

CEN-CENELEC TC10
Material Efficiency Aspects for Ecodesign'

Secretary Enquiry (new work item 65687 / prEN 45558)

To: National Standardisation Bodies

Secretary Enquiry

CEN/CLC European Standard

prEN 45558 - General method to declare the use of critical raw materials in energy related products

National Standardisation Bodies are invited to comment on the document. Comments can be considered only if form sheet (FormComments.doc) is used.

National Standardisation Bodies shall upload their comments, as a reply to this document on the Collaboration tool, no later than 2017-11-13.

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5 Contents

Page

6			
7	Foreword		3
8	Introduction		3
9	1 Scope		4
10	2 Normative references		4
11	3 Terms and definitions and Abbreviations		5
12	3.1 Terms and definitions		5
13	3.2 Abbreviations		7
14	4 Material declaration according to the IEC 62474 standard		8
15	5 Declaration of regulated CRMs		9
16	6 Assessing and declaring the use of non-regulated CRMs		9
17	6.1 Considerations on the declarations of non-regulated CRMs requirements		10
18	6.1.1 Name of the substance / substance group		10
19	6.1.2 Location of the CRM in the product		10
20	6.1.3 Amount of the substance / substance group		10
21			
22	6.1.4 Reporting threshold		11
23	7 Maintenance of the CRM list		11
24	8 Checking compliance		11
25	9 Communication of CRM-related content		11
26	Annex A (informative) Introduction to the IEC 62474 Standard		13
27	A.1 IEC 62474 introduction		13
28	A.2 Considerations on the inclusion of CRMs into the IEC 62474 substances list		14
29	A.3 Example of data element types of a material declaration		14
30	Bibliography		19
31			

32 Foreword

33 The dual logo CEN-CENELEC standardization deliverables, in the numerical range of 45550 – 45559,
34 have been developed under standardization request M/543 of the European Commission.

35 Topics covered in the above standardization request are product durability, reparability, reusability,
36 upgradability, recyclability, recycled content, ability to remanufacture, product lifespan, and critical raw
37 material together with associated communication. While various topics in the context of material
38 efficiency are covered in these CEN-CENELEC deliverables, other subjects of material efficiency are
39 not covered, despite their potential impact on material efficiency. Examples of topics not covered
40 include for instance renewable resources.

41 The standardization deliverables are horizontal in nature and describe or define fundamental principles,
42 concepts, terminology or technical characteristics, relevant to a number of technical committees.

43 The primary addressee of most of these standardization deliverables are product-specific technical
44 committees. For this specific standard this is different, where the users will be the broad supply chain
45 of energy-related products.

46 Introduction

47 At the core of circularity and resource efficiency are the so-called raw materials. Raw materials are
48 crucial to Europe's economy and essential to maintaining and improving our quality of life. Securing
49 reliable and unhindered access to certain raw materials is a growing concern within the EU and across
50 the globe. To address this challenge, the European Commission has created a list of critical raw
51 materials. Critical raw materials (CRMs) combine a high economic importance to the EU with a high
52 risk associated with their supply that are defined according to an objective methodology [22].
53 Examples of critical raw materials include rare earth elements, cobalt, niobium, etc. The CRM list is
54 regularly updated: the latest update, published in 2017, contains 27 CRMs [1].

55 The availability of information on the use of critical raw materials in energy-related products is intended
56 at improving exchange of information between manufacturers and recyclers, as to promote recycling
57 of these materials.

58 CRMs are identified as a priority area of the European Commission's Circular Economy Action Plan
59 COM(2015) 614/2. Altogether, the list of critical raw materials and related initiative (including this one)
60 are expected to:

- 61 • Contribute to the implementation of the EU industrial policy and strengthen industrial
62 competitiveness
- 63 • Stimulate production of critical raw materials (including from secondary sources) and the launch
64 of new mining activities in the EU and
- 65 • Monitor issues on critical raw materials to identify priority actions (related for example to trade,
66 research & innovation, circular economy)

67 As the information on the use of the critical raw materials in energy-related products by member states
68 and industry is still very scarce, efforts need to be made to acquire such a knowledge. The objective
69 of this European Standard is to provide general methodology for declaration of the use of critical raw
70 materials in energy-related products in support of the implementation of the Raw Materials Initiative
71 by the EU (SWD(2014) 171 final).

72 This European Standard specifies a procedure for the declaration of regulated and non-regulated
73 CRMs. It will be, therefore, essential in supporting manufacturers of energy-related products to obtain

74 information and report on the use of certain CRMs needed to comply with specific requirements in
75 product specific legislations in the future.

76 This standard is linked to another standard in this range, namely prEN 45555 - General methods for
77 assessing the recyclability and recoverability of energy-related products, where the information to be
78 gathered on the CRMs with the support of the present standard can be used by the recycling operators
79 on the recovery of CRMs from energy related products.

81 1 Scope

82 This European Standard specifies the basis for definition of a procedure, content and form relating to
83 declarations on the use of critical raw materials in energy-related products. Process chemicals and
84 emissions during product manufacturing are not in the scope of this standard and also packaging is
85 not in scope of this standard.

86 The main intended use of this European Standard is to provide a means for which information on the
87 use of CRMs can be exchanged up and down the supply chain that:

- 88 • Allows organizations to assess energy-related products against the use of critical raw materials,
89 as to answer to compliance requirements in European legislation
- 90 • Allows organizations to use this information in support of the collection or recycling process of
91 energy-related products to obtain/extract these critical raw materials
- 92 • Allows organizations to use this information in the life-cycle management across all product life
93 cycle phases, by reducing or replacing certain CRMs by non-critical materials
- 94 • Support policy makers in the preparation of policy around the use or import of critical raw
95 materials, e.g. tax incentive

96 Potential users of this standard are any public, private and social enterprises involved in the treatment
97 of waste of energy-related products as well as manufacturers of energy-related products (including
98 SME's) and other players involved in the product supply chain, other than commercial driven players.
99 Last, it is also relevant to European surveillance and trade authorities as well as European policy
100 makers.

101 This standard does not include product-specific provisions, and instead, it can be applied directly to
102 any energy-related type of product. It is intended that product-specific provisions that are related to
103 CRM will be fully based on and use the principles and procedures of this standard.

104 This standard does not override, or in any way change, legally required critical raw materials
105 information, claims or labelling, or any other applicable legal requirements.

106 This European Standard proposes a standardised format for reporting use of critical raw materials in
107 energy-related products by applying the IEC 62474 materials declaration standard. It however, does
108 not provide or determine any specific method or tool to capture critical raw material data. Organizations
109 have the flexibility to choose the most appropriate method/tool to capture declaration data of critical
110 raw materials without compromising data utility and quality.

112 2 Normative references

113 The following referenced documents are indispensable for the application of this document. For dated
114 references, only the edition cited applies. For undated references, the latest edition of the referenced
115 document (including any amendments) applies.

116 IEC 62474 Edition 2 (111/459/CDV) - Material declaration for products of and for the electrotechnical
117 industry

118 IEC TR 62474-1 - Material declaration for products of and for the electrotechnical industry – Part 1:
119 Guidance for the implementation of IEC 62474 standard

120 IEC 62474 Database - <http://std.iec.ch/iec62474>

121 prEN 45559 - Methods for providing information relating to material efficiency aspects of energy-related
122 products

123

124 **3 Terms and definitions and Abbreviations**

125 **3.1 Terms and definitions**

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

127 **3.1.1**

128 **critical raw material**

129 **CRM**

130 material which, according to a defined classification methodology, are economically important, and
131 have a high-risk associated with their supply

132 Note 1 to entry: for the purpose of this standard, critical raw materials are the ones listed in annex 1 of "{COM(2017) 490
133 final} : COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN
134 ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS on the 2017 list of Critical Raw Materials
135 for the EU". Future updates to this list also apply.

136

137 **3.1.2**

138 **component**

139 part of a product that cannot be taken apart without destruction or impairment of its intended use

140 [SOURCE IEC 62542 definition 3.3, modified to cover more than "electronic component"]

141

142 **3.1.3**

143 **declarable substance**

144 substance that meets specified criteria for reporting

145 Note 1 to entry: criteria for declarable substances within the IEC 62474 DSL are specified in clause 5 of IEC 62474 Edition 2

146 [SOURCE: IEC 62474 Edition 2 (111/459/CDV), definition 3.6]

147

148 **3.1.4**

149 **declarable substance**

150 **DS**

151 substance that meets specified criteria for reporting

152 Note 1 to entry: criteria for declarable substances within the IEC 62474 DSL are specified in clause 5 of IEC 62474 Edition 2

153 [SOURCE: IEC 62474 Edition 2 (111/459/CDV), definition 3.6]

154

155	3.1.5
156	declarable substance group
157	DSG
158	substance group that meets specified criteria for reporting
159	Note 1 to entry: criteria for declarable substance groups within the IEC 62474 DSL are specified in clause 5 of IEC 62474
160	Edition 2
161	[SOURCE: IEC 62474 Edition 2 (111/459/CDV), definition 3.7]
162	
163	3.1.6
164	declarable substance list
165	DSL
166	list of declarable substances and/or declarable substance groups each with a reporting threshold and
167	reportable application (s) which require reporting when contained at or above its maximum threshold
168	value and reportable application within a product, product part or material
169	[SOURCE: IEC 62474 Edition 2 (111/459/CDV), definition 3.7]
170	
171	energy-related products
172	ErP
173	products covered by the EcoDesign Directive, 2009/125/EC
174	Note 1 to Entry: For certain product types, also consumables, accessories and packaging are included
175	
176	3.1.7
177	material
178	substance or mixture of substances within a product or product part
179	[SOURCE: EN 62474: 2012, definition 3.4]
180	[SOURCE: IEC 62474 Edition 2 (111/459/CDV), definition 3.12]
181	
182	3.1.8
183	material declaration
184	declaration of the presence of certain substance or substance group contained within a product,
185	product part, or material as applicable
186	Note 1 to entry: the declaration might be quantitative, where the amount of the declared substance or substance group is
187	provided OR it might qualitative, where only the presence or absence of the declared substance or substance group is
188	provided
189	[SOURCE: IEC 62474 Edition 2 (111/459/CDV), definition 3.xx]
190	
191	3.1.9
192	product
193	any goods or service
194	Note 1 to entry: This definition includes components as they may be considered products under the Eco Design Directive (e.g.
195	motor and fans)
196	Note 2 to entry: In the context of this standard, the definition of product is limited to the product category "hardware" according
197	to ISO 9000:2005
198	

199 **3.1.10**200 **product part**

201 sub-unit of a product or another (product) part

202 Note 1 to entry: This is a recursive definition

203 Note 2 to entry: If a standard product part e.g. a cable of 1m length is declared as product part only portions of it might be
204 physically present in the product

205 [SOURCE: EN 62474: 2012, definition 3.9, modified by addition of Note 2 to entry]

206 [SOURCE: IEC 62474 Edition 2 (111/459/CDV), definition 3.17]

207

208 **3.1.11**209 **reporting threshold level**210 concentration limit at or above which the presence of a declarable substance in a material or product
211 is declared if declaration of the declarable substance is mandatory, or if it is agreed on to be declared212 Note 1 to entry: mandatory declaration can be according to legislation and/or according to specification in the IEC 62474
213 Database or equivalent

214 [SOURCE: EN 62474: 2012, definition 3.12, modified]

215 [SOURCE: IEC 62474 Edition 2 (111/459/CDV), definition 3.21, modified]

216

217 **3.1.12**218 **Regulated critical raw material**219 **Regulated CRM**

220 Critical Raw Material for which specific requirements have been enforced

221 Note 1 to Entry: Not all CRMs are regulated CRM

222 Note 2 to Entry: In EU, regulated CRM are the subject of implementing measures under the Eco-design Directive 2009/125/EC

223

224 **3.1.13**225 **substance**226 chemical element and its compounds in the natural state or obtained by any manufacturing process,
227 including any additive necessary to preserve its stability and any impurity deriving from the process
228 used, but excluding any solvent which may be separated without affecting the stability of the declarable
229 substance or changing its composition230 [SOURCE: Globally Harmonized System of Classification and Labelling (GHS):2003, Chapter 1.2, Definitions and
231 Abbreviations]

232

233 **3.1.14**234 **substance group**235 two or more substances, that share at least one chemical sub-structure, or chemical or physical
236 property under a generic name

237 [SOURCE: IEC 62474 Edition 2 (111/459/CDV), definition 3.25]

238

239 **3.2 Abbreviations**

240 The following abbreviations have been used in this document:

241	CRM	critical raw material
242	DSL	declarable substance list
243	DS	declarable substance
244	DSG	declarable substance group
245	ErP	energy-related products

246

247 **4 Material declaration according to the IEC 62474 standard**

248 The process of tracking substances or groups of substances like critical raw materials used in products
249 can be complex, especially for products with many parts and long supply chains, such as it is the case
250 for electrical and electronic and the other energy-related products. Significant issues around the
251 exchange of the information through the supply chains can be expected in case there is no harmonized
252 ways to provide such information.

253 To facilitate the collection and declaration of information on the use of substances in product (parts),
254 IEC developed the standard IEC 62474 on material declaration. This standard contains:

- 255 • A standardized list of regulated substances with standardized names to avoid misspelling
256 (called declarable substances list)
- 257 • A standardized format for declaration to ensure that declarations from different suppliers can
258 easily be understood and exchanged among each other

259 In principle, the IEC 62474 standard covers only Electric and Electrical Equipment (EEE). This means
260 that regulated substances not found in EEE will not be placed in the IEC 62474 declarable substances
261 list. However, the IEC 62474 declaration format and its process to transfer and aggregate information
262 from the supply chain can be also applied to different substances lists, as long as they follow the same
263 organization scheme as in the IEC 62474 list. This implies that substances used in any product,
264 including energy-related products, can be declared using the IEC 62474 standard.

265 The IEC 62474 standard is not specifically linked to the reporting of hazardous substances. Rather, it
266 is developed to manage declaration of regulated substances, independent from the reason for them to
267 be regulated. Therefore, the IEC 62474 standard is perfectly able to manage CRMs, which are critical
268 from the economic and supply risk perspective, but are not necessarily hazardous.

269 Also, the formats and processes of IEC 62474 standard can be applied to a list containing only some
270 substances of the IEC declarable substances list. This is important in case the user is interested in
271 only certain types of substances like CRMs. In the case of CRMs more specifically, the IEC 62474 list
272 will contain only the regulated CRMs.

273 The flexibility of the IEC 62474 declaration format enables players in the supply chain to be able to
274 effectively associate the CRM to the product or to a specific part of that product. For instance, one can
275 declare a personal computer (product) with a motherboard (product part 1) with a coin cell battery (part
276 of product part 1) that contains a CRM. This flexibility enables users to be able to report on different
277 or multiple levels of the product (part). For the scope of this Standard, IEC 62474 shall be used as the
278 format to share information on the use of CRMS in energy-related products.

279 Note 1: Other standards could be used (e.g. [9]), provided that they have equivalent declaration format to IEC 62474

280 Note 2: The data to be reported is often likely to be based on engineering judgment, supplier material declarations, and/or
281 sampling and testing

282

283 **5 Declaration of regulated CRMs**

284 For regulated CRMs a material declaration providing information on the specific CRM specified in the
285 legislation shall be provided.

286 The material declaration format shall meet the requirements specified in IEC 62474 for the applicable
287 CRMs.

288 The declaration of regulated CRMs shall be done according to the requirements of the legislation.
289 Typical requirements are:

- 290 • Reporting of the name of the substance or substance group as required in the legislation
- 291 • Reporting of substance or substance group amount as required in the legislation
- 292 • Reporting the location of the substance in the product if required by the legislation
- 293 • Exemptions, if applicable

294 Manufacturers should use the IEC 62474 standard to:

- 295 • List the declarable CRMs according to the names used in the database to ensure the same
296 names of substances are used along the supply chain
- 297 • Declare the CRMs according to the XML format to ensure compatibility of the declarations along
298 the supply chain, thus allowing automatic aggregation of information from different suppliers

299 Note: see <http://std.iec.ch/IEC62474> for more information

300

301 **6 Assessing and declaring the use of non-regulated CRMs**

302 Even if a particular CRM is not regulated, companies may still need to collect CRM data, for example
303 to provide information required by Ecolabels. The IEC 62474 standard can also be used to collect this
304 kind of company specific information. However, as non-regulated CRMs are not automatically included
305 in the IEC Declarable Substance List, the manufacturer will need to create its own substance list for
306 the declaration purpose.

307 Voluntarily collected information can vary on level of details and thoroughness. When collecting
308 information on non-regulated CRMs, it is up to the manufacturer to decide what kind of information
309 they want to collect and what are the minimum requirements for the information (e.g. does the collection
310 covers all CRMs or just part of them, what is the threshold to be reported, is the information collected
311 on product or on component level). Manufacturers shall create and assess the minimum data (quality)
312 requirements in order to make sure that the collected data is sufficient to fulfill their needs.

313 Relevant information to be assessed and collected on CRMs in order to support activities such as
314 recycling or (technology / material) substitution are:

- 315 • Business Information (e.g. name, address, responsible person and other administrative details
316 of the party preparing the declaration)
- 317 • Product Information (e.g. product ID, name, category, weight, etc.)
- 318 • Reporting of the name of the substance or substance group
- 319 • Definition of a (minimum) reporting threshold for the reporting of the substance or substance
320 group
- 321 • Reporting of substance or substance group amount

- 322 • Reporting the location of the substance in the product if required

323 Note 1: If tools are used to facilitate collection of information of non-regulated CRMs, it is the manufacturer's responsibility
324 to make sure that the selected tool is able to deal with all defined requirements (e.g. specific list of substances and substance
325 groups, their threshold, etc.)

326 Note 2: Manufacturers should take care of contracts through the supply chain in order to facilitate the delivery of the
327 information

328

329 **6.1 Considerations on the declarations of non-regulated CRMs requirements**

330 **6.1.1 Name of the substance / substance group**

331 Declaration of CRMs may be done either on substance or substance group level. If the declaration is
332 required on substance level, the list of all specific substances needs to be generated. IUPAC or CAS
333 rules for naming should be used and every substance should accompanied with unique CAS number.

334 Note 1: Example of substance and substance groups: for the listed CRMs "light rare earth", several substances groups can
335 be identified, for instance Neodymium and its compounds, Praseodymium and its compounds, Lanthanum and its compounds,
336 etc. Taking Neodymium and its compounds as example, substance groups of Neodymium could be e.g. Neodymium Oxides,
337 Neodymium Fluorides, Neodymium Chlorides, Neodymium Bromides, Neodymium Aluminium Borate, etc. An example of a
338 substance within this substances group is e.g. Neodymium (III) chloride with CAS nr. 10024-93-8

339 Note 2: Often it is only specific CRM substances that are used in some ErP applications. In such cases it is adequate to only
340 require information on these relevant CRM substance(s)

341 Note 3: CRMs can be used in very different applications. Therefore properties and used amounts may vary based on the
342 technology/application. In such cases requesting information on substance group level is probably not useful as different
343 substances in that group are declared together

344

345 **6.1.2 Location of the CRM in the product**

346 CRMs may be clustered in one specific component or they can be spread throughout different
347 components in the product. When it is relevant to know the location of the CRM, the location where
348 the substance is found in the product should be identified.

349 Complex products consist of a number of, often, specialized components, that differ due to their
350 function and their (material) composition. CRMs are often concentrated in certain specific components.

351 Components can be either product specific or suitable for a wide range of products. In case of the
352 latter, CRMs can be found in many product types as part of such specific component.

353

354 **6.1.3 Amount of the substance / substance group**

355 Following the IEC 62474 requirements, the amount of the substance(s) shall be specified in the
356 declaration in either mass or mass percent, but not both. If multiple suppliers are used to supply one
357 component and CRM amount (in mass or mass %) varies between suppliers, a range amount (x-x %
358 or x-x mass) should be declared.

359 Note 1: Specific product parts such as an wire, may be declared in "meter" or "square meter" unit of measure (or a fraction
360 thereof).

361 When reporting product families (e.g. ICs, resistors, capacitors, etc) which contain multiple products
362 in one declaration, manufacturers should report them using mass percent. When reporting assemblies
363 or finished goods when a single product is declared, it should be declared in mass. Reporting
364 concentrations (mass percent) for product families provides sufficient data for the receiver of the
365 declaration to correctly calculate the mass of each product in the family with their IT software system
366 tools, while streamlining the number of material declarations to be exchanged between the two
367 companies.

368 When declaring product parts, it should be ensured that mass percent is always referring to the next
 369 higher level in the product hierarchy that is declared. This means that mass percent can refer to the
 370 material, to the product part or to the product.

371 Note 2: See IEC 62474-1 for more details on declaration amounts

372

373 **6.1.4 Reporting threshold**

374 Reporting threshold is a pre-defined minimum amount at which a substance or substance group should
 375 be reported. In general declarable substance and declarable substance group entries have a reporting
 376 threshold based on the mass percent of the product, product part or material being reported. The
 377 threshold may also be based on absolute mass value (e.g. the amount, if present above certain given
 378 value, needs to be reported). In some cases it is enough to report the absence of a substance above
 379 certain mass/mass percent.

380 The threshold for declaration of non-regulated CRMs should be set to meet the information needs of
 381 the user of this standard, e.g. for recycling purposes is likely to be higher than in case of hazardous
 382 substances. Another option is setting threshold to "intentionally added".

383

384 **7 Maintenance of the CRM list**

385 The CRM list itself is maintained by the European Commission and regularly updated, at least every
 386 three years.

387 The IEC 62474 substances list which includes regulated CRMs is maintained by the VT 62474
 388 (validation team). This team updates information in the database based on requirements specified in
 389 the IEC 62474 standard, generally triggered by updates of regulatory requirements. If a new CRM is
 390 regulated or if requirements of an existing legislation are updated, it will be assessed and included into
 391 the IEC 62474 regulated substance list.

392

393 **8 Checking compliance**

394 Material declaration as described in this document is one of the methods manufacturers may use in
 395 order to demonstrate compliance with an applicable substance (group) legislation. Another method
 396 may be testing. However, due to the complex structure of most of the energy-related products, it is
 397 impractical for manufacturers of products to undertake testing of all substances contained in the final
 398 assembled product, also considering that there may not be appropriate test methods available to test
 399 them. Instead, in most cases, the only practical way to assess the presence of substances/substance
 400 groups in the product is for manufacturers to work with their suppliers to manage compliance and
 401 compile technical documentation as evidence of compliance. This approach is well recognised by both
 402 industry and enforcement authorities.

403

404 **9 Communication of CRM-related content**

405 Information on the use of regulated CRMs in energy-related products should be communicated in the
 406 supply chain to all downstream users and should be collected by manufacturers of the ErP. Typical
 407 information that can be available after collection of the data is (depending on the specific requirements
 408 in the applicable legislation):

- 409 • Name of the substance or substance group
- 410 • The amount (in mass or mass %) in the product or product part

411 • If known, the location (in the product) where the substance is found

412 CRM data shall be made available by the manufacturer to authorities for surveillance purposes.

413 A summary of the data shall be provided to relevant professionals like recycling operators. Unless
414 otherwise stipulated in the legislation, the exact form how the information will be provided shall be
415 agreed upon with recyclers. Examples are:

416 • Amounts or ranges of CRM in the product type or family

417 • Typical location in the product (e.g. PCBs)

418 Note: The communication aspects of CRM use are further detailed within the prEN 45559 - Methods for providing information
419 relating to material efficiency aspects of energy-related products

Annex A (informative)

Introduction to the IEC 62474 Standard

- 420
421
422
423
- 424 **A.1 IEC 62474 introduction**
- 425 The International IEC 62474 is implemented in two parts:
- 426 • IEC 62474 Edition 2 (111/459/CDV) - Material declaration for products of and for the
427 electrotechnical industry
 - 428 • IEC 62474 database - <http://std.iec.ch/IEC62474>
 - 429 • IEC TR 62474.1 - Material declaration for products of and for the electrotechnical industry –
430 Part 1: Guidance for the implementation of IEC 62474
- 431 IEC 62474 standard includes a material declaration procedure (rules) and an XML schema for data
432 exchange. By using this standard the supplier creating a material declaration and the customer
433 receiving the declaration are using the same data format.
- 434 The IEC 62464 database is located on the IEC website and contains the information that is updated
435 periodically (Declarable Substance List and XML Schema).
- 436 Declarable Substance List (DSL) specifies what substances, substance groups and material classes
437 need to be included in the material declarations. Each substance or substance group entry in the list
438 is completed with the reportable application and a reporting threshold level.
- 439 There are three different criteria used to classify declarable substances, declarable substance groups,
440 and material classes in the IEC 62474 Database:
- 441 • Criteria 1: substance or substance group that is regulated and with “mandatory” reporting
442 requirement
 - 443 • Criteria 2: substance or substance group currently under assessment to be regulated
 - 444 • Criteria 3: substance or substance group not regulated but with recognized industry-wide
445 interest. For “for information only” reporting with “optional” reporting requirement
- 446 Note 1: Once the effective date of the regulatory requirement is specified, Criteria 2 substance (group) is reclassified as
447 category 1.
- 448 Note 2: A criteria 3 “for information only” declarable substance (group) is to be reclassified as criteria 1 or criteria 2 if one of
449 those criteria become applicable.
- 450
- 451 The information in the IEC 62474 database (including the DSL) are updated as needed, but a minimum
452 of once per year. This is done by the IEC Validation Team (VT). The validation team is a permanent,
453 “executive” group of experts appointed by and acting as delegates on behalf of their National
454 Committees to validate proposed items and vote for their release as part of a database standard.
- 455 There are many commercially and private available tools to support material declaration collection
456 based on the IEC 62474 XML schema (procedure and rules). Companies can also develop their own
457 “interface” tool which support their own list of substances and declarations.

A.2 Considerations on the inclusion of CRMs into the IEC 62474 substances list

To be fully compliant with IEC 62474 or other similar substances declaration scheme, the legal requirements on CRM should contain:

- A unique name of the substance or substances group
- For a substance group, the complete list of substances included in the group should be listed
- A threshold should be associated to each substance. If the presence of the substance is above threshold then it shall be declared by the users
- In case of a group of substances, it must be indicated if the threshold apply to a single substance of the group, or to the total amount of substance in the group
- If exemptions apply, then they should be indicated.

A.3 Example of data element types of a material declaration

Table A.1 shows a few selected snapshots of data element types of a material declaration according to IEC 62474 standard. These data elements represent a simplified view of the data fields in the XML schema.

Note 1: Table A.1 is for reference purpose only and it does not contain all element types of a material declaration. For the complete overview, refer to the IEC 62474 Edition 2 (111/459/CDV), Annex A.

Note 2: For the actual description of mandatory and optional requirements, it is referred to the data exchange format within the IEC 62474 Database. If there is a discrepancy between Table A.1 and the IEC 62474 Database, the IEC 62474 Database takes precedence.

Table A.1 – Selected data element types of a material declaration (1 of 5)

Category	Data element type	Obligation	Description
Main (top level object to be included in every material declaration)	schemaDatabaseVersion	Mandatory	Version of the IEC Database which contains the XML schema on which the declaration is based
	ToolNameVersionID	Optional	Unique tool name and its version number used for material declaration data exchange compliant to IEC 62474 requirements.
	Signature	Optional	Digital signature
	Include	Mandatory	Contents of the declaration Declaration for compliance, Composition decalaration, Declaration for compliance and Composition declaration, Material class, Lists etc
	declarationComplete	Optional	Status declaration indicating that XML data file is complete or is in progress of file-creation.
	charaLocal	Conditional	The language character set as defined by ISO 639-1:2002 specifies the local language that is used in the elements with postfix "Local" (for example, 'nameLocal').

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Table A.1 (2 of 5)

Category	Data element type		Obligation	Description
	parent	child		
Business info (this category is mandatory in every material declaration)	Response	SupplyCompany	Mandatory	Name, identifier and address of the supplier company
		Contact	Mandatory	Name, title, phone, email of the supplier contact person
		Authorizer	Mandatory	Name, title, phone, email of the supplier person authorizing the accuracy of this material declaration
		date	Mandatory	Date the response is returned to the requester by the responder in response/responder mode or the date the distribute form is completed in Pro-active distribution mode.
		docID	Optional	Identification code for declaration. In request/responder mode, the responder defines the identification code. In distribution mode, the declaring company defines the identification code.
		comment	Optional	Comment field fir any additional information correspond to the supplier.
	Request	RequestCompany	Mandatory	Name, identifier and address of the supplier company
		Contact	Mandatory	Name, title, phone, email of the supplier contact person
		date	Mandatory	Date the request is made by the requesting company
		docID	Optional	Identification code for the request as specified by the requester.
		internalSupplierID	Optional	Identifier for the responder assigned by the requester

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Table A.1 (3 of 5)

Category	Data element type		Obligation	Description
	parent	child		
Product (this category is mandatory in every material declaration)	ProductID	name	Optional	Product name used by the supplier.
		identifier	Mandatory	An identifier(Authority and List Identity) for the product defined by the supplier.
		manufacturingSite	Optional	Manufacturing site of the product.
		effectiveDate	Mandatory	Date that the material declaration is applicable and valid.
		version	Optional	Product version (if applicable)
		requesterName	Optional	Product name used by the requesting company.
		requesterIdentifier	Optional	An identifier (Authority and List Identity) for the product defined by the requester.
		Mass	Mandatory	The total mass of the product and its unit of measure for the mass.
		InstanceID	Optional	Identification of a specific product instance or a range of instances that are applicable to this declaration
	productFamilyName		Optional	Name of product family being declared
	QueryList		Optional	A query list provides the ability to declare true/false responses to statements that may be specified by either the requester or responder.
	unitType		Mandatory	A unit type describes the units used to measure a product. Eg. Each, g, kg, cm2, m3, cm3
comment		Optional	Comment field fir any additional information correspond to the product.	
Exemptions		Optional	Exemptions being declared at the product level	

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Table A.1 (4 of 5)

Category	Data element type		Obligation	Description
	parent	child		
Composition	MaterialList		Optional	An identifier (Authority and List Identity) for the material list in declaring the material.
	DeclarableSubstanceList		Optional	An identifier (Authority and List Identity) for the reference declarable substance list in composition declaration. (Only if there is it)
	ProductPart		Conditional	sub-unit of a product or another (product) part. A Product Part can be decomposed into other Product Parts.
	Material		Conditional	material and its properties which is being reported for the product family, product, or product part
	Substance	name	Mandatory	The name of the declarable substance correspond to the declarable substance list defined as SubstanceList
		UniqueID	Conditional	The unique identifier (Authority and List Identity) of the substance
		Mass	Conditional	The mass of the substance within a product, product part or material and its unit of measure for the mass
		MassPercent	Conditional	The mass percent of the mass
		MatMassPercent	Conditional	Substance concentration in mass percent of the homogeneous material mass. The mass percent is calculated as specified in IEC 62474 Database if a reporting requirement is provided
		reportingThreshold	Optional	Concentration limit at or above which the presence of a declarable substance in a material or product is declared.
Exemptions	Optional	Exemptions applicable to declared substance and Identifier of the Exemption List		

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Table A.1 (5 of 5)

Category	Data element type		Obligation	Description
	parent	child		
ProductPart (this category is conditional)	ProductID	name	Optional	The name of the product part
		identifier	Optional	The identifier of the product part.
		manufacturingSite	Optional	Manufacturing site of the product part.
		effectiveDate	Conditional	Date that the material declaration is applicable and valid.
		version	Optional	Product part version (if applicable)
		requesterName	Optional	Product part name used by the requesting company.
		requesterIdentifier	Optional	Product part identifier used by the requesting company.
		Mass	Conditional	The mass of the product part and its unit of measure for the mass.
		MassPercent	Conditional	The mass percent of the product part to the product.
		InstanceID	Optional	Identification of a specific product instance or a range of instances that are applicable to this declaration
	numberOfUnits		Mandatory	Number of identical instances of product part in a declared product
comment		Optional	Comment field for any additional information correspond to the product part.	
Material		Conditional	Material and its properties which is being reported for the product family, product, or product part	

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Bibliography

- 499 [1] {COM(2017) 490 final} : COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN
500 PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE
501 COMMITTEE OF THE REGIONS on the 2017 list of Critical Raw Materials for the EU
- 502 [2] {SWD(2014) 171 final} : COMMISSION STAFF WORKING DOCUMENT On the implementation of the
503 Raw Materials Initiative Accompanying the document Communication from the Commission to the
504 European Parliament, The Council, The European Economic and Social Committee and the Committee
505 of the Regions on the review of the list of critical raw materials for the EU and the implementation of the
506 Raw Materials Initiative
- 507 [3] Directive 2009/125/EC of the European Parliament and of the Council of 21 October 2009 establishing a
508 framework for the setting of ecodesign requirements for energy-related products
- 509 [4] IEC 62474 Edition 2 (111/459/CDV) - Material declaration for products of and for the electrotechnical
510 industry
- 511 [5] IEC 62474 database - <http://std.iec.ch/IEC62474>
- 512 [6] IEC TR 62474.1 - Material declaration for products of and for the electrotechnical industry – Part 1:
513 Guidance for the implementation of IEC 62474
- 514 [7] prEN 45559 - Methods for providing information relating to material efficiency aspects of energy-related
515 products
- 516 [8] prEN 45555 - General methods for assessing the recyclability and recoverability of energy-related
517 products
- 518 [9] IPC 1752A, Materials Declaration Management Standard
- 519 [10] CloseWEEE (www.closeweee.eu) project (grant agreement No 641747) – An EU Horizon 2020 research
520 and innovation programme
- 521 [11] RIC - the Recyclers Information Center (Developed as part of the CloseWEEE project aimed at improving
522 technology and procedures for end-of-life treatment of WEEE
- 523 [12] International Union of Pure and Applied Chemistry (1998). Compendium of Analytical Nomenclature
524 (definitive rules 1997, 3rd. ed.). Oxford: Blackwell Science. ISBN 0-86542-6155
- 525 [13] American Chemical Society. "CAS REGISTRY and CAS Registry Number"
- 526 [14] ISO/NP 22453 [Under development] Rare earth -- Elements recycling -- Method for the exchange of
527 information of rare earth elements in by-products and industrial wastes
- 528 [15] IEC/PAS 62596:2009, Electrotechnical products – Determination of restricted substances – Sampling
529 procedure – Guidelines
- 530 [16] IEC 63000:2016, Technical documentation for the assessment of electrical and electronic products with
531 respect to the restriction of hazardous substances
- 532 [17] IEC 62430, Environmentally conscious design for electrical and electronic products
- 533 [18] IEC TR 62635:2012, Guidelines for end-of-life information provided by manufacturers and recyclers and
534 for recyclability rate calculation of electrical and electronic equipment

- 535 [19] ISO 14020:2000, Environmental labels and declarations – General principles
- 536 [20] ISO 14024:1999, Environmental labels and declarations – Type I environmental labelling – Principles and
537 procedures
- 538 [21] ISO 14025:2006, Environmental labels and declarations – Type III environmental declarations –
539 Principles and procedures
- 540 [22] Blengini, G.A., Blagoeva, D., Dewulf, J., Torres de Matos, C., Nita, V., Vidal-Legaz, B., Latunussa, C.E.L.,
541 Kayam, Y., Talens Peirò, L., Baranzelli, C., Manfredi, S., Mancini, L., Nuss, P., Marmier, A., Alves-Dias,
542 P., Pavel, C., Tzimas, E., Mathieux, F., Pennington, D. and Ciupagea, C. Assessment of the Methodology
543 for Establishing the EU List of Critical Raw Materials, Publications Office of the European Union,
544 Luxemburg, 2017, 978-92-79-69612-1, doi:10.2760/73303, JRC106997

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