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Gas heated catering equipment - Part 2-4: Specific requirements - Fryers

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

Appareils de cuisson professionnelle utilisant les combustibles gazeux - Partie 2-4: Exigences particulieres - Friteuses

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EUROPEAN STANDARD

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English Version

Gas heated catering equipment - Part 2-4: Specific requirements - Fryers

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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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Foreword

This European Standard (EN 203-2-4:2005) 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of an identical text or by endorsement, at the latest by April 2006, and conflicting national standards shall be withdrawn at the latest by December 2008.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 203-2-5, EN 203-2-6, 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 fryers.

This European Standard has to be used in conjunction with EN 203-1 Gas Heated Catering Equipment Part 1 - Safety Requirements. This sub-part of part 2 supplements or modifies the corresponding clause of EN 203-1.

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

Sub-clauses 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 fryers.

This European Standard only covers type testing.

2 Normative references

Addition

EN 203-1:2005, *Gas heated catering equipment - Part 1: General safety rules*

3.101
fryer
single or multi-pan appliance for frying foodstuff in oil or fat at a high temperature in which the foodstuff is submerged

3.102
pressure fryer
fryer where the cooking operation is carried out under pressure

3.103
maximum oil level
mark to indicate the maximum oil level for safe operation

3.104
minimum oil level
mark to indicate the minimum oil level for safe operation

3.105
draining device
device for draining the oil or fat. It may be a valve or tap, or an access to a filtering pump system for emptying and/or refilling

3.106
drainage container
container to receive the contents of the pan during the drainage operation. It can be fitted with filters to clean the oil or fat

5.1.2 Materials and methods of construction

Addition

The appliance shall be so designed that it is impossible for bubbling oil or fat to reach or penetrate the burner(s) and/or insulation.

5.1.2.101 Drainage device

It shall be located in a place which enables the oil or fat to be drained completely.

The open and closed positions of the device shall be readily recognisable and it shall not be possible to open the device accidentally.

After drainage it shall be possible to easily remove any cooking crumbs from the pan.

5.1.2.102 Pump drainage system

When a pump drainage system is integrated into the fryer, it shall not be possible to operate the pump accidentally.

Operation of the pump shall be possible without special action even with solidified fat present in the body of the pump and/or drain tubes.

It shall not be possible for crumbs to cause blockage or leakage either in the pump or its suction and discharge tubes.

5.3.3 Safety risk from fire

Addition

The fryer shall be marked indelibly with the maximum and minimum levels of cold fat or oil consistent with complete safety of operation.

Appliances shall have adequate surge allowance above the maximum indicated oil level such that the total surge volume of the pan, including any container designed to collect surging oil, shall have a ratio in litres to the recommended batch load in kilograms of not less than 4. Compliance is checked by measurement.

Appliances supplied with containers intended to drain and/or to collect fat or oil shall be so designed and placed that spillage and overflow cannot reach areas where there is a risk of catching fire.

6.3.2.101 Temperature regulation

A regulating thermostat shall be fitted to each pan and under the conditions of 7.4.2.101 it is verified that the temperature never exceeds 200 °C.

6.3.2.102 Overheat limit device

An overheat limit device shall be fitted to each pan and under the conditions of 7.4.2.102 it is verified that the temperature never exceeds 230 °C when the regulating thermostat is put out of action.

6.3.2.2 Protection against risks of burns

Addition

The whole of the pan (bottom, sides and hob) are considered as working surfaces as well as the drain tap.

6.3.2.2.101 Front of fryers accessible to the customers

When the non-working side of a fryer is designed to form part of a serving counter which may be touched by customers, under the conditions described in 7.4.2 of EN 203-1:2005 the requirements of 6.3.2.2.1 of EN 203-1:2005 shall be met.

6.8.2.101 Pressurised fryers

Pressurised fryers shall be fitted with a pressure regulator and a relief valve the design of which shall be such that they cannot be made inoperative or set to higher relief pressure.

The locking mechanism of the cover shall be so constructed that any opening under pressure shall not be possible.

A pressurised fryer shall be fitted with a pressure gauge or indicator device.

6.10 Rational use of energy

When tested in accordance with 7.101 the efficiency of the fryer shall be not less than 50 %.

7.4.2.101 Checking of the temperature regulation

The pan is filled to its minimum indicated level with oil at (20 ± 5) °C.

The temperature is measured at the geometric centre of the oil, 25 mm below the surface.

The test is started from cold. The appliance is operating at its nominal heat input with a reference gas corresponding to its category at normal pressure. The thermostat is set to its highest setting.

After the thermostat has cut out three times in succession, it is checked that the requirement of 6.3.2.101 is met.

7.4.2.102 Checking of the overheat limit device

After the test described in 7.4.2.101 the thermostat is put out of action.

The maximum temperature is measured after the overheat device has operated, and it is checked that the requirement of 6.3.2.102 is met.

7.101 Rational use of energy

The appliance is supplied with the reference gas corresponding to the highest nominal heat input. Type B_{11BS} appliances shall be fitted with 0,5 m flue length after the draught diverter. Type B_{14} appliances shall be fitted with the shortest combustion products evacuation duct stated by the manufacturer. According to the specification of the manufacturer the pan is filled with water. The control thermostat is set in the highest position. After having reached the boiling point, the appliance is left to operate during the measuring time.

The efficiency is determined according to the following formula:

$$\eta = \frac{M_w \times C_w}{V_c \times H_i} \times 100$$

where:

M_w is the amount of the evaporated water during the measuring time, in grams (g);

C_w is the evaporation heat of water, in megajoules per gram (MJ/g) [2,256 MJ/g];

V_c is the volume or mass of gas consumed during the measuring time, in cubic meters (m^3) or kilograms (kg);

if Vc is measured by volume:

$$Vc = Vmes \times \frac{(pa + p - ps)}{1013{,}25} \times \frac{288{,}15}{(273{,}15 + tg)}$$

where:

V_{mes} is the volume of gas measured in cubic metres (m^3);

p_a is the atmospheric pressure in millibars (mbar);

p is the supply pressure of the gas at the point of measurement of the heat input in millibars (mbar);

p_s is the partial pressure of water vapour in millibars (mbar) (see EN 203-1);

t_g is the temperature of gas at the point of measurement of heat input in degrees Celsius (°C).

H_i is the net caloric value of the dry reference gas at 15°C, 1013,25 mbar, in megajoules per cubic meters (MJ/m^3) or megajoules per kilograms (MJ/kg).

9.2.1 Data plates and labels

Addition

For pressurised appliances a plate shall state the operating pressure of the appliance.

9.3.2 Instructions for use and maintenance

Addition

The instructions shall include warnings regarding the risks due to the use of hot and/or old oil and at least on the following points:

- overheating of the oil;
- unattended use of the fryer;
- replenishment of the oil when the fryer is hot;
- use of flammable solvents and cleaning aids;
- over and under filling of the pan;
- introduction of wet food or water into the hot oil or fat.