



**SLOVENSKI STANDARD**  
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**Splošna metoda za ocenjevanje deleža recikliranega materiala v proizvodih, povezanih z energijo**

General method for assessing the proportion of recycled material content in energy related products

Allgemeines Verfahren zur Bewertung des Anteils an recyceltem Materials von energieverbrauchsrelevanter Produkte

Méthode générale pour l'évaluation du contenu en matériaux recyclés des produits liés à l'énergie

<https://standards.iteh.ai/catalog/standards/sist/2cb6c87d-a561-4720-a4b7-0d244ad0727f/sist-en-45557-2020>

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13.020.20	Okoljska ekonomija. Trajnostnost	Environmental economics. Sustainability
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## General method for assessing the proportion of recycled material content in energy related products

Méthode générale pour l'évaluation du contenu en matériaux recyclés des produits liés à l'énergie

Allgemeines Verfahren zur Bewertung des Anteils an recyceltem Materials von energieverbrauchsrelevanter Produkte

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/CLC/JTC 10.

If this draft becomes a European Standard, CEN and CENELEC members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration.

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## 29 **European foreword**

30 This document (prEN 45557:2018) has been prepared by Technical Committee CEN/CENELEC/JTC 10  
31 “Energy-related products - Material Efficiency Aspects for Ecodesign”, the secretariat of which is held by  
32 NEN.

33 This document is currently submitted to the CEN Enquiry.

34 This document has been prepared under a standardization request given to CEN by the European  
35 Commission and the European Free Trade Association.

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

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

42 a) Extending product lifetime

43 b) Ability to re-use components or recycle materials from products at end-of-life

44 c) Use of re-used components and/or recycled materials in products

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

48 This document is intended to be used by technical committees when producing horizontal, generic, and  
49 product, or product-group, standards.”

50 Note CEN/CENELEC/JTC 10 is a dual logo TC, and uses either CEN or CENELEC foreword templates, as  
51 appropriate. The template for the current document is correct at the time of publication..

## 52 Introduction

53 Beyond the potentials of reusability, recyclability and recoverability, recycled material content of new  
54 products is a physical characteristic of a product and its parts and also contributes to material efficiency.  
55 For the purpose of an efficient and effective use of natural resources, secondary materials are often able  
56 to substitute primary materials, reducing the demand for primary materials, which bring potential  
57 environmental, social and economic benefits. Environmental benefits include reduced mining and  
58 consumption of natural resources, reduced landfill and emissions as well as energy savings. The overall  
59 environmental benefit will depend on the difference in environmental impact of making material from  
60 primary sources (oil, ore etc.) vs. processing waste into a secondary material which would directly  
61 substitute primary material. The benefit of increasing recycled material content in products incentivises,  
62 in many cases, recycling of end-of-life (EoL) waste material by stimulating demand for secondary  
63 materials. In other cases, where there is already sufficient demand for secondary materials to use what  
64 is already supplied by the market, specification of higher recycled material content will not necessarily  
65 incentivise recycling of additional EoL waste material, and so is therefore not always relevant to eco-  
66 design e.g. if supply is limited. The rationale for specifying recycled material content, therefore needs to  
67 be considered for each material individually depending on the overall market demand/supply situation  
68 for each material.

69 This document helps to give substantiated claims of the recycled content in energy-related products  
70 (ErPs). Key for substantiated claims for new products is the recognition of the chain of custody, which  
71 allows tracing secondary materials from different sources.

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## 72 1 Scope

73 This document provides a general method for assessing the proportion of secondary material in an  
74 energy-related product, its parts or material(s).

75 This document is applicable as the framework to be used for defining the assessment of recycled material  
76 content in specific product groups; however in absence of product specific standards it can be applied  
77 directly.

78 This document does not apply to the assessment of reused components.

79 NOTE Reused components are addressed in prEN 45556:2018.

## 80 2 Normative references

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

84 prEN 45559:2018, *Methods for providing information relating to material efficiency aspects of energy-*  
85 *related products*

## 86 3 Terms and definitions

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

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

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

### 91 3.1

#### 92 chain of custody

93 sequence of responsibilities for, or control of products or materials as they move through each step in the  
94 relevant supply chain

95 [SOURCE: ISO 13065:2015, modified, “chain” replaced by “sequence”, “products or” added and “of the  
96 process or product system under assessment” replaced with “in the relevant supply chain”]

### 97 3.2

#### 98 pre-consumer material

99 material diverted from the waste generated during a manufacturing process excluding reutilization of  
100 materials such as rework, regrind or scrap generated in a process and capable of being reclaimed within  
101 the same process that generated it

102 [SOURCE: ISO 14021:2016, 7.8.1.1, modified “stream” replaced by “generated” and drafting rules of  
103 CEN/CLC Internal Regulations Part 3 applied]

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104 **3.3**  
 105 **post-consumer material**  
 106 material recovered from waste generated by households or by commercial, industrial and institutional  
 107 facilities in their role as end-users of the product which can no longer be used for its intended purpose

108 Note 1 to entry: This includes returns of energy-related products, and materials therein, from the distribution of  
 109 finished products.

110 [SOURCE: ISO 14021:2016, 7.8.1.1, modified “generated” replaced by “recovered from waste generated”,  
 111 “this includes returns of material from the distribution chain” replaced by “This includes returns of  
 112 energy-related products, and materials therein, from the distribution of finished products” and moved to  
 113 Note 1 to entry and drafting rules of CEN/CLC Internal Regulations Part 3 applied]

114 **3.4**  
 115 **recycled material content**  
 116 proportion, by mass, of secondary material in a product

117 **3.5**  
 118 **primary material**  
 119 material made from virgin raw material sources extracted from a renewable or non-renewable resource

120 **3.6**  
 121 **secondary material**  
 122 material recovered from pre-consumer or post-consumer material

123 **3.7**  
 124 **part**  
 125 hardware, firmware or software constituent of a product

126 [SOURCE: prEN 45554:2018]  
 127 **3.8**  
 128 **waste**  
 129 substance or object of any kind, which the holder discards or intends or is required to discard

130 [SOURCE: Directive 2008/98/EC]

**131 4 General assessment procedure**

132 Primary and secondary material is often physically or chemically indistinguishable and there are  
 133 currently no analytical methods available for directly measuring the recycled material content in a  
 134 product. For the purpose of this document, the verification of recycled content therefore relies on  
 135 documental proof (see Clause 6) provided by the relevant operator in the chain of custody. Recycled  
 136 content is expressed as the average ratio of secondary material used in the total production output over  
 137 a specified time. Those materials constitute the inputs to a product manufacturer, which are transformed  
 138 into parts of an energy-related product.

139 The assessment of recycled material content requires:

- 140 1) Definition of the scope of the assessment (see Clause 5.1);
- 141 2) Assessment of materials composition of a single product (see Clause 5.2 and 5.3);
- 142 3) An open, easy to follow management system to trace the type of material inputs, both primary and  
 143 secondary materials (see Clause 6);



144 4) Performing a mass balance calculation, linking secondary materials of a part/product to total  
145 material quantity in a part/product (see Clause 7).

## 146 5 Assessment of materials composition

### 147 5.1 Scope of the assessment

148 The user of this document shall define the scope of the assessment and select its appropriate elements  
149 detailed below. The assessment shall be applied either on:

- 150 • the whole ErP (e.g. vacuum cleaner), or
- 151 • a specified unit of the ErP (e.g. electrical motor of a vacuum cleaner), or
- 152 • an intermediate product in the value chain that leads to a unit of the ErP or the product (e.g. copper  
153 winding of the stator in an electrical motor of a vacuum cleaner).

154 It is possible to perform the assessment at pre-consumer and/or post-consumer recycled content and at  
155 different levels:

- 156 • parts included in the product, e.g. motor, housing etc., or
- 157 • type of material in the product or in parts of the product, e.g. the fractions of plastic, metal, glass etc.  
158 (more details provided in Clause 5.2), or
- 159 • a subgroup of the type of material, e.g. polypropylene, aluminium, float glass etc. (more details  
160 provided in Clause 5.2).

161 The scope description shall contain the position in the supply chain of the company executing the  
162 assessment:

- 163 • material supplier, and/or
- 164 • part supplier, and/or
- 165 • ErP manufacturer.

166 Which of the elements of the scope are best applicable shall be determined by the user of this document  
167 and shall be reported in the final project report (see Clause 8.2).

### 168 5.2 Material declaration clustering and unspecified materials

169 The material declaration is a way to express the composition of the materials contained in a product or  
170 any part of it. To establish a material declaration, each part of the product shall be assessed for the weight  
171 of its constituent materials, according to the scope of assessment (see Clause 5.1). The masses of the  
172 respective material fractions of all parts shall be summed up to obtain the material composition of the  
173 whole product.

174 In many cases a given material type represents different grades of the same material that are not identical  
175 but very similar and thus share the majority of physical and chemical properties.

176 EXAMPLE Steel or polypropylene (PP) are produced in different grades for specific applications. The Society  
177 of Automotive Engineers lists among others different grades of Nickel-chromium steels with varying proportion of  
178 Nickel and chromium, e.g. 31xx, 32xx, 33xx, 34xx. For Polypropylene, the three main grades are homopolymer PP,  
179 random copolymer PP, block copolymer PP.

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180 Various grades of a material type shall be treated as one material to determine the proportion of recycled  
181 material content of a product. Alloys may require the allocation to a certain material. Users of this  
182 document shall define the applicable material clusters for their respective product group.

183 It may be necessary to exclude parts from the allocation to specific material clusters due to their small  
184 size, their complexity of material composition or other, e.g. administrative or legal reasons. To keep the  
185 mass balance even, these unspecified parts/materials shall be classified as “other materials” and be  
186 accounted for in the total mass of the product. These “other materials” shall be treated as primary  
187 material. Users of this document may determine limits for materials classified as “other materials” if  
188 applicable.

**189 5.3 Pre-consumer material and post-consumer material distinction**

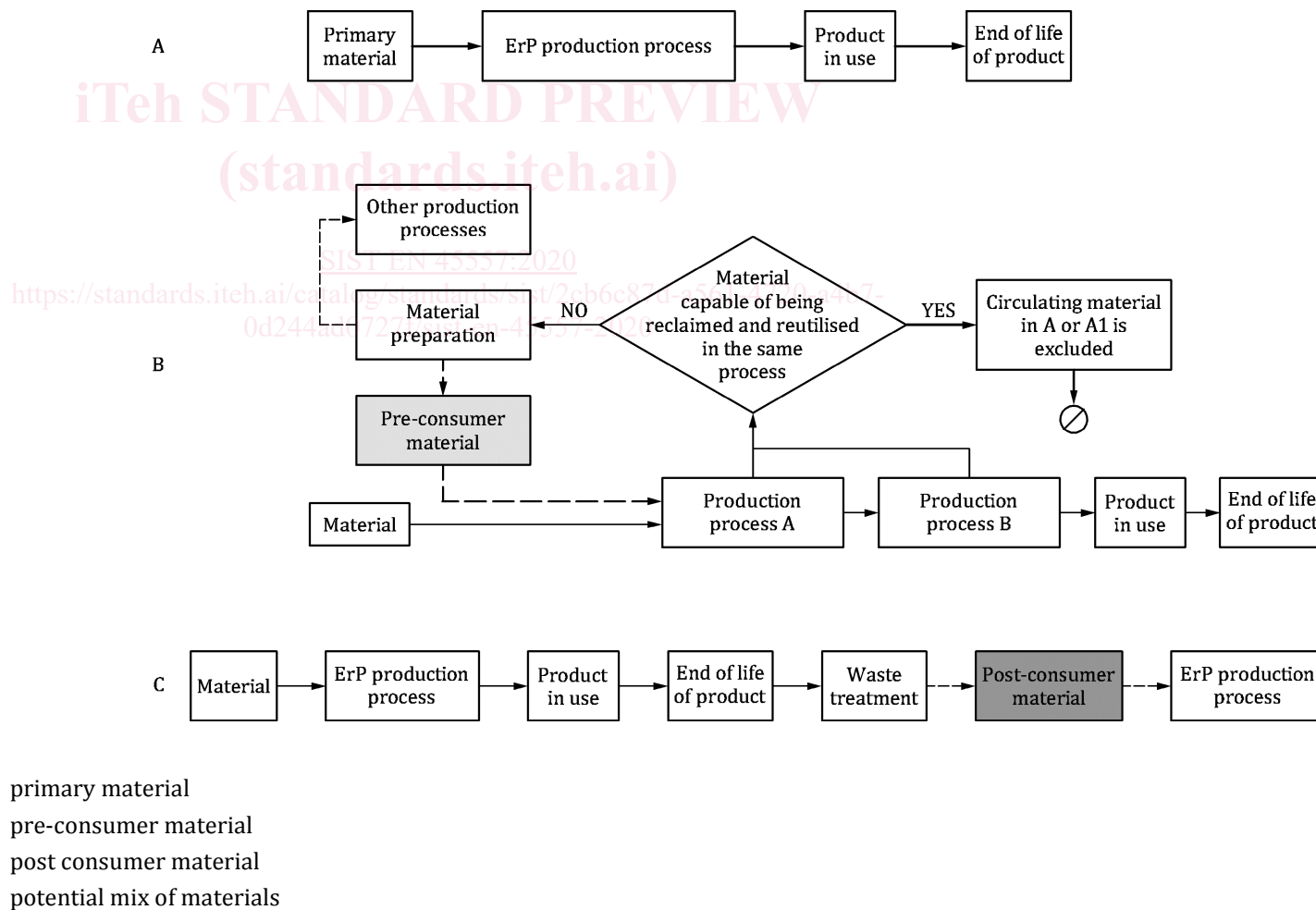
190 Only pre-consumer materials and post-consumer materials shall count towards recycled material  
191 content, in accordance with their definition provided in Clause 3, as well as with specific guidelines  
192 provided in Annex A for different material types. Material, which is reclaimed or capable of being  
193 reclaimed within the same manufacturing process that generated it, is referred to as circulating material  
194 and shall not count towards recycled material content.

195 The general concept of primary material, pre-consumer material and post-consumer material is  
196 visualized in Figure 1.

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**Figure 1 — Visualization of primary material, pre-consumer material and post-consumer material**