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Gas heated catering equipment - Part 1: General safety rules

Großküchengeräte für gasförmige Brennstoffe - Teil 1: Allgemeine Sicherheitsanforderungen

Appareils de cuisine professionnelle utilisant les combustibles gazeux - Partie 1: Règles générales de sécurité

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ICS:

97.040.20	Štedilniki, delovni pulti, pečice in podobni aparati	Cooking ranges, working tables, ovens and similar appliances

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EUROPEAN STANDARD

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

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Foreword

This document (EN 203-1:2014) has been prepared by Technical Committee CEN/TC 106 “Gas heated catering equipment”, the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2014 and conflicting national standards shall be withdrawn at the latest by August 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes EN 203-1:2005+A1:2008.

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.

Questions relating to quality assurance systems, manufacturing tests and certificates of conformity of ancillary devices in particular, are not covered by this document.

This European Standard constitutes Part 1 of EN 203 *Gas heated catering equipment*. It states the definitions, the requirements of construction and performance, the test requirements, the requirements of marking applicable to all professional catering equipment mainly on matters of safety. The particular requirements relative to safety and rational use of energy for each specific type of appliance are the subjects of Part 2: *Specific requirements*. The particular requirements relative to materials and parts in contact with food and other sanitary aspects are the subjects of Part 3: *Materials and parts in contact with food and other sanitary aspects*.

The main changes compared to the former version are the following:

— forbid the use of needle taps;

— addition of requirements for regulated appliances;

— declaration and checking of a minimum rate;

— better definition of normal and abnormal operation;

— requirement on TSA for automatic burners;

— measurement of TSE;

— information on LPG cylinders and tubes and flexible hoses;

— clarification on the fact that doors are not working surfaces;

— addition of sequential burners;

— reference to national regulation for connection to water network.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece,

Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies the general requirements and the constructional and operating characteristics relating to safety[1)], marking, and the associated test methods for gas heated commercial catering and bakery appliances.

The specific requirements are given in Part 2.

Requirements on materials and parts in contact with food and other sanitary aspects are given in Part 3.

Only appliances of types A_1, A_2, A_3, B_1 and B_2, as defined in Clause 4, are considered in this European Standard.

This European Standard applies to all professional cooking and bakery appliances using gas for preparing food and drink.

Only the net calorific value (H_i) and net Wobbe number (W_i) are used.

Annex C, informative, lists the main types of equipment entering into the field of application of this European Standard.

This European Standard does not deal with rational use of energy. This aspect is mentioned in 6.10 only for the coherency with the associated Part 2 (clauses numbering) and to mention that if no Part 2 exists for a specific product, rational use of energy should however be considered.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 88 (all parts), *Pressure regulators and associated safety devices for gas appliances*

EN 125, *Flame supervision devices for gas burning appliances - Thermoelectric flame supervision devices*

EN 126, *Multifunctional controls for gas burning appliances*

EN 161, *Automatic shut-off valves for gas burners and gas appliances*

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

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

EN 437:2003+A1:2009, *Test gases - Test pressures - Appliance categories*

EN 1106, *Manually operated taps for gas burning appliances*

EN 10226-1, *Pipe threads where pressure tight joints are made on the threads - Part 1: Taper external threads and parallel internal threads - Dimensions, tolerances and designation*

1) The term "safety" includes not only the safety of the appliance gas line but also that of the overall cooking appliance during its normal use in catering.

EN 10226-2, *Pipe threads where pressure tight joints are made on the threads - Part 2: Taper external threads and taper internal threads - Dimensions, tolerances and designation*

EN 60335-1:2002, *Household and similar electrical appliances – Safety – Part 1: General requirements (IEC 60335-1:2001, modified)*

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

EN 60730-2-9, *Automatic electrical controls for household and similar use – Part 2-9: Particular requirements for temperature sensing controls (IEC 60730-2-9)*

EN ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation (ISO 228-1)*

ISO 301, *Zinc alloy ingots intended for castings*

3 Terms and definitions

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

3.1 Terminology referring to gases and pressures

3.1.1
reference conditions
15 °C, 1 013,25 mbar

3.1.2
units
calorific value and Wobbe number: (MJ/m^3)

Note 1 to entry: Test pressures: 1 mbar = 10^2 Pa.

3.1.3
gas supply pressure
p
difference between the static pressure measured at the inlet connection of the appliance, with the appliance in operation, and atmospheric pressure

Note 1 to entry: Gas supply pressure is expressed in millibars (mbar).

3.1.4
relative density
d
ratio of the masses of equal volumes of dry gas and dry air under the same conditions of temperature and pressure: 15 °C or 0 °C and 1 013,25 mbar

[SOURCE: EN 437:2003+A1:2009, 3.10]

3.1.5
calorific value
quantity of heat produced by the complete combustion, at a constant pressure equal to 1 013,25 mbar, of a unit volume or mass of gas, the constituents of the combustible mixture being taken at reference conditions and the products of combustion being brought back to the same conditions

Note 1 to entry: A distinction is made between:

— the gross calorific value H_s: the water produced by combustion is assumed to be condensed;

— the net calorific value H_i: the water produced by combustion is assumed to be in the vapour state.

Note 2 to entry: The calorific value is expressed:

— either in megajoules per cubic metre (MJ/m^3) of dry gas under the reference conditions;

— or in megajoules per kilogram (MJ/kg) of dry gas.

[SOURCE: EN 437:2003+A1:2009, 3.11, modified – added a Note 1 to entry]

3.1.6
Wobbe index
gross Wobbe index W_s; net Wobbe index W_i
ratio of the calorific value of a gas per unit volume and the square root of its relative density under the same reference conditions

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

Note 2 to entry: The Wobbe indices are expressed:

— either in megajoules per cubic metre (MJ/m^3) of dry gas under the reference conditions;

— or in megajoules per kilogram (MJ/kg) of dry gas.

[SOURCE: EN 437:2003+A1:2009, 3.12, modified – added a Note 1 to entry]

3.2 General terminology referring to appliance design

3.2.1 Terminology referring to the gas circuit

3.2.1.1
gas circuit
part of an appliance between the gas inlet connection and the burner(s) which conveys or contains the gas

3.2.1.2
inlet connection
part of the appliance which is intended to be connected to the gas supply

3.2.1.3
mechanical soundness joint (or mechanical means of obtaining soundness)
assembly of several parts, generally metallic, which achieves soundness by use of mechanical means such as metal-to-metal joints, toroidal sealing rings (O rings) or flat joints

3.2.1.4
restrictor or calibrated orifice
device with one or more orifices that is placed in the path of the gas flow between the appliance inlet connection and the burner so as to create a pressure drop, and thus reduce the gas pressure at the burner to a predetermined value for a given supply pressure and rate

3.2.1.5
gas rate adjuster
component which allows the gas input to each burner to be set at a predetermined value according to supply conditions

Note 1 to entry: Adjustment may be continuous (screw adjuster) or discontinuous (changing restrictors).

Note 2 to entry: The adjusting device of an adjustable regulator is regarded as a gas rate adjuster.

Note 3 to entry: The operation of setting this device is known as “setting the gas rate”.

3.2.1.6
gas rate control
tap or equivalent component which allows the gas supply to one or more burners to be opened or closed, and possibly, the burner or burners to be adjusted to a gas input lower than the nominal rate

3.2.1.7
touch control
indirect manual burner control resulting from finger contact or light touch, with or without movement of the contact surface

3.2.1.8
indirect control
control that commands a shut-off or gas regulating device via some auxiliary energy (e.g. electric, pneumatic, etc.)

3.2.1.9
primary aeration adjuster
device which allows the aeration of a burner to be set at a desired value, according to the supply conditions

Note 1 to entry: The operation of changing the setting of the device is called “adjusting the primary aeration”.

3.2.1.10
injector
component which admits gas into an atmospheric burner

3.2.1.11
heat bearing fluid
intermediary fluid that indirectly conveys the heat from a burner to the food or cooking container

3.2.2 Terminology referring to the burner

3.2.2.1
atmospheric induction burner
burner in which part of the air necessary for combustion, called primary air, is entrained by the gas flow and is mixed upstream of the burner

Note 1 to entry: The remainder of the air, called secondary air, is taken up downstream of the burner.

3.2.2.2
main burner
burner which affects the heating function of the appliance and is often called simply a “burner”

3.2.2.3
auxiliary burner
burner which allows, by means of an ignition burner or pilot, ignition of a main burner

3.2.2.4
ignition burner or pilot
burner intended to ignite the main burner

Note 1 to entry: If a burner operates independently of the main burners, it is called a “pilot”.

3.2.2.5
alternating ignition burner
ignition burner which goes off as soon as the main burner is ignited and is ignited from the main burner just before the main burner is extinguished

3.2.2.6
forced draught burner
burner in which the combustion air is introduced by means of a fan

3.2.2.7
pre-mixed burner
burner in which the gas and at least the quantity of air necessary for complete combustion is pre-mixed before the burner ports

3.2.3
purging
act of forcing air into the combustion circuit to expel any remaining gas/air mixture or products of combustion

Note 1 to entry: Pre-purging is a purging that takes place between the starting demand and the activation of the ignition device.

3.2.4
control device for aeration or evacuation of combustion products
device which causes shut-down in the event of abnormal aeration or combustion products evacuation conditions

3.2.5
air/gas ratio device
device which automatically adjusts the combustion air flow to the gas flow and vice versa

3.2.6 Terminology referring to the combustion circuit

3.2.6.1
combustion circuit
circuit including the air supply duct, if it exists, the combustion chamber, the heat exchanger and the combustion products evacuation duct, if it exists

3.2.6.2
combustion products circuit
circuit including the combustion chamber, the heat exchanger and the combustion products evacuation duct if exists

3.2.6.3
combustion chamber
enclosure in which the air/gas mixture burns

3.2.6.4
flue outlet
part of an appliance intended to be connected to a combustion products evacuation duct

3.2.6.5
draught diverter
device placed in the combustion products circuit of type B_1 appliances, which is intended to reduce the influence of the flue pull and down draught on the burner performance and combustion

3.2.6.6
combustion products outlet or flueway extension
part of an appliance not connected to a flue, through which products of combustion are discharged into a room

3.2.6.7
combustion products discharge safety device
device that at least shuts off the main burner when there is an unacceptable spillage of combustion products at the draught diverter of type B_{11BS} appliances

3.2.7
auxiliary equipment
all the accessory devices of an appliance which act directly or indirectly on the gas rate (e.g. gas rate control, flame supervision device, governor, thermostat, etc.)

3.2.7.1
ignition device
means used to light gas admitted to the ignition burner or main burner

Note 1 to entry: This can be intermittent or permanent.

3.2.7.1.1
intermittent ignition device
means, which may or may not be fixed to the appliance, to assure ignition of the initial flow of gas only to the ignition burner or main burner

3.2.7.1.2
permanent ignition device
means which, at any time when the gas rate controls are open, assures ignition or re-ignition of the gas admitted to ignition burners or main burners

3.2.7.2
flame supervision device
device which, on the disappearance of the supervised flame, shuts off the gas supply

Note 1 to entry: It is described as having “simple control” if it shuts off the gas supply to the main burner only.

Note 2 to entry: It is described as having “complete control” if it shuts off the gas supply to the main burner and to the ignition burner.

3.2.7.2.1
ignition time
time interval between the ignition of the supervised flame and the moment when the force thus produced is sufficient to keep the valve open

3.2.7.2.2 ignition safety times

3.2.7.2.2.1
ignition safety time (TSA)
time that elapses between the order to open the gas supply to the burner and the gas supply being shut off in the event no flame has been detected

[SOURCE: EN 297:1994, 1.3.4.5.3]

3.2.7.2.2.2
maximum ignition safety time (TSA_{MAX})
ignition safety time measured under the least favourable conditions of ambient temperature and variation in supply voltage

[SOURCE: EN 297:1994, 1.3.4.5.3.1]