

**KUNI 70 kW KASULIKU SOOJUSKOORMUSEGA
ABSORPTSIOONPRINTSIIBIL GAASISEADMED KÜTTE-
JA/VÕI JAHUTUSE TARBEKS. OSA 4: KATSEMEETODID**

**Gas-fired sorption appliances for heating and/or
cooling with a net heat input not exceeding 70 kW -
Part 4: Test methods**

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 12309-4:2015 sisaldab Euroopa standardi EN 12309-4:2014 ingliskeelset teksti.	This Estonian standard EVS-EN 12309-4:2015 consists of the English text of the European standard EN 12309-4:2014.
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English Version

**Gas-fired sorption appliances for heating and/or cooling with a
net heat input not exceeding 70 kW - Part 4: Test methods**

Appareils à sorption fonctionnant au gaz pour le chauffage
et/ou le refroidissement de débit calorifique sur PCI inférieur
ou égal à 70 kW - Partie 4 : Méthodes d'essai

Gasbefeuerte Sorptions-Geräte für Heizung und/oder
Kühlung mit einer Nennwärmebelastung nicht über 70 kW -
Teil 4: Prüfverfahren

This European Standard was approved by CEN on 18 October 2014.

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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Contents	Page
Foreword.....	4
1 Scope.....	6
1.1 Scope of EN 12309.....	6
1.2 Scope of this Part 4 of EN 12309.....	6
2 Normative references.....	7
3 Terms and definitions.....	7
4 Test methods.....	7
4.1 General.....	7
4.2 Basic principles.....	7
4.2.1 Heating capacity.....	7
4.2.2 Cooling capacity.....	9
4.2.3 Heat recovery capacity.....	11
4.2.4 Heat input.....	13
4.2.5 Electrical power input.....	15
4.2.6 Gas utilization efficiency.....	18
4.2.7 Auxiliary energy factor.....	18
4.3 Test apparatus.....	19
4.3.1 Arrangement of the test apparatus.....	19
4.3.2 Installation and connection of the appliance.....	20
4.4 Uncertainties of measurement.....	21
4.5 Test procedure.....	22
4.5.1 General.....	22
4.5.2 Non-cyclical operation.....	23
4.5.3 Cyclical operation.....	31
4.6 Test methods for electric power consumption during thermostat off mode, standby mode and off mode.....	35
4.6.1 Measurement of electrical power consumption during thermostat off mode.....	35
4.6.2 Measurement of the electrical power consumption during standby mode.....	35
4.6.3 Measurement of the electric power consumption during off mode.....	35
4.7 Test results.....	35
Annex A (normative) Determination of the pump efficiency.....	38
A.1 General.....	38
A.2 Hydraulic power of the pump.....	38
A.3 Efficiency of the pump.....	39
Annex B (normative) “Individual” corrections to include in the “global” electrical power input correction depending on the appliance.....	40
Annex C (informative) Primary energy efficiency - Calculation at a single operating point.....	41
C.1 General.....	41
C.2 Primary energy ratio in heating mode.....	41
C.3 Primary energy ratio in cooling mode.....	42
Annex D (informative) Heating capacity tests - Flow chart and examples of different test sequences.....	43
D.1 Flow chart.....	43

D.2	Examples of test profiles	44
Annex E (informative) Direct method for air-to-water (brine) and water (brine) to water (brine) appliances		50
E.1	General	50
E.2	Compensation system air to water appliances	50
E.3	Compensation system for water/brine to water appliances	51
Annex F (informative) Measurement control criteria for water (brine) to water (brine) appliances		52
F.1	General	52
F.2	Water (brine)-to-water (brine) heat pump in heating mode	52
F.3	Water (brine)-to-water (brine) chiller or chiller/heater in cooling mode	53
Annex G (normative) Measurement in ON/OFF cycling mode		55
G.1	General	55
G.2	Test Procedure for measurement in ON/OFF cycling	55
Annex H (informative) Test report		57
H.1	General information	57
H.2	Additional information	57
H.3	Rating test results	58
Annex ZA (informative) Relationship between this European Standard and the requirements of Commission Regulation (EC) No 813/2013		59
Annex ZB (informative) Relationship between this European Standard and the requirements of Commission Regulation (EC) No 811/2013		60
Bibliography		61

Foreword

This document (EN 12309-4:2014) has been prepared by Technical Committee CEN/TC 299 “Gas-fired sorption appliances, indirect fired sorption appliances, gas-fired endothermic engine heat pumps and domestic gas-fired washing and drying appliances”, 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 June 2015, and conflicting national standards shall be withdrawn at the latest by June 2015.

This document supersedes EN 12309-2:2000.

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 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.

This European Standard comprises the following parts under the general title, *Gas-fired sorption appliances for heating and/or cooling with a net heat input not exceeding 70 kW*:

- *Part 1: Terms and definitions;*
- *Part 2: Safety;*
- *Part 3: Test conditions;*
- *Part 4: Test methods;*
- *Part 5: Requirements;*
- *Part 6: Calculation of seasonal performances;*
- *Part 7: Specific provisions for hybrid appliances;*
- *Part 8: Environmental aspects.*

EN 12309-1 and EN 12309-2 supersede EN 12309-1:1999, whereas EN 12309-1, EN 12309-3, EN 12309-4, EN 12309-5, EN 12309-6, and EN 12309-7 supersede EN 12309-2:2000.

EN 12309-1, EN 12309-2, EN 12309-3, EN 12309-4, EN 12309-5, EN 12309-6, and EN 12309-7 have been prepared to address the essential requirements of the European Directive 2009/142/EC relating to appliances burning gaseous fuels (see Annex ZA of prEN 12309-2:2013 for safety aspects and Annex ZA of EN 12309-5:2014 for rational use of energy aspects).

These documents are linked to the Energy Related Products Directive (2009/125/EC) in terms of tests conditions, tests methods and seasonal performances calculation methods under Mandate M/495 (see EN 12309-3:2014, Annex ZA; EN 12309-4:2014, Annex ZA; EN 12309-6:2014, Annex ZA and EN 12309-7:2014, Annex ZA and prEN 12309-2:2013, Annex ZB and EN 12309-5:2014, Annex ZB).

These documents will be reviewed whenever new mandates could apply.

EN 12309-8 ("Environmental aspects") deals with the incorporation of the Resolution BT 27/2008 regarding CEN approach on addressing environmental issues in product and service standards.

According to the CEN-CENELEC Internal Regulations, the national standards organizations 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.

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1 Scope

1.1 Scope of EN 12309

Appliances covered by this European Standard include one or a combination of the following:

- gas-fired sorption chiller;
- gas-fired sorption chiller/heater;
- gas-fired sorption heat pump.

This European Standard applies to appliances designed to be used for space heating or cooling or refrigeration with or without heat recovery.

This European Standard applies to appliances having flue gas systems of type B and type C (according to CEN/TR 1749) and to appliances designed for outdoor installations. EN 12309 does not apply to air conditioners, it only applies to appliances having:

- integral burners under the control of fully automatic burner control systems,
- closed system refrigerant circuits in which the refrigerant does not come into direct contact with the water or air to be cooled or heated,
- mechanical means to assist transportation of the combustion air and/or the flue gas.

The above appliances can have one or more primary or secondary functions (i.e. heat recovery - see definitions in EN 12309-1:2014).

In the case of packaged units (consisting of several parts), this European Standard applies only to those designed and supplied as a complete package.

The appliances having their condenser cooled by air and by the evaporation of external additional water are not covered by EN 12309.

Installations used for heating and/or cooling of industrial processes are not within the scope of EN 12309.

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

1.2 Scope of this Part 4 of EN 12309

This part of EN 12309 specifies the test methods for gas-fired sorption appliances for heating and/or cooling with a net heat input not exceeding 70 kW.

This part of EN 12309 deals particularly with test protocols and tools to calculate the capacity, the gas utilization efficiency and the electrical power input of the appliance. This data can be used in particular to calculate the seasonal efficiency of the appliance.

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 437, *Test gases — Test pressures — Appliance categories*

EN 12309-1:2014, *Gas-fired sorption appliances for heating and/or cooling with a net heat input not exceeding 70 kW — Part 1: Terms and definitions*

prEN 12309-2:2013, *Gas-fired sorption appliances for heating and/or cooling with a net heat input not exceeding 70 kW — Part 2: Safety*

EN 12309-3:2014, *Gas-fired sorption appliances for heating and/or cooling with a net heat input not exceeding 70 kW — Part 3: Test conditions*

EN 12309-7:2014, *Gas-fired sorption appliances for heating and/or cooling with a net heat input not exceeding 70 kW — Part 7: Specific provisions for hybrid appliances*

EN 12102, *Air conditioners, liquid chilling packages, heat pumps and dehumidifiers with electrically driven compressors for space heating and cooling - Measurement of airborne noise - Determination of the sound power level*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 12309-1:2014 apply.

4 Test methods

4.1 General

A steady-state, transient or cyclical operation test could be applied for full capacity tests or for reduced capacity tests.

The sound power level is measured in the standard rating conditions as given in EN 12309-3:2014 for monovalent and EN 12309-7:2014 for hybrids and bivalent with the corresponding test methods according to EN 12102. It is considered that this European Standard, dedicated to determination of the sound power level could be used with appliances covered in the scope of EN 12309.

4.2 Basic principles

4.2.1 Heating capacity

4.2.1.1 General

The heating capacity of air-to-water(brine), water(brine)-to-water(brine) chiller/heater or heat pumps shall be determined in accordance with the direct method at the water or brine (indoor) heat exchanger(s), by determination of the volume or mass flow rate of the heat transfer medium, and the inlet and outlet temperatures, taking into consideration the specific heat capacity and density, or the enthalpy change, of the heat transfer medium (see 4.2.1.2, 4.2.1.3, 4.2.1.4).