



SLOVENSKI STANDARD
SIST EN 50597:2015

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Poraba energije prodajnih avtomatov

Energy consumption of vending machines

Energieverbrauch von Verkaufsautomaten

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Ta slovenski standard je istoveten z: EN 50597:2015

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55.230	Razdelilni in prodajni avtomati	Distribution and vending machines

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Energy Consumption of Vending Machines

Consommation d'énergie des distributeurs automatiques

Energieverbrauch von Verkaufsautomaten

This European Standard was approved by CENELEC on 2015-09-07. CENELEC 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.

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European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

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EN 50597:2015 (E)

European foreword

This document (EN 50597:2015) has been prepared by CLC/TC 59X "Performance of household and similar electrical appliances".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-09-07
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2018-09-07

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Introduction

Vending machines are included in the European Commission's eco-design study on ENER Lot 12. It is foreseen that an Ecodesign Regulation implementing Directive 2009/125/EC on the eco-design of energy-related products will be adopted in the future, and a corresponding standardization request will be issued to CEN and CENELEC accordingly. The development of the present European Standard was deemed necessary in a view to anticipate the above-mentioned developments.

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1 Scope

This European Standard defines methods for the measurement of energy consumption of vending machines, whether or not fitted with refrigerating appliances.

The European Standard applies (but is not limited) to the following categories of machine types:

Table 1 — Vending machine categories

CATEGORY	MACHINE TYPE
1	Refrigerated closed fronted can and bottle machines where the products are held in stacks
2	Refrigerated glass fronted can and bottle, confectionery & snack machines
3	Refrigerated glass fronted machines entirely for perishable foodstuffs
4	Refrigerated multi-temperature glass fronted machines
5	Confectionery and snack machines that are not refrigerated

For verification purposes all the tests specified need to be applied to a single unit. The tests may also be made individually for the study of a particular characteristic.

This European Standard does not deal with any characteristics of machine design other than energy consumption.

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 50564, *Electrical and electronic household and office equipment — Measurement of low power consumption*

3 Terms and definitions

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

3.1 Relating specifically to the vending process:

3.1.1

automatic defrosting

defrosting where no action is necessary by the user to initiate the removal of frost accumulation and to restore normal operation

Note 1 to entry: It includes the automatic removal of defrost water.

3.1.2

cabinet

enclosure within a vending machine in which products are held ready to be vended

3.1.3

automatic energy saving mode

mode of a vending machine in which energy reducing measures are automatically applied as a result of operational controls fitted by the manufacturer

Note 1 to entry: These operational controls could include light or movement sensors. Timers or other controls that can be adjusted by the machine operating company do not qualify as automatic unless they have a permanent minimum configuration level that cannot be overridden by the machine operating company, in which case they may be operational for the automatic energy saving mode test at their minimum configuration.

3.1.4

factory settings

settings that are made in the factory before the machine is sent to the customer; these include, but are not limited to, thermostat settings, defrost cycles and energy saving features

3.1.5

health control cut out function

function that prevents vending of foodstuff if the machine or compartment experiences a time/temperature condition outside that permitted under food safety regulations

Note 1 to entry: This function is fitted on machines intended entirely for the storage and vending of perishable foodstuffs or with a compartment for the storage and vending of such foodstuffs.

3.1.6

loading or filling

process of putting products into the vending machine

Note 1 to entry: This may require the door of the machine to be open.

3.1.7

manufacturer's instructions

instructions that accompany the machine, including advice on installation of the machine at the final operating location

3.1.8

non-refrigerated machines

vending machines with no refrigeration system fitted

Note 1 to entry: These may dispense a variety of products including but not limited to newspapers, non-perishable snacks and toys.

3.1.9

perishable foodstuffs

foods, such as dairy products, sandwiches and plated meals that are required to be kept chilled under food safety regulations

Note 1 to entry: Requirements vary between EU Member States.

3.1.10

pull down

reduction of temperature inside the product storage area of a chilled vending machine to the machine's nominal operating temperature as specified by the manufacturer, for example as required following the loading operation

3.1.11

ready mode

mode of a vending machine in which the machine is available (ready) for use but no products are taken, and in which vended products are available for immediate delivery

3.1.12

refrigerated multi-temperature glass fronted machines

machines which can be set up to have more than one compartment, each of which is held at a different temperature, one of which is for perishable food

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Note 1 to entry: The presence of a health control cutout function in the perishable food compartment is essential.

Note 2 to entry: The compartments in these machines are sized according to the needs of the final customer. In practice they are operated with no more than 50% capacity at perishable food temperatures.

3.1.13**vending machine entirely for perishable foodstuffs**

machines designed for the safe storage of perishable foods that meet the necessary regulatory requirements

Note 1 to entry: Presence of a health control cutout function is an essential part of that requirement.

3.1.14**vending mode**

transient mode of a vending machine during which products are dispensed

3.1.15**zone cooled vending machine**

vending machines for which the cabinet is not fully cooled throughout its volume and in which product is cooled to the final vending temperature only as it reaches close to the dispensing mechanism

Note 1 to entry: This is the usual configuration for category 1 machines.

Note 2 to entry: Zone cooled machines are not appropriate for perishable foodstuffs.

3.2 Relating to the tests:

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3.2.1**net volume**

net internal refrigerated volume of the cabinet within which the products directly available for vending are contained, measured according to 6.4

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3.2.2**normal conditions of use**

operating conditions which exist when the **cabinet**, including all permanently located accessories, has been set up and situated as stated in the manufacturer's instructions / technical documentation and is in service

Note 1 to entry: The effects of actions by non-technical personnel for purposes of loading, unloading, cleaning, defrosting, the manipulation of accessible controls and any removable accessories, etc., according to the **manufacturer's instructions** are within this definition. The effects of actions resulting from interventions by technical personnel for the purposes of maintenance or repair are outside this definition.

3.2.3**test package**

food product used as load when testing chilled food compartments

Note 1 to entry: The test packages used in these tests need to be commercially available, unopened, 330 ml cans of soft drinks.

Note 2 to entry: It has been established that the difference in heat capacity of cans of different soft drinks is insignificant in these tests.

4 General requirements

4.1 Applicability

This standard establishes the tests and calculations necessary to determine the energy rating of a vending machine.

The standard relates to the categories of vending machines described in Table 2.

Table 2 — Description of vending machine categories

CATEGORY	MACHINE TYPE	COMMENT
1	Refrigerated closed fronted can and bottle machines where the products are held in stacks	These machines serve refrigerated beverages that are not visible before vending.
2	Refrigerated glass fronted can and bottle, confectionery & snack machines	These machines are refrigerated for foodstuffs serving quality reasons not related to food safety.
3	Refrigerated glass fronted machines entirely for perishable foodstuffs	These machines are refrigerated for food safety reasons and have a health control cutout function.
4	Refrigerated multi-temperature glass fronted machines	These machines have more than one compartment, each of which is held at a different temperature, one of which is for perishable food. The compartment containing perishable food shall be controlled by a health control cutout function.
5	Confectionery and snack machines that are not refrigerated	These machines store product at ambient temperature without cooling.

The following types of vending machine are excluded from this standard:

- ice cream vending machines;
- drink machines dispensing hot and/or cold drinks into cups;
- vending machines operating at temperatures below 0°C.

The machine manufacturer shall provide adequate information to confirm that the machine is suitable for testing according to this specification and that it can perform the tests as required, if necessary with minimum intervention by manufacturers' technical staff.

Information shall be provided by completing the test report in Annex B.

4.2 Test room

Tests shall be carried out in a test room at (23 ± 2) °C and (60 ± 5) % relative humidity with defined air movement. The conditions in the test room shall be measured by a probe located 500 mm upstream of the vending machine (on the air supply side of the cabinet) in line with the front of the cabinet and at half the height of the vending machine being tested.

Lighting shall be installed to maintain (600 ± 100) lx measured at a height of 1 m above the floor level.