

**Updates on “Guide for EF compliant data sets (Version 2.0)”
to reflect the changes in the Environmental Footprint 3.1
reference package.**

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This document provides supplementary guidance, in addition to the *Guide for EF compliant data sets* (Fazio et al., 2020¹), in order to develop process data sets compliant with the Environmental Footprint (EF) requirements and the updates of the EF Reference package 3.1 released in July 2022 by the European Commission and currently available at the link:

<https://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml>.

The EF 3.1 package contains updates of characterization factors (CFs) in the impact categories of:

- “Climate Change”: update of CFs according to IPCC 2021.
- “Acidification”: bug fixing - correction of CFs for SO₂ emissions for the locations CZ and AL.
- “Ecotoxicity, freshwater”: harmonization of data sources; revision of emissions to water; revision of CFs for inorganic substances and proxies; solving issues related to synonyms/duplicates.
- “Photochemical ozone formation”: bug fixing - solving issues related to synonyms/duplicates.
- “Human Toxicity, cancer”: bug fixing - solving issues related to synonyms/duplicates.
- “Human Toxicity, non-cancer”: revision of CFs for inorganic substances and proxies; solving issues related to synonyms/duplicates.

Furthermore, the characterization factors in the sub-indicator "metals" have been merged with the corresponding "inorganics" sub-indicator as follows:

- “Ecotoxicity, freshwater metals” is now included in “Ecotoxicity, freshwater inorganics”
- “Human toxicity, cancer metals” is now included in “Human toxicity, cancer inorganics”
- “Human toxicity, non-cancer metals” is now included in “Human toxicity, non-cancer inorganics”

Further details are reported in the EF3.0-to-EF3.1 change log file available at the following link:

<https://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml>.

All the above-mentioned updates are reflected in the updated compliance declaration for the reference package and nomenclature of EF-compliant process data sets² (sections 5.2.15 and 5.4. 1 of the “*Guide for EF compliant data sets*” (Fazio et al., 2020)). The sections 2 and 5.2.15 detailed in this document replace the corresponding sections of the EF Data Guide of 2020¹.

Note that the above-mentioned updates EF 3.1 are expected to modify the LCIA results reported in the EF-compliant process data sets³. Nevertheless, this does not affect the requirements detailed in the current Section 5.2.16 (LCIA results) of the “*Guide for EF compliant data sets*” (Fazio et al., 2020).

¹ <https://op.europa.eu/s/xchS>

² Under the XML element <complianceDeclarations> in the ILCD dataset

³ Under the XML element <LCIAresults> in the ILCD dataset

The Section 2 reported in this page replaces Section 2 of

“Fazio et al., 2020, Guide for EF compliant data sets (Version 2.0)”, page 11. <https://op.europa.eu/s/xchS>

(Changes are reported in **red text**)

2 EF reference packages released

The EF reference package is released by the European Commission and is distributed in form of a compressed ZIP archive, containing a set of files and folders in accordance with the ILCD format specification as follows (folder names in **bold**):

- **ILCD** (containing the reference folders with XML files external docs and other files)
- **contacts** (files defining contacts in ILCD format – XML)
- **external_docs** (files linked in other XMLs, e.g. reports in PDF, images, etc.)
- **flowproperties** (files containing the flow properties linked to flows – XML)
- **flows** (Files containing elementary, product, waste and other flows – XML)
- **lciamethods** (files containing the list of CFs for each impact category –XML)
- **processes** (files containing process data sets – XML)
- **sources** (files defining sources in ILCD format – XML)
- **unitgroups** (conversion factors from default to other units – XML)
- **META-INF** (contains MAINFEST.MF, a technical file of no relevance for users)
- **Other** (contains additional files: validation profile, Look@LCI configuration file and package converter)
- **Schemas** (contains XSD files with the XML schemas of the ILCD format)
- **Stylesheets** (contains XSL files defining the styles applied to XML data)

The reference package contains also functional configuration files or tools related to the package itself, available in the “other” folder:

- validation profile for the Validation Tool
- configuration file for Look@LCI ⁷
- an automatic converter to convert process data sets from the previous version to the new version

Each version is released together with an excel file resuming the content of each package, and with a change log that reports the differences between the latest release and the previous version.

The latest EF reference package released by the EC is available under this link:

<https://epca.jrc.ec.europa.eu/LCDN/developerEF.xhtml>

EF 3.1 reference package (July 2022) contains updates of characterization factors with respect to the previous EF 3.0 reference package for the impact categories of: Climate Change; Acidification Ecotoxicity freshwater; Photochemical ozone formation; Human Toxicity cancer; and Human Toxicity non-cancer. It also includes updated validation profiles and configuration files for analysis with Look@LCI⁷, and the additional source datasets for the EF 3.1 nomenclature compliance declaration (see updated Section 5.2.15 of this document). New PEFCRs/OEFSRs developed during the EF transition phase shall use the EF 3.1 reference package in their underlying data sets, as well as EF studies using these new PEFCRs.

Previous EF reference packages are available at the following web page:
https://epca.jrc.ec.europa.eu/LCDN/EF_archive.xhtml

EF 3.0 reference package (December 2018), including all the reference files + additional documentation in the ILCD structure. It includes the configuration files for validation and analysis with Look@LCI⁷ and automatic converter from EF 2.0 to EF 3.0. ~~New PEFCRs/OEFSRs developed during the EF transition phase shall use this EF reference package in their underlying data sets, as well as EF studies using these new PEFCRs.~~

EF 2.0 reference package (June 2018), contains the same items available in EF 3.0, but referred to the previous version, except for the automatic converter. Part of the nomenclature, methods and other items are of course different. This reference package is used in the PEFCRs/OEFSRs developed during the EF Pilot phase and shall be used by all EF studies using these PEFCRs.

⁷ The reference EF package is mandatory for the execution of Look@LCI, as explained in the dedicated guidance https://epca.jrc.ec.europa.eu/permalink/TR_look_at_lci.pdf the software automatically picks from the package the methods (CFs for calculation) and the configuration file for the normalization and weighting factors for different impact categories.

The Section 5.2.15 reported in this page replaces Section 5.2.15 of

“Fazio et al., 2020, Guide for EF compliant data sets (Version 2.0)” - pages 24-25. <https://op.europa.eu/s/xchS>

(Changes are reported in **red text**)

5.2.15 Compliance

For EF-compliant data sets, the following 6 compliance systems shall be listed (no others can be listed), if there are no PEFCRs only 5 can be used:

Table 1. Compliance system and related source datasets allowed in EF scheme

Compliance declaration	Source dataset UUID	Level of compliance aspect
<p>Commission Recommendation (EU) 2021/2279. (Annex II - Part A. Requirements to develop PEFCRs and perform PEF studies in compliance with an existing Product Environmental Footprint Category Rule) PEFCR guidance 6.3²⁴</p> <p>Or</p> <p>Commission Recommendation (EU) 2021/2279. (Annex IV - Part A. Requirements to develop OEFSRs and perform OEF studies in compliance with an existing Organisation Environmental Footprint Sector Rule) OEFSR guidance 6.3²⁴</p> <p>Or</p> <p>Commission Recommendation (EU) 2021/2279. (Annex I. Product Environmental Footprint Method) Suggestions for updating the PEF method 2019</p> <p>Or</p> <p>Commission Recommendation (EU) 2021/2279. (Annex III. Organisation Environmental Footprint Method) Suggestions for updating the OEF method 2019</p>	<p>909ae358-42e0-4365-8767-22b92c3229f4 e2ecfeb8-078c-4ccc-9885-7135d35e4ff0</p> <p>Or</p> <p>cec792b1-58ce-4310-bc09-6612256633b8 bb3e3630-543f-4210-97b0-2a239e40e0e0</p> <p>Or</p> <p>779fb9ea-de54-4707-b7fc-6154661552b5 afe1ce43-e800-494b-aad4-46b9e8ea74da</p> <p>Or</p> <p>cbeab91f-74a4-4b5a-84dc-69915a22dc71 37d1d84f-0d67-4386-b1d1-a096e0eb3274</p>	<p>Modelling specific compliance. All compliance aspects shall be set at “Fully compliant”</p> <p>(Note 1: those sources are used to declare the overall PEF/OEF compliance)</p> <p>(Note 2: the four source datasets required to declare the compliance with the Commission Recommendation 2021/2279 are available in the folder “sources” of the EF3.1 reference package²⁵. They can also be downloaded individually via the link provided in the footnote.²⁶)</p>
The PEFCR used, if applicable	Use the dedicated source data set available in the “sources” section of the package-specific data stocks at: https://eplca.jrc.ec.europa.eu/EF-node/	All compliance aspects shall be set at “Fully compliant”
ILCD Data Network entry-level	d92a1a12-2545-49e2-a585-55c259997756	The quality compliance shall be set at “Not defined”. All other aspects shall be set at “Fully compliant”
ISO 14040	1ea48531-e397-4ca7-ac08-056e4fa11826	The nomenclature, documentation and quality compliance shall be set at “Not defined”. All other aspects shall be set at “Fully compliant”
ISO 14044	1adb438d-4a8b-4919-885e-0a66da3c0f2a	The nomenclature, review and quality compliance shall be set at “Not defined”. All other aspects shall be set at “Fully compliant”
<p>Environmental Footprint 2.0</p> <p>Or</p> <p>Environmental Footprint 3.0</p> <p>Or</p> <p>Environmental Footprint 3.1</p> <p>(Or any future reference package release)</p>	<p>c2633e08-f120-4def-b761-a63acbd75d8c</p> <p>Or</p> <p>3f5b0b56-60e6-4df7-869d-a811830386d9</p> <p>Or</p> <p>0eb2b770-2cb1-43cf-9fbc-215df36fe9f0</p> <p>(Or)</p>	<p>Reference package-specific compliance (flow list). The nomenclature shall be set as “Fully compliant” while other aspects shall be set as “Not defined”</p> <p>(Note: to declare the reference package used / flow list compliance)</p>

All these source data sets (potentially except for the one of your specific PEFCR) are available ~~in the sources section at https://eplca.jrc.ec.europa.eu/EF-node/sourceList.xhtml?stock=EF2_0_representative_products~~ in the folder “ILCD\sources” of the EF3.1 reference package²⁵ – please make sure to include them in your ILCD/eILCD archives when providing a data set. The **compliance declarations** shall be reported under “modelling and validation” field.

²⁴ In the EF 2.0 datasets tendered by the EC, the following compliance has been used (with exactly the same meaning): PEF/OEF implementation, mandatory data 2016-2021 [source dataset UUID: 66279383-8dc3-46c1-80d1-99866cc01e6a].

²⁵ <https://eplca.jrc.ec.europa.eu/LCDN/developerEF.xhtml>

²⁶ [eplca.jrc.ec.europa.eu/permalink/EU Recommendations 2021 2279 \(Ann I-II-III-IV\) RefSources EF.zip](https://eplca.jrc.ec.europa.eu/permalink/EU_Recommendations_2021_2279_(Ann_I-II-III-IV)_RefSources_EF.zip)

The updates reported in this page (in red text) apply to Section 5.4.1 of

“Fazio et al., 2020, Guide for EF compliant data sets (Version 2.0)” - page 29. <https://op.europa.eu/s/xchS>

5. The following compliance systems (source data set) are to be linked under Compliance declarations in the supporting sub-data set:

Compliance declaration	Source dataset UUID	Level of compliance aspect
<p>Environmental Footprint non-primary supporting data set</p> <p>(Note: to allow users to identify the sub-dataset)</p>	<p>2f8a3ebd-befc-4ea9-a6de-34bb6d426d2f</p> <p>Downloadable at: https://epica.jrc.ec.europa.eu/EF-node/showSource.xhtml?uuid=2f8a3ebd-befc-4ea9-a6de-34bb6d426d2f</p>	<p>For software systems to identify the supporting sub-data set as such. <i>The quality compliance shall be set at “Not defined”. All other aspects shall be set at “Fully compliant”</i></p>
<p>Environmental Footprint 2.0</p> <p>Or</p> <p>Environmental Footprint 3.0</p> <p>Or</p> <p>Environmental Footprint 3.1</p> <p>Or</p> <p>Any future reference package release</p>	<p>c2633e08-f120-4def-b761-a63acbd75d8c</p> <p>Or</p> <p>3f5b0b56-60e6-4df7-869d-a811830386d9</p> <p>Or</p> <p>0eb2b770-2cb1-43cf-9fbc-215df36fe9f0</p> <p>Or</p> <p>.....</p>	<p>Reference package-specific compliance (flow list). Shall be the same as the central dataset.</p> <p>The nomenclature shall be set as “Fully compliant” while other aspects shall be set as “Not defined”</p> <p>(Note: to declare the reference package used / flow list compliance)</p>