 | 24 [a] | 27 | 19 |
| Application rating conditions | 27 | 19 [a] | 21 | 15 |
| | 46 | 24 [a] | 29 | 19 |
| [a] The wet bulb condition is not required when testing units which do not evaporate condensate. | | | | |

**Table 21 — Heat recovery conditions for air-cooled multisplit systems**

| | | | Three room calorimeter or air enthalpy | | Two room Air enthalpy | |
|---|---|---|---|---|---|---|
| | | | **Dry bulb temperature** °C | **Wet bulb temperature** °C | **Dry bulb temperature** °C | **Wet bulb temperature** °C |
| Application rating conditions | Outdoor side | | 7 | 6 | 7 | 6 |
| | Indoor side | Heating | 20 | - | 20 | 19 |
| | | Cooling | 27 | 19 | 20 | 19 |

**Table 22 — Heating capacity conditions for water-cooled multisplit systems**

| | | Outdoor heat exchanger | | Indoor heat exchanger | |
|---|---|---|---|---|---|
| | | **Inlet temperature** °C | **Outlet temperature** °C | **Inlet dry bulb temperature** °C | **Inlet wet bulb Temperature** °C |
| Standard rating conditions | Water | 10 | 7 | 20 | 15 max. |
| | Brine | 0 | -3 | 20 | 15 max. |
| | Water loop | 20 | 17 | 20 | 15 max. |
| Application rating conditions | Water | 15 | [a] | 20 | 15 max. |
| | Brine | 5 | [a] | 20 | 15 max. |
| | Brine | -5 | [b] | 20 | 15 max. |
| [a] The test is performed at the flow rate obtained during the test at the corresponding standard rating conditions. | | | | | |

**Table 23 — Cooling capacity conditions for water-cooled multisplit systems**

| | Outdoor heat exchanger | | Indoor heat exchanger | |
|---|---|---|---|---|
| | **Inlet temperature** °C | **Outlet temperature** °C | **Inlet dry bulb temperature** °C | **Inlet wet bulb temperature** °C |
| Standard rating conditions | 30 | 35 | 27 | 19 |
| Application rating conditions | 15 | [a] | 27 | 19 |
| | 40 | [a] | 27 | 19 |

[a] The test is performed at the nominal water flow rate obtained during the test at the corresponding standard rating conditions.

# Annex ZA
(informative)

## Relationship between this European Standard and the requirements of Commission Regulation (EC) No 206/2012

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to requirements of *Commission Regulation (EC) No 206/2012 of 6 March 2012 implementing Directive 2009/125/EC of the European Parliament and of the Council with regard to ecodesign requirements for air conditioners*.

Once this standard is cited in the Official Journal of the European Union under that Commission Regulation, compliance with the clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding requirements of that and associated EFTA regulations

**Table ZA.1 — Correspondence between this European Standard and Commission Regulation (EC) No 206/2012**

| **Clause(s)/sub-clause(s) of this EN** | **Requirements of Commission Regulation (EC) No 206/2012** | **Qualifying remarks/Notes** |
|---|---|---|
| 4<br>4.1<br>4.2, Table 4 | Minimum energy efficiency for double duct and single duct air conditioners, $EER_{rated}$ | |
| 4.1<br>4.2, Table 3 | Minimum energy efficiency for double duct and single duct air conditioners, $COP_{rated}$ | |
| 4<br>4.1<br>4.2, Table 4 | Product information requirements, $P_{rated}$ for cooling, $P_{EER}$, $EER_{rated}$, $Q_{DD}$, $Q_{SD}$ | |
| 4.1<br>4.2, Table 3 | Product information requirements, $P_{rated}$ for heating, $P_{COP}$, $COP_{rated}$, $Q_{DD}$, $Q_{SD}$ | |

**WARNING —** Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

# Bibliography

[1] EN 14511-3:2013, *Air conditioners, liquid chilling packages and heat pumps with electrically driven compressors for space heating and cooling — Part 3: Test methods*

[2] EN 14825, *Air conditioners, liquid chilling packages and heat pumps, with electrically driven compressors, for space heating and cooling — Testing and rating at part load conditions and calculation of seasonal performance*

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