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Responsible committee: CPL/59 Performance of household electrical appliances

Interested committees:

Title: BS EN IEC 61254 Electric shavers for household use - Evaluation of experience and user satisfaction

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

For national standards, comments will be reviewed by the relevant UK national committee and the resulting standards published as a British Standard.

UK Vote

Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

Submission of Comments

- **Annotated drafts are not acceptable and will be rejected.**
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Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx
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1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex (e.g. 3.1)	Paragraph/Figure/ Table/Note	Type of comment	Commend (justification for change) by the MB	Proposed change by the MB	Secretariat observations on each comment submitted
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	



PROJECT NUMBER:

IEC 61254 ED2

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CLOSING DATE FOR COMMENTS:

2024-06-14

SUPERSEDES DOCUMENTS:

59L/229/RR

IEC SC 59L : SMALL HOUSEHOLD APPLIANCES

SECRETARIAT:

Italy

SECRETARY:

Mr Davide Pietrosevoli

OF INTEREST TO THE FOLLOWING COMMITTEES:

PROPOSED HORIZONTAL STANDARD:

☐

Other TC/SCs are requested to indicate their interest, if any, in this CD to the secretary.

FUNCTIONS CONCERNED:

☐ EMC

☐ ENVIRONMENT

☒ QUALITY ASSURANCE

☐ SAFETY

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Recipients of this document are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

Recipients of this document are invited to submit, with their comments, notification of any local regulations or technical reasons that may exist and should be considered should this proposal proceed, recognizing that failure to address such requirements could result in the need for new or existing "In Some Countries" clauses. (SEE [AC/22/2007](#) OR [NEW GUIDANCE DOC](#)).

TITLE:

Electric shavers for household use - Evaluation of experience and user satisfaction

NOTE FROM TC/SC OFFICERS:

CONTENTS

FOREWORD.....	3
1 Scope	5
2 Normative references	5
3 Definitions	5
4 List of evaluations	6
5 General conditions for evaluations	6
6 Evaluations of user experience for comparing different products.....	6
6.1 Shaving performance	6
6.2 Trimmer performance	8
6.3 Gravimetric analysis of the difference in closeness of shave	8
7 Evaluations of user satisfaction for particular product	12
7.1 Satisfaction for electric shavers-function and performance	12
7.2 Overall satisfaction for electric shavers.....	13
Annex A.....	16
Questionnaires	16
Questionnaire 1	17
Questionnaire 2	18
Annex B.....	26
Annex C	27
Annex D	30
Table 1-Sources of variation and associated number of degrees of freedom	8
Table C.1.....	27
Table C.2.....	28
Table C.3 - Introduction period and first week of the distribution scheme.....	29

INTERNATIONAL ELECTROTECHNICAL COMMISSION

**ELECTRIC SHAVERS FORHOUSEHOLD USE -
EVALUATIONOFEXPERIENCEAND USER SATISFACTION****FOREWORD**

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International Standard IEC 61254 has been prepared by subcommittee 59L: Small household appliances, of IEC technical committee Performance of household and similar electrical appliances:

The text of this standard is based on the following documents:

RM	RR
59L_223e_RM	59L_229e_RR

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

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

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

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

The National Committees are requested to note that for this publication the stability date is 2024.

THIS TEXT IS INCLUDED FOR THE INFORMATION OF THE NATIONAL COMMITTEES AND WILL BE DELETED AT THE PUBLICATION STAGE.

ELECTRIC SHAVERS FOR HOUSEHOLD USE - EVALUATION OF EXPERIENCE AND USER SATISFACTION

1 Scope

This document applies to men's electric shavers and their trimmers for household use.

This document deals with the methods of evaluating user experience and user satisfaction, in subjective way, for men's electric shavers and their trimmers with a rated voltage not greater than 250V.

This document does not specify safety or performance requirements.

2 Normative references

The following referenced documents are indispensable for the application 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.

ISO 9241-210 Ergonomics of human-system interaction- Part 210: Human-centred design for interactive systems

3 Definitions

For the purpose of this document, the following definitions apply.

3.1

electric shaver

Appliance that uses electric energy to drive shaving head for shaving.

3.2

rotary electric shaver

Electric shaver with round shaving head(s) and usually rotating cutters.

3.3

vibratory electric shaver

Electric shaver with linear shaving head(s) and usually vibrating cutters.

3.4

trimmer

Accessory incorporated in the electric shaver, to groom particular facial hair, e.g., moustache, beard or side whiskers.

3.5

user experience

person's perceptions and responses resulting from the use and/or anticipated use of a product, system or service

Note 1 to entry: Users' perceptions and responses include the users' emotions, beliefs, preferences, perceptions, comfort, behaviors, and accomplishments that occur before, during and after use.

Note 2 to entry: User experience is a consequence of brand image, presentation, functionality, system performance, interactive behavior, and assistive capabilities of a system, product or service. It also results from the user's internal and physical state resulting from prior experiences, attitudes, skills, abilities and personality; and from the context of use.

Note 3 to entry: The term "user experience" can also be used to refer to competence or processes such as user experience professional, user experience design, user experience method, user experience evaluation, user experience research, user experience department.

Note 4 to entry: Human-centred design can only manage those aspects of user experience that result from designed aspects of the interactive system.

[ISO 9241-210:2010]

3.6

satisfaction

Freedom from discomfort and positive attitudes towards the use of the product.

[ISO 9241-210:2010]

4 List of evaluations

Depending on the appliance, the following evaluations or tests shall be carried out, as appropriate:

4.1 User experience for comparing different products

- Shaving performance
- Trimmer performance
- Gravimetric analysis of the difference in closeness of shave

4.2 User satisfaction for particular product

- Satisfaction for electric shavers-function and performance
- Overall satisfaction

5 General conditions for evaluations

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

- Ambient temperature: $(20 \pm 5) ^\circ\text{C}$.
- Supply voltage: rated voltage.

6 Evaluations of user experience for comparing different products

6.1 Shaving performance

6.1.1 Composition of the test panels

Each panel is to be composed so that it is reasonably representative of the adult male population of the country in which the test is performed, particular attention being paid to hair density, rate of beard growth, toughness of the beard, sensitivity towards skin irritation, and the time taken to shave.

Besides, panel shall meet the following requirements:

- with no pain or injury in the face;
- with no allergic skin;
- shall be potential users;
- shall have a positive attitude towards the functions.

The members of the test panels should not be influenced by preconceived ideas.

Subpanels of equal size should be formed, each subpanel representing one of the two basic electric shaver systems:

- rotary electric shaver users (ROTA panel)
- vibratory electric shaver users (VIBRA panel).

For statistical reasons, the number t of testers in each of the above subpanels should be at least 12.

Note 1 Whereas some deviation of the test panel composition from the real situation in a country will not have a noticeable influence on the results, it is essential that subpanels have comparable compositions.

Note 2 A subpanel composed of testers who use wet shavers (razor blades) may be considered.

6.1.2 Test duration and test procedure

6.1.2.1 Test duration

The test period is preceded by a two week introduction period in which the panel testers familiarize themselves with the other shaving system, i.e. rotary type shaver users shave with vibratory type shavers, and vibratory type shaver users shave with rotary type shavers.

The test period for each shaver, which should start within a week of the introduction period, has three shaving days. The first day of each period the tester uses his own shaver (see annex D).

Note 1 If a small number of shaver models are to be tested, the three days period can be extended to six days.

On day 7 the testers use their own shaver (see annex D).

Note 2 For panels with a low density of beard hairs or light beards. Each test day may be preceded by a non-shaving day (see annex D).

6.1.2.2 Test procedure

Day 1

On the first shaving day each panel tester shaves with his own shaver, which is used as a reference. Questionnaire 1 (see annex A) is to be completed immediately after shaving. But only in the first two test periods.

Note Questionnaire 1 is not included in the final analysis. It allows for the test institute to characterize the user-panels, particularly with respect to the average level of judgement scores.

Day 2 and Day 3

On the second and third shaving days the panel tester shaves with one of the test shavers. On both days he records the shaving time with a stopwatch, and immediately after shaving fills in questionnaire 2 (see annex A) relating to shaving time, closeness of shave, and skin comfort.

Note Possible variations in the testing scheme are given in annex D.

6.1.2.3 Handling, convenience and storage, etc.

For each test period the handling, convenience and storage, etc. of the test shaver are assessed and questionnaire 3 is completed on the last day of the test period (see annex A).

The test is continued until each panel tester has tested each shaver once.

The instruction for panel testers is given in annex B.

6.1.3 Distribution of the shavers

The shavers are distributed so that each panel tester:

- shaves with each shaver in turn;
- uses each shaver an equal number of times (usually once).

The following should be observed as far as possible:

- For each panel tester, the sequence of distribution of the shavers should be different.

Note This procedure avoids possible interaction between shavers.

-- The first shaver to be tested shall not be the same as that used in the introduction period.

-- If a particular shaving system (vibra or rota) is substantially under-represented, all shavers of that system should be tested sequentially.

Note This procedure limits the influence of the over-representation of the other system.

The number of each model of shaver should be as small as possible.

Note Although each shaver is judged individually, the method proposed by Kraitchik (1953) can be used as an efficient tool to produce a distribution scheme. The method is illustrated by the example shown in annex C.

6.1.4 Statistical analysis

Using a 10 point scale, as shown in annex A. The results are analyzed by using an analysis of variance. The following sources of variation are included:

- variation due to subpanels p;
- variation due to users t (within subpanels p);
- variation due to shaver types n;
- variation due to the interaction p x n;
- variation due to the interaction t(p)x n;

--variation due to experimental error (residual variation).

As an example table 1 shows the sources of variation and the associated numbers of degrees of freedom (df) for the case $p=2$, $t(p)=18$, $n=9$, k (number of the repetitions)=2.

Table 1-Sources of variation and associated number of degrees of freedom

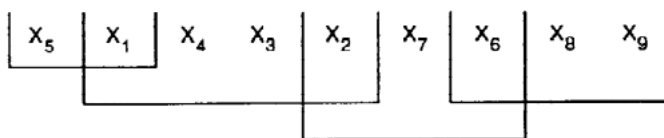
Source of variation	df
Grand mean	1
Subpanels p	1
Users (within panels)fp)	34
Shaver types n	8
Interaction p x n	8
Interaction t (p) × n	272
Residual	324

The homogeneity of the shaver types can be assessed with an F-test. Given a significant difference between types, it is possible to establish clusters of types (see annex E).

6.1.5 Final ranking

If the statistical analysis shows a significant interaction between subpanels and shaver types ($p \times n$), results for each subpanel have to be presented separately.

For each result e.g. closeness on cheek, chin, under the nose (see annex A); the analysis leads to a result which can be shown schematically. An example for nine shavers, X_1 to X_9 is given below:



The horizontal bars below the characters X_5 , X_1 etc., represent the results of the analysis of variance. Shaver types X_5 and X_1 form the first statistical group, showing that the difference between X_5 and X_1 does not differ significantly from zero. The second statistical group is formed by shavers X_1 , X_4 , X_3 and X_2 , the third by X_2 , X_7 and X_6 and the fourth by X_6 , X_8 and X_9 .

Differences in average scores should only be identified if the relevant shaver types belong to different statistical groups.

6.2 Trimmer performance

The evaluation of trimmer performance is included in questionnaire 3 (annex A).

6.3 Gravimetric analysis of the difference in closeness of shave

In this analysis the relative closeness of shave produced by different shaver types is determined by establishing the total yield of hair and skin flakes, and by applying mathematical treatment and statistical analysis of the data.

The method is of a differential nature, testers shaving one side of their face with a shaver of one particular type and the other side of their face with another. Thus, results always relate to differences in shaving quality rather than to absolute values. The gravimetric analysis has