# SLOVENSKI STANDARD

**SIST EN 203-2-6:2005**

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**Plinske naprave za gostinstvo – 2-6. del: Posebne zahteve – Grelniki vode za pripravo napitkov**

Gas heated catering equipment - Part 2-6: Specific requirements - Hot water heaters for beverage

Großküchengeräte für gasförmige Brennstoffe - Teil 2-1: Spezielle Anforderungen; Wasserheizer für Getränke



Appareils de cuisson professionnelle utilisant les combustibles gazeux - Partie 2-6: Exigences particulieres - Générateurs d'eau chaude pour boisson



**Ta slovenski standard je istoveten z:** **EN 203-2-6:2005**

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97.040.20

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN 203-2-6

October 2005

ICS 97.040.20

Supersedes EN 203-2:1995

English Version

# Gas heated catering equipment - Part 2-6: Specific requirements - Hot water heaters for beverage

Appareils de cuisson professionnelle utilisant les combustibles gazeux - Partie 2-6: Exigences particulières - Générateurs d'eau chaude pour boisson

Großküchengeräte für gasförmige Brennstoffe - Teil 2-6: Spezifische Anforderungen - Wasserkocher für Getränkezubereiter

This European Standard was approved by CEN on 22 July 2005.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.



CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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# Contents

## Foreword

This European Standard (EN 203-2-6:2005) 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 April 2006, and conflicting national standards shall be withdrawn at the latest by December 2008.

This European Standard 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 European Standard.

This European Standard supersedes EN 203-2:1995, together with EN 203-2-1, EN 203-2-2, EN 203-2-3, EN 203-2-4, EN 203-2-5, EN 203-2-7, EN 203-2-8, EN 203-2-9, EN 203-2-10 and EN 203-2-11.

This European Standard specifies the safety and rational use of energy requirements for hot water heaters for beverage.



This European Standard has to be used in conjunction with EN 203-1 Gas Heated Catering Equipment Part 1 – General safety rules.



This sub-part of part 2 supplements or modifies the corresponding clauses of EN 203-1, so as to convert it into the European Standard for gas heated hot water heaters for beverage.

Where a particular sub-clause of EN 203-1 is not mentioned in this sub-part of part 2, that sub-clause applies as far as is reasonable. Where this standard states "addition", "modification" or "replacement", the relevant text of EN 203-1 is to be adapted accordingly.

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

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

## 1 Scope

*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 Water Boiling and Heating Appliances for Beverage Making.

This European Standard only covers type testing.

## 2 Normative references

*Addition:*

EN 203-1:2005, *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*

**3.3.101**
**pressure water boiler**
appliance in which water is boiled and pressurised, to provide a bulk supply and thereafter a continuous supply of boiling water. Drawn off water is replaced automatically so that a constant supply of boiling water is available. It may also be provided with a steam injector



**3.3.102**
**expansion boiler**
appliance which relies on the expansion of water when heated, to provide a supply of boiling water. Drawn off water is replaced automatically so that a continuous supply of boiling water is available



**3.3.103**
**bulk boiler**
appliance in which a bulk quantity of water is heated and boiled. When drawn off, the appliance is re-filled manually and the cycle is re-started

**3.3.104**
**coffee machine**
appliance fitted with a steam or superheated water generator to a coffee filtration system. It may also be provided with a steam injector

**3.3.105**
**coffee percolator**
appliance which supplies boiling water to a coffee filtration system

**3.3.106**
**jacketed urn**
appliance supplied with an inner container for the storage of pre-heated milk or pre- prepared beverages, surrounded by a heated water or steam jacket

**3.3.107**
**indicated level**
permanent mark on the appliance to indicate the maximum level for correct operation

**3.3.108**
**nominal volume**
$V_n$
manufacturers declared working volume (if applicable) when filled to the indicated level

#### 6.3.2.2 Protection against burns

*Addition:*

The following are designated as working areas: internal and external surfaces of covers, draw off tap bodies, steam injector bodies and flue outlets.

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

The outlet of draw off taps and steam injectors on pressurised appliances shall be designed to minimise turbulence and splashes.

##### 6.3.2.2.1 Control knobs or other handles

*Addition:*

Handles for draw off taps, steam injectors and covers shall conform to this requirement.

### 6.8.2 Pressurised parts

*Addition:*

Pressurised 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.

The lockout mechanism(s) of the cover shall be design to prevent any unintended under pressure opening.



It shall not be possible to open the lid or cover of a pressurised appliance until the pressure has been reduced to approximately atmospheric pressure.

Pressurised appliances shall incorporate a vacuum release device to prevent a partial vacuum forming unless they are designed for vacuum operation.

In every case pressurised appliances shall satisfy the pressure tests of 7.8.2 of EN 203-1:2005.

Note The requirements of the pressure equipment's directive 97/23/EEC are applicable to water boiling appliances of continuous flow of a capacity greater than 2 litres and working at a pressure greater than 0,5 bar.

### 6.10 Rational use of energy

Jacketed urns and coffee machines are not subject to this requirement.

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

- Continuous flow water boiling appliances: 60 %;

- Bulk water boiling appliances: 50 %.

### 7.8.1 Stability and mechanical safety

*Addition:*

The requirements of 6.8.1 of EN 203-1:2005 shall be satisfied when the tests are carried out with the appliance empty and with the appliance filled with water to its indicated level.

## 7.101 Rational use of energy

### 7.101.1 Efficiency calculation

At the end of the tests in 7.101.2 to 7.101.5 after extinction of the burner, the maximum water temperature attained is measured.

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 percent;

$m$ is the mass of water in kilograms;

$C_p$ is the specific heat of water [ 4,186 x $10^{-3}$ 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.



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 7.3.2.1 of EN 203-1:2005);

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

### 7.101.2 Water boiling appliances (continuous flow)

The appliance shall be set up in accordance with the conditions specified in 7.1.4 of EN 203-1:2005, special precautions being taken to ensure the following factors are closely controlled:

a) during the test, the cold water inlet temperature should not vary by more than ± 2 °C;

b) appliance shall be levelled, and the ball valve in the cistern or within the boiler shall be adjusted, if necessary, so that the water is ± 3 mm of the indicated level.

### 7.101.3 Expansion water boiling appliances

If an adjustable by-pass is provided, it is set to a rate just sufficient to maintain water at not more than 95 °C.

The bypass gas rate is measured.

Insert thermometers, or equivalent, in the feed water system and into a T or other convenient pocket attached to the boiling water outlet, $t_1$ and $t_2$ are respectively measured at these points.

Set the appliance in accordance with the manufacturers instructions to give continuous delivery of boiling water, with the minimum formation of water vapour, and allow it to run for at least 15 min before commencing testing.

Collect and weigh not less than 15 kg of water in a covered vessel, and note the temperature of the water and the gas consumed.

### 7.101.4 Pressure water boiling appliances

If an adjustable bypass is provided, it is set to a rate just sufficient to maintain steam pressure.

Insert thermometers, or equivalent, in the feed water system and in a T or other convenient pocket attachment to the boiling water outlet, $t_1$ and $t_2$ are respectively measured at these points.



Set the appliance in accordance with the manufacturers instructions and allow the appliance to attain equilibrium condition, with the boiler filled with water.

With the gas off (or at bypass rate when fitted) note the meter reading.



Open the draw off tap and collect the boiling water in a weighed covered container. Allow the water level to fall to the low level mark, turn off the draw off tap and weigh the water collected.

Allow the boiler to refill and the gas to extinguish or reduce to bypass rate and note the gas consumed.

### 7.101.5 Bulk water boiling appliances

The burner is adjusted to its nominal rate.

The boiler is filled with water to its indicated level (stated by the manufacturer) the water being at a temperature of approximately 15 °C.

If an automatic water level is fitted, it should be adjusted, if necessary, to ± 3 mm of the indicated level, and the interconnecting valve turned off when the boiler is filled.

The water temperature is taken as near as possible to the centre of the container, 10 cm below the water surface.

Tests are carried out with the cover closed.

The burner is ignited and the measurement of the gas consumption starts when the water reaches (20 ± 1) °C.

The gas consumption required to reach a temperature rise of 70 K is noted.

At the end of the test, after extinction of the burner, the maximum water temperature attained is measured.