

**SLOVENSKI STANDARD**  
**SIST EN 12309-1:2023****01-oktober-2023****Nadomešča:**  
**SIST EN 12309-1:2015**

---

**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 fonctionnant au gaz pour le chauffage et/ou le refroidissement de débit calorifique sur PCI inférieur ou égal à 70 kW - Partie 1 : Termes et définitions

**Ta slovenski standard je istoveten z: EN 12309-1:2023****ICS:**

01.040.27	Prenos energije in toplote (Slovarji)	Energy and heat transfer engineering (Vocabularies)
01.040.91	Gradbeni materiali in gradnja (Slovarji)	Construction materials and building (Vocabularies)
27.080	Toplotne črpalke	Heat pumps
91.140.30	Prezračevalni in klimatski sistemi	Ventilation and air-conditioning systems

**SIST EN 12309-1:2023****en,fr,de**



EUROPEAN STANDARD

EN 12309-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

June 2023

ICS 01.040.27; 01.040.91; 27.080; 91.140.30

Supersedes EN 12309-1:2014

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 fonctionnant au gaz pour le chauffage et/ou le refroidissement de débit calorifique sur PCI inférieur ou égal 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 European Standard was approved by CEN on 30 April 2023.

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



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

<b>Contents</b>		<b>Page</b>
<b>European foreword</b> .....		<b>3</b>
<b>1</b>	<b>Scope</b> .....	<b>4</b>
<b>1.1</b>	<b>Scope of EN 12309</b> .....	<b>4</b>
<b>1.2</b>	<b>Scope of this Part 1 of EN 12309</b> .....	<b>4</b>
<b>2</b>	<b>Normative references</b> .....	<b>4</b>
<b>3</b>	<b>Terms and definitions</b> .....	<b>5</b>
<b>3.1</b>	<b>Appliance types</b> .....	<b>5</b>
<b>3.2</b>	<b>Appliance components</b> .....	<b>7</b>
<b>3.3</b>	<b>Combustion products circuit</b> .....	<b>10</b>
<b>3.4</b>	<b>Adjusting, control and safety devices</b> .....	<b>10</b>
<b>3.5</b>	<b>Operation of the appliance</b> .....	<b>12</b>
<b>3.6</b>	<b>Gases</b> .....	<b>15</b>
<b>3.7</b>	<b>Conditions of operation, measurement and calculations</b> .....	<b>17</b>
<b>Bibliography</b> .....		<b>30</b>
<b>Index</b> .....		<b>31</b>

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

SIST EN 12309-1:2023

<https://standards.iteh.ai/catalog/standards/sist/e77093be-36d6-4993-b065-504743b4d0aa/sist-en-12309-1-2023>

## European foreword

This document (EN 12309-1:2023) 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 December 2023, and conflicting national standards shall be withdrawn at the latest by December 2023.

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 supersedes EN 12309-1:2014.

In comparison with the previous edition, the following technical modifications have been made:

EN 12309-1:2023 gathers terms and definitions from all the other parts of EN 12309. Moreover, new terms and definitions used in the other parts have been added and existing terms and definitions have been updated consistently to the other parts of this standard.

This standard comprises parts under the general title, Gas-fired sorption appliances for heating and/or cooling with a net heat input not exceeding 70 kW. A list of all parts in a series can be found on the CEN website.

These documents will be reviewed whenever new mandates could apply.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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

## EN 12309-1:2023 (E)

### 1 Scope

#### 1.1 Scope of EN 12309

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

- gas-fired sorption chiller;
- gas-fired sorption chiller/heater;
- gas-fired sorption heat pump;
- hybrids based on gas sorption appliances.

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

This document applies to appliances having flue gas systems of type B and C (according to EN 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).

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 are used regardless of the language used.

#### 1.2 Scope of this Part 1 of EN 12309

This part of this document 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

There are no normative references in this document.

### 3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

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

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

#### 3.1 Appliance types

##### 3.1.1

##### **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.

##### 3.1.2

##### **absorption**

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

##### 3.1.3

##### **adsorption**

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

##### 3.1.4

##### **air-conditioner**

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

##### **bivalent appliance**

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

##### 3.1.6

##### **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)

##### 3.1.7

##### **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.

**EN 12309-1:2023 (E)****3.1.8****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)

**3.1.9****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

**3.1.10****continuous appliance**

appliance where the four phases of the sorption cycle (i.e. sorption-desorption-condensation-evaporation) are processed continuously

Note 1 to entry: According to this definition, each phase of the sorption cycle is processed by a specific component.

Note 2 to entry: A continuous appliance operates in one or more of the following modes: steady-state, transient and on-off.

**3.1.11****alternating appliance**

appliance where sorption module(s) alternately process the sorption and the desorption phases leading to a cyclical operation

Note 1 to entry: According to this definition, the phases of the sorption cycle are shifted among the internal components of the appliance. This concept is valid at least for the sorption module.

Note 2 to entry: An alternating appliance operates in one or more of the following modes: steady-state, transient and on-off.

Note 3 to entry: The definition of alternating appliance applies to hybrid appliances with adsorption module and adsorption appliances.

**3.1.12****flueless appliance**

outdoor appliance which is not designed to be fitted with external ducts to transport combustion air to, or products of combustion away from, the appliance's casing

**3.1.13****gas fired appliance**

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

**3.1.14****heat pump**

encased assembly or assemblies designed as an appliance whose primary function is delivery of heat and/or cooling

Note 1 to entry: The primary function is dependent on circulation of fluid (refrigerant and/or solution) within the absorption, adsorption or refrigerant circuit(s).



**3.1.15****hybrid appliance**

encased assembly or assemblies utilizing at least two different technologies whose primary function is to generate heat, including overall control system that selects, according to predefined parameters, which technology (or combination thereof) satisfies the customers' requirements while minimizing energy costs, consumption and/or carbon emissions

Note 1 to entry: Hybrid appliances according to the scope of this standard are based on gas fired technologies.

**3.1.16****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)

**3.1.17****open system**

system in which the fluid within the refrigerant circuit (e.g. water, 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

**3.1.18****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.

**3.1.19****packaged unit**

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

**3.1.20****sorption**

physical and chemical process by which one substance becomes attached to another, that can be absorption or adsorption

**3.1.21****sorption appliance**

appliance which use the physical and chemical process by which one substance becomes attached to another to generate heat and/or cooling

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

**3.2 Appliance components****3.2.1****aeration adjuster**

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

**3.2.2****brine**

liquid that has a freezing point depressed relative to water

**EN 12309-1:2023 (E)****3.2.3****gas circuit**

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

**3.2.4****gas inlet connection**

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

**3.2.5****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 pressure regulator is regarded as a rate adjuster.

**3.2.6****heat recovery**

collecting the energy 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)

**3.2.7****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.

**3.2.8****ignition burner**

burner whose flame is intended to ignite another burner

**3.2.9****ignition device**

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.

**3.2.10****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.

**3.2.11****injector**

component that admits the gas into a burner

**3.2.12****main burner**

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

**3.2.13****mechanical joint**

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.

**3.2.14****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.

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.

**3.2.15****out of service**

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

**3.2.16****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

**3.2.17****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 regulator is considered to be non-existent if it has been factory sealed in the fully opened position.

**EN 12309-1:2023 (E)****3.2.18****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

**3.2.19****setting an adjuster**

procedure by which an adjuster is immobilized in a position by some means (e.g. screw)

**3.3 Combustion products circuit****3.3.1****combustion chamber**

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

**3.3.2****draught diverter**

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

**3.3.3****flue outlet**

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

**3.3.4****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

**3.4 Adjusting, control and safety devices****3.4.1****adjustable pressure regulator**

regulator provided with means for changing the outlet pressure setting

**3.4.2****automatic burner control system**

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

**3.4.3****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

**3.4.4****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

**3.4.5****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