

ELEKTRIKOMPRESSORITEGA ÕHU KONDITSIONEERID,
VEDELIKJAHUTUSSEADMED, SOOJUSPUMBAD,
PROTSESSIJAHUTID JA ÕHUKUIVATID. HELIVÕIMSUSE
TASEME MÄÄRAMINE. OSA 2: SOOJUSPUMBAGA
VEESOOJENDID

Air conditioners, liquid chilling packages, heat pumps,
process chillers and dehumidifiers with electrically
driven compressors - Determination of the sound power
level - Part 2: Heat pump water heaters

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 12102-2:2019 sisaldab Euroopa standardi EN 12102-2:2019 ingliskeelset teksti.	This Estonian standard EVS-EN 12102-2:2019 consists of the English text of the European standard EN 12102-2:2019.
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 15.05.2019.	Date of Availability of the European standard is 15.05.2019.
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ICS 17.140.20, 91.140.65

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English Version

**Air conditioners, liquid chilling packages, heat pumps,
process chillers and dehumidifiers with electrically driven
compressors - Determination of the sound power level -
Part 2: Heat pump water heaters**

Climatiseurs, groupes refroidisseurs de liquide,
pompes à chaleur, refroidisseurs industriels et
déshumidificateurs avec compresseur entraîné par
moteur électrique - Détermination du niveau de
puissance acoustique - Partie 2: Pompe à chaleur pour
la production d'eau chaude sanitaire

Luftkonditionierer, Flüssigkeitskühlsätze,
Wärmepumpen, Prozesskühler und Entfeuchter mit
elektrisch angetriebenen Verdichtern - Bestimmung
des Schalleistungspegels - Teil 2: Wärmepumpen-
Wassererwärmer

This European Standard was approved by CEN on 19 October 2018.

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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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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 (EN 12102-2:2019) has been prepared by Technical Committee CEN/TC 113 “Heat pumps and air conditioning units”, the secretariat of which is held by UNE.

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 November 2019, and conflicting national standards shall be withdrawn at the latest by November 2019.

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 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 and Annex ZB, which are integral parts of this document.

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document specifies methods for testing the sound power level of air/water, brine/water, water/water and direct exchange/water heat pump water heaters and heat pump combination heaters with electrically driven compressors and connected to or including a domestic hot water storage tank for domestic hot water production.

This European Standard comprises only the testing procedure for the domestic hot water production of the heat pump system.

NOTE 1 Testing procedures for simultaneous operation for domestic hot water production and space heating are not treated in this standard. Simultaneous operation means that domestic hot water production and space heating generation occur at the same time and may interact.

NOTE 2 For space heating function, the requirements are given in EN 12102-1:2017.

This European Standard only applies to water heaters which are supplied in a package of heat pump and storage tank. In the case of water heaters consisting of several parts with refrigerant connections, this European Standard applies only to those designed and supplied as a complete package.

This European Standard does not specify requirements for the quality of the used water.

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 12102-1:2017, *Air conditioners, liquid chilling packages, heat pumps, process chillers and dehumidifiers with electrically driven compressors - Determination of the sound power level - Part 1: Air conditioners, liquid chilling packages, heat pumps for space heating and cooling, dehumidifiers and process chillers*

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

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

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

EN 16147:2017, *Heat pumps with electrically driven compressors - Testing, performance rating and requirements for marking of domestic hot water units*

EN ISO 3741:2010, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Precision methods for reverberation test rooms (ISO 3741:2010)*

EN ISO 3743-1, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for small movable sources in reverberant fields - Part 1: Comparison method for a hard-walled test room (ISO 3743-1:2010)*

EN ISO 3744, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering methods for an essentially free field over a reflecting plane (ISO 3744:2010)*

EN ISO 3745, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Precision methods for anechoic rooms and hemi-anechoic rooms (ISO 3745:2012)*

EN ISO 3747, *Acoustics - Determination of sound power levels and sound energy levels of noise sources using sound pressure - Engineering/survey methods for use in situ in a reverberant environment (ISO 3747:2010)*

EN ISO 5801, *Fans - Performance testing using standardized airways (ISO 5801:2017)*

EN ISO 9614 (all parts), *Acoustics - Determination of sound power levels of noise sources using sound intensity*

3 Terms, definitions and symbols

3.1 Terms and definitions

For the purposes of this document, the terms and definitions given in EN ISO 3741, EN ISO 3743-1, EN ISO 3744, EN ISO 3745, EN ISO 3747, EN ISO 9614 (all parts), EN 14511-1, EN 16147 and EN 12102-1 apply.

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

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

3.2 Symbols, subscripts and units

The symbols, subscripts and units used in this document are given in Table 1.

Table 1 — Symbols, subscripts and units

Symbol/Subscript	Denomination	Unit
BC	Bend correction	mm
BR	Brine	—
c_o	Speed of sound in air	m/s
d	In duct	—
D	Diameter	mm
D_H	Total duration of heating	min
E	Duct end correction factor	dB
f	Centre frequency band	Hz
i	Indoor side of units	—
$\overline{L_{pA}}$	A-weighted average sound power level	dB(A)
L_W	Sound power level	dB
L_{WA}	A-weighted sound power level	dB(A)
L_{Wd}	Sound power level travelling into the duct	dB
o	Outdoor side of units	—
$Prated^a$	Rated heat output	kW
R	Refrigerant	—