BS EN 203-2-3:2014

BSI Standards Publication

# Gas heated catering equipment

## Part 2-3: Specific requirements — Boiling pans

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**National foreword**

This British Standard is the UK implementation of EN 203-2-3:2014. It supersedes BS EN 203-2-3:2005 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee GSE/19, Catering equipment (gas).

A list of organizations represented on this committee can be obtained on request to its secretary.

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.



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**Compliance with a British Standard cannot confer immunity from legal obligations.**

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EUROPEAN STANDARD

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# EN 203-2-3

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English Version

# Gas heated catering equipment - Part 2-3: Specific requirements - Boiling pans

Appareils de cuisson professionnelle utilisant les combustibles gazeux - Partie 2-3: Exigences particulières - Marmites

Großküchengeräte für gasförmige Brennstoffe - Teil 2-3: Spezifische Anforderungen - Kochkessel

This European Standard was approved by CEN on 8 November 2014.

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EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

## Contents

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# Foreword

This document (EN 203-2-3:2014) has been prepared by Technical Committee CEN/TC 106 “Large kitchen appliances using gaseous fuels”, 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of an identical text or by endorsement, at the latest by June 2015 and conflicting national standards shall be withdrawn at the latest by June 2016.

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 203-2-3:2005.

The technical changes in comparison to the previous edition are:

- in 5.1.5.2, clarification on type A and type B appliances;
- revision of 5.1.101 on flexibles hoses and/or rotating connections;
- addition of a paragraph in 5.3.1 food spillage;
- revision of 5.3.2.101 on tilting boiling pans;
- addition of motorized cover in 5.3.2.102;
- revision of 5.3.2.103 on boiling pans fitted with stirrers and/or mixers;
- addition of a filling level in 5.3.101;
- revision of 6.8.2 on pressurized parts;
- revision of 7.2.101 on soundness of gas circuits;
- addition of 7.2.102 on soundness of the combustion product circuits for tilting pans;
- addition of burners with sequential controls in 7.6.2.101;
- modification of the requirements for the stability and mechanical safety of tilting parts in 7.8.3.

This European Standard specifies the test methods and safety and rational use of energy requirements for boiling pans.

This European Standard has to be used in conjunction with EN 203-1. This document refers to Clauses of EN 203-1:2014 or adapts Clauses by stating “with the following modification”, “with the following addition”, “is replaced by the following” or “is not applicable” in the corresponding Clause. This European Standard adds Clauses or Sub-clauses to the structure of EN 203-1:2014 which are particular to this standard.

Subclauses and Figures which are additional to those in EN 203-1 are numbered starting with 101.

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.

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

*Scope is applicable with the following addition:*

This European Standard specifies the test methods and requirements for the construction and operating characteristics relating to the safety, rational use of energy and marking, of commercial gas heated boiling pans.

# 2 Normative references

*Normative references are applicable with the following addition:*

EN 203-1:2014, *Gas heated catering equipment - Part 1: General safety rules*

EN 1717, *Protection against pollution of potable water in water installations and general requirements of devices to prevent pollution by backflow*

EN 60335-2-47, *Household and similar electrical appliances - Safety - Part 2-47: Particular requirements for commercial electric boiling pans (IEC 60335-2-47)*

EN 61032, *Protection of persons and equipment by enclosures - Probes for verification (IEC 61032)*

# 3 Terms and definitions

## 3.1 Terminology referring to gases and pressures

Shall be according to EN 203-1:2014, 3.1.

## 3.2 General terminology referring to appliance design

Shall be according to EN 203-1:2014, 3.2.

## 3.3 Terminology referring to appliance operation

*Shall be according to* EN 203-1:2014, 3.3 *with the following addition:*

**3.3.101**
**boiling pan**
appliance in which liquids contained in the kettle are heated to boiling point as part of a cooking process

Note 1 to entry: The pressure within the kettle can exceed atmospheric pressure.

Note 2 to entry: The kettle may be fixed or tilting and it can be fitted with a stirrer and/or mixer.

**3.3.102**
**atmospheric boiling pan**
boiling pan in which the pressure within the cooking kettle does not differ significantly from atmospheric pressure

**3.3.103**
**pressurized boiling pan**
boiling pan in which the pressure within the cooking area exceeds atmospheric pressure

**3.3.104**
**jacketed boiling pan**
appliance having a double walled vessel, the space between the inner and outer walls containing a heat bearing fluid which is heated by the gas burner

**3.3.105**
**direct fired boiling pan**
appliance in which the heating of the contents of the kettle is achieved by means other than via a heat bearing fluid

**3.3.106**
**dual purpose boiling pan**
appliance incorporating two vessels, the inner one being removable

Note 1 to entry: The appliance may be used with or without the removable vessel.

**3.3.107**
**danger zone**
any zone within and/or around appliance in which a person is subject to a risk to health or safety

**3.3.109**
**nominal volume**
$V_n$
working volume when filled to the maximum level, as stated in the product instructions

**3.3.110**
**stirrer**
tool which operates with slow rotating speed (10 rpm to 200 rpm)

**3.3.111**
**mixer**
tool which operates with high rotating speed (up to 3000 rpm)

# 4 Classification

Shall be according to EN 203–1:2014, Clause 4.

# 5 Constructional requirements

## 5.1 General

### 5.1.1 Conversion to different gases

Shall be according to EN 203–1:2014, 5.1.1.

### 5.1.2 Materials and methods of construction

Shall be according to EN 203–1:2014, 5.1.2.

### 5.1.3 Use, cleaning and maintenance

Shall be according to EN 203–1:2014, 5.1.3.

### 5.1.4 Gas connections

Shall be according to EN 203–1:2014, 5.1.4.

### 5.1.5 Soundness

#### 5.1.5.1 Soundness of the gas circuit

Shall be according to EN 203–1:2014, 5.1.5.1.

#### 5.1.5.2 Soundness of the combustion products circuit

*Shall be according to* EN 203–1:2014, 5.1.5.2 *with the following addition:*

For type A appliances a break in the soundness is acceptable if the operation of the appliance in the most unfavourable position satisfies the requirements of EN 203–1:2014, 6.3.2, 6.3.3 and 6.7.

For type B appliances the main burner(s) shall be shut-off at the start of the tilting of the pan, if the combustion products can escape to the atmosphere.

### 5.1.6 Supply of combustion air and evacuation of combustion products

Shall be according to EN 203-1:2014, 5.1.6.

### 5.1.7 Flame visibility

Shall be according to EN 203-1:2014, 5.1.7.

### 5.1.8 Electrical safety

Shall be according to EN 203-1:2014, 5.1.8.

### 5.1.9 Construction requirements for gas cylinder compartment

Shall be according to EN 203-1:2014, 5.1.9.

### 5.1.101 Flexible hoses and/or rotating connections

When flexible hoses and/or rotating connections are used for the gas supply to burners, pilot burners or ignition burners, these components, shall not be subject to mechanical or thermal conditions which can cause damage to or leakage from the components.

They shall be subject to the endurance test of 7.2.101 and resist a minimum number of cycles, to verify their suitability.

At the end of this test, the requirements of EN 203-1:2014, 6.1.1 shall be satisfied.

The minimum number of cycles is 10 000.

The maximum number of cycles is 35 000. If they cannot be reached, instructions shall include a notice for replacing the flexible hose or rotating connection, and a warning shall be placed on the appliance indicating the frequency of the replacement.

## 5.2 Particular requirements for components in the gas circuit

### 5.2.1 General

Shall be according to EN 203-1:2014, 5.2.1.

### 5.2.2 Gas rate control and shut-off device

#### 5.2.2.1 General

Shall be according to EN 203-1:2014, 5.2.2.1.

#### 5.2.2.2 Shut-off device

Shall be according to EN 203-1:2014, 5.2.2.2.

#### 5.2.2.3 Control knob

Shall be according to EN 203-1:2014, 5.2.2.3.

#### 5.2.2.4 Control signals and marking

Shall be according to EN 203-1:2014, 5.2.2.4.

### 5.2.3 Auxiliary equipment

Shall be according to EN 203-1:2014, 5.2.3.

#### 5.2.3.1 General

Shall be according to EN 203-1:2014, 5.2.3.1.

#### 5.2.3.2 Ignition device

Shall be according to EN 203-1:2014, 5.2.3.2.

#### 5.2.3.3 Flame supervision device

Shall be according to EN 203-1:2014, 5.2.3.3.

#### 5.2.3.4 Gas regulator

Shall be according to EN 203-1:2014, 5.2.3.4.

#### 5.2.3.5 Regulating and overheat limit devices

Shall be according to EN 203-1:2014, 5.2.3.5.

#### 5.2.3.6 Pressure test points

Shall be according to EN 203-1:2014, 5.2.3.6.

### 5.2.4 Burners

Shall be according to EN 203-1:2014, 5.2.4.

#### 5.2.5 Gas rate adjusters

Shall be according to EN 203-1:2014, 5.2.5

### 5.3 Particular requirements

#### 5.3.1 Food spillage

*Shall be according to* EN 203-1:2014, 5.3.1 *with the following addition:*

Boiling pans that are fitted with a water supply to the pan which can operate when the pan is tilting shall be so constructed that sprinkling or spillage shall not lead to a dangerous situation.

#### 5.3.2 Stability and mechanical safety

*Shall be according to* EN 203-1:2014, 5.3.2 *with the following addition:*

#### 5.3.2.101 Tilting boiling pans

When the pan is fitted with a strainer to retain the food during the tilting operation, it shall be fixed in an effective manner to stay in place in any tilting position.

The kettle shall only be tilted by a voluntary action of the operator. This requirement shall be the same when the kettle is tilted back to its working position.

When actuators are released in any tilting position of the kettle, it shall remain stationary.

In the case of a manual control device, it shall be so designed that the tilting motion is controlled during all of its motion.

It shall not be possible to adversely influence the tilting action other than by the intended means.

The kettle shall be self balanced or self locking.

In the case of power operated tilting of the kettle, it shall be achieved by a maintained action control device which shall be situated outside the danger zone, and located where the operator can see clearly the movement of the kettle during the tilting.

The tilting mechanism shall be self-locking to prevent unintended movements of the kettle in every position in case of failure of the power.

Devices controlling the tilting process shall be clearly marked to show the direction of movement.

The control devices shall be located and protected in such a way that they cannot be operated accidentally.

For tilting devices using auxiliary energy, the minimum time for tilting shall be 20 s.

Tilting boiling pans shall be safe during the tilting operation and in the rest position when tested in accordance with of EN 203-1:2014, 7.8.1 as well as 7.8.101.

Appliances with tilting pans shall be fitted with a mechanism intended to avoid accidental tilting from any position.

Compliance is checked by inspection and by actuating the safety devices.

The safety requirements and/or measures given in EN 60335-2-47 for electric motorised parts shall be complied with.

#### 5.3.2.102 Covers

Covers shall be constructed in such a way so as to ensure that uncontrolled closure does not cause injury to the operator.

The peripheral speed of a motorised cover shall not exceed 80 mm/s. The appliance shall be provided with an interlock or a similar device that can be activated by the operator without the use of his hands. The interlock device shall be non self-resetting

#### 5.3.2.103 Boiling pans fitted with stirrers and/or mixers

Boiling pans with moving parts intended for mixing, stirring, etc., having a kinetic energy of more than 200 J shall be provided with an interlock to stop the moving parts when the lid or guard has been opened by more than 50 mm.

It shall not be possible to release the interlock by means of test probe B of EN 61032.

Alternatively, if the peripheral speed of the stirring device does not exceed 1 m/s, the appliance may be provided with an interlock or similar device that can be easily actuated by the user without the use of his hands. The interlock or device shall be non-self-resetting and shall provide all-pole disconnection from the supply.

### 5.3.3 Safety from fire risk

Shall be according to EN 203-1:2014, 5.3.3.

### 5.3.4 Appliances connected to a potable water supply

Shall be according to EN 203-1:2014, 5.3.4.

### 5.3.101 Filling level

The vessel shall carry permanently fixed marks indicating the nominal and minimum operating level of filling and shall be so located as to be readily visible when filling and in operation.

## 6 Performance requirements

## 6.1 Soundness

### 6.1.1 Soundness of the gas circuit

Shall be according to EN 203-1:2014, 6.1.1.

### 6.1.2 Soundness of combustion product circuit of type B appliances

Shall be according to EN 203-1:2014, 6.1.2.

### 6.1.101 Soundness of the evacuation circuit of combustion product of tilting boiling pans (For type B appliances)

The soundness between the combustion chamber and the circuit of evacuation of combustion products is verified with the pan in the rest position.

## 6.2 Obtaining the gas rate

### 6.2.1 Nominal heat input ($Q_n$)

Shall be according to EN 203-1:2014, 6.2.1

### 6.2.2 Full calorific rate

Shall be according to EN 203-1:2014, 6.2.2

### 6.2.3 Reduced heat input

Shall be according to EN 203-1:2014, 6.2.3

### 6.2.4 Ignition burner heat input

Shall be according to EN 203-1:2014, 6.2.4

## 6.3 Safety of operation

### 6.3.1 Burners

Shall be according to EN 203-1:2014, 6.3.1.

### 6.3.2 Temperature limits

#### 6.3.2.1 Protection against risk of fire

Shall be according to EN 203-1:2014, 6.3.2.1.

#### 6.3.2.2 Protection against risk of burns

*Shall be according to* EN 203-1:2014, 6.3.2.2 *with the following addition:*

The following are designated as working areas: internal and external surfaces of covers, draw off taps, flue outlets and the pan and hob.

During the test of 7.101 no overflow of water shall be allowed.

The rim of tilting boiling pans shall be constructed so that the liquid is poured out in an even stream.

The knob of the draw off taps and of the tilting mechanism are considered as working surfaces, only the knobs for tap and cover opening shall comply with requirements of EN 203-1:2014, 6.3.2.2.1.

#### 6.3.2.3 Regulating, control and safety devices

Shall be according to EN 203-1:2014, 6.3.2.3.

### 6.3.3 Ignition – cross-lighting - flame stability

Shall be according to EN 203-1:2014, 6.3.3

### 6.3.4 Combustion products safety devices for type $B_{11BS}$ appliances

Shall be according to EN 203-1:2014, 6.3.4.

#### 6.3.5 Pre-purge

Shall be according to EN 203-1:2014, 6.3.5.

### 6.4 Influence of burners on each other

Shall be according to EN 203-1:2014, 6.4.

### 6.5 Auxiliary equipment

#### 6.5.1 Flame shut off device

Shall be according to EN 203-1:2014, 6.5.1.

#### 6.5.2 Ignition device

Shall be according to EN 203-1:2014, 6.5.2.

### 6.6 Air proving device

#### 6.6.1 General

Shall be according to EN 203-1:2014, 6.6.1.

#### 6.6.2 Supervision of the combustion air or combustion products rate

Shall be according to EN 203-1:2014, 6.6.2.

#### 6.6.3 Supervision of the combustion air pressure or combustion products pressure

Shall be according to EN 203-1:2014, 6.6.3.

#### 6.6.4 Air/gas ratio controls

Shall be according to EN 203-1:2014, 6.6.4.

### 6.7 Combustion

#### 6.7.1 All appliances (in calm air)

Shall be according to EN 203-1:2014, 6.7.1.

#### 6.7.2 Special conditions

Shall be according to EN 203-1:2014, 6.7.2.

### 6.8 Particular requirements

#### 6.8.1 Stability and mechanical safety

Shall be according to EN 203-1:2014, 6.8.1.

#### 6.8.2 Pressurized parts

*Shall be according to* EN 203-1:2014, 6.8.2 *with the following addition:*

Pressurized appliances shall be fitted, in addition of pressure regulator(s), with relief valves of which the calibrated pressure and relief cannot be modified.

The relief valve(s) shall be located in such a way to not be a risk in case of opening.

For pressurized boiling pans, it shall not be possible to open the lid as long as the pressure has reached a value near the atmospheric pressure. Any de-pressurising shall be safe and under control. The lockout mechanism(s) of the cover shall be design to prevent any unintended under pressure opening.

A pressurized boiling pan shall be fitted with an indicator device (e.g. pressure gauge) for the cooking area.

In all cases pressurized boiling pans shall satisfy the requirements of 6.8.2 of EN 203-1:2014 in the test conditions of 7.8.2 of EN 203-1:2014.

Pressurized boiling pan and jackets shall incorporate a vacuum release device to prevent a partial vacuum forming unless they are designed for vacuum operation.

Pressurized boiling pan and jackets shall be fitted with relief valves of which the calibrated pressure and relief cannot be modified.

## 6.9 Auxiliary energy

### 6.9.1 General

Shall be according to EN 203-1:2014, 6.9.1.

### 6.9.2 Electrical energy fluctuation

Shall be according to EN 203-1:2014, 6.9.2.

### 6.9.3 Other auxiliary energy

Shall be according to EN 203-1:2014, 6.9.3.

## 6.10 Rational use of energy

*Shall be according to* EN 203-1:2014, 6.10 *with the following addition.*

When tested in accordance with 7.101 the thermal efficiency shall not be less than:

— for direct fired boiling pans, 50 %;

— for jacketed boiling pans, 45 %.

## 6.11 Operating requirements - Temperature of the LPG cylinder and its compartment

### 6.11.1 Temperature of the walls of the compartment

Shall be according to EN 203-1:2014, 6.11.1.

### 6.11.2 Temperature of the LPG cylinder

Shall be according to EN 203-1:2014, 6.11.2.

# 7 Test conditions

## 7.1 General

### 7.1.1 Characteristics of the test gases

Shall be according to EN 203-1:2014, 7.1.1.

### 7.1.2 Requirements for making up test gases

Shall be according to EN 203-1:2014, 7.1.2.

### 7.1.3 Test room

Shall be according to EN 203-1:2014, 7.1.3.

### 7.1.4 Preparation of the appliance

*Shall be according to* EN 203-1:2014, 7.1.4 *with the following addition:*

Tests on dual purpose boiling pans are carried out with or without the inner vessel, whichever imposes the more severe conditions, taking into account the instructions manual.

### 7.1.5 Practical method of test

Shall be according to EN 203-1:2014, 7.1.5.

### 7.1.6 Test pressures

Shall be according to EN 203-1:2014, 7.1.6.

### 7.1.7 Carrying out the tests

Shall be according to EN 203-1:2014, 7.1.7.

## 7.2 Soundness

### 7.2.1 Soundness of the gas circuit

Shall be according to EN 203-1:2014, 7.2.1.

### 7.2.2 Soundness of the combustion circuit and correct evacuation of the combustion products for type B appliances

Shall be according to EN 203-1:2014, 7.2.2.

### 7.2.101 Soundness of gas circuits in appliances with flexible hoses and/or rotating connections

One test is made on the flexible hose or the rotation connection or both assemblies, if applicable.

This test is carried out to forward and backward cycles (1 cycle = forward + backward) until the gas leakage.

If this test is carried out by removing the corresponding piece of the appliance for a separate tested, the conditions of the test shall be representative of the conditions of normal use.

The fluid for the test shall be air or nitrogen, and the test pressure shall be 150 mbar.

The movement shall have a frequency of between 1 and 2 cycles per minute.

At the end of the test, the appliance shall comply with EN 203-1:2014, 6.1.1.

#### 7.2.102 Soundness of the combustion products circuit for tilting pans (for type B appliances only)

The empty pan is operated at half power for 20 min, and tilted using the mechanism designed for tilting. The pan is tilted 20 times, after the last movement it is stopped in the position of rest allowed by the mechanism.

The soundness of the combustion products circuit is measured by using a $CO_2$ analyser. No leakage of burnt gas shall be detected around the junction of the flue duct nor between the pan and its combustion chamber.

### 7.3 Obtaining gas rates

#### 7.3.1 General

Shall be according to EN 203-1:2014, 7.3.1.

#### 7.3.2 Nominal heat input

Shall be according to EN 203-1:2014, 7.3.2.

#### 7.3.3 Full rate

Shall be according to EN 203-1:2014, 7.3.3.

#### 7.3.4 Reduced rate

Shall be according to EN 203-1:2014, 7.3.4.

### 7.4 Operational safety

#### 7.4.1 Burners

Shall be according to EN 203-1:2014, 7.4.1.

#### 7.4.2 Temperature limits

*Shall be according to* EN 203-1:2014, 7.4.2 *with the following addition:*

For this test the boiling pan is filled with water to its nominal level.

#### 7.4.3 Ignition - cross- lighting - flame stability

Shall be according to EN 203-1:2014, 7.4.3.

### 7.5 Auxiliary equipment

#### 7.5.1 Flame shut off device

Shall be according to EN 203-1:2014, 7.5.1.

#### 7.5.2 Ignition device

Shall be according to EN 203-1:2014, 7.5.2.

## 7.6 Combustion

### 7.6.1 General

Shall be according to EN 203-1:2014, 7.6.1

### 7.6.2 Tests carried out under normal conditions

#### 7.6.2.1 General test conditions

Shall be according to EN 203-1:2014, 7.6.2.1.

#### 7.6.2.2 Supplementary test

Shall be according to EN 203-1:2014, 7.6.2.2

#### 7.6.2.101 Burners with sequential controls

In the case of burners with sequential controls, a first test is carried out with the burner functioning in a continuous manner if this position is possible.

When the burner functions in cycles (on/off or full input/reduced input) the CO and $CO_2$ concentration samples shall be recorded every five seconds and the $CO/CO_2$ ratio (dry free air) calculated during at least five complete cycles of the gas rate control to the burner. For each cycle the $CO/CO_2$ (dry free air) arithmetic mean is calculated. None of these five $CO/CO_2$ values shall exceed limits specified in 6.7.1 respectively with the test gas used (reference and limit).

The sequential function control is adjusted in a manner to obtain minimum setting of the control range, and then 40 % and 80 % of the adjusting range.

### 7.6.3 Specific test for type B appliances

Shall be according to EN 203-1:2014, 7.6.3.

### 7.6.4 Test with sooting limit gas

Shall be according to EN 203-1:2014, 7.6.4.

## 7.7 Air-proving device

### 7.7.1 General

Shall be according to EN 203-1:2014, 7.7.1.

### 7.7.2 Supervision of the combustion air or the combustion products rate

Shall be according to EN 203-1:2014, 7.7.2.

### 7.7.3 Supervision of the combustion air or the combustion products pressure

Shall be according to EN 203-1:2014, 7.7.3.

## 7.8 Special tests

### 7.8.1 Stability and mechanical safety

*Shall be according to* EN 203-1:2014, 7.8.1 *with the following addition:*

Covers, lids and accessories are placed in the most unfavourable positions.

The appliance is filled with water and /or food to the nominal level.

#### 7.8.2 Pressurized parts

*Shall be according to* EN 203-1:2014, 7.8.2 *with the following addition:*

Requirements of 6.8.2 of this European Standard are checked by visual examination.

#### 7.8.3 Lack of heat bearing fluid

Shall be according to EN 203-1:2014, 7.8.3.

#### 7.8.101 Stability and mechanical safety of tilting parts

The tilting boiling pans are installed in accordance with the instructions. They shall not be connected to different supplies. The pan is filled with water at (20 ± 10) °C to the nominal level on the pan.

— Manually tilted pan is unlocked, and tilting shall be possible only through a deliberate pressure by the operator on the tilting system. Draining shall be controllable throughout the emptying, when the operator stops the pressure the pan shall remain in its last position or return to a position of rest (draining, intermediate or utilization) without danger to the operator (visual test).

— For irreversible tilting devices, a force of 100 N is applied in the most unfavourable direction on the forward edge of the pan. While in the most unfavourable position, it shall not provoke further movement of the pan.

— Tilting direction of the pan shall be clearly identified on the tilting control (except lever or crank). The movement shall be smooth without risk of splashing and it shall be possible to check that the pan is draining correctly in the different tilting positions.

— Throughout the tilting operation of the pan, no areas of entrapment shall be accessible by the operator. This is verified by use of the test finger described in Figure 101 for manual tilting devices. This test is used as well for other energy when the tilting time is less than 20 s.

Boiling pans fitted with a strainer are tested by replacing the water with dry maize grains filled to 50 % of the nominal volume of the pan as stated in the instructions. With the strainer in position, the pan is tilted to the maximum angle before the granules spill out. The strainer shall remain in position, the pan shall be stable.

The assembly shall not tilt when an additional force of 100 N is applied to the front edge.

### 7.9 Test method - Overheating of the LPG cylinder and its compartment

Shall be according to EN 203-1:2014, 7.9.

### 7.101 Rational use of energy

The burner is adjusted to its nominal rate. Tests are carried out with the lid closed.

The pan is filled with a measured quantity of water, to the nominal level stated in the instructions, the water being at approximately 15 $^{o}$ C.

The temperature of the water is measured at the centre of the pan, 10 cm below the surface of the water. The water is not stirred.

The burner is ignited and the measurement of time, gas consumption and temperature rise starts when the temperature of the water reaches (20 ± 1) $^{o}$ C ($t_1$).

The time and gas consumption required to reach a temperature rise of 70 K are noted.

At the end of the test, after extinction of the burner, the maximum water temperature reached is measured ($t_2$).

If boiling point is reached during this test, the test is repeated with a lower rise of temperature.

The efficiency is given by:

$$R = m \times C_p \times \frac{(t_2 - t_1)}{V_c \times H_i} \times 100$$

where

$R$ is the efficiency, in per cent;

$M$ is the mass of water in kilograms;

$C_p$ is the specific heat of water [ 4,186 × $10^{-3}$ MJ/(kg.K)];

$t_1$ is the initial water temperature in degrees Celsius;

$t_2$ is the final water temperature in degrees Celsius;

$V_c$ is the volume or mass of gas burned in cubic metres or kilograms;

$H_i$ is the net calorific value of the gas in megajoules per cubic metre or megajoules per kilogram (kilocalories per cubic metre).

The volume of the gas consumed determined from the volume measured is given by:

$$V_c = V_{mes} \times \frac{p_a + p - p_s}{1013,25} \times \frac{288,15}{273,15 + t_g}$$

where

$V_{mes}$ is the volume of gas measured in cubic metres;

$p_a$ is the atmospheric pressure in millibars;

$p$ is the supply pressure of the gas at the point of measurement of the heat input in millibars;

$p_s$ is the partial pressure of water vapour in millibars (as defined in of EN 203-1:2014, 7.3.2.1);

$t_g$ is the temperature of gas at the point of measurement of heat input in degrees Celsius.

# 8 Designation

Shall be according to EN 203-1:2014, Clause 8.

# 9 Marking and instructions

## 9.1 General

Shall be according to EN 203-1:2014, 9.1.

## 9.2 Marking on the appliance

### 9.2.1 Data plates and labels

*Shall be according to* EN 203-1:2014, 9.2.1 *with the following addition:*

For pressurized appliances a data plate shall be carried stating the working pressure of the appliance.

Warning on the frequency of replacement of flexible hoses and rotating connection if 35 000 cycles were not reached during the test described in 7.2.101.

#### 9.2.2 Other marking on the appliance

Shall be according to EN 203-1:2014, 9.2.2.

### 9.3 Instructions

#### 9.3.1 General

Shall be according to EN 203-1:2014, 9.3.1.

#### 9.3.2 Instructions for use and maintenance

*Shall be according to* EN 203-1:2014, 9.3.2 *with the following addition:*

— for stirrer/mixer, when fitted, a detailed description of the equipment, its fittings, its guards and/or safety devices;

— instructions shall warn that the appliance shall not be used filled below the minimum mark.

Warning on the need and frequency of replacement of flexible hoses and rotating connection if 35 000 cycles were not reached during the test described in 7.2.101.

#### 9.3.3 Instructions for installation and adjustment

*Shall be according to* EN 203-1:2014, 9.3.3 *with the following addition:*

— need to install the appliance in accordance with EN 1717 and the national water regulations in force.

#### 9.3.4 Instructions for conversion to different gases

Shall be according to EN 203-1:2014, 9.3.4.

### 9.4 Packaging

Shall be according to EN 203-1:2014, 9.4.

# Annex ZA
(informative)

## Clauses of this European Standard EN 203-2-3 addressing essential requirements or other provisions of EU Directives.

This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association to provide a means of conforming to Essential Requirements of the New Approach Directive 2009/142/EC.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

**Table ZA.1**

| Essential Requirements | Subject | Requirements of the standard EN 203–2-3 complementing EN 203–1 | Comments |
|---|---|---|---|
| 1 | Annex I General conditions | | |
| 1.1 | Operating safety | 5.3.2.101, 5.3.2.102, 5.3.2.103, 6.3.2.2 | |
| 1.2 | Marking and instructions<br>Instructions for installer<br>Instructions for user<br>Warnings<br>Official languages | | |
| 1.2.1 | Information for technical instructions | 9.3.3 | |
| 1.2.2 | Contents of the instructions for use and maintenance | 9.3.2 | |
| 1.2.3 | Marking on appliances and packaging | 9.2.1, 5.3.101 | |
| 1.3 | Fittings | | NA |
| 2 | Materials | | |
| 2.1 | Characteristics | | |
| 2.2 | Guarantee | | |
| 3 | Design and construction | | |
| 3.1 | General | | |
| 3.1.1 | Stress resistance | | |
| 3.1.2 | Condensation | | |
| 3.1.3 | Risks of explosion | | |

| | | | |
|---|---|---|---|
| 3.1.4 | Penetration by air and water | | "Water penetration" not applicable |
| 3.1.5 | Auxiliary energy normal fluctuation | | |
| 3.1.6 | Auxiliary energy abnormal fluctuation | | |
| 3.1.7 | Electrical hazards | | |
| 3.1.8 | Pressurized parts | 6.8.2 | |
| 3.1.9 | Safety device failure;<br>- flame supervision device<br>- shut off device<br>- gas governor<br>- shut off components<br>- regulating and limiting device | | |
| 3.1.10 | Safety/adjustment | | |
| 3.1.11 | Protection of parts adjusted as specified in the instructions | | |
| 3.1.12 | Marking of control levers | | |
| 3.2 | Release of un-burnt gas | 5.1.101 | |
| 3.2.1 | Risk of gas leak | | |
| 3.2.2 | Risk of accumulation in appliance | | |
| 3.2.3 | Risk of accumulation in room | | |
| 3.3 | Ignition | | |
| 3.4 | Combustion | | |
| 3.4.1 | Flame stability<br>Concentration of harmful substances in combustion products | | |
| 3.4.2 | Release of combustion products | 5.1.5.2 | |
| 3.4.3 | Release of combustion products in room (for appliance connected to a flue, with abnormal draught) | | NA |
| 3.4.4 | Co limit in room (heating appliance and water heater not connected) | | NA |
| 3.5 | Rational use of energy | 6.10 | |
| 3.6 | Temperature | | |

| | | | |
|---|---|---|---|
| 3.6.1 | Floor and adjacent panels | | |
| 3.6.2 | Adjustment levers | | |
| 3.6.3 | Temperature of external surfaces | | |
| 3.7 | Foodstuffs and sanitary water | | |

# Bibliography

[1] EN 13886, *Food processing machinery- Cooking kettles equipped with stirrer and/or mixer - Safety and hygiene requirements*

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