

Electric ovens for household use — Methods for measuring energy consumption

The European Standard EN 50304:2001 has the status of a
British Standard

ICS 97.040.20

National foreword

This British Standard is the official English language version of EN 50304:2001, including Corrigendum March 2002.

The UK participation in its preparation was entrusted by Technical Committee CPL/59, Performance of household electrical appliances, to Subcommittee CPL/59/9, Cooking and microwave appliances, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

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

Cross-references

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This British Standard, having been prepared under the direction of the Electrotechnical Sector Committee, was published under the authority of the Standards Committee and comes into effect on 17 June 2002

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13842 Corrigendum No. 1	17 June 2002	Addition of footnote to Annex C

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**Electric ovens for household use -
Methods for measuring the energy consumption**

Fours électriques à usage domestique -
Méthodes de mesure de la consommation
d'énergie

Elektrische Backöfen für den
Hausgebrauch -
Verfahren zur Messung des
Energieverbrauchs

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CENELEC

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

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Foreword

This European Standard was prepared by the Technical Committee CENELEC TC 59X, Consumer information related to household electrical appliances.

According to the decision of CLC/TC 59X, taken at the meeting in Brussels on 7th/8th October 1996 and confirmed at the meeting in Paris on 26th/27th March 1998 this standard has been drawn up as a self-contained CENELEC document. But it follows, as far as suitable, the structure of IEC 60350:1999.

Based on an interlaboratory test performed by nine laboratories test results obtained according to this standard are for direct comparison and are considered sufficiently reproducible within given limits for the purpose of energy labelling in according to the Commission Directive on energy labelling and standard product information.

This European Standard has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association and covers essential requirements of EC Directive 92/75/EEC on "Indication by labelling and standard product information of the consumption of energy and other resources by household appliances".

It deals **only** with those test procedures that are required for the Commission Directive on Energy labelling for ovens.

It also defines permitted tolerances to values declared by the manufacturer and control procedures for checking these values.

The text of the draft was submitted to the formal vote and was approved by CENELEC as EN 50304 on 2000-04-01.

This European Standard supersedes HD 376 S2:1984.

The following dates were fixed:

- | | | |
|---|-------|------------|
| - latest date by which the EN has to be implemented | | |
| - at national level by publication of an identical | | |
| - national standard or by endorsement | (dop) | 2001-11-01 |
| - latest date by which national standards conflicting | | |
| - with the EN have to be withdrawn | (dow) | 2003-04-01 |

Annexes designated "normative" are part of the body of the standard.

Annexes designated "informative" are given for information only.

In this standard, annexe A is normative, annexes B, C and D are informative.

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1 Scope

This standard applies to electric ovens for household use.

It is not applicable to:

- microwave ovens and microwave combination ovens;
- small cavity ovens (see 4.4);
- ovens without adjustable temperature control;
- heating functions others than defined in 4.1 - 4.3.

2 Object

The object of this standard is to specify in accordance with the Council Directive on energy labelling and standard product information:

- energy consumption using a standardised load during a standardised test procedure;
- some performance characteristics (like volume, time for heating a load and baking trays area);
- permitted tolerances to values declared by the manufacturer and control procedures for checking these declared values.

This standard is concerned neither with safety nor with performance requirements.

3 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places 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 undated references the latest edition of the publication referred to applies.

EN 60350	1999	<i>Electric cooking ranges, hobs, ovens and grills for household use - Methods for measuring performance (IEC 60350:1999)</i>
EN 60584-2	1993	<i>Thermocouples – Part 2: Tolerances (IEC 60584-2:1982 + A1:1989)</i>
EN 61591	1997	<i>Household range hoods - Methods for measuring the performance (IEC 61591:1997)</i>

4 Definitions

For the purpose of this standard the following definitions apply:

4.1

conventional heating function

food is cooked by radiation and natural convection only

NOTE This does not include ovens that have a top heating element only (i.e. for the grilling function).

4.2

forced air circulation function

heat transmission to the food by forced air convection, i.e. circulating the air with the help of a fan

NOTE This does not include circulated air functions which operate a grill element only.

4.3

hot steam function

food is heated with hot steam ($T >> 100\text{ °C}$) at ambient pressure (1 bar)

4.4

small cavity oven

an oven with the following dimensions related to the usable volume:

- both width and depth < 250 mm,
- or height < 120 mm.

NOTE The definition of small cavity ovens in this standard is due to the size of the artificial standard load.

4.5

multiple cavity appliance

an appliance that has more than one separate oven cavity in which food is cooked and which can be controlled independently, but cannot be installed separately

5 List of measurements

5.1 *Dimensions*

- Overall dimensions (clause 7);
- Dimensions of the usable volume and the surface area (clause 7).

5.2 *Energy consumption and heating times*

- Preheating of the empty oven (8.2);
- Heating of the load (8.3).

6 General conditions for measurements

6.1 *General*

The manufacturer's instructions regarding installation of the oven shall be followed.

Prior to every test the whole appliance (this includes the material and the insulation) shall be at ambient temperature. In multiple cavity appliances each oven cavity has to be measured separately. Only the cavity measured shall be switched on.

In case an oven has several variants of the functions as described in 4.1 – 4.3, the manufacturer can choose the variant to be tested. This has to be reported (see clause 9).

Unless otherwise specified, measurements are conducted under the following conditions:

6.2 *Ambient temperature*

The tests are carried out in a substantially draught-free room in which the ambient temperature is maintained at $(23 \pm 2) ^\circ\text{C}$ during the complete test.

This ambient temperature is measured at a point that is at the same height as the centre of the usable volume of the oven cavity and at a distance of 0,5 m diagonally from one of the front edges of the appliance, see Figure 1.

The measurement of the ambient temperature shall not be influenced by the oven itself or by any other appliance.

6.3 *Electrical supply*

The supply voltage shall be maintained at the main terminal at $230 \text{ V} \pm 1 \%$ or at $400 \text{ V} \pm 1 \%$, as defined by the manufacturers installation guide, while the heating elements are switched on. The supply frequency shall be at nominal $50 \text{ Hz} \pm 1 \%$.