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Electrically operated food preparation appliances - Methods for measuring the performance

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Electrically operated food preparation appliances - Methods for measuring the performance

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IEC 60619 has been prepared by subcommittee 59L: Small household 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 1993, Amendment 1:1995 and Amendment 2:2004. This edition constitutes a technical revision.

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

a) deleted test in Clause 6;
b) modified description of movement of handheld machines in Subclause 5.4;
c) fully revised test on whipping cream in Clause 7;
d) revised Clause 15;
e) figures moved from Clause 22 to Subclauses 5.4 to 5.8,
f) deleted Clause 22.

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

Draft	Report on voting
59L/319/FDIS	59L/327/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.

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, and the ISO/IEC Directives, JTC 1 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

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1 Scope

This document applies to electrically operated food preparation appliances for household use.

The purpose of this document is to state and define test methods for measuring the functions that can be carried out by means of household electrical food preparation appliances, which are of interest to the user and to give some guidelines for the evaluation of test results.

Taking into account the lower grade of accuracy and repeatability, due to variations in time and origin of test materials and ingredients and to the influence of the subjective judgement of test operators, the described test methods can be applied more reliably for comparative testing of a number of appliances at approximately the same time, in the same laboratory, by the same operator and with the same utensils, rather than for testing of single appliances in different laboratories.

This document does not cover safety.

This document does not apply to appliances designed exclusively for commercial or industrial use.

Attention is drawn to the fact that sometimes the same result can be obtained using different functions.

2 Normative references

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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.

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OECD (all parts), *International Standards for Fruit and Vegetables*

3 Terms and definitions

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

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

– IEC Electropedia: available at https://www.electropedia.org/
– ISO Online browsing platform: available at https://www.iso.org/obp

3.1 Terms used to define the functions

3.1.1
whipping cream
incorporating air and increasing the volume of cream

3.1.2
beating
mixing and incorporating air

EXAMPLE: Beating of cake batter to produce dough.

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3.1.3
heavy mixing
incorporating ingredients evenly into a heavy mixture without chopping

EXAMPLE: Mixing of ingredients including dried fruits and glazed cherries to produce fruit cake dough.

3.1.4
mixing
combining ingredients evenly

EXAMPLE: Mixing ingredients to produce pastry or pie.

3.1.5
kneading
working a heavy mixture to form a smooth, pliable mass

3.1.6
blending
pureeing
making semi-solid ingredients liquid or to chop with liquid

EXAMPLE: Chopping or liquidifying vegetables or fruits to produce baby food, pureed fruit or soup.

3.1.7
emulsifying
combining together insoluble liquids so that one or more is suspended in droplets throughout the other

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EXAMPLE: Combining egg and oil to produce mayonnaise.

3.1.8
chopping
reducing solid ingredients to small particles

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EXAMPLE: Chopping of meat to produce minced meat, chopping of onions to produce chopped onions, chopping of almonds to produce chopped almonds.

3.1.9
slicing
cutting into slices

EXAMPLE: Slicing of vegetables to produce carrot slices, cucumber slices or leek slices.

3.1.10
shredding
cutting solid ingredients to small stripes or shreds

EXAMPLE: Cutting carrots to produce carrot shreds, cutting cheese to produce cheese shreds.

3.1.11
grating
producing fine particles that are as uniform as possible

Note 1 to entry: The particles are smaller than those produced by shredding.

3.1.12
cutting French fries
cutting potatoes into the shape of French fries

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3.1.13
juice separation
removing juice from fruit or vegetables by centrifugal force or a strainer by use of auger

3.1.14
citrus juice extraction
removing juice from citrus fruits by applying fruit halves to a rotating cone

3.1.15
coffee milling and grinding
breaking up whole coffee beans in small particles by means of grinding discs, cylinders or cones and similar devices or by means of high-speed rotating cutting blades

3.2 Terms used to define the convenience in use

3.2.1
splashing and spillage
unintentional loss of ingredients during switching on and operation of an appliance

3.2.2
cleaning efficiency
effort necessary to empty, clean and dry an appliance (or separate parts), including the disassembling of the appliance

3.2.3
cleaning time
time necessary to empty, manually clean and dry an appliance (or separate parts), including the disassembling of the appliance

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Note 1 to entry: An automatic cleaning programme of the appliance is considered manual cleaning for the test described in Clause 22.

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4 List of measurements

This document covers the following functions:

– whipping cream (Clause 7);
– beating (Clause 8);
– heavy mixing (Clause 9);
– mixing (Clause 10);
– kneading (Clause 11);
– blending/pureeing (Clause 12);
– emulsifying (Clause 13);
– chopping of meat (Subclause 14.1);
– chopping of onions (Subclause 14.2);
– chopping of almonds (Subclause 14.3);
– slicing of carrots (Subclause 15.1);
– slicing of cucumbers (Subclause 15.2);
– slicing of leeks (Subclause 15.3);
– shredding of carrots (Subclause 16.1);
– grating of cheese (Subclause 16.2);
– French fries chipping (Clause 17);
– juice separation (Clause 18);

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– citrus juice extraction (Clause 19);
– coffee milling and grinding (Clause 20)
– splashing and spillage (21);
– cleaning efficiency and cleaning time (Clause 22).

5 General conditions for measurements

5.1 General

Unless otherwise specified, the measurements are conducted under the following conditions. The attachments, speed, tools and quantities of ingredients used shall be those recommended by the manufacturer. In the absence of manufacturer's recommendations, the quantities quoted shall be used. The ingredients specified have been selected primarily to ensure uniform and reproducible results. Ingredients with their specifications listed in Annex A shall be used, unless otherwise specified. Unless otherwise stated, the appliance shall be operated in accordance with the manufacturer's instructions.

As there is no definition of a given type or size of oven, and as a number of the tests involve baking of the final product in order to make a determination of volume, a variation in results can be expected between ovens used. It is advised that all comparative tests are undertaken in the same oven.

All the tests from Clause 7 to Clause 20 shall be carried out three times (repeated twice), unless otherwise stated in the specific clause.

A test report shall include the settings used for the respective test.

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NOTE Information to be provided to the point of sale are shown in informative Annex B.

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5.2 Electrical supply

The measurements shall be made at rated frequency and at a voltage which is within ±1 % of the rated voltage or the mean of the rated voltage range.

For battery-powered appliances, the appliances are operated with batteries fully charged.

If the rated voltage differs from the nominal supply voltage of the country concerned, measurements carried out at rated voltage can be misleading. Therefore, for comparative testing, the voltage used for the tests shall conform to the nominal supply voltage and this shall be reported.

5.3 Ambient temperature

The ambient temperature and the temperature of all utensils and ingredients shall be maintained at (23 ± 2) °C, unless otherwise specified. The temperature shall be recorded.

In tropical climates, the ambient temperature may be (27 ± 5) °C.

5.4 Movement of hand-held machines

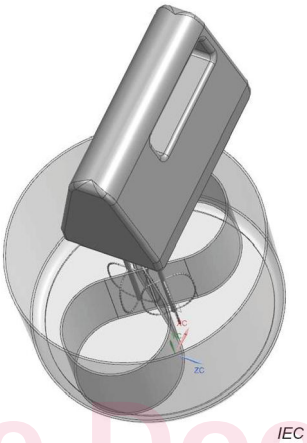
When whipping cream (Clause 7) with a hand-held machine, a movement that describes the shape of the Arabic number eight (see Figure 1) shall be used if possible; otherwise, the shape of the bowl shall be followed. The number of complete movements should be between 45 and 60 per minute. The bowl shall not be moved or lifted during whipping. Touching walls, raising or lowering the hand-held appliance should be avoided.

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When processing cake batter (Clause 8) with a hand-held machine, a movement that describes the shape of the number eight shall be used if possible; otherwise, the shape of the bowl shall be followed. The number of complete movements should be between 30 and 40 per minute. The bowl shall not be moved or lifted during beating. Touching walls, raising or lowering the hand-held appliance should be avoided.

When kneading (Clause 11), hand mixers shall be moved as necessary to achieve good operation but at a speed not exceeding 30 movements per minute. The bowl shall not be moved or lifted during kneading.

For other operations, hand-held machines shall be moved as necessary to achieve good operation but at a speed not exceeding 30 movements per minute.



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Figure 1 – Movement of a hand-held machine in the shape of the Arabic number eight

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5.5 Type of bowl

For appliances supplied with a bowl, the measurements shall be made using this bowl.

Hand-held machines supplied with bowl and stand shall be operated in accordance with the manufacturer's instructions. If no instructions are supplied and it is obvious that the bowl moves, this is allowed but shall be stated in the report.

For appliances not supplied with a bowl, one of the bowls shown in Figure 2, Figure 3 and Figure 4 shall be used, choosing the most suitable for the function that is measured.

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