



SLOVENSKI STANDARD
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Gas-fired type B tumble dryers of nominal heat input not exceeding 20 kW - Part 1:
Safety

Gasbefeuerte Trommeltrockner Typ B mit Nennwärmebelastungen bis 20 kW - Teil 1:
Sicherheit

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(standard title)
Seche-linge de type B a tambour utilisant les combustibles gazeux, de débit calorifique
nominal ne dépassant pas 20 kW - Partie 1: Sécurité

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97.060

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English version

Gas-fired type B tumble dryers of nominal heat input not exceeding 20 kW - Part 1: Safety

Sèche-linge de type B à tambour utilisant les combustibles gazeux, de débit calorifique nominal ne dépassant pas 20 kW - Partie 1: Sécurité

Gasbefeuerte Trommeltrockner Typ B mit Nennwärmebelastungen bis 20 kW - Teil 1: Sicherheit

This European Standard was approved by CEN on 3 July 1999.

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, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

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

Central Secretariat: rue de Stassart, 36 B-1050 Brussels

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FOREWORD

This European Standard has been prepared by Technical Committee CEN/TC 299 "Gas-fired sorption appliances and domestic gas-fired washing and drying appliances", the secretariat of which is held by AENOR.

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 February 2000, and conflicting national standards shall be withdrawn at the latest by February 2000.

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 standard.

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

The Directive makes no specification in respect of the maximum rating of appliances falling within its scope. However, the scope of this standard has been limited to appliances having heat inputs not greater than 20 kW.

For domestic tumble dryers of types B_{22D} and B_{23D} of nominal heat input not exceeding 6 kW see prEN 1458-1 and prEN 1458-2.

The test gases, test pressures and appliance categories given in this European Standard are in accordance with those specified in EN 437: *"Test gases, test pressures and appliance categories"*.

The marking requirements in this European Standard take into account CR 1472 *"General guidance for the of gas appliances"*.

1 Scope

This European Standard specifies the requirements and test methods for the construction, safety and marking of gas-fired type B tumble dryers not exceeding a nominal heat input of 20 kW and with drum volume not exceeding 350 l, hereafter referred to as "Appliances".

This European Standard applies to types B₂₂ and B₂₃ direct gas-fired appliances and to types B₁₁ and B_{11BS} indirect gas-fired appliances.

This Standard does not apply to:

- a) catalytic combustion appliances;
- b) appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere;
- c) appliances of the condensing type wherein the heated air and products of combustion used for the drying process are dehumidified by cooling with water or air;
- d) appliances intended to be used in vehicles or on board ships or aircraft;
- e) appliances of types B_{22D} and B_{23D}.

This standard covers type testing only.

2 Normative references

This Standard incorporates, by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate place in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For the undated references, incorporated in it by amendment or revision. For undated references, the latest edition of the publication referred to applies.

EN 88	Pressure governors for gas appliances for inlet pressures up to 200 mbar
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 gas burner control systems for gas burners and gas burning appliances with or without fans
EN 437: 1993	Test gases - Test pressures - Appliance categories

EN 1057	Copper and copper alloys - Seamless, round copper tubes for water and gas in sanitary and heating applications
EN 50165	Electrical equipment of non-electric appliances for household and similar purposes - Safety requirements.
EN 60204-1	Safety of machinery - Electrical equipment of machines - Part 1: General requirements (IEC 60204-1:1997)
EN 60335-1	Safety of household and similar electrical appliances - Part 1: General requirements (IEC 60335-1)
EN 60335-2-11: 1995	Safety of household and similar electrical appliances - Part 2-11: Particular requirements for tumble dryers (IEC 60335-2-11: 1993)
EN 60529	Degrees of protection provided by enclosures (IP code) (IEC 60529:1989)
EN 60730-2-9	Automatic electrical controls for household and similar use - Part 2-9: Particular requirements for temperature sensing controls (IEC 60730-2-9:1992)
EN 61121	Method for measuring the performance of tumble dryers for household use (IEC 61121:1993)
EN ISO 3166-1	Codes for the representation of names of countries and their subdivisions - Part 1: Country codes (ISO 3166-1:1997)
CR 1749	European scheme for the classification of gas appliances according to the method of evacuation of the products of combustion (types)
ISO 7-1	Pipe threads where pressure-tight joints are made on the threads - Part 1: Dimensions, tolerances and designation
ISO 228-1	Pipe threads where pressure-tight joints are not made on the threads - Part 1: Dimensions, tolerances and designation
ISO 1182	Fire tests - Building materials - Non-combustibility test
ISO 6976	Natural gas - Calculation of calorific values, density, relative density and Wobbe index from composition

3 Definitions

For the purposes of this standard, the following definitions apply:

3.1 Tumble dryers

3.1.1 direct gas-fired tumble dryer: Appliance in which textile material is dried by tumbling in a rotating drum through which heated air and products of combustion are forced or induced by mechanical means.

3.1.2 indirect gas-fired tumble dryer: Appliance in which textile material is dried by tumbling in a rotating drum through which heated air is forced or induced by mechanical means. The drying air is heated in an integral heat exchanger.

3.1.3 drum volume: Internal net volume in litres of the drum in which the textile is placed.

3.2 Gases

3.2.1 reference conditions: 15 °C, 1 013,25 mbar, unless otherwise specified.

3.2.2 calorific value: Quantity of heat produced by the complete combustion, at a constant pressure of 1 013,25 mbar, of 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.

A distinction is made between

- the gross calorific value in which the water produced by combustion is assumed to be condensed;

Symbol: H_s

- the net calorific value in which the water produced by combustion is assumed to be in the vapour state.

Symbol: H_i

Units: either

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- megajoule per cubic metre (MJ/m^3) of dry gas at the reference conditions, or
- megajoule per kilogram (MJ/kg) of dry gas.

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[EN 437: 1993].

3.2.3 relative density: Ratio of the masses of equal volumes of dry gas and dry air at the same conditions of temperature and pressure: 15 °C and 1 013,25 mbar.

Symbol: d

3.2.4 Wobbe index: Ratio of the net calorific value of a gas per unit volume and the square root of its relative density under the same reference conditions. The Wobbe index is said to be gross or net according to whether the calorific value used is the gross or net calorific value.

Symbol: gross Wobbe index: W_s ; net Wobbe index: W_i

Units: either

- megajoule per cubic metre (MJ/m^3) of dry gas at the reference conditions, or
- megajoule per kilogram (MJ/kg) of dry gas.

[EN 437: 1993].

3.2.5 gas supply pressure: Relative static pressure measured at the gas inlet connection of the appliance, with the appliance in operation.

3.2.6 test gases: Gases intended for the verification of the operational characteristics of appliances using combustible gases. They consist of reference gases and limit gases.

[EN 437: 1993].

3.2.7 reference gases: Test gases on which appliances operate under nominal conditions when they are supplied at the corresponding normal pressure. [EN 437: 1993].

3.2.8 limit gases: Test gases representative of the extreme variations in the characteristics of the gases for which appliances have been designed. [EN 437: 1993].

3.2.9 test pressures: Gas pressures used to verify the operational characteristics of appliances using combustible gases. They consist of normal and limit pressures.

Unit: millibar (mbar).

NOTE: 1 mbar = 10^2 Pa

[EN 437: 1993].

3.2.10 normal pressure: Pressure under which the appliances operate in nominal conditions when they are supplied with the corresponding reference gas.

Symbol: p_n

[EN 437: 1993].

3.2.11 limit pressures: Pressures representative of the extreme variations in the appliance supply conditions.

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Symbols: maximum pressure: p_{\max} ; minimum pressure: p_{\min}

[EN 437: 1993].

3.2.12 pressure couple: Combination of two distinct gas distribution pressures applied by reason of the significant difference existing between the Wobbe indices within a single family or group in which:

- the higher pressure corresponds only to gases of low Wobbe index;
- the lower pressure corresponds to gases of high Wobbe index.

[EN 437: 1993].

3.3 Conditions of operation and measurement

3.3.1 cold condition: Condition of the appliance required for some tests and obtained by allowing the unlit appliance to attain thermal equilibrium at room temperature.

3.3.2 hot condition: Condition of the appliance required for some tests and obtained by heating to thermal equilibrium at the nominal heat input specified by the manufacturer, any thermostat remaining fully open.

3.4 Appliance construction

3.4.1 Gas circuit

3.4.1.1 gas circuit: Part of an appliance between the gas inlet connection and the burner(s) conveying or containing the gas. The circuit can comprise several components.

EXAMPLES: restrictors, gas rate adjusters, gas rate controls, injectors.

3.4.1.2 mechanical joint: Connection device assuring soundness in an assembly of several parts, generally of metal.

EXAMPLES: cone seated joint, O-ring joint, flat faced washered joint.

3.4.1.3 restrictor: Device with an orifice, which is placed in the path of the gas flow between the appliance inlet connection and the burners 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.

3.4.1.4 gas rate adjuster: Component intended for the manufacturer or installer to set the gas rate to each burner at a predetermined value according to the supply conditions.

The adjustment can be progressive (screw adjuster) or discontinuous (changing restrictors).

The adjuster of an adjustable governor is regarded as a gas rate adjuster.

The action of setting this device is called "setting the gas rate".

3.4.1.5 gas rate control: Component intended for the user to open or close the gas supply to one or more burners. It can also be used to adjust the gas rate of certain burners to a predetermined value, called the "reduced rate". This device can be a "tap".

3.4.1.6 injector: Component that admits the gas into an aerated burner.

3.4.2 Burners

3.4.2.1 main burner: Burner that assures the thermal function of an appliance. It is usually called simply "burner".

3.4.2.2 ignition device: Device that ignites one or more burners. Such a device can be, for example, an ignition burner.

3.4.2.3 ignition burner: Burner intended to ignite a main burner.

3.4.2.4 intermittent ignition burner: Ignition burner that is ignited and extinguished at the same time as the main burner.

3.4.2.5 fixed primary aeration restrictor: Device containing an orifice of fixed cross section which limits the supply of air to a burner.

3.4.3 flue outlet: Part of an appliance that connects with a flue to evacuate the products of combustion.

3.4.4 equivalent resistance (of the flue outlet): Resistance to flow in millibar, measured at the outlet of the appliance, which is equivalent to that of the actual flue.

3.4.5 draught diverter: Device placed in the combustion products circuit to reduce the influence of flue-pull and that of downdraught on the burner performance and combustion.

3.4.6 Auxiliary equipment **STANDARD PREVIEW** (standards.iteh.ai)

3.4.6.1 governor: Device that maintains, within a fixed range, a constant downstream pressure, independent of the upstream pressure and/or the gas rate.

3.4.6.2 flame supervision device: Device, including a sensing element, that causes the gas supply to a burner to be opened or closed according to the presence or absence of the flame that activates the sensing element.

3.4.6.3 control knob: Component designed to be moved by hand in order to operate an appliance control (tap, thermostat, etc.).

3.4.6.4 programming unit: Unit which reacts to impulses from control and safety devices, gives control commands, controls the start up programme, supervises the burner operation and causes