REVIEW REPORTING

General Information

Data set name	Acrylic binder production; technology mix; production mix, at plant; 100% active substance
Data set UUID and version number	3f3e0b3a-6b03-4fd5-af6e-363fda33d0af; 03.01.000
Data set locator (e.g. Permanent URI, URL, contact point, or database name and version, etc.)	ecoinvent LCDN node (http://ecoinvent.lca-data.com/) EF3_0_Chemicals
Review commissioner(s)	ecoinvent Association
Reviewer name(s) and affiliation(s), contact	Internal reviewer: Gregor Wernet, ecoinvent Association, wernet@ecoinvent.org Internal reviewer: Emilia Moreno Ruiz, ecoinvent Association, moreno@ecoinvent.org External reviewer: Eric Johnson, Atlantic Consulting, ejohnson@ecosite.co.uk
Review type applied, and compliance with EF requirements for review	Review type 1
Method used for review , and review scope	The unit process data was reviewed during the EF Pilot phase, any eventual update/correction was reviewed in view of the EF Transition phase. The impact assessment scores have been reviewed by both the internal and external reviewers. The change of scores was assessed in different steps: 1) eventual data correction for water balance check or error correction 2) update from EF2.0 to EF3.0 package 3) replacement of energy and transport data from EF2.0 to EF3.0 4) replacement of data for End of Life and packaging. The review report for the EF Pilot phase data can be accessed on the EF2.0 data stock. Source reference: (*https://ecoinvent.lca-data.com/showSource.xhtml?uuid= 0e6590c5-115d-4c14-aa3a-12b85607170c&stock;=EF2_0_Chemicals*)
Date of review completion (DD/MM/YYYY)	18 December 2020
Reviewed against/Compliance system name	PEF
Compatibility with EF reference package (Version)	EF REFERENCE PACKAGE 3.0

OVERALL COMPLIANCE ASSESSMENT

Aspect	Compliant	Comments

Compliance with specific EF requirements	yes	The data set is compliant with all requirements of the reference documents (PEF/OEF implementation, mandatory data 2016-2021; ILCD Data Network - Entry-level; Suggestions for updating the PEF method 2019; ISO 14040 Environmental Management – Life Cycle Assessment – Principles and Framework, 2006; ISO 14044:2006. Environmental Management – Life Cycle Assessment – Requirements and guidelines;Environmental Footprint 3.0). The documentation is complete and clearly describes how the requirements have been applied in the data set. All modelling constants follow the requirements listed in the Tender Specifications ENV.B1/SER/2019/NP-EF01 and in section 6 of the Guide for EF compliant data sets version 2. Compliance is correctly reported in the Modelling constants section of the process.
Allocation rules clearly explained and consistent	yes	Allcoation rules are clearly explained in the Modelling constants section of the process. Allocation follows the rules set in the Guide for EF compliant data sets version 2, including the application of the CFF formula where necessary.
Circular Footprint Formula (correct implementation)	yes	Where applicable, reviewers have checked the use of appropriate parameters values. Reviewers have checked the point of substitution and the used complementing processes. Information about the CFF implementation is clearly reported under the section Deviation from LCI method approaches.
LCIA results consistency	yes	The LCIA scores have been compared to the ones resulting from the calculations in the Look@LCI tool. No discrepancy over 1% have been identified.
Nomenclature	**Comments**	
Correctness and consistency of applied nomenclature (use of Specific EF reference package; Correct nomenclature of other flows, processes etc;)	Only flows from the EF3.0 package have been used in this dataset, all flows are included. Flow have only been excluded if no appropriate flow was identified in the EF3.0 package.	
Documentation	**Comments**	
Appropriateness of documentation. See Document 'Documentation of LCA data sets' and additional EF data guidelines.	The documentation of the datasets is clear and describes in adequate detail what type of production the dataset represents.	
Appropriateness / correctness of documentation format (ILCD Format)	The documentation is appropriate and in the correct format (the ILCD format).	

Validation with ILCD validator	yes	
DQRs	yes	The overall quality of the dataset has been calculated from the individual scores. Individual scores are generally based on a contribution analysis of important flows, but evaluated an confirmed or adjusted by the external reviewer. The process represent an updated version of the respective dataset provided during the EF Pilot phase, the DQR was calculated in the context of the Pilot Phase and reconfirmed by the reviewers.The overall quality of this process is: 2
Cut-off		There are no intentional cut-offs in the inventory no matter how small their contribution to all the EF impact categories is. Every known elementary and intermediate exchange is listed.

Additional Information (if needed)

The orginal process was created in the context of the EF Pilot phase. This review covers:

- eventual inventory corrections and relative changes in LCIA scores
- update from EF2.0 to EF3.0 reference package and relative changes in LCIA scores
- update of Sphera (Thinkstep) energy and transport data from EF2.0 to EF3.0 compliant and relative changes in LCIA scores
- integration of Sphera (Thinkstep) packaging and end of life data and relative changes in LCIA scores

Documents referred or accessed by the reviewer (references also for unpublished documentation)

Sources:

- Simone Fazio, Luca Zampori, An De Schryver, Oliver Kusche, Lionel Thellier, Edward Diaconu. Guide for EF compliant data sets, Version 2.0 Luxembourg, 2020, ISBN 978-92-76-17951-1 (online), doi:10.2760/537292 (online), JRC120340.
- ILCD Data Network - Entry-level
- Environmental Footprint 3.0 package

Compliance declaration:

"The reviewer(s) declare on his/her (their) responsibility that the reviewed data set is/~~is not~~ compliant with the Environmental Footprint general and specific compliancy rules."

Internal Reviewer(s)' signature(s)

Name Surname <u>Gregor Wernet</u>

Name Surname <u>Emilia Moreno Ruiz</u>

Note: the external review of the data is documented below. The external reviewer provided a general review statement and specific review details for a selected example dataset "hydraulic oil production".

Independent External Review for EF 3.0 datasets delivered by ecoinvent

8 January 2021

External Reviewer:

Eric Johnson: **Atlantic Consulting**; Chemicals Editor at ecoinvent

Method

Eric Johnson of Atlantic Consulting has nearly 40 years of experience in assessing chemical- and energy-production technologies. He was invited by the ecoinvent PEF project-team to review: 1) the impact assessment scores of the EF updated pilot phase for chemicals; 2) corrections to six datasets; and 3) an ecoinvent-internal review of a PEF dataset for hydraulic oil production. This third review is reported separately.

For all three reviews, Eric Johnson read the relevant documentation, inspected the datasets and discussed them at length with Lucia Valsasina, the project leader at ecoinvent. There were 5-6 conversations and approximately as many emails exchanged. Eric Johnson submitted detailed questions and comments, which were answered and responded to by ecoinvent.

Conclusion

The external reviewer is satisfied that ecoinvent performed the dataset generation and review professionally and diligently.

Independent External Review for EF 3.0, Hydraulic oil production

8 January 2021

External Reviewer:

Eric Johnson: **Atlantic Consulting**; Chemicals Editor at ecoinvent

Description of Review Process:

The external-review process was initiated by Lucia Valsasina from the High-performance Team, who invited an external reviewer to back up the two internal reviews already conducted by ecoinvent. Eric Johnson, the external reviewer, was briefed twice about the key changes: 1) eventual data correction for water balance check or error correction; 2) update from EF2.0 to EF3.0 package; 3) replacement of energy and transport data from EF2.0 to EF3.0; and 4) replacement of data for End of Life and packaging.

He was also briefed on methods, compliance with EF requirements, allocation, circular footprint formula, LCIA results consistency, nomenclature, DQRs and cut-off. The briefings (conducted by video with shared screens) including unlimited Q&A periods, and further questions were clarified by email.

Review Statement:

The external reviewer is satisfied that ecoinvent performed the dataset generation and review professionally and diligently.