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Part 1: General requirements

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Introduction

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Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



DRAFT International Standard

ISO/DIS 21364-1

Domestic gas cooking appliances — Safety —

Part 1: General requirements

*Appareils de cuisson domestiques utilisant les combustibles
gazeux — Sécurité —*

Partie 1: Exigences générales

ICS: 97.040.20

ISO/TC 291

Secretariat: **DIN**

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2024-04-15

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2024-07-08

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Contents

Page

Foreword	vi
Introduction	vii
1 Scope	1
2 Normative references	1
3 Terms and definitions	2
3.1 Definitions relating to appliances	2
3.2 Definitions relating to the tests	4
3.3 Definitions relating to components	7
3.4 Definitions relating to the function of ABCS	10
4 Components in gas cooking appliances	11
4.1 General	11
4.2 Manual gas shut-off valves (Taps)	11
4.3 Knobs	11
4.3.1 Design of knobs	11
4.3.2 Marking for knobs	12
4.4 Multifunctional controls	12
4.5 Thermoelectric flame supervision controls	12
4.5.1 General	12
4.5.2 Opening time	12
4.5.3 Extinction delay time	13
4.6 Thermostats	13
4.7 Pressure regulators	13
4.7.1 General	13
4.7.2 Regulation capacity	13
4.8 Automatic shut-off valves	13
4.9 Injectors and adjusters	14
4.9.1 General	14
4.9.2 Injectors	14
4.9.3 Air rate adjusters	14
4.9.4 Low rate adjusters	14
4.10 Ignition systems	15
4.11 Thermal cut-outs	15
4.12 Components for appliances with automatic burner control system (ABCS)	15
4.12.1 General	15
4.12.2 Flame detection system	16
4.12.3 Direct flame establishment	17
4.12.4 Safety in the event of a failure to ignite	17
4.12.5 Safety in the event of a flame failure	18
4.13 Indirect manually operated burner control	18
4.13.1 General	18
4.13.2 Controls having a single closing direction	18
4.13.3 Controls having two closing directions	18
5 General conditions of test	19
5.1 Reference conditions	19
5.2 Reference and test gases	19
5.2.1 Characteristics of the test gases	19
5.2.2 Conditions for producing test gases	19
5.3 Test pressures	19
5.4 Temperature conditions	19
5.5 Adjustment of the burner	20
5.6 Test installation	20
5.6.1 General	20
5.6.2 Built-in appliances	21

5.6.3	Freestanding appliances	21
5.6.4	Table-top appliances	22
5.7	Characteristics of the test pans	22
5.7.1	Pans required for testing on gas burners	22
5.7.2	Pans required for testing on electric hob elements and induction hob elements	24
6	Heat input	24
6.1	General	24
6.2	Obtaining the nominal heat input	24
6.3	Measurements and calculations	24
6.3.1	General	24
6.3.2	Appliances with automatic burner control system	26
6.4	Obtaining the reduced heat input	26
6.4.1	Requirement	26
6.4.2	Test	26
6.5	Total heat input	26
6.5.1	Requirement	26
6.5.2	Test	26
7	Heating	27
7.1	General	27
7.2	Operating conditions	27
7.3	Heating tests	27
7.3.1	Requirement	27
7.3.2	Test under normal operation	27
7.4	Abnormal operation	30
8	Combustion	30
8.1	Measurement of all burners simultaneously	30
8.1.1	Requirement	30
8.1.2	Test	30
8.2	Blocked combustion products outlet	32
8.2.1	Requirement	32
8.2.2	Test	33
8.3	Analysis of the combustion products	33
8.3.1	General	33
8.3.2	Calculation with CO ₂	33
8.3.3	Calculation with O ₂	34
9	Ignition, cross lighting and flame stability	34
9.1	General	34
9.2	Movement of oven/grill door or cabinet door	34
9.2.1	Requirement	34
9.2.2	Test	34
9.3	Test for appliances having an automatic burner control system	34
9.3.1	Requirement	34
9.3.2	Test	35
10	Accumulation of unburnt gas and leak tightness	36
10.1	Accumulation of unburnt gas	36
10.2	Leakage	36
10.2.1	Requirement	36
10.2.2	Tests	36
10.3	Leak tightness of the appliance	36
10.3.1	General	36
10.3.2	Requirement	37
10.3.3	Test	37
10.4	Spillage of unburnt gas inside the appliance	37
10.4.1	Requirement	37
10.4.2	Test	37
11	Construction	37

11.1	General.....	37
11.2	Materials	38
11.2.1	General	38
11.2.2	Burner material test.....	38
11.2.3	Sealings.....	38
11.3	Gas inlet connections.....	38
11.4	Conversion to different gases.....	38
11.5	Pull forces of knobs for manual gas shut-off valves (taps)	39
11.5.1	Requirement.....	39
11.5.2	Test.....	39
11.6	Appliances that enable the user to program the start or the end of the cooking cycle.....	39
11.6.1	General	39
11.6.2	Electronic timer	40
11.6.3	Electro-mechanical or motorized timer	40
11.7	Compartment for one gas cylinder	40
11.8	Touch controls.....	40
12	Mechanical strength.....	41
12.1	Parts made of glass and glass-ceramic	41
12.1.1	General	41
12.1.2	Spring hammer test	41
12.1.3	Punch test.....	41
13	Electrical safety	43
13.1	General.....	43
13.2	Battery powered appliances.....	43
14	Marking and instructions	43
14.1	Marking.....	43
14.1.1	Marking on the appliance.....	43
14.1.2	Marking on the packaging.....	44
14.2	Instructions.....	45
14.2.1	General	45
14.2.2	Instructions for use and maintenance.....	45
14.2.3	Instructions for use and maintenance of glass parts	47
14.2.4	Instructions for the installer	47
	Annex A (normative) Table of test gases.....	51
	Annex B (normative) Purity of gases	74
	Annex C (normative) Accuracy of test equipment.....	75
	Annex D (informative) Gas supply connections in force in various countries	76
	Annex E (normative) National deviations in various countries	82
	Bibliography.....	86

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 291, *Domestic gas cooking appliances*.

Introduction

This document provides general requirements for safety of domestic gas cooking appliances.

This document can also be applied, so far as is reasonable, to appliances not mentioned in this specific standard and to appliances designed on the basis of new principles, in which case additional requirements may be necessary.

Where no specific International Standard for an appliance exists, the appliance can be tested according to this document and further tests which take into account the intended use.

Gas burning appliances using fuel gases need to withstand the type of gas which is specified. Other ISO technical committees, e.g. ISO/TC 193, Natural gas, deal with the testing and properties of fuel gases.

Note that, due to the differing properties of fuel gas depending on its source/region of origin, certain differences in regulations exist at present in different regions; some of these differences are presented in [Annexes A](#) and [E](#).

This document covers type testing.

This document series ISO 21364 "Domestic gas cooking appliances – Safety" is structured as follows:

- Part 1: General requirements
- Part 21: Particular requirements for hobs, surface grills and griddles
- Part 22: Particular requirements for ovens and compartment grills

This document can be supplemented by the corresponding clauses of ISO/DIS 21364-21:2024 and ISO/DIS 21364-22:2024.

Domestic gas cooking appliances — Safety —

Part 1: General requirements

1 Scope

This document specifies the safety requirements for domestic gas cooking appliances. These appliances are freestanding, built-in or table-top and are intended to be used indoors. This document applies to the gas sections of the appliances and their component parts (e.g. combined gas-electric cooking appliances). This document does not apply to:

- a) electrical heated elements as part of the appliance;
- b) outdoor appliances;
- c) appliances supplied at pressures greater than the maximum pressure of the test gases;
- d) cook stoves, covered by the standards being developed in ISO/TC 285

In general, it does not take into account children playing with the appliance.

NOTE 1 For requirements of electrical safety refer to the IEC 60335 standard series.

NOTE 2 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board of ships or aircrafts, additional requirements could be necessary;
- in many countries additional requirements are specified by the national health authorities, the national water supply authorities and similar authorities

This document does not cover requirements relating to gas cylinders, their pressure regulators and their connections.

This document does not cover requirements for gas installation.

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.

ISO 3166-1:2020, *Codes for the representation of names of countries and their subdivisions — Part 1: Country code*

ISO/DIS 21364-22:2024, *Domestic gas cooking appliances – Safety- Part 22: Particular requirements for ovens and compartment grills*

ISO 23550:2018, *Safety and control devices for gas and/or oil burners and appliances — General requirements*

ISO 23551-1:2012, *Safety and control devices for gas burners and gas-burning appliances — Particular requirements — Part 1: Automatic and semi-automatic valves*

ISO 23551-2:2018, *Safety and control devices for gas burners and gas-burning appliances — Particular requirements — Part 2: Pressure regulators*

ISO 23551-5:2023, *Safety and control devices for gas burners and gas-burning appliances — Particular requirements — Part 5: Manual gas valves*

ISO 23551-6:2021, *Safety and control devices for gas burners and gas-burning appliances — Particular requirements — Part 6: Thermoelectric flame supervision controls*

ISO 23551-8:2023, *Safety and control devices for gas burners and gas-burning appliances — Particular requirements — Part 8: Multifunctional controls*

ISO 23551-9:2022, *Safety and control devices for gas burners and gas-burning appliances — Particular requirements — Part 9: Mechanical gas thermostats*

IEC 60068-2-75:2014, *Environmental testing Part 2: Test Eh: Hammer test*

IEC 60335-1:2020, *Household and similar electrical appliances — Safety — Part 1: General requirements*

IEC 60335-2-6:2014+A1:2018, *Household and similar electrical appliances — Safety — Part 2-6: Particular requirements for stationary cooking ranges, hobs, ovens and similar appliances*

IEC 60335-2-102:2017, *Household and similar electrical appliances — Safety — Part 2-102: Particular requirements for gas, oil and solid-fuel burning appliances having electrical connections*

IEC 60730-1:2022, *Automatic electrical controls - Part 1: General requirements*

IEC 60730-2-5:2013+A1:2017+A2:2021, *Automatic electrical controls - Part 2-5: Particular requirements for automatic electrical burner control systems*

IEC 60730-2-7:2015, *Automatic electrical controls for household and similar use — Part 2-7: Particular requirements for timers and time switches*

IEC 60730-2-9:2015+A1:2018+A2:2020, *Automatic electrical controls for household and similar use — Part 2-9: Particular requirements for temperature sensing controls*

3 Terms and definitions

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

ISO and IEC maintain terminological 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 Definitions relating to appliances

3.1.1

domestic gas cooking appliance

appliance burning gas for food preparation incorporating one or more cooking function(s) and to be used by private individuals in a domestic environment

3.1.2

freestanding appliance

appliance intended to be placed on the floor, having an enclosure and not intended to have direct contact with adjacent furniture and not intended to be built-in

3.1.3

built-in appliance

appliance intended to be installed in a cabinet or unit or in a housing located in a wall

3.1.4

cooking range

combination of a *hob* ([3.1.10](#)) and an *oven* ([3.1.13](#)) which may incorporate a *grill* ([3.1.5](#)) or a *griddle* ([3.1.11](#))

Note 1 to entry: Can be freestanding or built-in.

[SOURCE: IEC 60335-2-6:2014, 3.104]

3.1.5

grill

appliance or a part of an appliance constructed so that the food is supported on a grid or spit and is cooked by radiant heat

Note 1 to entry: Can be built-in, freestanding, placed in a compartment or a cooking surface. The *grill* ([3.1.5](#)) is sometimes also named as radiant.

[SOURCE: IEC 60335-2-6:2014, 3.102 modified – Note to entry has been replaced.]

3.1.6

combined gas-electric cooking appliance

appliance where the cooking function is powered by gas and electrical energy.

Note 1 to entry: Examples are a *cooking range* ([3.1.4](#)) with an electrical *oven* ([3.1.13](#)) and a gas *hob* ([3.1.10](#)) or a *hob* ([3.1.10](#)) with gas burners and electrical heating elements.

3.1.7

warming drawer

appliance or part of the appliance that fulfils an independent warming function

Note 1 to entry: The same requirements of a warming drawer are applied to a warming cabinet.

3.1.8

portable appliance

appliance that is intended to be placed on a table or working surface and having a mass less than 18 kg

3.1.9

table-top appliance

appliance that is intended to be placed on a table or working surface

Note 1 to entry: It can be portable

3.1.10

hob

appliance that incorporates one or several covered or open burners, and/or one or more electric heating element(s)

Note 1 to entry: Can be built-in, part of a *cooking range* ([3.1.4](#)) or table top.

[SOURCE: IEC 60335-2-6:2014, 3.103]

3.1.11

griddle

appliance or part of an appliance constructed so that the food is only cooked by contact heat on closed surface

3.1.12

surface cooking appliance

appliance that can be a *hob* ([3.1.10](#)), *griddle* ([3.1.11](#)), surface *grill* ([3.1.5](#)) or a combination of these devices

3.1.13**oven**

appliance or part of an appliance having a closed compartment constructed so that the food is cooked by the heat transmitted by natural convection or by forced convection

Note 1 to entry: Can be freestanding, built-in, table top or part of a *cooking range* ([3.1.4](#))

3.1.14**compartment grill**

appliance or part of an appliance having a radiant heating element placed in a cavity

Note 1 to entry: Can be built-in or freestanding.

3.2 Definitions relating to the tests**3.2.1****gas family**

group of combustible gases with similar burning characteristics linked together by range of Wobbe indices

Note 1 to entry: Three gas families are known:

- First family: Town/Manufactured gas
- Second family: Natural gas
- Third family: Liquefied Petroleum Gas (LPG)

3.2.2**Wobbe index**

ratio of the calorific value of a gas per unit volume and the square root of its *relative density* ([3.2.17](#)) under the same *reference conditions* ([3.2.15](#))

Note 1 to entry: The Wobbe index is said to be gross (W_g) or net (W_i) according to whether the calorific value used is the gross or net calorific value.

Note 2 to entry: In this document only the gross Wobbe index (W_g) is used

Note 3 to entry: The Wobbe index is expressed either in

- a) megajoules per cubic metre (MJ/m^3) of dry gas, or
- b) megajoules per kilogram (MJ/kg) of dry gas.

3.2.3**test gas**

gas intended for the verification of the operational characteristics of appliances using combustible gas; it can be *reference gas* ([3.2.4](#)) or *limit gas* ([3.2.5](#))

3.2.4**reference gas**

test gas ([3.2.3](#)) representative of the *gas family* ([3.2.1](#)) with which appliances operate under nominal conditions

3.2.5**limit gas**

test gas ([3.2.3](#)) representative of the extreme variations in characteristics of the *gas family* ([3.2.1](#)) for which the appliances have been designed; such as:

- for *incomplete combustion* ([3.2.10](#)),
- for *flame lift* ([3.2.6](#)),
- for *light back* ([3.2.7](#)),

— for *sooting* ([3.2.8](#)) or *yellow tipping* ([3.2.9](#)).

3.2.6

flame lift

phenomenon characterized by the partial or total movement of the base of the flame away from the burner port

3.2.7

light back

phenomenon characterized by the return of the flame inside the body of the burner or on the *injector* ([3.3.10](#))

3.2.8

sooting

phenomenon appearing at the time of *incomplete combustion* ([3.2.10](#)) and characterized by a deposit of soot on the surfaces in contact with the flames or the *combustion products* ([3.2.25](#))

3.2.9

yellow tipping

phenomenon characterized by the appearance of yellow colouring at the top of the blue cone of an aerated flame

3.2.10

incomplete combustion

combustion process which entails only partial burning of gas

Note 1 to entry: Carbon monoxide is typically produced as a by-product

3.2.11

cross lighting

complete ignition of all ports around a ring of flame ports and/or successful ignition of all rings of ports from an adjacent ring of ports

3.2.12

heat input

quantity of energy used in unit time corresponding to the *volumetric* or *mass flow rates* ([3.2.23](#), [3.2.24](#)), the calorific value used being the *Gross calorific value* ([3.2.16](#))

Note 1 to entry: The heat input is expressed in kilowatts (kW)

3.2.13

nominal heat input

value of the *heat input* ([3.2.12](#)) as declared by the manufacturer

[SOURCE: ISO 22967:2010]

3.2.14

gas installation

a combination of the following used or intended to be used in the supplying and utilisation of gas taken as separate items or as a whole: Consumer piping, fittings, components, flues, sub-meters, apparatus or other devices and associated requirements

3.2.15

reference conditions

dry gas under conditions of temperature and pressure: 15 °C and 101,325 kPa

[SOURCE: ISO 6976:2016]

3.2.16**Gross calorific value**

amount of heat that would be released by the complete combustion with oxygen of a specified quantity of gas, in such a way that the pressure, 101,325 kPa, at which the reaction takes place remains constant, and all the *combustion products* (3.2.25) are returned to the same specified temperature, 15 °C, as that of the reactants, all of these products being in the gaseous state except for water, which is condensed to the liquid state at 15 °C

[SOURCE: ISO 6976:2016, 3.1, modified – p1 replaced by 101,325 kPa; t1 replaced by 15 °C, Note to entry has been replaced]

Note 1 to entry: The calorific value is expressed:

- either in megajoules per cubic metre (MJ/m³) of dry gas;
- or in megajoules per kilogram (MJ/kg) of dry gas.

Note 2 to entry: In this document only the Gross calorific value is used

3.2.17**relative density**

ratio of the masses of equal volumes of dry gas and dry air under the same conditions of temperature and pressure

[SOURCE: ISO 22967:2010, 3.2.3]

3.2.18**gas supply pressure**

difference between the static pressure measured at the inlet connection of the appliance in operation and the atmospheric pressure

[SOURCE: EN 30-1-1:2021]

Note 1 to entry: The gas pressures used are expressed in kilopascals (kPa).

3.2.19**test pressure**

gas pressure used to verify the operational characteristics of appliances using combustible gases, consisting of *normal pressure* (3.2.20) or *limit pressure* (3.2.21)

[SOURCE: EN 30-1-1:2021]

3.2.20**normal pressure**

pressure under which the appliances operate in nominal conditions, when they are supplied with the corresponding *reference gas* (3.2.4)

Note 1 to entry: The gas pressures used are expressed in kilopascals (kPa)

3.2.21**limit pressure**

pressure representative of the extreme variations in the supply conditions

maximum pressure: $p_{\max}$;

minimum pressure: $p_{\min}$

3.2.22**pressure couple**

combination of two distinct gas distribution pressures applied by reason of the significant difference existing between the Wobbe indices within a single family in which:

- the higher pressure corresponds only to gases of low *Wobbe index* (3.2.2);

— the lower pressure corresponds to gases of high *Wobbe index* (3.2.2)

[SOURCE: EN 437:2021, modified – Note to entry has been deleted]

3.2.23

volumetric flow rate

volume of gas consumed by the burner or burners in unit time, with the gas under *reference conditions* (3.2.15)

Note 1 to entry: The volumetric flow rate is expressed in cubic meter per hour (m³/h) or possibly litre per minute (l/min), litre per second (l/s), cubic decimetre per hour (dm³/h), cubic decimetre per second (dm³/s).

[SOURCE: EN 30-1-1:2021, modified – named volumetric flow rate instead volume rate]

3.2.24

mass flow rate

mass of gas consumed by the appliance in unit time during continuous operation

Note 1 to entry: The mass flow rate is expressed in kilogram per hour (kg/h), or eventually gram per hour (g/h).

[SOURCE: EN 30-1-1:2021]

3.2.25

combustion products

constituents resulting from the combustion of a fuel gas with the oxygen of the air, including the inerts, but excluding excess air

3.3 Definitions relating to components

3.3.1

pressure regulator

device that maintains the outlet pressure constant within given limits, independently of the variations in inlet pressure and/or flow rate

[SOURCE: ISO 23551-2:2006, 3.1.1]

3.3.2

manual gas shut-off valve (tap)

manually operated valve for the control of the gas flow from an “off” to an “on” position and vice versa

[SOURCE: ISO 23551-5:2023]

3.3.3

multifunctional control

combination of two or more controls, at least one of these is a mechanical control, whereby the functional parts cannot operate if separated

[SOURCE: ISO 23551-8: 2023]

3.3.4

mechanical thermostat

thermostat which controls the temperature by adjusting the flow rate accordingly to the temperature of the thermal sensing element without any external energy, such that the temperature remains within defined limits

[SOURCE: ISO 23551-9:2015]

3.3.5

flame supervision device

device designed to stop flammable gas going to the burner of a gas appliance if the flame is extinguished

3.3.6

thermoelectric flame supervision control

thermoelectric flame supervision device

control which, in response to the electromagnetic force produced by the thermocouple, maintains the gas way to the main burner open and which shuts off the gas way after extinction of the supervised flame

[SOURCE: ISO 23551-6:2014, modified – Note to entry has been deleted; pilot burner has been deleted]

3.3.7

opening time

time which elapses between the ignition of the supervised flame and the moment when the effect of this flame is sufficient to hold open the shut-off device

[SOURCE: EN 30-1-1:2021]

3.3.8

extinction delay time

time which elapses between the extinction of the supervised flame and the closure of the gas supply controlled by the *flame supervision device* ([3.3.5](#))

[SOURCE: EN 30-1-1:2021]

3.3.9

automatic shut-off valve

valve which opens when energized and closes automatically when de-energized

[SOURCE: ISO 23551-1:2012]

3.3.10

injector

component part that admits the gas into an aerated burner

Note 1 to entry: There are two types of injectors:

- calibrated injector in which the section of the outlet orifice is fixed;
- adjustable injector in which the section of the outlet orifice is variable.

[SOURCE: EN 30-1-1:2021]

3.3.11

low rate adjuster

device allowing the reduced gas rate to a burner to be set at a pre-determined value according to the supply conditions

[SOURCE: EN 30-1-1:2021, , modified – named low rate adjuster instead reduced gas rate adjuster]

Note 1 to entry: The adjustment may be continuous (adjustment screw) or discontinuous (change of calibrated orifices, etc.)

Note 2 to entry: The operation of changing the setting of this device is termed the "adjustment of the reduced gas rate"

3.3.12

air rate adjuster

device allowing the aeration of a burner to be set at a pre-determined value according to the supply conditions

[SOURCE: EN 30-1-1:2021, modified – named air rate adjuster instead primary air adjuster]

3.3.13

spacer

component used in a gap to maintain a predetermined gap width

[SOURCE: ISO 6707-1:2014, 5.5.90]

3.3.14

touch control

control actuated by contact or proximity of a finger, with little or no movement of the contact surface

[SOURCE: IEC 60335-2-6:2014]

3.3.15

pan support

support placed above an uncovered hob burner, which supports the pan being heated

3.3.16

covered burner

burner under a removable closed cooking surface; there is no direct flame contact to the pan or food

3.3.17

automatic burner control system (ABCS)

system which includes a programming unit, a flame detector and may include an ignition system and which monitors the operation of gas burners

[SOURCE: IEC 60730-2-5:2013+A1:2017+A2:2021, 2.2.101 modified, ignition source replaced by ignition system, fuel replaced by gas]

3.3.18

programming unit

device which controls the burner operation in a declared sequence from start-up to shut-down within declared timings and in response to signals from regulating, limiting and monitoring devices

[SOURCE: IEC 60730-2-5:2013+A1:2017+A2:2021, 2.2.106]

3.3.19

flame detector

device which provides the programming unit with a signal indicating the presence or absence of flame

[SOURCE: IEC 60730-2-5:2013+A1:2017+A2:2021, 2.2.102]

3.3.20

Indirect manually operated burner control

device to isolate the gas supply to a burner and possibly to adjust its thermal function during use, in which case the opening and closing of the gas supply to the burner is achieved indirectly by means of one or more automatic shut off valves. This control may incorporate means of adjusting the thermal function of the burner.

For example:

by adjusting the gas flow (e.g. high-low thermostat);

by on-off cycling (e.g. on-off thermostat, gas energy regulator).

[SOURCE: EN 30-1-4:2012]

3.3.21

gas energy regulator

indirect manually operated burner control that cycles the burner on and off periodically

Note 1 to entry: The thermal function of the burner can be controlled by adjusting the duration of the “on” and/or “off” cycles times.

[SOURCE: EN 30-1-4:2012]

3.3.22

self-resetting thermal cut-out

thermal cut-out which as appropriate initiates automatic recycling of the burner or automatic restoration of the full heat input of the burner after the relevant part of the appliance has cooled down sufficiently

[SOURCE: EN 30-1-4:2012]

3.3.23

non-self-resetting thermal cut-out

thermal cut-out which requires a manual operation, or the replacement of a part, in order as appropriate to restart the burner or to restore its full heat input

[SOURCE: EN 30-1-4:2012]

3.3.24

direct flame establishment

type of ignition which is applied directly to the main burner, without the use of a pilot

3.3.25

hob guard

device that reduces physical access to the cooking surface to avoid hazardous situations

3.4 Definitions relating to the function of ABCS

3.4.1

safety shut-down

de-energization of the main gas flow means as the result of the action of a limiter, a cut-out or the detection of an internal fault of the system

[SOURCE: IEC 60730-2-5:2013+A1:2017+A2:2021, 2.3.32 modified, fuel replaced by gas, Note to entry deleted]

3.4.2

flame detector response time

period of time between the loss of the sensed flame and the signal indicating the absence of flame

[SOURCE: IEC 60730-2-5:2013+A1:2017+A2:2021, 2.3.103]

3.4.3

flame failure lock-out time

period of time between the signal indicating absence of flame and lock-out

[SOURCE: IEC 60730-2-5:2013+A1:2017+A2:2021, 2.3.107]

3.4.4

flame failure re-ignition time

period of time between the signal indicating absence of flame and the signal to energize the ignition device, during which the gas supply is not shut off

[SOURCE: IEC 60730-2-5:2013+A1:2017+A2:2021, 2.3.108 modified, fuel replaced by gas]

3.4.5

start-up lock-out time

period of time between the signal to energize the gas supply means and lock-out

[SOURCE: IEC 60730-2-5:2013+A1:2017+A2:2021, 2.3.125 modified, fuel flow replaced by gas supply]

3.4.6

lock-out

process in which the system goes into one of the following lock-out conditions, following safety shut-down

- **non-volatile lock-out**
condition such that a restart can only be accomplished by a manual **reset** of the system and by no other cause
- **volatile lock-out**
condition such that a restart can be accomplished by either a manual **reset** of the system or by an interruption of the power supply and its subsequent restoration

[SOURCE: IEC 60730-2-5:2013+A1:2017+A2:2021, 2.3.112]

3.4.7

automatic recycle

automatic repetition of the start-up procedure, without manual intervention, following loss of the supervised flame and subsequent gas supply shutoff

[SOURCE: IEC 60730-2-5:2013+A1:2017+A2:2021, 2.3.101]

3.4.8

ignition energy restoration

process by which, after disappearance of the flame signal in the running condition or, where appropriate, in the event of failure to ignite, the ignition device is energized again without the gas supply having been totally interrupted

[SOURCE: EN 30-1-4:2012]

3.4.9

flame simulation

condition which occurs when the flame detector indicates the presence of flame when in reality no flame is present

[SOURCE: IEC 60730-2-5:2013+A1:2017+A2:2021, 2.3.110]

3.5

qualified person

a person with relevant education, training, knowledge and experience to enable him or her to perceive risks and to avoid danger which is related to gas appliances

4 Components in gas cooking appliances

4.1 General

Components in gas cooking appliances shall conform with the applicable ISO- or IEC Standards. Components not covered by these standards shall be tested in the appliance.

4.2 Manual gas shut-off valves (Taps)

Manual gas shut-off valves shall conform with ISO 23551-5:2023.

4.3 Knobs

4.3.1 Design of knobs

The purpose of knobs shall be clearly identifiable in respect to the burner they control. Removable knobs shall be constructed such that installation shall be possible in only the correct orientation.

For a tap operated by rotating, the closing direction shall be clockwise. This does not apply to a combined tap for oven and grill burners.

4.3.2 Marking for knobs

Markings shall be clearly visible, legible and durable. It shall be easy for the user to identify the burner and the setting the markings refer to.

The closed position shall be marked with figure "0", or a full disc or a circle of at least 3 mm in diameter.

The closed position for all knobs shall be the same.

Symbols for the other positions may be as follows:

full rate position:	large flame	
reduced rate position:	small flame	
range of rates:	triangle	
	or	
	scale	1 2 3 4 or 4 3 2 1
position of ignition	stylized star	

Other symbols may be used except letters.

If there is a special position for ignition, it shall be marked e.g. by a stylized star.

4.4 Multifunctional controls

Multifunctional controls shall conform with ISO 23551-8: 2023.

4.5 Thermoelectric flame supervision controls

4.5.1 General

Thermoelectric flame supervision controls shall conform with ISO 23551-6:2014+AMD 1:2019. Its sensing element shall supervise a single burner only.

In the case of a failure of any of the components indispensable to their operation, the supply of gas controlled by the device is cut off automatically and its re-establishment shall require manual intervention.

For measuring the opening time and the extinction delay time the appliance shall be supplied with each of the reference gases that the appliance can use at the corresponding normal pressure.

4.5.2 Opening time

4.5.2.1 Requirement

During the following test the opening time of a hob burner shall be less than 10 s. The opening time of an oven or a grill burner shall be less than 15 s.

4.5.2.2 Test

The appliance shall be in cold conditions. Each burner is lit, and the opening time is measured as the time between the moment the flame appears and the moment when the thermoelectric flame supervision control allows admission of gas to the burner without manual intervention

4.5.3 Extinction delay time

4.5.3.1 Requirement

During the following test the extinction delay time for hob burners shall be less than 90 s. The extinction delay time for an oven or grill burner shall be less than 60 s.

4.5.3.2 Test

The burner is operated at full rate for 20 min and hob burners are equipped with a pan according [5.7](#) and filled with water up to (50 ± 2) mm from the bottom. The extinction delay time is measured between the moment when the flame goes off (e.g. by cutting and immediately restoring the gas supply) and the moment when gas flow to the burner stops due to the action of the thermoelectric flame supervision control.

4.6 Thermostats

Mechanical thermostats for domestic gas cooking appliances shall conform with ISO 23551-9:2015.

Electrical thermostats shall conform with IEC 60730-2-9:2015+A1:2018+A2:2020 and IEC 60335-2-6:2014, 24.101.

4.7 Pressure regulators

4.7.1 General

Pressure regulators shall conform with ISO 23551-2:2018.

A pressure regulator is prohibited for appliances operating with a pressure couple.

4.7.2 Regulation capacity

4.7.2.1 Requirement

Under the test conditions below, the gas rate shall be within $\pm 7,5$ % of the rate obtained at the normal pressure.

4.7.2.2 Tests

Two tests shall be performed using reference gas at ambient temperature.

The gas rate is adjusted as described for Test 1 and Test 2, and then, the pressure is varied between minimum pressure and maximum pressure of the corresponding reference gas (corresponding Table of [Annex A](#)).

4.7.2.2.1 Test 1

For an appliance with several burners, the gas rate corresponds to $2/3$ of the sum of the nominal heat inputs of all the burners, which can function simultaneously. For an appliance with only one burner, the gas rate corresponds to the nominal heat input.

4.7.2.2.2 Test 2

The appliance gas rate is adjusted to $0,08 \text{ m}^3/\text{h}$ for first family gases and to $0,05 \text{ m}^3/\text{h}$ for second family gases, and to $0,02 \text{ m}^3/\text{h}$ for third family gases.

4.8 Automatic shut-off valves

Automatically operated valves shall conform with ISO 23551-1:2012.

If automatic shut-off valves are used to assure the safety shut-down in combination with an automatic burner control system, following requirements apply:

All gas supplies to each burner shall have an automatic shut-off valve system in accordance with a) or b) as follows:

- a) two automatic shut-off valves connected to the gas line in series, one of class C and one of class J;
- b) an automatic shut-off valve class C connected to the gas line in series with a manual gas shut-off valve.

The automatic shut-off valves class C may be common to all burners of the appliance if its failure would not create a hazard.

NOTE The class C valves may be replaced by valves of class B or A. The class J valves may be replaced by valves of class C, B or A.

A strainer shall be fitted at the inlet of any system incorporating automatic shut-off valve(s) to prevent the ingress of foreign matter.

For class C, B or A valve, the maximum diagonal strainer hole dimension shall not be greater than 1,5 mm and a 1 mm pin gauge shall not pass the mesh. The strainer may be integral with the upstream automatic shut-off valve.

If a class J valve is utilised a strainer shall be used such that it does not pass a 0,2 mm pin gauge.

In systems comprising multiple automatic shut-off valves of classes A, B C or J, only one strainer need be fitted, provided it gives adequate protection to all valves.

Where a pressure regulator is fitted upstream of the automatic shut-off valve system, the strainer may be fitted upstream of the pressure regulator.

The operating cycles for automatic shut-off valves are given in Table 4 of ISO 23551-1.

4.9 Injectors and adjusters

4.9.1 General

Air rate adjusters and injectors shall be of metallic material and have a melting point above 500 °C. Additionally they shall be corrosion resistant or have a corrosion resistant finish.

4.9.2 Injectors

It shall only be possible to mount and dismantle an injector with the use of a tool.

Injectors, that are likely to be soiled as a result of cooking, shall be accessible for cleaning. They shall be indelibly marked for identification if, once the appliance is installed, it is possible to dismantle and exchange the injectors.

4.9.3 Air rate adjusters

Air rate adjuster shall be set in the factory and, if necessary, shall only be adjusted by a qualified person.

Air rate adjusters shall be locked. They shall not be unlocked without the aid of a tool.

NOTE Locked in the adjustment position means fixed or immobilized.

4.9.4 Low rate adjusters

Low rate adjusters shall be set and locked in the factory.

Low rate adjusters shall only be adjusted by a qualified person according to the instructions for conversion to various gases.

It shall only be possible to move the adjuster with the use of a tool. Adjusting screws shall be placed so that they cannot fall into the gas passage.

NOTE Locked in the adjustment position means fixed or immobilized.

4.10 Ignition systems

A touchable spark ignition system shall conform with IEC 60335-2-102:2017, 8.101.

It shall withstand 25,000 cycles of operation.

All the components of the ignition device shall be designed to avoid damage or accidental displacement in normal use. The relative position of the ignition device and the burner shall be sufficiently well defined to ensure satisfactory operation of the assembly.

For appliances without automatic burner control systems, in the event of failure of the ignition system for the burner(s) of the appliance, it shall be possible to light the burner(s) concerned with a match after removing, if necessary, a movable part (griddle, bottom of the oven, etc.). This requirement shall not apply to oven burners that are designed specifically to prevent the ignition by manual means. In this case, the manufacturer's instructions for use and maintenance shall state that the ignition by manual means is prohibited.

The electrical safety shall be checked according to IEC 60335-2-102:2017.

4.11 Thermal cut-outs

Thermal cut-outs of the capillary type shall conform with the requirements for type 2 K controls in IEC 60730-2-9:2015+AMD1:2018+AMD2:2020.

4.12 Components for appliances with automatic burner control system (ABCS)

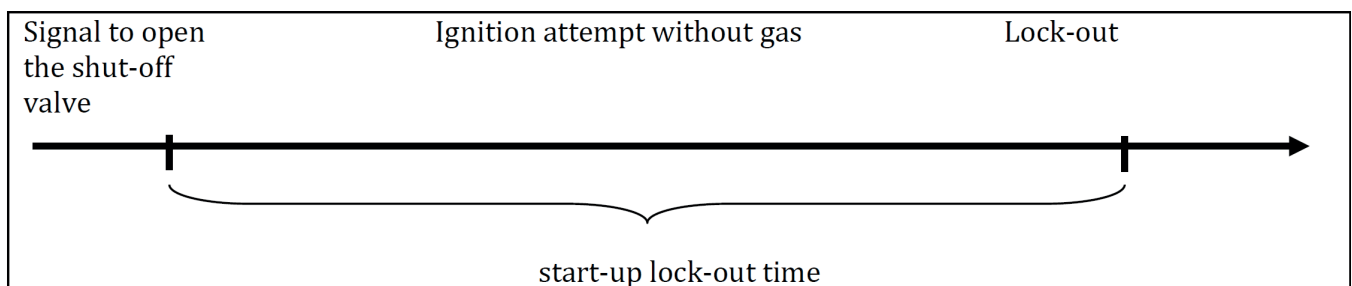
4.12.1 General

Automatic burner control systems shall comply with IEC 60730-2-5:2013+A1:2017+A2:2021 with safety times specified in [Table 1](#):

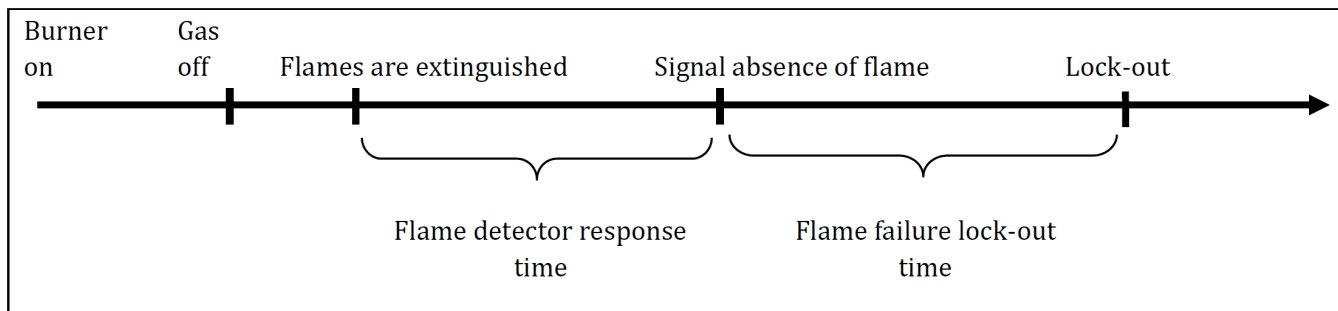
Table 1 — Some examples Operation time and limits for safety times

Operation time-	Hobs	Ovens
for test with heat sensitive FSD	20 min	15 min
Safety time:	Hobs	Ovens
start-up lock-out time	< 60 s	< 60 s
Sum of flame detector response time and flame failure lock-out time	< 10 s	< 3 s
Sum of flame detector response time and flame failure re-ignition time	< 10 s	< 3 s

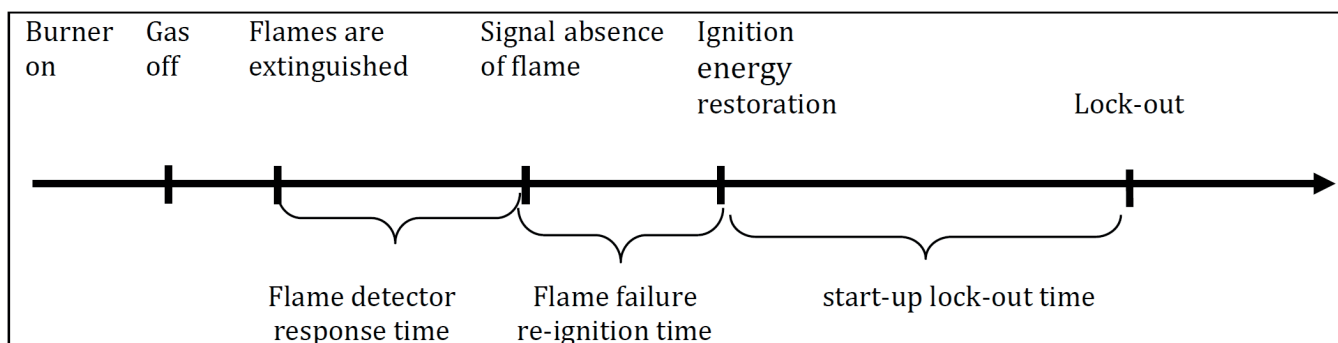
Direct flame establishment:



Flame failure without ignition energy restoration:



Flame failure with ignition energy restoration:



Safety devices which require a non-volatile lockout to occur shall give rise to simultaneous signal to close the two valves.

In case of flame failure on one burner, only the gas supply to this burner may be shut-off.

The functioning of safety devices shall not be overruled by any controlling device

In response to a control device, if the delay between the signals to close the two valves is not greater than 5 s, the signals are considered to be simultaneous.

4.12.2 Flame detection system

Each burner controlled by an ABCS shall be equipped with a flame detector.

When the burner is started from the shut-down condition, the flame detector system shall prevent any ignition attempt or the opening of any automatic shut-off valve if a flame or flame simulation is present.

4.12.2.1 Requirement

The addition of the flame detector response time and the flame failure lock-out time (or flame failure re-ignition time) for each flame detector shall not exceed the times specified in [Table 1](#) and shall be verified by the following test.

4.12.2.2 Test

Each burner having an automatic burner control system is adjusted to its nominal heat input and tested separately as follows.

With the burner control system in the running condition, isolate the gas supply to the burner. Measure the time interval between when the burner flames are extinguished and the signal to lock-out or to start recycle or re-ignition is given.

If the burner has a flame supervision device that is heat sensitive, this test is carried out after the operation time specified in [Table 1](#) with the following settings:

- A hob or surface grill burner being adjusted at a position corresponding to half nominal heat input.
- A thermostat or burner control of an oven or compartment grill burner being adjusted to the position or setting giving the highest temperature at maximum test pressure.

When, following isolation of the gas supply, the burner flames have been extinguished, the gas supply to the burner is restored.

4.12.3 Direct flame establishment

4.12.3.1 Requirement

The burner shall be capable of being ignited directly at its nominal heat input or at any specific ignition position.

The start-up lock-out time shall not exceed 60 s.

The start-up lock-out time shall be verified for each burner having an ABCS under the following test.

4.12.3.2 Test

Shut-off the gas supply to the burner concerned. Attempt to light the burner in accordance with the instructions for use, and measure the time interval between the signal to open and the signal to close (lock-out) the automatic shut-off valve(s) in the event of failure to ignite.

When the ignition device operates with sparks, it shall be energized at or before the signal to open the main gas valve(s) but no later than the moment when gas arrives at the burner. In the case of a hot surface igniter, the ignition device shall be so energized that the ignition source is capable of igniting incoming gas before the main gas valves are opened.

4.12.4 Safety in the event of a failure to ignite

4.12.4.1 For hob and surface grill burners

If the flame has not been detected by the end of the start-up lock-out time, the control system shall cause:

- non-volatile lock-out
- volatile lock-out
- automatic recycle, or
- ignition energy restoration to occur.

Where ignition energy restoration is used, the re-ignition attempt(s) shall finish by the end of the start-up lock-out time (see [Table 1](#)).

If this re-ignition attempt is not successful, volatile or non-volatile lock-out shall result.

4.12.4.2 For oven and compartment grill burner

If the flame has not been detected by the end of the start-up lock-out time, non-volatile lock-out of the burner or system shall occur. In addition, in the instructions for use and maintenance concerning the lighting of the burner shall include a specific instruction to warn the user that if the burner does not light, to wait at least one minute before making a new attempt to light the burner.

4.12.5 Safety in the event of a flame failure

4.12.5.1 For hob and surface grill burners

Flame failure in the running condition shall result in:

- non-volatile lock-out
- volatile lock-out
- automatic recycle, or
- ignition energy restoration to occur.

Where ignition energy restoration is used, the re-ignition attempt(s) shall finish by the end of the start-up lock-out time.

If this re-ignition attempt is not successful, volatile or non-volatile lock-out shall result.

The signal to lock-out or to start recycle or re-ignition shall happen later 10 s after the flame has been extinguished.

4.12.5.2 For oven and compartment grill burner

Flame failure in the running condition shall result in non-volatile lock-out of the burner or system.

4.13 Indirect manually operated burner control

4.13.1 General

Indirect manually operated burner controls shall only be used in combination with an automatic burner control system.

The purpose of indirect manually operated burner controls shall be clearly identifiable with respect to the burners they control.

For a given appliance, all controls controlling the same type of burners shall be of the same type.

4.13.2 Controls having a single closing direction

The control shall have two stops, one in “off” position, and the other at the other end of the travel.

The reduced rate, if it exists, may be obtained:

either:

at the end of the travel remote from the “off” position;

or:

in an intermediate position between the closed and fully opened positions.

4.13.3 Controls having two closing directions

The “off” position shall be provided with means:

- a) that arrest the control in this position when it is turned off from either closing direction, and
- b) that avoid inadvertent movement of the control from the “off” position e.g. by use of suitable detents.

The operation of the burner(s) shall be able to be verified at any time by the user, either by means of visual observation of the flames, or by other indirect means.

When an indirect means of signalling is used (e.g. indicator light), the signalling of the existence of a flame shall not be able to be confused with the signalling of any fault, except for a fault in the functioning of the flame detector itself, which shall manifest itself by an indication of loss of flame.

5 General conditions of test

5.1 Reference conditions

All determined values of this document shall be in accordance with the following reference conditions:

- dry gas
- temperature of 15 °C
- pressure of 101,325 kPa

In this document, only the Gross calorific value (H_g) shall be used.

5.2 Reference and test gases

5.2.1 Characteristics of the test gases

The burners shall be tested with the test gases indicated in [Annex A](#), in the corresponding Table for the countries of destination.

5.2.2 Conditions for producing test gases

The composition of the gases used for the tests shall be as near as possible to those given in [Annex A](#), in the corresponding Table for the countries of destination. The production of these gases shall be in accordance with the following rules:

- the Wobbe index of the gas used shall be within ± 2 % of the value indicated in the Table for the corresponding test gas (this tolerance includes the error of the measuring equipment);
- the constituents of the test gases shall have the minimum degree of purity according to [Annex B, Table B1](#).

5.3 Test pressures

The test pressures, i.e. the static pressure to be applied at the gas inlet connection of the appliance in operation, are given in [Annex A](#), in the corresponding Table for the countries of destination.

5.4 Temperature conditions

The ambient temperature for the tests shall be (20 ± 5) °C. All tests shall be carried out in a substantially draught-free room in which the ambient temperature is maintained during the complete test.

The ambient temperature is measured with an appropriate instrument under the following conditions:

- at a height of (900 ± 50) mm from the floor;
- at a distance of between 1 m and 1,5 m from the appliance;
- using an instrument which is accurate to within $\pm 0,5$ °C.

The instrument shall not be affected by radiation from the appliance.

For the purposes of this document, the burner is considered to be cold, when it meets the specification for ambient temperature. A burner is considered to be hot after 10 minutes of operation at full rate (hot conditions).