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REDLINE VERSION

INTERNATIONAL STANDARD



**Household electric cooking appliances –
Part 1: Ranges, ovens, steam ovens and grills – Methods for measuring
performance**

INTERNATIONAL
ELECTROTECHNICAL
COMMISSION

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD ELECTRIC COOKING APPLIANCES –

Part 1: Ranges, ovens, steam ovens and grills – Methods for measuring performance

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This redline version of the official IEC Standard allows the user to identify the changes made to the previous edition IEC 60350-1:2016+AMD1:2021 CSV. A vertical bar appears in the margin wherever a change has been made. Additions are in green text, deletions are in strikethrough red text.

IEC 60350-1 has been prepared by subcommittee 59K: Performance of household and similar electrical cooking appliances, of IEC technical committee 59: Performance of household and similar electrical appliances. It is an International Standard.

This third edition cancels and replaces the second edition published in 2016 and Interpretation Sheet 1:2021. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) new definitions for heating function, eco function and definitions relevant for low power mode considerations are amended in Clause 3;
- b) order of clauses is changed;
- c) revision of 5.3;
- d) update of 6.2 in order to improve the reliability of volume measurement;
- e) removal of 6.7, Level of shelf;
- f) revision of Clause 7 concerning the accuracy of **eco functions** with residual heat use;
- g) revision of Clause 8 in order to improve the reliability of the method for measuring the energy consumption, especially regarding anti-circumvention;
- h) unique energy consumption measurement for all **heating functions** and **eco functions** with an indication of the energy consumption for a temperature increase of 165 K (compared to 155 K currently for forced air circulation function, for example), which results in higher energy consumption values compared to the previous edition;
- i) R_y replaced by L^* in Clause 9 and reference to IEC TS 63350;
- j) cooking time for reference measurement introduced for broccoli in Clause 10;
- k) yellow part replaced by hue angle value in Clause 10;
- l) requirements for digital assessment (see former 7.5.3.6.3) are obsolete as specified in IEC TS 63350;
- m) revision of Clause 14 (Consumption measurement of low power modes, previous Clause 12);
- n) former Annex G (informative) is cancelled due to the fact that this method for measuring an associated activity has been not applied;
- o) former Annexes B and F are obsolete, up-to-date shade charts are specified in IEC TS 63350;
- p) former Annex E will be substituted by a supporting document located on the IEC's website.

The document contains supplementary material highlighted by notes indicating the link.

The text of this International Standard is based on the following documents:

Draft	Report on voting
59K/365/FDIS	59K/370/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

Words in **bold** in the text are specifically defined in Clause 3.

A list of all parts in the IEC 60350 series, published under the general title *Household electric cooking appliances*, can be found on the IEC website.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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HOUSEHOLD ELECTRIC COOKING APPLIANCES –

Part 1: Ranges, ovens, steam ovens and grills – Methods for measuring performance

1 Scope

This part of IEC 60350 specifies methods for measuring the performance of electric **cooking ranges, ovens, steam ovens, and grills** for household use.

NOTE 1 This document is also applicable to portable appliances with similar functionalities that were previously covered by the withdrawn IEC 61817.

The **ovens** covered by this document ~~may~~ can be with or without microwave function.

Manufacturers ~~should~~ are expected to define the primary cooking function of the appliance – microwave function or thermal heat. The primary cooking function ~~should be~~ is measured with an existing method according to energy consumption. If the primary cooking function is declared in the instruction manual as a microwave function, IEC 60705 is applied for energy consumption measurement. If the primary cooking function is declared as a thermal heat, then IEC 60350-1 is applied for energy consumption measurement.

If the primary function is not declared by the manufacturer, the performance of the microwave function and thermal heat ~~should be~~ is measured as far as it is possible.

NOTE 2 For measurement of energy consumption and time for heating a load (see Clause 8), this document is furthermore not applicable to:

- microwave combination function;
- **ovens** with reciprocating trays or turntable;
- **small cavity ovens** (see 3.16);
- **ovens** without adjustable temperature control;
- **heating functions and eco functions** other than defined in this document;
- appliances with only solo **steam function**.

NOTE 3 This document does not apply to

- microwave ovens (IEC 60705).

This document defines the main performance characteristics of these appliances that are of interest to the user and specifies methods for measuring these characteristics.

This document does not specify a classification or ranking for performance.

~~NOTE 3 Some of the tests which are specified in this standard are not considered to be reproducible since the results may vary between laboratories. They are therefore intended for comparative testing purposes only.~~

NOTE 4 This document does not deal with safety requirements (IEC 60335-2-6 and IEC 60335-2-9).

NOTE 5 Appliances covered by this document ~~may~~ can be built-in or for placing on a working surface or the floor.

NOTE 6 There is no measurement method for the energy consumption for grilling and **steam functions** available.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies.

For undated references, the latest edition of the referenced document (including any amendments) applies.

~~IEC 60584-2, Thermocouples – Part 2: Tolerances~~

IEC 60584-1, *Thermocouples – Part 1: EMF specifications and tolerances*

IEC 62301:2011, *Household electrical appliances – Measurement of standby power*

IEC TS 63350:2022, *Household electrical appliances – Specification of the properties of a digital system for measuring the performance*

IEC 63474¹, *Electrical and electronic household and office equipment – Measurement of networked standby power consumption of edge equipment*

ISO 80000-1:2009, *Quantities and units – Part 1: General*

~~GIE 15, Colorimetry~~

¹ Under preparation. Stage at the time of publication: IEC CDV 63474:2022.

INTERNATIONAL STANDARD

NORME INTERNATIONALE



**Household electric cooking appliances –
Part 1: Ranges, ovens, steam ovens and grills – Methods for measuring
performance**

**Appareils de cuisson électrodomestiques –
Partie 1: Cuisinières, fours, fours à vapeur et grils – Méthodes de mesure de
l'aptitude à la fonction**

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INTERNATIONAL ELECTROTECHNICAL COMMISSION

HOUSEHOLD ELECTRIC COOKING APPLIANCES –

Part 1: Ranges, ovens, steam ovens and grills – Methods for measuring performance

FOREWORD

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IEC 60350-1 has been prepared by subcommittee 59K: Performance of household and similar electrical cooking appliances, of IEC technical committee 59: Performance of household and similar electrical appliances. It is an International Standard.

This third edition cancels and replaces the second edition published in 2016 and Interpretation Sheet 1:2021. This edition constitutes a technical revision.

This edition includes the following significant technical changes with respect to the previous edition:

- a) new definitions for heating function, eco function and definitions relevant for low power mode considerations are amended in Clause 3;
- b) order of clauses is changed;
- c) revision of 5.3;
- d) update of 6.2 in order to improve the reliability of volume measurement;
- e) removal of 6.7, Level of shelf;

- f) revision of Clause 7 concerning the accuracy of **eco functions** with residual heat use;
- g) revision of Clause 8 in order to improve the reliability of the method for measuring the energy consumption, especially regarding anti-circumvention;
- h) unique energy consumption measurement for all **heating functions** and **eco functions** with an indication of the energy consumption for a temperature increase of 165 K (compared to 155 K currently for forced air circulation function, for example), which results in higher energy consumption values compared to the previous edition;
- i) R_y replaced by L^* in Clause 9 and reference to IEC TS 63350;
- j) cooking time for reference measurement introduced for broccoli in Clause 10;
- k) yellow part replaced by hue angle value in Clause 10;
- l) requirements for digital assessment (see former 7.5.3.6.3) are obsolete as specified in IEC TS 63350;
- m) revision of Clause 14 (Consumption measurement of low power modes, previous Clause 12);
- n) former Annex G (informative) is cancelled due to the fact that this method for measuring an associated activity has been not applied;
- o) former Annexes B and F are obsolete, up-to-date shade charts are specified in IEC TS 63350;
- p) former Annex E will be substituted by a supporting document located on the IEC's website.

The document contains supplementary material highlighted by notes indicating the link.

The text of this International Standard is based on the following documents:

Draft	Report on voting
59K/365/FDIS	59K/370/RVD

Full information on the voting for its approval can be found in the report on voting indicated in the above table.

The language used for the development of this International Standard is English.

Words in **bold** in the text are specifically defined in Clause 3.

A list of all parts in the IEC 60350 series, published under the general title *Household electric cooking appliances*, can be found on the IEC website.

This document was drafted in accordance with ISO/IEC Directives, Part 2, and developed in accordance with ISO/IEC Directives, Part 1 and ISO/IEC Directives, IEC Supplement, available at www.iec.ch/members_experts/refdocs. The main document types developed by IEC are described in greater detail at www.iec.ch/publications.

The committee has decided that the contents of this document will remain unchanged until the stability date indicated on the IEC website under webstore.iec.ch in the data related to the specific document. At this date, the document will be

- reconfirmed,
- withdrawn,
- replaced by a revised edition, or
- amended.

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HOUSEHOLD ELECTRIC COOKING APPLIANCES –

Part 1: Ranges, ovens, steam ovens and grills – Methods for measuring performance

1 Scope

This part of IEC 60350 specifies methods for measuring the performance of electric **cooking ranges, ovens, steam ovens, and grills** for household use.

NOTE 1 This document is also applicable to portable appliances with similar functionalities that were previously covered by the withdrawn IEC 61817.

The **ovens** covered by this document can be with or without microwave function.

Manufacturers are expected to define the primary cooking function of the appliance – microwave function or thermal heat. The primary cooking function is measured with an existing method according to energy consumption. If the primary cooking function is declared in the instruction manual as a microwave function, IEC 60705 is applied for energy consumption measurement. If the primary cooking function is declared as a thermal heat, then IEC 60350-1 is applied for energy consumption measurement.

If the primary function is not declared by the manufacturer, the performance of the microwave function and thermal heat is measured as far as it is possible.

NOTE 2 For measurement of energy consumption and time for heating a load (see Clause 8), this document is furthermore not applicable to:

- microwave combination function;
- **ovens** with reciprocating trays or turntable;
- **small cavity ovens** (see 3.16);
- **ovens** without adjustable temperature control;
- **heating functions** and **eco functions** other than defined in this document;
- appliances with only solo **steam function**.

NOTE 3 This document does not apply to

- microwave ovens (IEC 60705).

This document defines the main performance characteristics of these appliances that are of interest to the user and specifies methods for measuring these characteristics.

This document does not specify a classification or ranking for performance.

NOTE 4 This document does not deal with safety requirements (IEC 60335-2-6 and IEC 60335-2-9).

NOTE 5 Appliances covered by this document can be built-in or for placing on a working surface or the floor.

NOTE 6 There is no measurement method for the energy consumption for grilling and **steam functions** available.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60584-1, *Thermocouples – Part 1: EMF specifications and tolerances*

IEC 62301:2011, *Household electrical appliances – Measurement of standby power*

IEC TS 63350:2022, *Household electrical appliances – Specification of the properties of a digital system for measuring the performance*

IEC 63474¹, *Electrical and electronic household and office equipment – Measurement of networked standby power consumption of edge equipment*

ISO 80000-1:2009, *Quantities and units – Part 1: General*

¹ Under preparation. Stage at the time of publication: IEC CDV 63474:2022.

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COMMISSION ÉLECTROTECHNIQUE INTERNATIONALE

APPAREILS DE CUISSON ÉLECTRODOMESTIQUES –

Partie 1: Cuisinières, fours, fours à vapeur et grils – Méthodes de mesure de l'aptitude à la fonction

AVANT-PROPOS

- 1) La Commission Électrotechnique Internationale (IEC) est une organisation mondiale de normalisation composée de l'ensemble des comités électrotechniques nationaux (Comités nationaux de l'IEC). L'IEC a pour objet de favoriser la coopération internationale pour toutes les questions de normalisation dans les domaines de l'électricité et de l'électronique. À cet effet, l'IEC – entre autres activités – publie des Normes internationales, des Spécifications techniques, des Rapports techniques, des Spécifications accessibles au public (PAS) et des Guides (ci-après dénommés "Publication(s) de l'IEC"). Leur élaboration est confiée à des comités d'études, aux travaux desquels tout Comité national intéressé par le sujet traité peut participer. Les organisations internationales, gouvernementales et non gouvernementales, en liaison avec l'IEC, participent également aux travaux. L'IEC collabore étroitement avec l'Organisation Internationale de Normalisation (ISO), selon des conditions fixées par accord entre les deux organisations.
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- 9) L'attention est attirée sur le fait que certains des éléments de la présente Publication de l'IEC peuvent faire l'objet de droits de brevet. L'IEC ne saurait être tenue pour responsable de ne pas avoir identifié de tels droits de brevets.

L'IEC 60350-1 a été établie par le sous-comité 59K: Aptitude à la fonction des appareils électrodomestiques et similaires de cuisson électrique, du comité d'études 59 de l'IEC: Aptitude à la fonction des appareils électrodomestiques et analogues. Il s'agit d'une Norme internationale.

Cette troisième édition annule et remplace la deuxième édition parue en 2016 et la Fiche d'interprétation 1:2021. Cette édition constitue une révision technique.

Cette édition inclut les modifications techniques majeures suivantes par rapport à l'édition précédente:

- a) ajout de nouvelles définitions pour la fonction de chauffage et la fonction éco, avec un amendement concernant les considérations relatives au mode faible puissance à l'Article 3;
- b) modification de l'ordre des articles;
- c) révision du 5.3;
- d) mise à jour du 6.2 afin d'améliorer la fiabilité de la mesure du volume;
- e) suppression du 6.7, Horizontalité de l'étagère;
- f) révision de l'Article 7 relatif à l'exactitude des **fonctions éco** avec utilisation de la chaleur résiduelle;
- g) révision de l'Article 8 afin d'améliorer la fiabilité de la méthode de mesure de la consommation d'énergie, en particulier en ce qui concerne l'anticonournement;
- h) mesurage de la consommation d'énergie unique pour l'ensemble des **fonctions de chauffage** et des **fonctions éco** avec indication de la consommation d'énergie pour une augmentation de la température de 165 K (comparée à 155 K actuellement pour une fonction de circulation forcée de l'air, par exemple), ce qui donne des valeurs de consommation d'énergie supérieures à celles de l'édition précédente;
- i) remplacement de R_y par L^* dans l'Article 9 et référence à l'IEC TS 63350;
- j) introduction du temps de cuisson pour la mesure de référence des brocolis à l'Article 10;
- k) remplacement du terme "partie jaune" par le terme "valeur d'angle de teinte" à l'Article 10;
- l) les exigences relatives à la vérification numérique (voir l'ancien 7.5.3.6.3) sont obsolètes, comme cela est spécifié dans l'IEC TS 63350;
- m) révision de l'Article 14 (Mesurage de la consommation des modes faible puissance, ancien Article 12);
- n) annulation de l'ancienne Annexe G (informative) en raison de l'absence d'application de cette méthode de mesure d'une activité associée;
- o) les anciennes Annexes B et F sont obsolètes, car des nuanciers plus récents sont spécifiés dans l'IEC TS 63350;
- p) l'ancienne Annexe E sera remplacée par un document de support disponible sur le site web de l'IEC.

Ce document contient des informations supplémentaires mises en évidence par des notes qui indiquent le lien.

Le texte de cette Norme internationale est issu des documents suivants:

Projet	Rapport de vote
59K/365/FDIS	59K/370/RVD

Le rapport de vote indiqué dans le tableau ci-dessus donne toute information sur le vote ayant abouti à son approbation.

La langue employée pour l'élaboration de cette Norme internationale est l'anglais.

Les termes en **gras** dans le texte sont spécifiquement définis à l'Article 3.

Une liste de toutes les parties de la série IEC 60350, publiées sous le titre général *Appareils de cuisson électrodomestiques*, se trouve sur le site web de l'IEC.

Ce document a été rédigé selon les Directives ISO/IEC, Partie 2, il a été développé selon les Directives ISO/IEC, Partie 1 et les Directives ISO/IEC, Supplément IEC, disponibles sous www.iec.ch/members_experts/refdocs. Les principaux types de documents développés par l'IEC sont décrits plus en détail sous www.iec.ch/publications.

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APPAREILS DE CUISSON ÉLECTRODOMESTIQUES –

Partie 1: Cuisinières, fours, fours à vapeur et grils – Méthodes de mesure de l'aptitude à la fonction

1 Domaine d'application

La présente partie de l'IEC 60350 spécifie les méthodes de mesure de l'aptitude à la fonction des **cuisinières**, des **fours**, des **fours à vapeur** et des **grils** électriques à usage domestique.

NOTE 1 Le présent document s'applique également aux appareils mobiles équipés de fonctionnalités similaires, qui étaient auparavant couverts par l'IEC 61817 aujourd'hui supprimée.

Les **fours** couverts par le présent document peuvent disposer ou non d'une fonction micro-ondes.

Les fabricants sont présumés définir la fonction de cuisson principale de l'appareil: micro-ondes ou chaleur thermique. La fonction de cuisson principale est mesurée au moyen d'une méthode existante en fonction de la consommation d'énergie. Si la fonction de cuisson principale est déclarée dans le manuel d'instruction comme étant la fonction micro-ondes, l'IEC 60705 s'applique pour le mesurage de la consommation d'énergie. Si la fonction de cuisson principale est déclarée comme étant la chaleur thermique, l'IEC 60350-1 s'applique pour le mesurage de la consommation d'énergie.

Si la fonction principale n'est pas déclarée par le fabricant, l'aptitude à la fonction micro-ondes et à la fonction chaleur thermique est mesurée autant que possible.

NOTE 2 Pour le mesurage de la consommation d'énergie et du temps de chauffage d'une charge (voir l'Article 8), le présent document ne s'applique pas non plus aux:

- fonctions micro-ondes combinées;
- **fours** avec plateau coulissant ou plateau tournant;
- **fours à petite cavité** (voir le 3.16);
- **fours** sans commande de température réglable;
- **fonctions de chauffage** et **fonctions éco** autres que celles définies dans le présent document;
- appareils avec **fonction de vapeur** uniquement.

NOTE 3 Le présent document ne s'applique pas aux:

- fours à micro-ondes (IEC 60705).

Le présent document définit les caractéristiques de performance principales de ces appareils qui sont pertinentes pour l'utilisateur et spécifie les méthodes de mesure de ces caractéristiques.

Le présent document ne spécifie pas un système de classement pour l'aptitude à la fonction de ces appareils.

NOTE 4 Le présent document ne traite pas des exigences de sécurité (IEC 60335-2-6 et IEC 60335-2-9).

NOTE 5 Les appareils couverts par le présent document peuvent être posés sur le sol, encastrés ou placés sur un plan de travail.

NOTE 6 Aucune méthode de mesure de la consommation d'énergie n'est disponible pour les **fonctions de vapeur** et de gril.

2 Références normatives

Les documents suivants sont cités dans le texte de sorte qu'ils constituent, pour tout ou partie de leur contenu, des exigences du présent document. Pour les références datées, seule l'édition citée s'applique. Pour les références non datées, la dernière édition du document de référence s'applique (y compris les éventuels amendements).

IEC 60584-1, *Couples thermoélectriques – Partie 1: Spécifications et tolérances en matière de FEM*

IEC 62301:2011, *Appareils électrodomestiques – Mesure de la consommation en veille*

IEC TS 63350:2022, *Household electrical appliances – Specification of the properties of a digital system for measuring the performance* (disponible en anglais seulement)

IEC 63474¹, *Appareils électriques et électroniques pour application domestique et équipement de bureau – Mesure de la consommation d'énergie en veille avec maintien de la connexion au réseau des équipements de périphérie*

ISO 80000-1:2009, *Grandeurs et unités – Partie 1: Généralités*

¹ À l'étude. Stade au moment de la publication: IEC CDV 63474:2022.