



**SLOVENSKI STANDARD**  
**oSIST prEN 12309-1:2012**  
**01-oktober-2012**

---

**Absorpcijske in adsorpcijske plinske naprave za gretje in/ali hlajenje z grelno močjo do vključno 70 kW - 1. del: Izrazi in definicije**

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

Gasbefeuerte Sorptions-Geräte für Heizung und/oder Kühlung mit einer Nennwärmebelastung nicht über 70 kW - Teil 1: Begriffe

Appareils à sorption à chauffage direct au gaz pour chauffage et/ou refroidissement d'un débit calorifique sur PCI inférieur à 70 kW - Partie 1: Termes et définitions

**Ta slovenski standard je istoveten z: prEN 12309-1**

---

**ICS:**

23.120	Zračniki. Vetrniki. Klimatske naprave	Ventilators. Fans. Air-conditioners
27.080	Toplotne črpalke	Heat pumps
91.140.30	Prezračevalni in klimatski sistemi	Ventilation and air-conditioning

**oSIST prEN 12309-1:2012**

**en,fr,de**



EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

**DRAFT**  
**prEN 12309-1**

July 2012

ICS 27.080; 91.140.30

Will supersede EN 12309-1:1999, 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 1: Terms and definitions

Appareils à sorption à chauffage direct au gaz pour chauffage et/ou refroidissement d'un débit calorifique sur PCI inférieur à 70 kW - Partie 1: Termes et définitions

Gasbefeuerte Sorptions-Geräte für Heizung und/oder Kühlung mit einer Nennwärmebelastung nicht über 70 kW - Teil 1: Begriffe

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 299.

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.

This draft European Standard was established by CEN 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.

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.

**Warning** : This document is not a European Standard. It is distributed for review and comments. It is subject to change without notice and shall not be referred to as a European Standard.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

**Contents**

Page

Foreword.....	3
<b>1</b> Scope .....	<b>4</b>
1.1 Scope of EN 12309 series .....	4
1.2 Scope of this Part 1 to EN 12309.....	4
<b>2</b> Normative references .....	<b>5</b>
<b>3</b> Terms and definitions .....	<b>5</b>
3.1 Appliance and its constituents.....	5
3.2 Combustion products circuit.....	9
3.3 Adjusting, control and safety devices .....	10
3.4 Operation of the appliance .....	11
3.5 Gases .....	14
3.6 Conditions of operation, measurement and calculations .....	15
3.7 Marking of the appliance and packaging .....	27
Bibliography .....	28

**iTeh STANDARD PREVIEW**  
(standards.iteh.ai)

SIST EN 12309-1:2015

<https://standards.iteh.ai/catalog/standards/sist/55d5ddb6f-6c21-4d98-ae69-9f3de376ec8d/sist-en-12309-1-2015>

## Foreword

This document (prEN 12309-1:2012) 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 document is currently submitted to the CEN Enquiry.

This document will supersede EN 12309-1:1999, EN 12309-2:2000.

EN 12309 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.

Parts 1 and 2 to EN 12309 will supersede EN 12309-1:1999, whereas Part 1 and Parts 3 to 7 of EN 12309 will supersede EN 12309-2:2000. Parts 1 to 7 have been prepared to address the essential requirements of the European Directive 2009/142/EC relating to appliances burning gaseous fuels (see informative Annex ZA of EN 12309-2:20xx for safety aspects and Annex ZA of prEN 12309-5:2012 for rational use of energy aspects).

These documents are linked to the following European Directives:

- Energy Related Products Directive (2009/125/EC) in terms of tests conditions, tests methods and seasonal performances calculation methods under Mandate M/495 (see Annex ZB of prEN 12309-5:2012);
- Promotion of the Use of Renewable Energy Directive (2009/28/EC – Annex VII) (see Annex A of prEN 12309-5:2012).

For the relationship with EU Directive(s), see informative Annexes ZA and ZB in EN 12309-2:20xx and in prEN 12309-5:2012, which are an integral part of this document. These documents will be reviewed whenever new mandates could apply.

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

**prEN 12309-1:2012 (E)****1 Scope****1.1 Scope of EN 12309 series**

Appliances covered by EN 12309 include one or a combination of the following:

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

EN 12309 applies to appliances only when used for space heating or cooling or refrigeration with or without heat recovery. Appliances can be monovalent, bivalent or hybrid types.

EN 12309 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 applies to appliances that can be single ducted or double ducted.

EN 12309 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 prEN 12309-1:2012) and EN 12309 applies to all such functions providing that the function concerned is dependent on circulation of fluid (refrigerant and/or solution) within the absorption, adsorption or refrigerant circuit(s).

NOTE 1 Any appliance function that is not dependent on circulation of the fluid within the absorption, adsorption, or refrigerant circuit(s) should be assessed separately.

EN 12309 is applicable to appliances that are intended to be type tested. Requirements for appliances that are not type tested would need to be subject to further consideration.

In the case of packaged units (consisting of several parts), EN 12309 applies only to those designed and supplied as a complete package.

EN 12309 does not apply to air conditioners.

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.

NOTE 2 All the symbols given in this text should be used regardless of the language used.

**1.2 Scope of this Part 1 to EN 12309**

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

## 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.

prEN 12309-3:2012, *Gas-fired sorption appliances for heating and/or cooling with a net heat input not exceeding 70 kW – Part 3: Test conditions*

prEN 12309-7:2012, *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*

## 3 Terms and definitions

### 3.1 Appliance and its constituents

#### 3.1.1

##### **absorption**

process in which molecules of the refrigerant are dissolved into a liquid

#### 3.1.2

##### **adsorption**

process in which molecules of the refrigerant are held at the surface of a solid (possibly porous) structure

#### 3.1.3

##### **aeration adjuster**

device enabling the air to be set at the desired value according to the supply conditions

Note 1 to entry: The action of adjusting this device is called "adjusting the aeration".

#### 3.1.4

##### **air-conditioners**

encased assembly or assemblies designed as an appliance to provide delivery of conditioned air to an enclosed space (room for instance) or zone

Note 1 to entry: The medium used for distribution of heating and/or cooling is exclusively air.

#### 3.1.5

##### **appliance**

assembly of various parts according to the installation instructions, if the appliance is supplied to the market in multiple parts

Note 1 to entry: Accessories provided optionally are not to be included.

Note 2 to entry: Appliance may be supplied to be marketed in one or more than one part.

#### 3.1.6

##### **bivalent appliance**

encased assembly or assemblies designed and packaged by a manufacturer which is made up of components that can be tested separately

#### 3.1.7

##### **brine**

liquid that has a freezing point depressed relative to water

**prEN 12309-1:2012 (E)****3.1.8****chiller**

encased assembly or assemblies designed as an appliance, whose primary function is delivery of cooling only, and whose primary function is dependent on circulation of fluid (refrigerant and/or solution) within the absorption, adsorption or refrigerant circuit(s)

**3.1.9****chiller/heater**

encased assembly or assemblies, whose primary function is delivery of cooling and/or heating and whose primary function of cooling is dependent on circulation of fluid (refrigerant and/or solution) within the absorption, adsorption or refrigerant circuit(s)

Note 1 to entry: The primary function of heating only uses directly or indirectly the energy delivered by the combustion system.

**3.1.10****closed system**

system in which the fluid within the refrigerant circuit (e.g. water, ammonia, etc.) providing heating or cooling does not come into contact with the surrounding air or the heat transfer medium (e.g. water, brine, air)

**3.1.11****condensing appliance**

appliance in which, under normal operating conditions and at certain operating water temperatures, the water vapour in the combustion products is partially condensed in order to make use of the latent heat of this water vapour for heating and/or heat recovery purposes

**3.1.12****gas circuit**

part of the appliance that conveys or contains the gas between the appliance gas inlet connection and the burner(s)

**3.1.13****gas fired**

appliance which mainly consume gas for implementation of the function or functions, the electrical power consumption being dedicated to auxiliaries needed for operation

**3.1.14****gas inlet connection**

part of the appliance intended to be connected to the gas supply

**3.1.15****gas rate adjuster**

component allowing an authorized person to set the gas rate of the burner to a predetermined value according to the supply conditions

Note 1 to entry: Adjustment may be progressive (screw adjuster) or in discrete steps (by changing restrictors).

Note 2 to entry: The adjusting screw of an adjustable governor is regarded as a rate adjuster.

Note 3 to entry: The action of adjusting this device is called "adjusting the gas rate".

Note 4 to entry: A factory sealed gas rate adjuster is considered to be non-existent.

**3.1.16****heat pump**

encased assembly or assemblies designed as an appliance whose primary function is delivery of heat and/or cooling. The primary function is dependent on circulation of fluid (refrigerant and/or solution) within the absorption, adsorption or refrigerant circuit(s)



**3.1.17****heat recovery**

recovery of heat rejected by the appliance whose primary control is in the cooling mode by means of an additional heat exchanger (e.g. a chiller with an additional condenser or absorber)

**3.1.18****heat transfer medium**

any medium (e.g. air, water, brine, etc.) used for the transfer of heat to or from refrigerant-containing parts of the appliance

Note 1 to entry: The medium may be

- the cooling medium circulating in the evaporator,
- the cooling medium circulating in the condenser and/or absorber and/or flue gas heat exchanger,
- the heat recovery medium circulating in the heat recovery heat exchanger.

**3.1.19****hybrid appliance**

encased assembly or assemblies as an appliance whose primary function is heating. The primary function is dependent either on circulation of fluid (refrigerant and/or solution within the absorption, adsorption or refrigerant circuits) or on additional integrated boiler or both

**3.1.20****ignition burner**

burner whose flame is intended to ignite another burner

**3.1.21****ignition device**

any means (flame, electrical ignition device or other device) used to ignite the gas at the ignition burner or at the main burner

Note 1 to entry: This device can operate intermittently or permanently.

**3.1.22****indoor heat exchanger**

heat exchanger which is designed to transfer heat to the indoor part of the building or to the indoor hot water supplies or to remove heat from these

Note 1 to entry: In the case of heat pumps operating in cooling mode, this is the evaporator. In the case of heat pumps operating in heating mode, this is the condenser.

**3.1.23****injector**

component that admits the gas into a burner

**3.1.24****main burner**

burner that is intended to assure the thermal function of the appliance and is generally called "the burner"

**prEN 12309-1:2012 (E)****3.1.25****mechanical joint****mechanical means of obtaining soundness**

means of assuring the soundness of an assembly of several (generally metallic) parts without the use of liquids, pastes, tapes, etc.

Note 1 to entry: The means are, for example:

- metal to metal joints;
- conical joints;
- toroidal sealing rings ("O" rings);
- flat joints.

**3.1.26****monovalent appliance**

encased assembly or assemblies whose primary and secondary functions are dependent on circulation of fluid (refrigerant and/or solution) within the absorption, adsorption or refrigerant circuit(s)

**3.1.27****outdoor heat exchanger**

heat exchanger which is designed to remove heat from the outdoor ambient environment, or any other available heat source, or to transfer heat to it

Note 1 to entry: In the case of heat pumps operating in cooling mode, this is the condenser. In the case of heat pumps operating in heating mode, this is the evaporator.

**3.1.28****open system**

system in which the fluid within the refrigerant circuit (e.g. water, ammonia, etc.) providing heating or cooling comes into direct contact with the heat transfer medium (e.g. water, air, etc.) which is to be heated or cooled

**3.1.29****packaged unit**

factory assembly of components of heat pump, chiller or chiller/heater fixed on a common mounting to form a discrete unit

**3.1.30****primary function**

main purpose for which the sorption appliance is designed

Note 1 to entry: In the case of chiller, the main purpose is the cooling function; in the case of a heat pump this is the heating function.

Note 2 to entry: Both the heating and cooling functions of the sorption appliance may be classed as primary functions if they satisfy the rational use of energy requirements for those functions.

**3.1.31****putting an adjuster or a control out of service**

procedure by which a control (temperature, pressure, etc.) is put out of action and sealed in this position

Note 1 to entry: The appliance then functions as if this device had been removed.

**3.1.32****restrictor**

part with an orifice, which is placed in the gas circuit so as to create a pressure drop and thus reduce the gas pressure at the burner to a predetermined value for a given supply pressure and rate

**3.1.33****sealing an adjuster**

procedure by which an adjuster is set so that changing the setting of the adjuster breaks the sealing material and makes the interference with the adjuster apparent

Note 1 to entry: A factory sealed adjuster is considered to be non existent.

Note 2 to entry: A governor is considered to be non existent if it has been factory sealed in the fully opened position.

**3.1.34****secondary function**

optional function of the sorption appliance, such as heating or cooling, which is not expected to satisfy the rational use of energy requirements of a primary function

**3.1.35****setting and adjuster**

procedure by which an adjuster is immobilized in a position by some means such as a screw, etc.

**3.1.36****sorption**

process that can be absorption or adsorption

**3.1.37****sorption appliance**

generic word used to describe all the appliances covered by this set of standards. The medium used for distribution of heating and/or cooling is liquid

Note 1 to entry: It excludes the air conditioners.

**3.2 Combustion products circuit****3.2.1****combustion chamber**

enclosure inside which combustion of the air/gas mixture takes place

**3.2.2****draught diverter**

device placed in the combustion products circuit to reduce the influence of flue pull and prevent down draught affecting on the burner performance and combustion

**3.2.3****flue damper**

manual or automatic device placed in the combustion products circuit intended to restrict or fully close off the passageways for the evacuation of products of combustion when the appliance is not in use

**3.2.4****flue outlet**

part of the appliance that connects with a flue to evacuate the products of combustion

**3.2.5****flue terminal**

device fitted at the end of the duct system that enables the discharge of flue gases and may, at the same time, allow entry of combustion air

## prEN 12309-1:2012 (E)

### 3.3 Adjusting, control and safety devices

#### 3.3.1

**adjustable pressure governor**

governor provided with means for changing the outlet pressure setting

#### 3.3.2

**automatic burner control system**

system comprising at least a programming unit and all the elements of a flame detector device

Note 1 to entry: The various functions of an automatic burner control system may be in one or more housings.

#### 3.3.3

**automatic shut-off valve**

device that automatically opens, closes or varies the gas rate on a signal from the control circuit and/or the safety circuit

#### 3.3.4

**control thermostat**

device controlling the operation of the appliance (by on/off, high/low or modulating control) and enabling the temperature to be kept automatically, within a given tolerance, at a predetermined value

#### 3.3.5

**fan delay control**

control that starts and/or stops the air delivery fan when the temperature of the delivered air reaches a certain predetermined value

#### 3.3.6

**flame detector device**

device by which the presence of a flame is detected and signalled

Note 1 to entry: It can consist of a flame sensor, an amplifier and a relay for signal transmission. These parts, with the possible exception of the present flame sensor, may be assembled in a single housing for use in conjunction with a programming unit.

#### 3.3.7

**flame signal**

signal given by the flame detector device, normally when the flame sensor senses a flame

#### 3.3.8

**flame simulation**

condition that occurs when the flame signal indicates the presence of a flame when in reality no flame is present

#### 3.3.9

**flame supervision device**

device that, in response to a signal from the flame detector, keeps the gas supply open and shuts it off in the absence of the supervised flame

#### 3.3.10

**high/low control**

automatic control that permits an appliance to operate either at the nominal heat input or at a fixed reduced heat input

#### 3.3.11

**modulating control**

automatic control by which the heat input of the appliance can be adjusted continuously between the nominal heat input and a minimum value