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

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NATIONAL FOREWORD

See Eesti standard EVS-EN 12309-7:2015 sisaldab Euroopa standardi EN 12309-7:2014 ingliskeelset teksti.	This Estonian standard EVS-EN 12309-7:2015 consists of the English text of the European standard EN 12309-7:2014.
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 17.12.2014.	Date of Availability of the European standard is 17.12.2014.
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 27.080, 91.140.30

EUROPEAN STANDARD

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EN 12309-7

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Supersedes EN 12309-2:2000

English Version

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

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 7 : Dispositions spécifiques pour les appareils hybrides

Gasbefeuerte Sorptions-Geräte für Heizung und/oder Kühlung mit einer Nennwärmebelastung nicht über 70 kW - Teil 7: Spezifische Bestimmungen für Hybridanlagen

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.

CEN members are the national standards bodies of 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 United Kingdom.

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Contents

Page

Foreword

This document (EN 12309-7:2014) 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 supersede 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 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.

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 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 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 7 of EN 12309

This part of EN 12309 deals particularly with the specific provisions of hybrid heating appliances based on gas-driven sorption heat pumps as defined in Part 1.

The heating appliances covered by this European Standard are of a hybrid type, an encased assembly or assemblies combining a direct or indirect-fired sorption heat pump for base load and a peak load condensing boiler with only one flue system, electrical supply cable and human machine interface to the end user. The direct- or indirect-fired sorption heat pump integrated in the hybrid appliances in this European Standard could be intermittent or continuously operating ab or adsorption heat pump.

The control system of hybrid heating appliances decides on the transition between the heat pump operation mode to/from the mixed operation mode (heating by both sorption heat pump as well as the peak boiler) and the direct heating mode (only peak boiler) depending on the heating fluid inlet or return temperature, temperature of brine entering the indoor heat exchanger (evaporator) of the heat pump, the required outlet or supply temperature dependent on the outdoor temperature as well as the target value of the indoor or room temperature. Upon transition from the heat pump operation mode to the mixed operation mode, the control system decides also on the degree of mixing based on the above mentioned parameters.

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 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[1], *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 12309-4:2014, *Gas-fired sorption appliances for heating and/or cooling with a net heat input not exceeding 70 kW — Part 4: Test methods*

EN 12309-6:2014, *Gas-fired sorption appliances for heating and/or cooling with a net heat input not exceeding 70 kW — Part 6: Calculation of seasonal performances*

3 Terms and definitions

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

4 Test conditions

4.1 General

The types of hybrid heating appliances considered in this European Standard are variable capacity delivering a variable heating fluid outlet temperature dependent on the outdoor (ambient air) and the design indoor (room) temperatures as well as the selected heat sink conditions.

Table 1 presents the design temperatures for heating (the dry bulb outdoor coldest temperature) for each reference heating season, the design indoor (room) temperature (T_R) as well as the balance point or heating limit temperature (T_{BP}) for the considered three reference heating seasons (climatic conditions) in EN 12309-6:2014; namely colder (C), average (A) and warmer (W). The heating season “Average” corresponds to the weather conditions of Strasburg, while “Warmer” and “Colder” correspond to the weather conditions of Athens and Helsinki, respectively.

Table 1 — Design temperature, indoor temperature and balance point temperatures for the different reference heating seasons

Reference Heating Season	Dry bulb temperature conditions		
	$T_{designh}$	T_R	T_{BP}
Colder (C)	−22 °C	20 °C	16 °C
Average (A)	−10 °C	20 °C	16 °C
Warmer (W)	+2 °C	20 °C	16 °C

In Table 2, the design outlet (supply) and inlet (return) temperatures to and from the building heating network (heating fluid temperatures from the heating appliance to the heating network and backwards, respectively) are listed as defined in EN 12309-3:2014.

[1] This part of EN 12309 is currently being revised.