

LEAF

Luxury Ethical and Fair Foundation

**LEAF HARDWARE CERTIFICATION - GENERAL
REQUIREMENTS**

V.1.1 – 05/09/2023

1

2

TABLE OF CONTENTS

| | | |
|----|--|-----------|
| 3 | | |
| 4 | | |
| 5 | 1. GOAL OF THE PRESENT DOCUMENT | 3 |
| 6 | 2. REFERENCE DOCUMENTS | 4 |
| 7 | 3. TERMS AD DEFINITIONS | 4 |
| 8 | 4. PRINCIPLES | 5 |
| 9 | 4.1. GENERAL INFORMATION | 5 |
| 10 | 5. REQUIREMENTS FOR LEAF HARDWARE PRODUCT CERTIFICATION | 7 |
| 11 | 5.1. GENERAL REQUIREMENTS | 7 |
| 12 | 5.1.1. COSTS AND FEES | 8 |
| 13 | 5.1.2. CHANGES, CORRECTIONS, OR AMENDMENTS TO PUBLISHED LEAF | |
| 14 | HARDWARE CERTIFICATIONS | 8 |
| 15 | 5.1.3. DE-REGISTRATION OF LEAF HARDWARE CERTIFICATION | 9 |
| 16 | 6. PRODUCT DOSSIER..... | 10 |
| 17 | 7. TECHNICAL DATA SHEET..... | 11 |
| 18 | 8. LIFE CYCLE ASSESSMENT (LCA) | 13 |
| 19 | 8.1. LCA REQUIREMENTS FOR LEAF HARDWARE CERTIFICATION PROCESS | 13 |
| 20 | 8.1.1. LEAF HARDWARE PRODUCT CATEGORIES | 13 |
| 21 | 8.1.2. LCA STUDY REPORT IN THE PRODUCT DOSSIER..... | 15 |
| 22 | 8.1.3. REVIEW PROCESS..... | 15 |
| 23 | 8.2. IMPACT CATEGORIES..... | 21 |
| 24 | 9. SAFETY TEST REPORT | 23 |
| 25 | 9.1. PRODUCT SAFETY REQUIREMENTS..... | 23 |
| 26 | 10. REQUIREMENTS FOR USE OF LEAF TRADEMARK | 24 |
| 27 | ANNEX A – GENERAL APPLICATION OF LCA METHODOLOGY | 25 |
| 28 | | |
| 29 | | |

30 **1. GOAL OF THE PRESENT DOCUMENT**

31 The goal of the present document is to define the requirements necessary to obtain LEAF
32 Hardware certification for fashion metal hardware products by:

- 33 1. calculating the potential environmental impact arising from the production of metal
34 hardware products on a life cycle basis, and
- 35 2. ensuring the product's safety via test reports assessing compliance to product's safety
36 requirements.

37 The Life Cycle Assessment (LCA) methodology's fundamental principles and specific
38 requirements for the present certification are reported in the following sections. In particular,
39 LEAF Hardware certification requires that, for a specific product category, the environmental
40 burden of selected impact categories (see Section 8.1.) and 8.2. shall be lower than the limit
41 values determined by LEAF via a benchmark study. The product categories and related impact
42 limit values are reported in the "LEAF Hardware: Product Categories and Impact Limit Values"
43 document.

44 In addition, LEAF Hardware certification requires that a product is compliant to a list of
45 restricted substances. This compliance shall be ensured by accredited Laboratories. Detailed
46 information are available throughout this document and in Section 9.1. The restricted
47 substances and relative limits are reported in the "LEAF Hardware: Restricted Substances List"
48 document.

49

50 **2. REFERENCE DOCUMENTS**

51 ISO 9000 – Quality management systems– Fundamentals and vocabulary;

52 ISO 14040 – Environmental management – Life cycle assessment – Principles and
53 Framework;

54 ISO 14044 – Environmental management – Life cycle assessment – Requirements and
55 guidelines;

56 ISO 14021 – Environmental labels and declarations – Self-declared environmental claims
57 (Type II environmental labelling);

58 EN 15804:2012+A2:2019 – Sustainability of construction works – Environmental products
59 declarations – core rules for the product category of construction products;

60 ISO/IEC 17025 – Testing and calibration laboratories;

61 ISO 19011 – Guidelines for auditing management systems;

62 ISO 17065 – Conformity assessment – Requirements for bodies certifying products,
63 processes and services;

64 “General Requirements for LEAF Company Certification”, in its most updated version
65 www.leafoundation.org/documenti;

66 “LEAF Foundation: Costs and Fees”, in its most updated version
67 www.leafoundation.org/documenti;

68 “LEAF Hardware: Product Categories and Impact Limit Values”, in its most updated
69 version www.leafoundation.org/documenti;

70 “LEAF Hardware: Restricted Substances List”, in its most updated version,
71 www.leafoundation.org/documenti;

72 Requirements for the use of LEAF trademark, www.leafoundation.org/documenti;

74 **3. TERMS AD DEFINITIONS**

75 For terms and definition, the present document makes reference to the abovementioned
76 documents (Section 2).

77 For other definitions of interest, please refer to the ISO and IEC databases, which can be
78 found at the following addresses:

79 <https://www.iso.org/obp/ui>

80 <https://www.electropedia.org/>

81

82 **4. PRINCIPLES**

83 **4.1. GENERAL INFORMATION**

84 In the redaction of the present requirements, the following process phases have been
85 considered:

- 86 ○ Processing of base materials into metal hardware accessories;
- 87 ○ Preparation of metal accessories to the following surface treatments;
- 88 ○ Surface treatments;
- 89 ○ Waste disposal.

90 The present requirements are to be considered valid for products such as rivets, loops, chains,
91 bells and more generally, fashion metal hardware accessories.

92 The present requirements are to be considered valid for base materials such as:

- 93 ○ Zinc+Copper-based alloys, e.g., Brass;
- 94 ○ Zinc alloys, e.g., Zamak;
- 95 ○ Iron or Iron alloys, e.g., Steel;
- 96 ○ Tin+Copper-based alloys, e.g., Bronze.

97

98 The present requirements are to be considered valid for surface treatments such as:

- 99 ○ Plating (galvanic electrodeposition);
- 100 ○ Physical vapour deposition (PVD);
- 101 ○ Varnishing;
- 102 ○ Any combination of abovementioned surface treatments.

103

104 The present requirements in their component relating to product safety have been redacted
105 in compliance with the limit values established by the regulations in force regarding product
106 safety at the date of publication of this document.

5. REQUIREMENTS FOR LEAF HARDWARE PRODUCT CERTIFICATION

5.1. GENERAL REQUIREMENTS

In order to request a LEAF Hardware certification for one or more products, the organization requesting certification shall:

1. Possess a valid LEAF Company certification and, therefore, be registered in the Certified LEAF Organizations register;
2. Prepare a Product Dossier for all products to be certified, which shall contain:
 - 2.1. A Technical Data Sheet according to Section 7;
 - 2.2. An LCA study report for the product(s) subject of certification, according to the requirements reported in Section 8.1., and Annex A;
 - 2.3. A Safety Test Report in accordance to the document "LEAF Hardware: Restricted Substances List" (see Section 9 for guidance);
 - 2.4. Proof of payment for LEAF Hardware certification fee (see document "LEAF Foundation: Costs and Fees");
3. Send the Product Dossier together with all attachments to the LEAF Technical Committee (TC) at the email address: info@leaffoundation.com for review;

TC review may result in:

- 1) *Positive Review*: the product is registered in the "LEAF Hardware Certified Products" Register and contextually are provided:
 - a) a unique identification number,
 - b) a QR code for the traceability of product registration in the LEAF Hardware Certified Products Register, and

- 140 c) the release of the license to use the LEAF Hardware trademark in accordance with
141 Section 10. of the present document and the "Requirements for the use of LEAF
142 Trademark";
143

144 2) *Negative Review*: The TC may:

- 145
- 146 a) Request clarifications and/or in-depth analysis and/or objective evidences and
147 subsequent review of the revised certification request.
148
- 149 b) Reject the application for certification stating in writing to the organization the reasons
150 for the negative review.
151

152 The LEAF Hardware certification has a validity of 1 year, except for circumstances reported in
153 Sections 5.1.2. and 5.1.3.

154 **5.1.1.COSTS AND FEES**

155 Fees associated with the registration and publication of the product's LEAF Hardware
156 certification are one-time fees or recurring fees (e.g. annual) to maintain registration,
157 publication, and continued use of the certification and trademark.

158 Up-to-date information about fees are be available at www.leaffoundation.org/documenti.
159 The fee structure and fees could be revised annually.

160 The Fees invoice shall be reported in the Product Dossier together with the invoice address
161 provided in the LEAF company certification process.

162 **5.1.2.CHANGES, CORRECTIONS, OR AMENDMENTS TO PUBLISHED** 163 **LEAF HARDWARE CERTIFICATIONS**

164 A LEAF Hardware product certification shall be updated and re-verified during its validity if
165 changes in technology or other circumstances have led to any of the following:

- 166
- 167 • an increase of any of the impact categories listed in Section 8.2. which causes any of
168 those impact categories to exceed the limits reported;
 - 169 • errors in the declared information;
 - 170
 - 171 • significant changes to the product's Technical Specifications or additional
172 environmental, social or economic information.

173 If such changes have occurred, but the certification is not updated, the organization shall
174 contact the TC to de-register the certification (see Section 5.1.3.)

175 The organization owing the product certification may also choose to make amendments or
176 other changes to such LEAF Hardware certification during its period of validity.

177 For changes concerning any of the reviewed data in the Product Dossier, a new review shall
178 be performed by the TC. The review shall result in a review report. The updated Product
179 Dossier and proof of review shall then be provided to the TC to update the certification and,
180 therefore, the published version on the website.

181 In addition to these situations, the certification owner may make editorial changes to a
182 published LEAF Hardware certification, such as the change of a logotype or correction of
183 spelling errors, by providing the revised certification directly to the TC without review.

184 A revised LEAF Hardware shall include a revision date normally set as the date for
185 submitting the updated Product Dossier document to the TC.

186 Substantial changes and deviations of the product covered by a certification shall be treated
187 as a separate registration and not an update of an existing certification.

188 **5.1.3.DE-REGISTRATION OF LEAF HARDWARE CERTIFICATION**

189 A LEAF Hardware product certification shall remain published as long as the applicable fees
190 are paid in due time and under the condition that the certification owner applied the terms
191 and conditions.

192 The certification owner may contact LEAF TC in writing for de-registration of the certification.

193 The TC may de-register certifications if fees are not paid in due time, or in case of non-
194 conformance with the terms and conditions as well as if the certification contains errors that
195 are not corrected by the certification owner in due time.

196 A de-registered LEAF Hardware certification shall no longer be used and the assigned
197 registration number shall not be re-used.

198 The TC shall maintain a list of de-registered LEAF Hardware certifications, which can be made
199 available upon request, provided acceptance from the former certification owner.

200

201

6. PRODUCT DOSSIER

202

The organization requestig LEAF Hardware certification shall prepare a Product Dossier for each product, in which at least the following information shall be reported:

203

204

a. Name of the Organization requesting certification;

205

206

b. LEAF Company Certification number;

207

208

c. Date;

209

210

d. Name and description of the product;

211

212

e. Product identification code;

213

214

f. LEAF Hardware product category (see "LEAF Hardware: Product Categories and Impact Limit Values" document). Note that, in the case of a multi-component product, the LEAF Hardware product category to be indicated shall be that of the major component in terms of component weight with respect to the total product weight;

215

216

217

218

219

g. Name of the Technical Data Sheet file, for example "Product_TDS.pdf". See Section 7 for guidance on correct Technical Data Sheet preparation;

220

221

222

h. Name of the LCA study report, for example "Product_LCA-Report.pdf". See Section 8.1. and Annex A for correct LCA Report preparation;

223

224

225

i. Name of the Product Safety Test Report, for example "Product_STR.pdf", with indication of the test report number, name and number of LEAF Accredited ISO 17025 Laboratory providing the Safety Test Report. LEAF Validated Laboratory number can be found at www.leaffoundation.org.

226

227

228

229

230

j. Any additional environmental, social and economic information.

231

232

The Product Dossier shall be sent to the LEAF TC via email at info@leaffoundation.org, together with the Technical Data Sheet, the LCA report and the Safety Test Report and any other additional environmental, social and economic information.

233

234

235

236

237

238

239

240

241

242

243

244

235

7. TECHNICAL DATA SHEET

236

In order to obtain a LEAF Hardware certification for a product, the organization shall prepare a technical data sheet, in which at least the following information shall be reported:

237

238

a. Name of the Organization requesting certification;

239

240

b. LEAF Company Certification number;

241

242

c. Date;

243

244

d. Name and description of the product;

245

246

e. Product identification code;

247

248

f. LEAF Hardware product category (see "LEAF Hardware: Product Categories and Impact Limit Values"). Note that, in the case of a multi-component product, the LEAF Hardware product category to be indicated shall be that of the major component in terms of component weight with respect to the total product weight;

249

250

251

252

g. Number and description of single components, for example a buckle and a prong;

253

254

h. Product weight (for single-component product) or components weights (for multi-components products);

255

256

257

i. Product surface area (for single-component product) or components surface areas (for multi-components products);

258

259

260

j. Base materials composition and realization processes, for example a "hot-stamped brass buckle" and a "die-cast zamak prong";

261

262

263

k. Surface treatment, for example "Nickel plating";

264

265

l. Presence and amount of recycled materials, if any, in the base materials and/or surface treatment materials (such as substrates or additives), together with self-declarations about the nature and amount of recycled materials according to ISO 14021;

266

267

268

m. Number and description of processes for product or components making and indication of the process sites;

269

270

271

272

n. Number and description of processes for product assembly, for example "soldering".

274

275

Subcontract process sites indicated in the Technical Data Sheet shall find correspondance to those indicated in the "Approved Process Sites" section in the organization's LEAF Company certification.

276

277

278

The most updated version of the Technical Data Sheet template for Product Dossier submission is available at www.leaffoundation.org/documenti or can be requested via email at info@leaffoundation.com

279

280

281

282 **8. LIFE CYCLE ASSESSMENT (LCA)**

283 LEAF Hardware requires that the environmental performance of the product to be certified
284 shall be obtained via a Life-Cycle Assessment (LCA) study on such product.

285 The LCA represents a methodology that allows to measure the potential environmental
286 impacts generated by products, services, economic systems and production chains on the
287 environment, human health and more generally on the planet along the entire life cycle, from
288 the acquisition of raw materials to the end of life.

289 Once the system boundaries (i.e., the field of analysis) have been defined and the data
290 collected in an inventory (Life Cycle Inventory, LCI), inventory data are associated with specific
291 environmental impact categories and category indicators (see Section 8.2.), thus helping to
292 establish a cause-and-effect logic between products/services and impacts. This latter phase
293 is called the impact assessment phase (Life Cycle Impact Assessment, or LCIA) The LCIA phase
294 therefore represents the interpretation phase of the life cycle.

295 Transparency is essential for the impact assessment, so as to guarantee the goodness and
296 truthfulness of the study.

297 **8.1. LCA REQUIREMENTS FOR LEAF HARDWARE** 298 **CERTIFICATION PROCESS**

299 The LCA study may be performed by the organization itself or with the help of a consultant
300 with expertise in LCA methodology.

301 The LCA study shall comply with:

- 302 • the international accepted principles, framework, methodology and practices for LCA
303 established by ISO 14040 and ISO 14044;
- 304 • the general purpose of LEAF Hardware in the collection of data, and the methods and
305 assumptions used as advocated and described in this Section and Annex A of the
306 present document.
307

308 The TC may provide guidance in finding the correct product category representative for the
309 product to be certified and it should be contacted in case of doubts about such topic.

310 **8.1.1. LEAF HARDWARE PRODUCT CATEGORIES**

311 Environmental impacts associated to different processes regarding the full *cradle-to-gate*
312 cycle of fashion hardware products (for example, base materials production, metal hardware
313 processing, surface treatments additive consumption) can be significantly different in
314 absolute terms.

315 LEAF Hardware product categories have been created for the purpose of generating
316 consistent results among products possessing similar characteristics (for example, the same
317 base material and a comparable plating treatment), in order to increase the comparability
318 between products within a product category.

319 LEAF Hardware product categories are reported in the most updated version of the “LEAF
320 Hardware: Product Categories and Impact Limit Values” document.

321 Each product category reports, *i)* the functional/declared unit, and *ii)* the LCA processes to be
322 included in the LCA study.

323 The LCA practitioner shall comply with the reported functional/declared unit and all the
324 mandatory LCA processes to support compatibility between products as far as possible. Any
325 deviation from the collection of data for such mandatory processes shall be documented and
326 motivated in the LCA report and reviewed by the TC.

327 ***Impact Categories Limit Values***

328 LEAF Hardware product categories also report the limit values for each impact category on a
329 “per product category” basis. These limit values have been determined by the LEAF’s TC
330 collecting primary *gate-to-gate* data for processes in fashion metal hardware production in
331 Europe and South-east Asia region the places where most of the worldwide fashion metal
332 hardware industry is located.

333 Secondary *cradle-to-gate* data (for example, ores extraction and affination) have been
334 obtained from the latest version of Ecoinvent database (Ecoinvent association, Switzerland, v.
335 3.9.1, 2023).

336 All data have been averaged on a per process basis. The resulting impact categories values,
337 therefore, can be considered representing indicators for benchmark situation for a specific
338 product category.

339 As reported in Section 8 of the “LEAF Company Certification: General requirements”
340 document, organizations requesting a LEAF Company certification shall provide company
341 production data to the LEAF TC in order to update the indicators limit values and yearly
342 redefine the benchmark situation. Organizations already adopting the best available practices
343 (BAPs) in their production processes help to lower the benchmark indicators limit values and,

344 therefore, the environmental burden associated to fashion metal hardware production.
345 Organizations not aligned to the most recent BAPs are strongly encouraged to start a
346 program of progressive adoption of BAPs in order to decrease their environmental impact and
347 strengthen the goodness and reliability of the here-proposed benchmark situation.

348 **8.1.2.LCA STUDY REPORT IN THE PRODUCT DOSSIER**

349 The results of the LCA study shall be compiled in the form of a report and inserted in the
350 Product Dossier, together with additional documents and information as reported in Section
351 6 . This may be performed by the organization itself (in-house) or with the help of a consultant.

352 **8.1.3.REVIEW PROCESS**

353 LCA report review consists in the review of LCA-based data, additional environmental, social
354 and economic information, and its consistency with other information reported in the Product
355 Dossier.

356 The review process is carried out by the LEAF TC.

357 Data for review shall be presented in the form of an LCA report i.e., a systematic and
358 comprehensive summary of the project documentation that includes the necessary data and
359 information for review. The LCA report is not made public in the certification.

360 The LCA report shall be written in a language that is understood by the reviewer.

361 The examination of the presentation of the LCA report shall specifically focus on that:

- 362 • the background information is presented in a transparent and understandable way;
- 363
- 364 • the presentation is credible and neutral;
- 365
- 366 • the declaration format follows the recommended layout as reported in ISO 14040 and
367 14044;
- 368
- 369 • information and guidance are given on where to find supplementary explanatory
370 materials.

371 ***Independence Of Verification***

372 All types of information and data shall be impartially reviewed. The reviewer shall not be
373 employed in a part- or full-time role by the practitioner or commissioner of the LCA study,
374 nor any subsidiaries of that organization.

375 The reviewer shall not have been involved in the execution of the LCA or the development of
376 the LCA report, and there shall not be conflicts of interest.

377 The reviewer shall report any perceived pressure by the organization requesting certification
378 or LCA practitioner to influence the outcome of the review to the LEAF Foundation board,
379 who may assist with arbitration, if necessary.

380 ***Principles For Verification***

381 The review process shall cover the following main areas:

- 382 • data collected and used for the LCA calculations and data quality;
- 383 •
- 384 • the methodology adopted for LCA-based calculations;
- 385 •
- 386 • the presentation of the results (i.e., impact categories) in the LCA report;
- 387 •
- 388 • the presentation of additional environmental, social and economic information and
389 any other information included in the Product Dossier.

390 In case of the existence of already verified background information in the LCA results (carried
391 out in accordance with the ISO standards for LCA and critical review of LCA) or valid reviewed
392 certifications, this information shall not be subject to further review provided that the
393 information is updated and valid through the product's certification validity.

394 ***Documental Review***

395 The review procedure consists in a documental review.

396 The documental review shall focus on the analysis of all documents that justify input data and
397 information included in the LCA report, both the LCA study and documents describing
398 additional environmental, social and economic information present in the Product Dossier.

399 The objectives of the documental review are:

- 400 • to assess the compliance of the LCA study with ISO 14040 and 14044, and the
401 requirements included in the present document;
- 402 •
- 403 • to assess the collection of data for all mandatory processes as specified in the "LEAF
404 Hardware: Product Categories and Impact Limit Values" document. Such data shall be

- 405 sufficiently consistent, reliable and understandable to enable an independent
406 evaluation of the relevance of the data;
- 407
- 408 • to verify that the results from the inventory analysis and the impact assessment
409 calculations have been performed using the most updated versions of the methods
410 for the impact categories reported in Section 8.2;
- 411
- 412 • to verify procedures established for updating the information in the LCA and
413 certification;
- 414
- 415 • to verify procedures established for an assessment of the conformity to all relevant
416 process and product-related environmental laws (where appropriate).

417 ***Data Confidentiality***

418 Business data may be of confidential nature because of competitive business or aspects,
419 intellectual property rights, or similar legal restrictions. Such confidential data are not made
420 public as the LEAF Hardware certification outputs typically only provide data aggregated over
421 full or relevant portions of the life cycle. Therefore, business data identified as confidential
422 and provided during the review process shall be kept confidential. The TC shall not
423 disseminate or otherwise retain for use, without the permission of the organization, any
424 information disclosed to them during the course of the review work.

425

426 ***Presentation Of Data For Verification***

427 In the presentation of data for review, references shall be made to the Product Dossier, as
428 well as other documents used. Any deviations from making use of these documents shall be
429 described and justified.

430 In the event the reviewer finds the LCA study not in conformance with the requirements
431 reported in Section 8.1., the reviewer may ask for additional information or further refinement
432 of the underlying data. This request shall be documented.

433 The presentation of the results from the LCA-based calculations shall be sufficiently
434 comprehensive to facilitate the examination by the reviewer. The organization (wether by
435 itself or with the help of a consultant) shall provide data and information to the reviewer in
436 the form of a:

- 437 1. presentation of data, and
- 438
- 439 2. description of the LCA-based calculations.

440 The presentation of data from the LCA-based calculations shall be done in a consistent way
441 to cover the most important aspects related to the accuracy and relevance of the data. Data
442 on unit processes/information modules shall be described in a transparent way. The same
443 rules apply regardless of the type of data, i.e., whether the data are primary or secondary,
444 from literature sources, from questionnaires, or from personal information.

445 Results from the inventory analysis should be presented separately in the form of a table. A
446 summation of the various parameters may be included for different life cycle stages. Inventory
447 results may be presented together with the characterisation factors used for converting the
448 inventory data into indicators for potential environmental impacts. Results from the impact
449 assessment should be presented in a way that illustrates the calculation procedure from raw
450 data collected in the inventory analysis phase to the final conversion of the data into the
451 impact categories.

452 Presentation of data, data quality assurance and data handling are central parts of the LCA
453 report. Primary or equivalent data from manufacturing processes shall be documented on the
454 site level. Unit processes/information modules and secondary data shall be reported on the
455 level of aggregation available for use in the calculation, but more detailed data can be
456 reported, if relevant.

457 Data relevant for the LEAF Hardware certification shall be documented and specified in a “per
458 LCA phases” manner, as reported in the “LEAF Hardware: Product Categories and Impact Limit
459 Values” document.

460 The following information about the goal and scope definition shall be included in the LCA
461 report, where relevant:

- 462 • definition of declared or functional unit, including technical specifications;
- 463
- 464 • description of key methodological elements, including documentation and justification
465 of procedures for allocation, averaging data, and cut-off;
- 466
- 467 • the technical system (type of system, geographical location, system boundary, and
468 description of life-cycle stages including omissions of life-cycle stages and
469 reasons/justifications for omissions);

470 The following information about the inventory analysis shall be included in the LCA report,
471 where relevant:

- 472 • the technical system (qualitative/quantitative description of unit processes, accounting
473 for data confidentiality, when appropriated);
- 474
- 475 • data collection (primary/secondary data, collection procedures, time period for data
476 collection, identification and handling of missing data and assessment of their, checks
477 of data collection being performed, references, and other administrative information);
- 478
- 479 • validation of data (internal quality assurance procedures; routines for identification,
480 follow-up, and treatment of missing data; references to external critical reviews of data
481 already validated);
- 482
- 483 • inventory analysis results (presentation of all input and output inventory data, results
484 for different life cycle stages/information modules in addition to the final aggregated
485 results);
- 486
- 487 • other key assumptions made.

488 The following information about the impact assessment shall be included in the LCA report,
489 where relevant:

- 490
- assignment of the results from the inventory analysis (classification);
- 491
- results of the characterisation and impact assessment calculations;
- 492
- references to all characterisation methods and factors used.
- 493
- 494

495 When checking the results from the impact assessment, the reviewer shall verify that the
496 calculations are made in a correct way based on the inventory analysis results and prescribed
497 characterisation factors.

498 The organization developing the LCA study by itself or with the help of a consultant shall
499 provide the reviewer with information about the underlying data and calculations carried out
500 upon request.

501 An LCIA interpretation should be included in the LCA report, where relevant, in the form of a
502 sensitivity analysis, especially when using a cut-off criteria different than that reported in
503 Annex A.

504

8.2. IMPACT CATEGORIES

The impact categories and methods to be used for the present requirements are the following:

- 1. Global Warming Potential (GWP, kg CO₂ eq.):** the calculation for this impact category shall be based on the final government distribution version of the IPCC report "AR6 Climate Change 2021: The Physical Science Basis". This document contains the Global Warming Potential (GWP) climate change factors of IPCC with a timeframe of 100 years. Note that the GWP 100 factors are recommended as default by UNEP-GLAM (2017).
- 2. Abiotic Resources Depletion Potential (ADP fossil resources, MJ + ADP minerals & metals, kg Sb eq.):** the calculation for this impact category shall be based on the impact factors "Abiotic resource depletion fossil fuels (ADP-fossil)" and "Abiotic resource depletion (ADP ultimate reserve)", both published on CML 2022, Guinée et. al. 2002, and van Oers et al. 2002.
- 3. Water Deprivation potential (WDP, m³ water eq. deprived):** the calculation for this impact category shall be based on the AWARE (Available Water REmaining) method, which represents the relative available water remaining per area in a region/watershed after the demand of humans and aquatic ecosystems has been met. It assesses the potential of water deprivation, to both humans and ecosystems, assuming that the less water remaining available per area, the more likely another user will be deprived. AWARE is a midpoint indicator expressed in m³ world eq. Characterization factors (CFs) of AWARE quantify the relative water scarcity of an average m³ of water withdrawn in a region, on a scale from 0.1 to 100, with a value of 1 corresponding to the world average. A value of 10, for example, indicates a region where there is 10 times less available water remaining per area than the world average.
In May 2016, the method was appointed by the Life Cycle Initiative as the global consensus method for water footprinting. This method is also used in the Environmental Footprint impact assessment method developed by the European Commission.
- 4. Ozone Depletion Potential (ODP, kg CFC11 eq.):** the calculation for this impact category shall be based on the impact factors published in the "Scientific Assessment of Ozone Depletion: 2014" by the World Meteorological Organization

(WMO). This methods allows for the calculation of the destructive effects on the stratospheric ozone layer over a time horizon of 100 years.

- 542
543
544
545
546
547
548
549
550
551
5. **Ecotoxicity (Acidification Potential (AP, mol H⁺ eq.) + Eutrophication Potential (EP, mol P eq.)):** the calculation for the Acidification Potential shall be based on the impact indicator "Accumulated Exceedance (AE)" characterizing the change in critical load exceedance of the sensitive area in terrestrial and main freshwater ecosystems, to which acidifying substances deposit. This is originally reported in "Accumulated Exceedance, Seppälä, et al. 2006, Posch et. al. 2008"

552
553
554
555
556
557

The calculation for the Eutrophication Potential shall be based on the impact indicator "Phosphorus equivalents", as an expression of the degree to which the emitted nutrients reaches the freshwater end compartment (phosphorus considered as limiting factor in freshwater). This is originally reported in "EUTREND model, Struijs et. al. 2009b", as implemented in ReCiPe.

- 558
559
560
561
562
563
564
565
566
567
6. **Human Toxicity (CTUh/kg):** USEtox is a scientific consensus model endorsed by the UNEP/SETAC Life Cycle Initiative for characterizing human and ecotoxicological impacts of chemicals. It is developed by the USEtox Team, a team of international researchers from the Task Force on Toxic Impacts under the auspices of UNEP/SETAC Life Cycle Initiative. The original documentation can be found on the website: www.usetox.org. In USEtox, a distinction was made between recommended and interim characterization factors, reflecting the level of reliability of the calculations in a qualitative way. The USEtox Team advises to use the recommended USEtox characterization factors always together with the interim characterization factors.

568

569

9. SAFETY TEST REPORT

570

9.1. PRODUCT SAFETY REQUIREMENTS

571

Applicants for LEAF Hardware certification are required to perform safety tests in accordance with the "LEAF Hardware: Restricted Substances List" document.

572

573

All LEAF Hardware products, including the single components of these products shall be tested.

574

575

Samples for compliance verification may also be requested by the LEAF TC during the Product Dossier review, either as support for the review process or in case of suspicion of contamination or non-compliance.

576

577

578

Additional samples of goods may be sampled at any time without prior notice.

579

Laboratories accredited according to ISO/IEC 17025 and possessing adequate experience in the testing of residual substances for fashion metal hardware are allowed to perform tests on chemical residues for tests falling within the scope of both this certification and their accreditation.

580

581

582

583

584

10. REQUIREMENTS FOR USE OF LEAF TRADEMARK

585

586

587

The use of the LEAF trademark shall comply with the requirements and provisions set out in the document "Regulation on the use of LEAF trademark". The approved Certification Body verifies compliance with the requirements for use of the trademark during surveillance audits.

588

589

590

The certified organization must keep one or more registers indicating the documents in which the LEAF trademark is affixed and make these registers available for inspection by the approved Certification Body during audits.

591

ANNEX A – GENERAL APPLICATION OF LCA

METHODOLOGY

This annex describes the general application of LCA methodology in the LEAF Hardware certification.

These rules follow the international standards ISO 14040/14044.

An LCA study according to ISO 14040/14044 consists of several stages: definition of goal and scope, inventory analysis, impact assessment and interpretation. For the application of the LCA in the intended use to obtain a LEAF Hardware Certification for a given product, the information reported in this Annex, in Section 8.1 of this document and in the “LEAF Hardware: Product Categories and Impact Limit Values” document shall be followed in order to increase the comparability between products of the same product category

If it is necessary to meet the market demand for life cycle-based environmental information for certain markets, product categories or applications, a methodology may be adopted which deviates from the general application of the LCA methodology described in this Annex.

An example is the methodology described in the EN 15804 standard. Such deviations must be described in the product and submitted to the LEAF TC review and approval process.

A-1 MODELLING APPROACH

The LCA modelling approach to be used is attributional LCA, which means that:

- 1) specific or average data (i.e. not marginal data) shall be used;
- 2) allocation problems that cannot be avoided by subdividing the unit process into two or more subprocesses, shall be solved via allocation (i.e. not via system expansion beyond the system boundaries set in the Product Dossier). Furthermore, "substitution" or "credits" for avoided environmental impact shall not be used to solve allocation problems.

The purpose of using this approach is to make information traceable, documented, and verifiable.

A-2 DECLARED/FUNCTIONAL UNIT

621 The declared or functional unit is the reference unit to which the environmental performance
622 of the product is related. Functional unit is defined as a quantified performance of a product
623 and a declared unit is defined as a quantity of a product. The declared/functional unit to use
624 for the specific LEAF Hardware product categories are reported in the “LEAF Hardware:
625 Product Categories and Impact Limit Values” document.

626 If the function of the product in the use phase is known and can be clearly defined, a
627 functional unit shall be used. If the function of the product in the use phase is unknown, if the
628 product can be used for several different functions, or if the function cannot be clearly
629 defined, a declared unit may be used.

630 **A-3 TECHNICAL SPECIFICATION**

631 The technical specification shall include sufficient information for the TC to verify the
632 legitimate correspondence between the results of the LCA study and the technical
633 specifications declared for the product to be certified. The technical specification shall include,
634 at least,:

- 635 1) the composition of the base material and its recycled metal content;
- 636
- 637 2) the accessory fabrication procedure (e.g., die-casting);
- 638
- 639 3) the plating/PVD/varnish pre-deposit operations, if any (e.g., polishing);
- 640
- 641 4) the plating/PVD/varnish deposit operations with amount of materials and energy
642 consumption (e.g., plating, PVD, ecc.);
- 643
- 644 5) the plating/PVD/varnish post-deposit operations, if any (e.g., laser operations).

645 See “LEAF Hardware Product Categories and Impact Limit Values” document for further
646 details.

647 **A-4 SYSTEM BOUNDARY**

648 The system boundary of the product life cycle determines the processes to be included or
649 excluded in the LCA. In principle, all environmentally relevant processes from “*cradle to grave*”
650 should be included, so that at minimum 99% of the total energy use, mass of product content,
651 and environmental impact is accounted for.

652 For intermediate products, such as fashion hardware accessories or other products for which
653 further processing and/or the end use is unknown, the system boundary may be limited to

654 "cradle to gate". If end-of-life treatment is excluded, one or more of the following criteria shall
655 be fulfilled:

- 656 1) the product is physically integrated with other products in subsequent life-cycle
657 process (such as fashion hardware accessories in fashion products) and cannot be
658 physically separated at end of life;
- 659 2) the product or material is no longer identifiable at end-of-life as a result of a physical
660 or chemical transformation process;
- 661
- 662

663 Any deviations from the above criteria for excluding end-of-life treatment shall be justified in
664 the Product Dossier.

665 **A-5 LIFE-CYCLE STAGES**

666 For the purpose of different data quality rules and for the presentation of results, the product
667 life cycle should be divided into the following life-cycle stages:

- 668 1) *Upstream processes*, mainly including the production of material inputs to the core
669 processes (e.g. raw material extraction and refinement, and the production of
670 intermediate components);
- 671 2) *Core processes*, mainly including the processes managed by the organization
672 requesting LEAF Hardware certification;
- 673 3) *Downstream processes*, including, for example, distribution transports, retail,
674 product use and end-of-life management of the product.
- 675
- 676

677 Which life cycle stage division to use and mandatory processes to be included in the LCA
678 study are reported in detail in the "LEAF Hardware: Product Categories and Impact Limit
679 Values" document.

680 **A-6 SPECIFICATIONS OF OTHER BOUNDARY SETTINGS**

681 Boundary in time shall define the time period for which the life cycle inventory data are
682 collected. The year that the LCA model best represents, considering the representativeness of
683 the inventory data shall, as far as possible, represent the year of the publication of the LEAF
684 Hardware certification. Boundary towards nature shall define the flow of material and energy
685 resources from nature into the technical system (i.e., the product system) and emissions from
686 the technical system to air, soil, and water. Agriculture, forestry, aquaculture and similar

687 production systems are part of the technical system, i.e. elementary flows that originate from
688 applied substances and eventually leaves to water, soil or air shall be accounted for.
689 Geographical boundary shall define the geographical coverage of the LCA. This shall reflect
690 the physical reality of the product under study, accounting for the representativeness of
691 technology, input materials and input energy.

692 Boundaries towards other technical systems shall define the flow of materials and
693 components to/from the product system under study from/to other product systems. If there
694 is an inflow of recycled material to the product system in the production/manufacturing stage,
695 the amount of recycled material shall be included, and the transport from the
696 scrapyard/collection site to the recycling plant, the recycling process, and the transportation
697 from the recycling plant to the site where the material is being used shall also be included, if
698 known.

699 If there is an outflow of material or component to recycling, the transportation of the material
700 to the scrapyard/collection site shall be included. The material or component going to
701 recycling is then an outflow from the product system.

702 **A-7. CRITERIA FOR THE INCLUSION OF INPUTS AND OUTPUTS (CUT-OFF CRITERIA)**

703 The default cut-off rule shall be set to 1%. In other words, the included inventory data shall
704 together give rise to at least 99% of the results of any of the environmental impact categories
705 (not including inventory data of processes that are explicitly outside the system boundary as
706 described above). Also, 99% of the mass of the product content and 99% of the energy use
707 of the product life cycle shall be accounted for. Deviations from this cut-off rule shall be
708 described in and justified in the Technical Specifications provided during the certification
709 process.

710 It is important to emphasise that, in general, the cut-off of inventory data should be avoided,
711 and all available inventory data shall be used. Using cut-off rules shall not give the impression
712 of “hiding” information but rather facilitating the data collection for practitioners. Exclusion
713 of inventory data based on the cut-off rule shall be documented in the LCA report. The cut-
714 off of inventory data, based on the abovementioned cut-off criteria, should be an output of
715 a sensitivity analysis, alone or in combination with expert judgment based on experience of
716 similar product systems. Further, the cut-off shall be possible to verify in the verification
717 process. The LCA study developer shall provide the information the verifier considers
718 necessary to verify the cut-off (e.g., in the form of a sensitivity analysis).

719 **A-8 DESCRIPTION OF DATA AND DATA QUALITY REQUIREMENTS**

720 Life cycle inventory data are classified into primary data and secondary data, where the latter
721 can be generic data or proxy data. The data categories are defined as follows:

722 1) *primary data (also referred to as "site-specific data"):*

- 723
- 724 a. data gathered from the actual manufacturing plant where product-specific
725 processes are carried out;
- 726
- 727 b. actual data from other stages of the product's life cycle, for example, site-
728 specific data on the production of materials or generation of electricity provided
729 by contracted suppliers, and transportation data on distances, means of
730 transportation, load factors, fuel consumptions, etc., of contracted
731 transportation providers;
- 732
- 733 c. LCI data from databases on transportation and energy that is combined with
734 actual transportation and energy parameters as listed above.

735

736 2) *Secondary data*, divided into:

737

- 738 a. generic data: data (e.g. commercial databases and free databases) that fulfil
739 data quality characteristics for precision, completeness, and representativeness
740 as reported in ISO 14040 and 14044;
- 741
- 742 b. proxy data: data (e.g. commercial databases and free databases) that do not
743 fulfil all of the data quality requirements of "generic data".

744 Primary data shall be used for the core processes. Primary data shall be used for upstream
745 and downstream processes, when available, otherwise secondary data may be used.
746 Secondary data should be used in cases in which they are representative for the purpose of
747 the certification, e.g. for bulk and raw materials on a spot market, if there is a lack of specific
748 data on the final product or if a product consists of many components.

749 For secondary data to be classified as "generic data", the following requirements apply:

- 750 1) datasets shall be based on attributional LCA modelling;
- 751
- 752 2) the reference year shall be as current as possible and should be representative for the
753 validity period of the certificate;
- 754
- 755 3) the 1% cut-off rule shall be met on the level of the product system;

- 756
757 4) datasets shall represent average values for a specific reference year; however, how data
758 are generated could vary, e.g. over time, and then they should have the form of a
759 representative annual average value for a specified reference period. Deviations shall
760 be justified and declared in the technical specifications;
761
- 762 5) the representativeness of the data shall be assessed to be better than $\pm 5\%$ (in terms
763 of the environmental impact calculated on the basis of the data) of data that is fully
764 representative for the given temporal, technological and geographical context.
765

766 Providing databases in the technical specifications does not replace the need for data quality
767 assessment during the LCA study.

768 If data fulfilling the above requirements on generic data are not available, proxy data may be
769 used. The environmental impacts associated with proxy data shall not exceed 10% of the
770 overall environmental impact of the product system.

771 **A-9 GENERAL DATA REQUIREMENTS**

772 Guarantees of Origin may be used to demonstrate that a specific electricity mix has been
773 used. Also, other contractual instruments may be used, as long as reliability, traceability, and
774 the avoidance of double counting are ensured.

775 The Guarantees of Origin (or similar) shall be valid for at least the upcoming year and the
776 manufacturer shall make a commitment to possess Guarantees of Origin for the full validity
777 period of the certificate. The LCA report associated to the Product Dossier shall contain
778 information on how electricity has been modelled for core processes, e.g. including whether
779 Guarantees of Origin (or similar) and/or residual electricity mixes have been used. Such report
780 should also contain information on how electricity has been modelled for upstream and
781 downstream processes, if relevant and if the information is available.

782 Guarantee certificates shall also be available for recycled product content in order to correctly
783 model the environmental impact associated to production and all other phases inherent to the
784 totally or partially recycled product.

785 **A-10 DATA QUALITY REQUIREMENTS PER LIFE-CYCLE STAGE**

786 Below are the default data quality requirement per life-cycle stage.

787 Upstream processes:

- 788 • data referring to upstream processes and activities in a supply chain over which an
789 organization has direct management control shall be specific and collected on site;
790
- 791 • data referring to contractors that supply main parts, packaging, or main auxiliaries
792 should be requested from the contractor as specific data, where relevant;
793
- 794 • data on transport of main parts and components along the supply chain to a
795 distribution point (e.g. a stockroom or warehouse) where the final delivery to the
796 manufacturer can take place, should be specific and based on the actual transportation
797 mode, distance from the supplier, and vehicle load;
798
- 799 • in the case of lacking of primary data, secondary generic data may be used. If this is
800 also lacking, proxy data may be used;
801
- 802 • for upstream processes modelled with specific data, generation of electricity used shall
803 be accounted for in this priority:
804
 - 805 1) specific electricity mix as generated, or purchased from an electricity supplier,
806 demonstrated by a Guarantee of Origin or similar as provided by the electricity
807 supplier;
808
 - 809 2) residual electricity mix of the electricity supplier on the market;
810
 - 811 3) residual electricity mix on the market;
812
 - 813 4) electricity consumption mix on the market.
814

815 "The market" in the above hierarchy may correspond to a national electricity market, if this
816 can be justified. The electricity mixes used to model upstream processes shall be documented
817 in the certificate, where relevant.

818 Core processes:

- 819 • transport from the final delivery point of raw materials, chemicals, main parts, and
820 components (see above regarding upstream processes) to the manufacturing
821 plant/place should be based on the actual transportation mode, distance from the
822 supplier, and vehicle load, if available;
823

- 824
- 825
- 826
- 827
- 828
- 829
- 830
- 831
- 832
- 833
- 834
- 835
- 836
- 837
- 838
- 839
- 840
- 841
- 842
- 843
- goods: primary data shall be used for the assembly of the product and for the manufacture of main parts as well as for on-site generation of steam, heat, electricity, etc., where relevant;
 - services: primary data shall be used for the consumption of materials, chemicals, steam, heat, electricity, etc., necessary for execution of the service;
 - for electricity used in the core processes, generation of electricity used shall be accounted for in this priority:
 - 1) specific electricity mix as generated, or purchased from an electricity supplier, demonstrated by a Guarantee of Origin or similar as provided by the electricity supplier;
 - 2) residual electricity mix of the electricity supplier on the market;
 - 3) residual electricity mix on the market;
 - 4) electricity consumption mix on the market.

844 “The market” in the above hierarchy may correspond a national electricity market, if this can
845 be justified. The electricity mixes used to model upstream processes shall be documented in
846 the certificate, where relevant.

- 847
- 848
- Waste treatment processes of manufacturing waste should be based on primary data, if available.

849 Downstream processes, if a *cradle-to-grave* approach is followed:

- 850
- 851
- 852
- 853
- 854
- 855
- 856
- 857
- 858
- 859
- data for the use stage are usually based on scenarios, but primary data should be used when available and relevant;
 - data on the emissions from the use stage should be based on documented studies/tests. Such studies/tests shall be representative for at least the temporal validity of the certificate and shall be available if requested from the LEAF TC;
 - the use of electricity in the region/country where the product is used shall be accounted for in this priority:

- 860 1) specific electricity mix as generated, or purchased from an electricity supplier,
861 demonstrated by a Guarantee of Origin or similar as provided by the electricity
862 supplier;
863
- 864 2) residual electricity mix of the electricity supplier on the market;
865
- 866 3) residual electricity mix on the market;
867
- 868 4) electricity consumption mix on the market.

869 "The market" in the above hierarchy may correspond a national electricity market, if this can
870 be justified. The electricity mixes used to model upstream processes shall be documented in
871 the certificate, where relevant.

- 872 • Scenarios for the end-of-life stage shall be technically and economically practicable
873 and compliant with current regulations in the relevant geographical region based on
874 the geographical scope of the certificate. Key assumptions regarding the end-of-life
875 stage scenario shall be documented in the LCA report.

876 **A-11 DATA QUALITY DECLARATION**

877 LEAF Hardware certificates shall include a declaration of the quality of data used in the LCA
878 calculations.

879 **A-12 ALLOCATION RULES**

880 Allocation can be divided into allocation of co-products, i.e. allocation of unit processes that
881 generate several products, and allocation of waste, i.e. allocation of unit processes that
882 generate materials that are, for example, landfilled recovered, recycled or reused, and which
883 require further processing to cease being waste and become products. The principles for
884 allocation of co-products and allocation of waste are described separately in the following
885 subsections.

886 **A-13 ALLOCATION OF CO-PRODUCTS**

887 In case of allocation of co-products, the following hierarchy of allocation methods shall be
888 followed:

- 889 1) allocation shall be avoided, if possible, by dividing the process to be allocated into
890 sub-processes and collecting the inventory data for each sub-process;
891

- 892 2) if allocation cannot be avoided, the inventory data should be partitioned between the
893 different co-products in a way that reflects the underlying physical relationships
894 between them, i.e. allocation should reflect the way in which the inventory data
895 changes if the quantity of delivered co-products changes;
896
- 897 3) if a physical relationship between the inventory data and the delivery of co-products
898 cannot be established, the inventory data should be allocated between the co-
899 products in a way that reflects other relationships between them. For example,
900 inventory data might be allocated between co-products in proportion to their
901 economic values. If economic allocation is used, a sensitivity analysis exploring the
902 influence of the choice of economic value shall be included in the LCA report.

903 **A-14 ALLOCATION OF WASTE** (Adapted from EN 15804)

904 Allocation of waste shall follow the *polluter pays* principle: "processes of waste processing
905 shall be assigned to the product system that generates the waste until the end-of-waste state
906 is reached."

907 The end-of-waste state is reached when all the following criteria for the end-of-waste state
908 are fulfilled:

- 909 1) the recovered material, component or product is commonly used for specific purposes;
910
- 911 2) a market or demand, identified e.g. by a positive economic value, exists for such a
912 recovered material, component or product;
913
- 914 3) the recovered material, component or product fulfils the technical requirements for
915 the specific purposes and meets the existing legislation and standards applicable to
916 products;
917
- 918 4) the use of the recovered material/product will not lead to overall adverse
919 environmental or human health impacts.

920 The above outlined principles mean that the generator of the waste shall carry the full
921 environmental impact until the point in the product life cycle in which all the end-of-waste
922 criteria are fulfilled. Waste may have a negative economic market value, and then the end-of-
923 waste stage is typically reached after (part of) the waste processing and further refinement,
924 at the point at which the waste no longer has a negative market value. This allocation method
925 is (in most cases) in line with a waste generator's juridical and financial responsibilities.

926 For waste being recycled or reused, the environmental impact of processes until the end-of-
927 waste state shall be attributed to the product system generating the waste. Processes after
928 the end-of-waste state, if any, shall be attributed to the product system using the
929 recycled/reused material flow (recycled materials are thereafter considered secondary
930 materials).

931 For waste incineration with energy recovery, the end-of-waste state is reached after the
932 incineration if the waste incinerator gets paid for incinerating the material (i.e., the material
933 has a negative economic value), which means that the environmental impact of collection,
934 pre-processing and incineration of the waste shall be attributed to the product system
935 generating the waste. Impacts related to making use of the energy, if any, shall however be
936 attributed to the product system using the energy. If the end-of-waste state is reached before
937 the incineration/combustion of the waste, the waste shall be considered a secondary fuel and
938 further processing and incineration/combustion of the secondary fuel shall be attributed to
939 the product system using the energy. For example, this is the case if the waste incinerator
940 pays for the material (i.e., the economic value of the material is positive) and all other criteria
941 for the end-of-waste state are fulfilled as well.

942 For waste incineration without energy recovery, the environmental impact of collection, pre-
943 processing and incineration of the waste shall be attributed to the product system generating
944 the waste.

945 For landfilling of waste, the environmental impact of landfilling as well as capturing and
946 combustion of landfill gas, if any, shall be attributed to the product system generating the
947 waste. Impacts related to making use of the energy, if any, shall be attributed to the product
948 system using the energy.

949 Even if benefits of reuse, recycling or recovery by default should be considered to be outside
950 the system boundary, quantitative information on recovered material/energy that potentially
951 can lead to environmental benefits may be declared.

952 **A-15 MODELLING OF END-OF-LIFE SCENARIOS**

953 End-of-life treatment processes of the product may depend on the destination of the product
954 and on the end-of-life treatment alternatives available where the product are expected to be
955 disposed. For these reasons, the end-of-life may be evaluated using one or several scenarios.

956 The following general rules shall be considered when defining end-of-life scenarios:

- 957 • scenarios shall be realistic and representative for the most probable end-of-life
958 treatment alternatives considering the geographical scope of the certificate;

- 959
- 960
- 961
- 962
- 963
- 964
- scenarios shall not include processes or procedures that are not in current use or which have not been demonstrated to be practical;
 - scenarios used shall be described in the LCA report, in a way that makes it clear that they reflect possible and realistic end-of-life treatment.

965 **A-16 MODELLING OF PRODUCT USE**

966 Product use extends from the moment the end user uses the product until it leaves its place
967 of use and enters the next process (e.g., an end-of-life process or a transport to end-of-life).
968 For products used by end users, product use shall always be included within the system
969 boundary.

970 Product use may be excluded for intermediate products such as fashion hardware accessories
971 being part of a fashion product.

972 To ensure consistency between certificates for the same product category, the certifications
973 guidelines shall:

- 974
- 975
- 976
- 977
- 978
- 979
- 980
- 981
- clearly indicate if product use shall, should or may be included or excluded;
 - define which processes belonging to product use that shall be included in the system boundary and which shall be excluded (any exclusion shall be justified);
 - provide default data/scenarios. The default data shall be used to fill in the data gaps and ensure consistency among certificates. Better data may be used but shall be justified in the LCA report.