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Date: 21 October 2021

Origin: European

Latest date for receipt of comments: 14 December 2021

Project No. 2021/01885

Responsible committee: GSE/35 Gas cooking appliances (domestic)

Interested committees:

Title: Draft BS EN 30-1-4 Domestic cooking appliances burning gas - Safety. Part 1-4: Appliances having one or more burners with an automatic burner control system.

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Template for comments and secretariat observations

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.	

English Version

Domestic cooking appliances burning gas - Safety - Part 1-4: Appliances having one or more burners with an automatic burner control system

Appareils de cuisson domestiques utilisant les combustibles gazeux - Sécurité - Partie 1-4: Appareils comportant un ou plusieurs brûleurs avec système automatique de commande des brûleurs

Haushalt-Kochgeräte für gasförmige Brennstoffe - Sicherheit - Teil 1-4: Geräte mit einem oder mehreren Brenner(n) mit Feuerungsautomat

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 49.

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.

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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.



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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Contents

Page

European foreword.....	5
1 Scope	6
2 Normative references	7
3 Terms and definitions	8
3.1 Additional definitions concerning parts of the appliance.....	8
3.2 Additional definitions concerning appliances having burners with an automatic burner control system.....	9
3.2.1 Definitions concerning the appliance components	9
3.2.2 Definitions concerning adjusting, control and safety devices	9
3.2.3 Definitions concerning the operation of the appliance.....	11
4 Classification.....	14
5 Constructional requirements	14
5.1 General.....	14
5.1.1 Introduction	14
5.1.2 Conversion to different gases	14
5.1.3 Materials.....	14
5.2 Special requirements.....	14
5.2.1 General.....	14
5.2.2 Taps.....	14
5.2.3 Knobs.....	14
5.2.4 Injectors and adjusters	15
5.2.5 Oven thermostats.....	15
5.2.6 Ignition systems.....	15
5.2.7 Flame supervision devices.....	15
5.2.8 Pressure Regulators.....	15
5.2.9 Hobs	16
5.2.10 Accumulation of un-burnt gas	16
5.3 Additional requirements for appliances having one or more burners with an automatic burner control system.....	16
5.3.1 Indirect manually operated burner controls.....	16
5.3.2 Indirect manually operated knobs and touch control pads	18
5.3.3 Verification of the state of operation	18
5.3.4 Thermostats and gas energy regulators.....	19
5.3.5 Combustion products outlets (enclosed covered hob burners).....	19
5.3.6 Multifunctional controls	19
5.3.7 Automatic shut-off valves.....	19
5.3.8 Accumulation of un-burnt gas in the appliance	21
5.3.9 Fans for the provision of combustion air and/or for the evacuation of products of combustion	21
5.4 Additional requirements for burners having automatic burner control systems	22
5.4.1 General.....	22
5.4.2 Burners without a fan for the supply of combustion air and/or for the evacuation of the products of combustion.....	23

5.4.3	Burners with a fan for the supply of combustion air and/or for the evacuation of the products of combustion.....	26
5.5	Additional requirements for appliances with one or more burners that are capable of remote on-site operation	29
5.5.1	Application	29
5.5.2	General	30
5.5.3	Remote on-site operation	30
5.6	Additional requirements for appliances incorporating one or more burners that enable the user to program the delayed start and the end of a cooking cycle	30
6	Operational requirements	31
6.1	General	31
6.1.1	Introduction.....	31
6.1.2	Obtaining the input rates	31
6.1.3	Flame supervision devices	31
6.1.4	Safety of operation	31
6.2	Special requirements for hobs.....	31
6.2.1	General	31
6.2.2	Ignition, cross-lighting and flame stability.....	32
6.2.3	Combustion	32
6.3	Special requirements for ovens and grills.....	32
6.3.1	General	32
6.3.2	Ignition, cross-lighting and flame stability.....	32
6.3.3	Combustion	32
6.4	Additional requirements for appliances having burners with automatic burner control systems	32
6.4.1	Obtaining the input rates.....	32
6.4.2	Safety in the event of failure of thermostats and gas energy regulators.....	33
6.5	Additional requirements for hob burners having automatic burner control systems	34
6.5.1	Ignition, cross-lighting and flame stability.....	34
6.5.2	Combustion	35
6.5.3	Air proving devices (enclosed covered hob burners with a fan for the supply of combustion air and/or for the evacuation of products of combustion)	35
6.6	Additional requirements for oven and grill burners having automatic burner control systems.....	36
6.6.1	Ignition, cross-lighting and flame stability.....	36
6.6.2	Combustion	37
6.6.3	Air proving devices (oven and/or grill burners with a fan for the supply of combustion air and/or for the evacuation of products of combustion)	38
7	Test methods.....	38
7.1	General	38
7.1.1	Introduction.....	38
7.1.2	Reference and test gases	39
7.1.3	Test pressures.....	39
7.1.4	Test procedures	39
7.1.5	Pans and oven and grill accessories	40
7.1.6	Temperature of the oven and grill	40
7.1.7	Appliances having a mains electrical supply	40
7.2	Verification of the constructional characteristics	40
7.2.1	General	40
7.2.2	Strength.....	41
7.2.3	Strength, stability	41
7.2.4	Accumulation of un-burnt gas in the appliance.....	41

7.2.5	Fragmentation test for principal components made from toughened soda-lime glass	41
7.2.6	Appliances with a glass lid having a device for shutting off the gas to the hob burners	41
7.3	Verification of operational characteristics	41
7.3.1	General tests	41
7.3.2	Specific tests for hobs	43
7.3.3	Specific tests for ovens and grills	45
7.4	Verification of the constructional requirements specific to parts of the appliance having burners with an automatic burner control system	46
7.4.1	Accumulation of un-burnt gas in the appliance	46
7.4.2	Manually operated devices (see 5.4.1)	48
7.4.3	Safety times	48
7.4.4	Appliances incorporating a hob having touch controls	48
7.5	Verification of the operational requirements specific to parts of the appliance having burners with an automatic burner control system	49
7.5.1	General tests	49
7.5.2	Specific tests for hobs	52
7.5.3	Specific tests for ovens and grills	63
8	Marking and instructions	72
8.1	Marking	72
8.1.1	General	72
8.1.2	Marking and warnings on the appliance	72
8.1.3	Additional marking and warnings on the appliance	72
8.1.4	Marking and warning on the packaging	72
8.1.5	Additional marking on the packaging	72
8.2	Instructions general	72
8.3	Instructions for installation	73
8.3.1	General	73
8.3.2	Instructions for installation and adjustment	73
8.3.3	Additional instructions for installation	73
8.4	Instructions for use and maintenance	73
Annex A (informative)	National situations	74
Annex B (informative)	Guidelines for extension to other categories	75
Annex C (normative)	Characteristics of the pans required	76
Annex D (normative)	Surface temperature probe (7.3.1.5.3.2)	77
Annex E (normative)	Use of the symbol on the appliance and packaging	78
Annex F (normative)	Fault analysis procedure for assessing the safety of the appliance in the event of failure of any single automatic shut-off valve in the burner control system	79
F.1	Explanatory notes	79
F.2	Procedure	80
F.3	Explanation of decisions taken during assessment of fault	80
Annex G (normative)	Fragmentation requirement for toughened soda-lime glass	82
Annex H (normative)	Example of multi-ring burners and their operating modes	83
Annex ZA (informative)	Relationship between this European Standard and the essential requirements of EU Regulation 2016/426/EU aimed to be covered	84
Bibliography		87

European foreword

This document (prEN 30-1-4:2021) has been prepared by Technical Committee CEN/TC 49 “Gas cooking appliances”, the secretariat of which is held by UNI.

This document is currently submitted to the Enquiry.

This document will supersede EN 30-1-4:2012.

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, which is an integral part of this document.

It is intended to use this document with FprEN 30-1-1:2021, on which the requirements and methods of test for appliances having one or more burners with an automatic burner control system are based. In particular, this document identifies the requirements and methods of test specific to these appliances, which are in addition to, or replace, those given in FprEN 30-1-1:2021.

This present part is intended to be used together with any other part of EN 30-1-x related to “Safety”, whenever the appliances covered by this other part includes a burner with an automatic burner control system.

Requirements relating to ‘Rational use of energy’ are given in other appropriate parts of this document, EN 30-2-x.

Matters relating to quality assurance systems, production testing and certificates of conformity, including those for auxiliary devices, are not dealt with in this document.

NOTE For countries requesting special categories (specified in EN 437:2021), the absence of specific information concerning A.3.3 and A.3.4 implies that the general requirements (see 5.2.4 and 5.1.1) also apply for particular categories.

Other documents covering domestic cooking appliances burning gas are as follows:

- EN 30-1-1, *Domestic cooking appliances burning gas — Part 1-1: Safety — General*;
- EN 30-1-2, *Domestic cooking appliances burning gas — Part 1-2: Safety — Appliances having forced-convection ovens and/or grills*;
- EN 30-1-3, *Domestic cooking appliances burning gas — Part 1-3: Safety — Appliances having a glass ceramic hotplate*;
- EN 30-2-1, *Domestic cooking appliances burning gas — Part 2-1: Rational use of energy — General*;
- EN 30-2-2, *Domestic cooking appliances burning gas — Part 2-2: Rational use of energy — Appliances having forced-convection ovens and /or grills*.

1 Scope

This document specifies the construction and performance characteristics as well as the requirements and methods of test for the safety and marking of domestic cooking appliances, capable of using the combustible gases defined in FprEN 30-1-1:2021 that have one or more burners with an automatic burner control system, referred to in the text as “appliances”.

This document includes specific requirements and methods of test that are applicable to burners having an automatic burner control system, whether or not the appliance is equipped with a fan for the supply of combustion air to, and/or the evacuation of the products of combustion from the burner concerned. These specific requirements and methods of test are only applicable when the burner has an automatic burner control system and do not apply to burners having automatic ignition that fall within the scope of FprEN 30-1-1:2021.

This document is intended to be used in conjunction with FprEN 30-1-1:2021 and, where appropriate, other parts of EN 30-1 covering appliances having:

- forced-convection ovens and/or grills;
- a glass ceramic hob.

This document does not cover all of the safety requirements and methods of test that are specific to forced-convection ovens and/or grills and glass ceramic hobs.

Unless specifically excluded hereafter, this document applies to these appliances or their component parts, whether or not the component parts are independent or incorporated into a single appliance, even if the other heating components of the appliance use electrical energy (e.g. combined gas-electric cookers).

This document includes requirements covering the electrical safety of equipment incorporated in the appliance that is associated with the use of gas. It does not include requirements covering the electrical safety of electrically heated component parts of their associated equipment¹.

This document does not apply to:

- outdoor appliances;
- appliances connected to a combustion products evacuation duct;
- appliances having a pyrolytic gas oven;
- appliances having automatic burner control systems that:
 - have a second safety time (see EN 298:2012), or
 - control one or more burners that incorporate a separate ignition burner;
- appliances having an uncovered burner or a non-enclosed covered burner (see 3.1.1) that utilizes a fan for the supply of its combustion air;
- appliances having enclosed covered burners that are not equipped with an automatic burner control system;
- appliances having one or more burners that are capable of remote operation, unless the burner(s) concerned are:

¹ Refer to the electrical safety rules.

- oven burners equipped with an automatic burner control system, or
- oven burners of time-controlled ovens that are designed for a delayed start without the user being present;
- appliances having one or more burners that are capable of on-sight operation, unless the burner(s) concerned are:
 - oven, grill or hob burners equipped with automatic burner control systems, or
 - oven burners of time-controlled ovens that are designed for a delayed start without the user being present;
- appliances supplied at pressures greater than those defined in 7.1.3;
- appliances equipped with air-gas ratio controls;
- appliances incorporating one or more hob or grill burners that enable the user to program the delayed start of a cooking cycle.

This document does not cover the requirements relating to automatic on-off cycling multi-ring hob burners for which specific requirements are under consideration.

This document does not cover the requirements relating to third family gas cylinders, their regulators and their connection.

This document only covers type testing.

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.

FprEN 30-1-1-;² *Domestic cooking appliances burning gas — Part 1-1: Safety — General*

prEN 30-1-2-;³ *Domestic cooking appliances burning gas — Safety — Part 1-2 — Appliances having forced-convection ovens and/or grills*

EN 30-1-3:2003+A1:2006, *Domestic cooking appliances burning gas - Part 1-3: Safety - Appliances having a glass ceramic hotplate*

EN 88-1:2011+A1:2016, *Pressure regulators and associated safety devices for gas appliances - Part 1: Pressure regulators for inlet pressures up to and including 50 kPa*

EN 126:2012, *Multifunctional controls for gas burning appliances*

EN 161:2011+A3:2013, *Automatic shut-off valves for gas burners and gas appliances*

EN 257:2010, *Mechanical thermostats for gas-burning appliances*

² Under preparation. Stage at time of publication: FprEN 30-1-1:2021.

³ Under preparation. Stage at time of publication: prEN 30-1-2:2021.

EN 298:2012, *Automatic burner control systems for burners and appliances burning gaseous or liquid fuels*

EN 60335-2-6:2015,⁴ *Household and similar electrical appliances - Safety - Part 2-6: Particular requirements for stationary cooking ranges, hobs, ovens and similar appliances*

EN IEC 60730-2-9:2019,⁵ *Automatic electrical controls - Part 2-9: Particular requirements for temperature sensing controls*

3 Terms and definitions

For the purposes of this document, unless specifically modified as described in 3.1, the terms and definitions given in FprEN 30-1-1:2021 and the following 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 <http://www.electropedia.org/>

3.1 Additional definitions concerning parts of the appliance

3.4.101

manually operated burner control

device to isolate the gas supply to a burner and possibly to adjust its thermal function during use

Note 1 to entry: A manually operated burner control may be:

- **direct-acting:** in which case the device is mechanical in operation (e.g. a tap or cock) and the gas flow is controlled directly by manipulation of a knob as defined in FprEN 30-1-1:2021, 3.4.3.1;
- **indirect:** 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).

3.4.102

remote on-site operation

operation by means of a separate hand-held control designed for use only when the appliance is in the same room/space as the user of the control and it is in-sight of the user of the control

Note 1 to entry: Examples of remote communication which are considered to be on-site include but are not limited to:

- NFC (near field communication);
- optical communication with line of sight (infrared rays or visual rays);

⁴ This document is impacted by A1:2020 and A11:2020.

⁵ This document is impacted by A1:2019 and A2:2020.

– hardwired configurations constructed of physical media;

3.2 Additional definitions concerning appliances having burners with an automatic burner control system

3.2.1 Definitions concerning the appliance components

3.2.1.1

combustion circuit

assembly comprising the air supply circuit, the combustion chamber and the products of combustion circuit up to the outlet of the appliance

3.2.1.2

fully pre-mixed gas and air burner

burner in which the gas and a quantity of air, corresponding to at least that theoretically required to achieve complete combustion, are mixed upstream of the burner ports

3.2.2 Definitions concerning adjusting, control and safety devices

3.2.2.1

total air adjuster

device enabling the total air flow required for the burner or, where appropriate, the burners to be set to predetermined value according to the supply conditions

Note 1 to entry: The operation of changing the setting of this device is termed the “adjustment of the total air”.

3.2.2.2

touch control

indirect manually operated burner control actuated by contact or the close proximity of a finger, with little or no movement of the contact surface

3.2.2.3

touch control pad

one of the contact surfaces of a touch control by which it is actuated

3.2.2.4

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.

3.2.2.5

automatic single burner control system

automatic single burner control system comprising at least a single burner 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.

Note 2 to entry: Similarly, the automatic burner control systems for several burners may be in the same housing. In this case the single burner programming units and all elements of the flame detector devices for these burners are so arranged as to provide independent control of each burner.

3.2.2.6

single burner programming unit

programming unit that reacts to signals from control and safety devices, gives control commands, controls the start-up sequence, supervises the burner operation and causes controlled shut-down, and if necessary, safety shut-down and lock-out

Note 1 to entry: The programming unit follows a predetermined sequence of actions and always operates in conjunction with a flame detector device.

3.2.2.7

automatic multi-burner control system

automatic multi-burner control system capable of controlling two or more burners simultaneously

Note 1 to entry: It comprises at least a multi-burner programming unit and all the elements of the flame detector devices for the burners controlled. The various functions of this automatic burner control system may be in one or more housings.

3.2.2.8

multi-burner programming unit

programming unit that reacts to signals from control and safety devices, gives control commands, controls the start-up sequences of the burners, supervises their operation and causes controlled shut-down, and if necessary, safety shut-down and lock-out of the burner or burners

Note 1 to entry: The programming unit follows predetermined sequences of actions and always operates in conjunction with a flame detector device for each of the burners controlled.

Note 2 to entry: According to predetermined sequences it may enable the burner to start up independently, or in combination with other burners, even when one or more burners are already in operation. It supervises their operation independently and causes controlled shut-down, safety shut-down and, if appropriate, lock-out of one or all of the burners under its control.

3.2.2.9

programme

sequence of control operations determined by the programming unit involving switching on, starting up, supervising and switching off the burner

3.2.2.10

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 actual flame sensor, may be assembled in a single housing for use in conjunction with a programming unit.

3.2.2.11

flame signal

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

3.2.2.12

flame simulation

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

3.2.2.13**automatic shut-off valve**

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

3.2.2.14**air proving device**

device that monitors the air provided by a fan and which causes safety shut-down of the burner(s) controlled by the device in the event of there being inadequate combustion air

3.2.2.15**thermal cut-out**

device which during abnormal operation limits the temperature of the controlled part automatically by shutting off the gas supply to the burner or by reducing its heat input, and which is constructed so that its setting cannot be altered by the user

3.2.2.16**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

3.2.2.17**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

3.2.3 Definitions concerning the operation of the appliance**3.2.3.1****start gas rate**

mean volume rate or mass rate during the safety time where this gas rate is limited by design for the purposes of ignition

3.2.3.2**start gas flame**

flame that can only be established at the start gas rate of the burner

3.2.3.3**main flame**

flame established, or capable of being established, at the full-on gas rate of the burner for the purposes of ignition

3.2.3.4**running condition of the system**

either:

condition of the automatic single burner control system in which the burner is in normal operation under the supervision of the single burner programming unit and its flame detector device,

or:

conditions of the automatic multi-burner control system in which one or more burners are in normal operation under the supervision of the multi-burner programming unit and their individual flame detector devices

3.2.3.5

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

Note 1 to entry: This process ends with the restoration of the running condition or, if there is no flame signal at the end of the safety time:

either:

with volatile or non-volatile lock-out of the system,

or:

according to the design of the automatic multi-burner control system, with volatile or non-volatile lock-out of the burner.

3.2.3.6

automatic recycling (of the system)

process by which, following accidental interruption of the operation of the automatic burner control system, loss of flame signal during the running condition or, where appropriate, failure to ignite, the gas supply to all of the burners controlled by the automatic burner control system is interrupted and the complete start sequence is automatically re-initiated

Note 1 to entry: This process ends with the restoration of the running condition or, if there is no flame signal at the end of the safety time, or if the cause of the accidental interruption has not disappeared, with volatile lock-out or non-volatile lock-out of the system.

3.2.3.7

automatic recycling (of the burner)

process within an automatic multi-burner control system by which, following loss of flame signal during the running condition or, where appropriate, failure to ignite, the gas supply to the burner concerned is interrupted and the burner start sequence is automatically re-initiated

Note 1 to entry: This process ends with the restoration of the running condition or, if there is no flame signal at the end of the safety time, with volatile lock-out or non-volatile lock-out of the system or with volatile or non-volatile lock-out of the burner.

3.2.3.8

controlled shut-down

process by which the power to the automatic shut-off valve(s) is removed in order to shut off the supply of gas to a burner under the control of an automatic burner control system within the extinction safety time, e.g. as a result of the action of a controlling function

3.2.3.9

safety shut-down (of the system)

process which is effected immediately following the detection of a fault in the burner control system or the response of a safety limiter or sensor and which shuts off the gas supply to all burners under the control of the automatic burner control system within the extinction safety time by removing the power to all of their automatic shut-off valves

3.2.3.10**safety shut-down (of the burner)**

process which is effected immediately following the response of a safety limiter or sensor and which shuts off the gas supply to the burner concerned within the extinction safety time by removing the power to its automatic shut-off valve(s)

3.2.3.11.1**non-volatile lock-out (of the system)**

safety shut-down condition of the system, such that a restart of the automatic burner control system can only be accomplished by a manual reset of the system and by no other means

3.2.3.11.2**volatile lock-out (of the system)**

safety shut-down condition of the system, such that a restart of the automatic burner control system can only be accomplished by either the manual reset of the system, or an interruption of the electrical supply and its subsequent restoration

3.2.3.11.3**non-volatile lock-out (of the burner)**

safety shut-down condition of a burner, such that a restart of the burner can only be accomplished by a manual reset of the burner control and by no other means

3.2.3.11.4**volatile lock-out (of the burner)**

safety shut-down condition of a burner, such that a restart of the burner can only be accomplished by either the manual reset of the burner control, or an interruption of the electrical supply and its subsequent restoration

3.2.3.12**purge**

forced introduction of air through the combustion chamber and the products of combustion circuit in order to displace any remaining gas/air mixture and/or products of combustion:

- pre-purge: the purge which takes place between the start signal and the energising of the ignition device;
- post-purge: the purge that takes place immediately following shut-down

3.2.3.13**safety time**

interval between the ignition burner gas valve, the start gas valve or main gas valve, as applicable, being energized and the ignition burner gas valve, start gas valve or main gas valve, as applicable, being de-energized if the flame detector signals the absence of a flame at the end of this interval

3.2.3.14**extinction safety time**

time interval between extinction of the supervised flame and the moment when the signal for valve closure is given to shut off the gas supply to the burner

4 Classification

The classification given in FprEN 30-1-1:2021, Clause 4 applies.

5 Constructional requirements

5.1 General

5.1.1 Introduction

Unless specifically modified as described hereafter, the appliances shall comply with the requirements of FprEN 30-1-1:2021, 5.1 and all its subclauses which are applicable to them, any verifications in the form of tests being carried out in accordance with Clause 7, and not in accordance with the corresponding clause of FprEN 30-1-1:2021.

The appliance shall also comply with the additional requirements given in 5.3.

NOTE This section of the document does not include all of the constructional requirements for appliances having forced-convection ovens and/or grills or glass ceramic hobs. Additional constructional requirements are given in prEN 30-1-2:2021 and EN 30-1-3:2003+A1:2006 respectively.

5.1.2 Conversion to different gases

FprEN 30-1-1:2021, 5.1.1 and all its subclauses shall apply with the following modification:

All requirements concerning adjustment of primary air shall also apply to total air adjusters.

5.1.3 Materials

FprEN 30-1-1:2021, 5.1.2 and all its subclauses shall apply.

5.2 Special requirements

5.2.1 General

Unless specifically modified as described hereafter, the appliance shall comply with the requirements of FprEN 30-1-1:2021, 5.2 which are applicable to them, any verifications in the form of tests being carried out in accordance with Clause 7, and not in accordance with the corresponding clause of FprEN 30-1-1:2021.

The appliance shall also comply with the additional requirements given in 5.4 and 5.5.

NOTE This section of the document does not include all of the constructional requirements for appliances having forced convection ovens and/or grills or glass ceramic hobs. Additional constructional requirements are given in prEN 30-1-2:2021 and EN 30-1-3:2003+A1:2006 respectively.

5.2.2 Taps

FprEN 30-1-1:2021, 5.2.1 shall apply to all direct-acting manually operated burner controls. Requirements for indirect manually operated burner controls are given in 5.3.1.

5.2.3 Knobs

FprEN 30-1-1:2021, 5.2.2 shall apply to knobs for all direct-acting manually operated burner controls. Requirements for indirect manually operated burner knobs and for touch controls are given in 5.3.2.

5.2.4 Injectors and adjusters

FprEN 30-1-1:2021, 5.2.3 shall apply with the following modification:

All requirements concerning air rate adjusters and primary air adjusters shall also apply to total air adjusters.

5.2.5 Oven thermostats

FprEN 30-1-1:2021, 5.2.4 shall apply where the oven burner is not equipped with an automatic burner control system. Requirements for oven burners having an automatic burner control system are given in 5.3.3.

5.2.6 Ignition systems

FprEN 30-1-1:2021, 5.2.5 is applicable with the following addition:

For burners provided with automatic control system and of the following types:

- a) uncovered hob burners;
- b) temporary and permanent non-enclosed covered burners and griddles;
- c) burners of grills without a compartment door, or grills for which the gas supply to the burner is only possible when the compartment door is open,

It shall be possible to light the burner(s) with a match unless the instructions for use and maintenance state that ignition by means of a match is prohibited.

The ignition system shall meet the requirements of 6.2.2 and 6.3.2 or 6.5.1 and 6.6.1 as appropriate.

5.2.7 Flame supervision devices

FprEN 30-1-1:2021, 5.2.6 is only applicable to burners not equipped with an automatic burner control system. Requirements for burners having automatic burner control systems are given in 5.4.

5.2.8 Pressure Regulators

FprEN 30-1-1:2021, 5.2.7 shall be replaced with the following:

Pressure regulators shall comply with the requirements of EN 88-1:2011+A1:2016.

Appliances of categories having the index 2_{E+} or 3_{+} may have an appliance regulator if this is not operational within the range of the two normal pressures of these pressure couples.

In other cases, the governing function is optional.

Where a regulator is used, the appliance shall have a pressure test point downstream of the regulator. The pressure test point shall have an external diameter of 9 (0/- 0, 5) mm and a useful length of at least 10 mm to allow connection of a rubber tube. At least one part of the orifice of the pressure test point shall have a diameter not exceeding 1 mm.

5.2.9 Hobs

5.2.9.1 General

FprEN 30-1-1:2021, 5.2.8, shall apply, with the following modification, to all hobs except glass ceramic hobs⁶.

5.2.9.2 Covered burners and griddles

5.2.8.2.2 of FprEN 30-1-1:2021 shall be replaced by the following:

Non-enclosed covered burners and griddles may be permanent or temporary. When a non-enclosed covered burner or griddle is temporary, the plate shall be removable and shall be supplied with the appliance.

Correct replacement of the removable plate or griddle on the burner for which it is intended shall be easy and obvious. The removable plate or griddle shall be stable when in its correct position.

Griddles shall be designed such that any greases produced in cooking cannot spill onto the burner or onto parts not intended for this purpose.

5.2.10 Accumulation of un-burnt gas

FprEN 30-1-1:2021, 5.2.12 shall apply to parts of the appliance having burners not equipped with automatic burner control systems. Requirements for parts of the appliance having burners equipped with automatic burner control systems are given in 5.3.8.

5.3 Additional requirements for appliances having one or more burners with an automatic burner control system

5.3.1 Indirect manually operated burner controls

5.3.1.1 General

These controls shall only be used with burners having an automatic burner control system.

5.3.1.2 Controls operated by rotation or with a sliding action

5.3.1.2.1 General

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

— with the reduced rate, if this exists:

either:

at the end of the travel or between the closed and full on positions for controls having a single closing direction;

or:

for rotating controls with two closing directions, positioned such that the same turning direction is used when turning from the full-on positions to the reduced rate positions;

— with all controls having two closing directions or with all having the same single closing direction.

NOTE This requirement does apply to combined oven and grill controls.

⁶ Additional requirements for glass ceramic hotplates are given in EN 30-1-3:2003+A1:2006.

5.3.1.2.2 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.

5.3.1.2.3 Controls having two closing directions

The “off” position shall be provided with means:

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

5.3.1.2.4 Oven and grill controls

The following requirements shall apply when an oven and grill are situated in the same compartment and the oven or grill burner is not intended to be operated at the same time as the other burner, or electric heating element, in the compartment.

If the oven and grill have a combined control, this shall be so designed that simultaneous operation of oven and grill is not possible and that switching from operation of the oven to the grill, and vice versa, is only possible after moving the control through the “off” position. In addition, the “off” position shall be provided with means complying with the requirements of 5.3.1.2.3.

If the oven and grill have separate controls, an interlock device shall be incorporated that prevents simultaneous operation of the oven and grill.

5.3.1.3 Touch controls

The touch controls for a particular burner shall be provided with sufficient touch pads to control the operation of the burner. These shall be so designed and arranged that the operation of the burner is easy and obvious.

The touch controls shall be designed in such a way that at least one of the touch pads only requires a single manual action to cause the closure of the gas supply to the burner. The closure of the gas supply shall occur in not more than 1 s after this manual action.

The touch controls shall be so designed that it requires at least two distinct manual actions to initiate the ignition sequence for the burner. However, additional burners may be ignited by a single manual operation. In this case, 1 min after all the burners have been turned off, two manual operations are required to re-initiate the ignition sequence for one burner.

NOTE Two touches of the same touch pad are not considered as two distinct actions.

If the thermal function of the burner can be varied, the touch controls shall be so designed that it is easy to increase or decrease the thermal function.

When an oven and grill are situated in the same compartment and the oven or grill burner is not intended to be operated at the same time as the other burner, or electric heating element, in the compartment, their touch controls shall be so designed that simultaneous operation is not possible.

When an appliance incorporates a hob having touch controls, the hob shall be so constructed that inadvertent operation of the touch controls for any hob burner is unlikely as a result of spillage of liquids, including that caused by a vessel boiling over, or from a damp cloth being placed on the control panel. This requirement is verified in accordance with the method of test described in 7.4.4.

5.3.2 Indirect manually operated knobs and touch control pads

5.3.2.1 Handles operated by rotation or with a sliding action

5.3.2.1.1 Design

The purpose of handles shall be clearly identifiable with respect to the burners they control. There shall not be any risk of confusion with the control for another energy.

Knobs shall be so arranged relative to one another, and with respect to knobs for any other energy, that the movement of one handle does not cause inadvertent movement of an adjacent handle.

Knobs shall be so designed that they can neither be fitted in the wrong position nor move by themselves.

Knobs shall not be interchangeable if this leads to a risk of confusion between the energy controlled, the closing direction, the operating positions and the “off” position.

5.3.2.1.2 Marking

The requirements of FprEN 30-1-1:2021, 5.2.2.2 shall apply.

5.3.2.2 Touch control pads

5.3.2.2.1 Design

The purpose of touch control pads shall be clearly identifiable with respect to the burners they control. There shall not be any risk of confusion with the control for another energy, nor with other direct and indirect manually operated burner controls.

Touch control pads shall be so arranged relative to one another, with respect to the touch control pads of another burner, and with respect to those for any other energy, that the manual operation of one touch pad does not cause inadvertent operation of an adjacent touch pad.

Touch control pads shall not be interchangeable if this leads to a risk of confusion between the energy controlled, the closing direction, the correct operating status and the “off” condition.

5.3.2.2.2 Marking

The touch control pad enabling rapid extinction of the burner in accordance with the requirements of 5.3.1.3, shall be identified by a symbol, or equivalent indication, such that it cannot be confused with any other touch control pad for the burner.

Marking and/or other forms of indication (e.g. indicator lights) shall ensure that it is evident whether the burner is in operation or not.

If the thermal function of the burner can be varied, indicators shall be used in such a way as to ensure that the current operating status of the burner, and the means of increasing or decreasing the thermal function, are obvious.

5.3.3 Verification of the state of operation

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.

In the case of mirrors, or viewing ports, etc., they shall be capable of retaining their optical properties.

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.

Where the appliance is equipped with fault indicators, these shall be so designed and arranged that the indication of a fault would not cause confusion with the indication of any operating conditions.

In all cases, indicators intended for the user shall be clearly visible, and their purpose explained, without ambiguity, in the instructions for use and maintenance.

5.3.4 Thermostats and gas energy regulators

Where the thermostat is covered by the scope of EN 257:2010, the requirements of EN 257:2010 shall be applied.

When the burner is controlled by a user-operated electrical thermostat (high-low or on-off) or a gas energy regulator, it shall comply with the type 1 requirements of EN IEC 60730-2-9:2019.

When an oven is controlled by a thermostat, the positions of the thermostat knob shall be marked in such a way that it is easy to identify the closed position, if there is only a single knob, and at least the positions corresponding to the minimum and maximum thermal functions. If the thermostat is operated by touch controls, indicators shall be used in such a way as to ensure that the current operating status of the burner, and the means of increasing or decreasing the thermal function, are obvious.

When a hob burner is controlled by a thermostat, the positions of the thermostat knob shall be marked in such a way that it is easy to identify:

- the closed position, if there is only a single knob,
- the various settings of the control,
- and the direction in which to manipulate the knob to increase or decrease the thermal function of the burner.

If the thermostat is operated by touch controls, indicators shall be used in such a way as to ensure that the current operating status of the burner, and the means of increasing or decreasing the thermal function, are obvious.

If the appliance incorporates a thermal cut-out to protect the appliance in the event of failure of the normal means of control, it shall comply with the type 2 K requirements of EN IEC 60730-2-9:2019.

5.3.5 Combustion products outlets (enclosed covered hob burners)

The final outlet for the products of combustion shall be designed so that accidental obstruction by pans placed on the hob is either not possible or does not give rise to a CO concentration in the products of combustion of more than 0,10 % by volume, 20 min after ignition under the test conditions of 7.5.2.2.5.

5.3.6 Multifunctional controls

Any multifunctional control shall comply with the requirements of EN 126:2012.

5.3.7 Automatic shut-off valves

5.3.7.1 General requirements

Automatic shut-off valves shall comply with the requirements of EN 161:2011+A3:2013.

The class C valves specified in 5.3.7.2 may be replaced by valves of class B or A. The class J valves specified in 5.3.7.2 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) of class A, B or C to prevent the ingress of foreign matter. The maximum strainer hole dimension shall not be greater than 1,5 mm and the mesh shall not pass a 1 mm pin gauge. The strainer may be integral with the upstream automatic shut-off valve.

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.

If a class J valve is utilized a strainer shall be used such that it does not pass a 0,2 mm pin gauge. This strainer shall be fitted upstream of the valve.

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

If automatic shut-off valves are used in conjunction with an on-off thermostat or gas energy regulator to control the thermal function of a burner by means of on-off cycling, the valve, or valves, that are cycled on and off for this purpose shall have undergone appropriate testing in order to verify that they are capable of functioning safely after 10^6 on-off cycles.

5.3.7.2 Application

5.3.7.2.1 Burners with a start gas flame

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

- a) automatic shut-off valves connected to the gas line in series, of a class according to Table 1 or 2 as appropriate;
- b) a valve system other than that specified in Table 1, providing that it can be verified by application of the fault analysis procedure given in Annex F that failure of any single shut-off valve in this system would not create a hazard.

If having utilized the fault analysis procedure given in Annex F, only a single automatic shut-off valve is found to be necessary, this valve shall be of at least class C.

5.3.7.2.2 Appliances with direct main flame ignition

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

- a) automatic shut-off valves connected to the gas line in series of a class according to Table 1 or 2 as appropriate;
- b) a valve system other than that specified in Table 1, providing that it can be verified by application of the fault analysis procedure given in Annex F that failure of any single shut-off valve in this system would not create a hazard.

If having utilized the fault analysis procedure given in Annex F, only a single automatic shut-off valve is found to be necessary, this valve shall be of at least class C.

Table 1 — Minimum valving requirements for burners without a fan for the supply of combustion air and/or for the evacuation of products of combustion

Main gas valves required ^a	Start-gas valves required
C + J	C ^b + J ^c
^a In the case of direct main flame ignition only the valves listed in this column are required. ^b This valve may be the upstream class C valve controlling the main burner gas supply. ^c This valve is not required if the start gas heat input does not exceed 0,6 kW and the requirements of 5.3.8 are met.	

Table 2 — Minimum valving requirements for burners with a fan for the supply of combustion air and/or for the evacuation of products of combustion

Main gas valves required ^a	Start-gas valves required
C + J	C ^b + J ^c
^a In the case of direct main flame ignition only the valves listed in this column are required. ^b This valve may be the valve controlling the main gas supply. ^c This valve is not required if all of the following requirements are met: - the start gas heat input is 10 % or below the main gas heat input; - the appliance is not capable of burning 3rd family gases; - the pre-purge gives at least 5 volumes changes of the combustion circuit.	

5.3.8 Accumulation of un-burnt gas in the appliance

Any appliance shall be so constructed that gas release during ignition and re-ignition and after flame extinction is sufficiently limited in order to avoid a dangerous accumulation of un-burnt gas in the appliance.

This requirement is deemed to be satisfied where any release of gas from the burner will not create a dangerous accumulation of un-burnt gas in the appliance, for example:

- uncovered hob burners;
- burners of grills without a compartment door, or grills for which the gas supply to the burner is only possible when its compartment door is open.

For other burners, it shall be verified under the conditions given in 7.4.1 and 7.5.2.1.5 or 7.5.3.1.11 as appropriate that any accumulation of un-burnt gas in the appliance is not dangerous.

5.3.9 Fans for the provision of combustion air and/or for the evacuation of products of combustion

The moving parts of the fan shall be positioned or protected such that in normal use appropriate protection is provided for persons against accidents, in accordance with the requirements of EN 60335-2-6:2015.

5.4 Additional requirements for burners having automatic burner control systems

5.4.1 General

Automatic single burner and multi-burner control systems shall comply with the following requirements of EN 298:2012, even if the automatic burner control system is designed for use with a heat sensitive flame supervision device:

- Clauses 4, 5 and 6;
- all subclauses of Clause 7, except 7.101.2.5, 7.101.2.9, 7.101.2.10, 7.101.3.3, 7.101.3.4, 7.101.3.5, 7.101.3.7 and 7.101.3.8, 7.101.3.10 and 7.101.4.3
- Clauses 8 and 9.

In addition, the control system shall be in accordance with the requirements of this document which determine that it is suitable for its application.

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

The operation of push buttons, switches, etc., incorrectly or out of sequence shall not adversely affect the safety of the automatic burner control system.

In particular, under the test conditions described in 7.4.2, the rapid (on and off) operation of any start/stop devices shall not set up a hazardous condition.

If the thermal function of the burner is controlled by on-off cycling it is permitted that only one of the main gas automatic shut-off valves is closed when the burner is functioning normally under on-off cycling control.

NOTE The various safety times and extinction safety times specified in the following clauses are summarized in Table 3.

Table 3 — Safety times

Burners	Safety time	Extinction safety time
Ovens, Grills (that are capable of being ignited with the door closed), Enclosed covered hob burners.	As specified in the technical documentation but not exceeding 60 s.	≤ 3 s
Uncovered hob burners, Non-enclosed covered burners, Grills without doors, Grills (that are not capable of being ignited with the door closed).		≤ 10 s

5.4.2 Burners without a fan for the supply of combustion air and/or for the evacuation of the products of combustion

5.4.2.1 Ovens, grills that are capable of being ignited with the door closed, and enclosed covered hob burners

5.4.2.1.1 Flame detector system

Each burner shall be equipped with a flame detector system complying with the requirements of 5.4.1.

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 simulating condition is present.

The extinction safety time for the flame detector system shall not be more than 3 s. This shall be verified under the test conditions given in 7.4.3.2.

5.4.2.1.2 Start gas flame establishment

5.4.2.1.2.1 General

In this system, the start gas flame shall be established at the main burner.

The start gas heat input shall not exceed 0,6 kW.

Where the gas supply for the start gas flame is taken from between the two main gas automatic shut-off valves,

either:

- a) a means shall be provided to prove that the downstream main gas automatic shut-off has closed before ignition is attempted;

or:

- b) the ignition shall be safe under the conditions of 7.5.2.1.5 or 7.5.3.1.12 as appropriate.

The maximum safety time shall be specified in the technical documentation and it shall not exceed 60 s. This shall be verified under the test conditions given in 7.4.3.1 (see also 5.3.8 and 6.5.1 or 6.6.1 as appropriate).

When the ignition device operates with sparks, it shall be energized at or before the signal to open the start 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 start gas valves are opened.

5.4.2.1.2.2 Safety in the event of failure to ignite

If the start gas flame has not been detected by the end of the safety time, non-volatile lock-out of the burner or system shall occur, or, providing that the requirements of 5.3.8 are met, with either of the following occurring:

- automatic recycling of the burner or system;
- ignition energy restoration.

Where ignition energy restoration is used, the re-ignition attempt(s) shall commence within the delay period specified in the technical documentation and finish:

- by the end of the safety time where the gas rate during the re-ignition is no higher than that normally authorized for ignition;
- by the end of the extinction safety time, if the gas rate during re-ignition exceeds that normally authorized for ignition.

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

The system shall be so designed that the supply of gas to the burner at the full main flame rate shall only be possible after the start gas flame has been detected.

5.4.2.1.2.3 Safety in the event of flame failure

Flame failure in the running condition shall result in non-volatile lock-out of the burner or system, or, providing that the requirements of 5.3.8 are met, automatic recycling of the burner or system or ignition energy restoration.

Where ignition energy restoration is used, the re-ignition attempt(s) shall commence within the delay period specified in the technical documentation and finish:

- by the end of the safety time where the gas rate during the re-ignition is no higher than that normally authorized for ignition;
- by the end of the extinction safety time, if the gas rate during re-ignition exceeds that normally authorized for ignition.

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

5.4.2.1.3 Direct main flame establishment

5.4.2.1.3.1 General

In this system the burner is capable of being ignited directly at its nominal heat input.

The maximum safety time shall be specified in the technical documentation, it shall not exceed 60 s. This shall be verified under the test conditions given in 7.4.3.1 (see also 5.3.8 and 6.5.1 or 6.6.1 as appropriate).

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.

5.4.2.1.3.2 Safety in the event of failure to ignite

If the flame has not been detected by the end of the safety time, non-volatile lock-out of the burner or system shall occur. In addition, the instructions for use and maintenance shall, in the instructions concerning the lighting of the burner, 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.

5.4.2.1.3.3 Safety in the event of flame failure

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

5.4.2.2 Uncovered hob burners, non-enclosed covered burners, grills without doors and grills that are not capable of being ignited with the door closed⁷

5.4.2.2.1 Flame detector system

Each burner shall be equipped with a flame detector system complying with the requirements of 5.4.1.

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 simulating condition is present.

The extinction safety time for the flame detector system shall not be more than 10 s. This shall be verified under the test conditions given in 7.4.3.2.

5.4.2.2.2 Direct main flame establishment

In this system, the burner is capable of being ignited directly at its nominal heat input.

The maximum safety time shall be specified in the technical documentation and it shall not exceed 60 s. This shall be verified under the test conditions given in 7.4.3.1 (see also 5.3.8 and 6.5.1 or 6.6.1 as appropriate).

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.

5.4.2.2.3 Safety in the event of failure to ignite

If the flame has not been detected by the end of the safety time, the control system shall cause:

- non-volatile lock-out of the burner or system,
- volatile lock-out of the burner or system,
- automatic recycling of the burner or system, or
- ignition energy restoration to occur.

Where ignition energy restoration is used, the re-ignition attempt(s) shall commence within the delay period specified in the technical documentation and finish by the end of the safety time.

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

5.4.2.2.4 Safety in the event of flame failure

Flame failure in the running condition shall result in:

- non-volatile lock-out of the burner or system,
- volatile lock-out of the burner or system,
- automatic recycling of the burner or system, or
- ignition energy restoration.

⁷ Requirements have not been included for controls systems utilising start gas flame establishment, as the use of such systems for these burners is unlikely.