
Splošna metoda za ocenjevanje deleža ponovno uporabljenih komponent v izdelkih, povezanih z energijo

General method for assessing the proportion of reused components in energy-related products

Allgemeines Verfahren zur Bewertung des Anteils an wiederverwendeten Komponenten in einem energieverbrauchsrelevanten Produkt

Méthode générale d'évaluation de la proportion de composants 2 réutilisés dans les produits liés à l'énergie

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13.030.50	Recikliranje	Recycling
29.020	Elektrotehnika na splošno	Electrical engineering in general
31.020	Elektronske komponente na splošno	Electronic components in general

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en

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Méthode générale d'évaluation de la proportion de composants réutilisés dans les produits liés à l'énergie

Allgemeines Verfahren zur Bewertung des Anteils an wiederverwendeten Komponenten in energieverbrauchsrelevanten Produkten

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Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN and CENELEC member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN and CENELEC member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

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European foreword

This document (EN 45556:2019) has been prepared by CEN/CLC/JTC 10 “Energy-related products - Material Efficiency Aspects for Ecodesign”.

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) 2020-04-15
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2022-04-15

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC shall not be held responsible for identifying any or all such patent rights.

The dual logo CEN-CENELEC standardization deliverables, in the numerical range of 45550 – 45559, have been developed under standardization request M/543 of the European Commission and are intended to potentially apply to any product within the scope of the energy-related products (ErP) Directive (2009/125/EC).

Topics covered in the above standardization request are linked to the following material efficiency aspects:

- a) Extending product lifetime. [SIST EN 45556:2019](https://standards.iteh.ai/catalog/standards/sist/9aa49539-5008-4564-b490-1b947e000000/sist-en-45556-2019)
- b) Ability to reuse components or recycle materials from products at end-of-life. <https://standards.iteh.ai/catalog/standards/sist/9aa49539-5008-4564-b490-1b947e000000/sist-en-45556-2019>
- c) Use of reused components and/or recycled materials in products.

These standards are general in nature and describe or define fundamental principles, concepts, terminology or technical characteristics. They can be cited together with other product-specific or product-group standards, e.g. developed by product technical committees.

This document is intended to be used by product technical committees when producing product-specific or product-group standards.

Introduction

This document provides general methods for assessing the proportion of reused components in an energy-related product. Four calculation methods based on mass of re-used components and the number of reused components are presented. Other methods may exist and be more suitable for certain products or product-groups. While writing product standards on assessing the proportion of reused components product technical committees should apply the most suitable methods for their product-group.

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1 Scope

This document deals with the assessment of the proportion of reused components in energy-related products on a generic level, which can be applied at any point in the life of the product.

This document is intended to be used by product technical committees when producing product, or product-group, standards.

This document can be applied where no product-specific standard exists.

Aspects like performance, validation, verification and suitability of reused components are not in the scope of this document.

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.

EN 45559:2019, *Methods for providing information relating to material efficiency aspects of energy-related products*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply. ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

NOTE See CLC/TR 45550:¹ for additional definitions related to Material Efficiency.

3.1 component

hardware constituent of a product that cannot be taken apart without destruction or impairment of its intended use

Note 1 to entry: A component which is used again with or without alteration is considered a reused component

[SOURCE: IEC 62542 definition 3.3, modified “electronic” removed, “device” replaced by “hardware constituent of a product”, Example removed, and Note 1 to entry replaced by “A component which is used again with or without alteration is considered a reused component”]

4 Assessment method for the proportion of reused components in an energy-related product

4.1 General considerations

As there are no methods available for directly measuring the proportion of reused components in a product it can be only determined indirectly. Therefore, the verification is by means of documented evidence from the manufacturer, supplier and/or authorized distributor. Aspects of traceability, including identification of the reused component or groups of reused components, shall be included in the documentation.

There is no obligation to collect information for all components, but only components verified as used can be accounted for as reused components.

¹ Under preparation. Stage at the time of publication: CLC/prTR 45550:2018

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NOTE 1 A component which is used again with or without alteration is considered a reused component.

NOTE 2 Performance characteristics of reused components can change over time and could be relevant for some product groups. For this document, performance characteristics of components are not taken into account.

4.2 Calculation of the proportion of reused components

4.2.1 General

The user of this document shall apply at least one of the here presented formulas to calculate the proportion of reused components in an energy-related product in their product standard. Assessment of the proportion of reused components in energy-related products can be based on product level, by assessing each product on its own (as given in 4.2.2 and 4.2.3) or, it can be based on a mass balance or number balance over a period of time (4.2.4 and 4.2.5).

The period accounted shall be specified, not exceed one year and shall be representative for the production volume.

4.2.2 Proportion of reused components by mass on product level

The following formula shall be applied to obtain the proportion of reused components by mass on a product level:

$$R_{pm} = \left(\frac{\sum_k m_{re-k}}{m_{tot}} \right) \times 100 \%$$

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where

m_{re} is the mass of the used components or groups of components in the assessed product

m_{tot} is the total mass of the product <https://standards.iteh.ai/catalog/standards/sist/9aa49539-5008-4564-b490-e1b9469eeced/sist-en-45556-2019>

R_{pm} is the proportion of reused components by mass of the product

NOTE 1 All masses are expressed in the same unit.

NOTE 2 Components mass based calculation is easy to apply consistently across different products within a product group.

NOTE 3 In some cases, the mass of a component or a group of components does not correlate to its economic value or environmental impact.

4.2.3 Proportion of reused components by number on product level

The following formula shall be applied to obtain the proportion of reused components by number on a product level:

$$R_{pn} = \left(\frac{\sum_k n_{re-k}}{n_{tot}} \right) \times 100 \%$$

where

n_{re} is the number of the used components or groups of components in the assessed product

n_{tot} is the total number of components in the product

R_{pn} is the proportion of reused components by number of the product

NOTE 1 Assessment based on the number of components can be applied consistently across different products in a product-group.

NOTE 2 It is essential that at a product or product-group level, a common way to identify and count components and groups of components are defined.

NOTE 3 In some cases, the number of components or a groups of components do not correlate to their economic value or environmental impact.

4.2.4 Proportion of reused components by mass balance

The following formula shall be applied to obtain the proportion of reused components by mass balance over the defined period of time:

$$R_{bm} = \left(\frac{m_{bt}}{n_{units} \times m_{units}} \right) \times 100 \%$$

where,

m_{bt} is the total mass of used components or groups of components used in the defined period of the products

n_{units} is number of units in the defined period

m_{units} is the mass per unit

R_{bm} is the total proportion of reused components by mass in the defined period for the assessed products

Different products can require different forms to obtain the total mass of reused components, depending on e.g. the complexity of the business, weight of the product, number of products handled in the accounted period. The user of this document shall determine the most suitable approach to evaluate the total mass of reused components in the defined period and document the chosen approach accordingly.

4.2.5 Proportion of reused components by number balance

The following formula shall be applied to obtain the proportion of reused components by number balance over the defined period of time:

$$R_{bn} = \left(\frac{n_{bt}}{n_{units} \times n_{components}} \right) \times 100 \%$$

where,

n_{bt} is the total number of used components or groups of components used in the defined period

n_{units} is number of units in the defined period

$n_{components}$ is the total number of components per unit

R_{bn} is the total proportion of reused components or groups of components by number in the defined period for the assessed products

5 Documenting the assessment of the proportion of reused components

5.1 General

The assessment of the proportion of the reused components of <product / product-group> shall be documented.

The need to report the proportion of the reused components to the different target audiences shall be assessed, and the data classified within the different sensitivity levels 1, 2, and 3. See Clauses 5.1 and 5.2 of EN 45559.