

Review

Review Details

The project included regular milestone meetings with representatives of all participating producers and PlasticsEurope as system operator. The reviewer participated in these meetings. In addition, a review meeting between the LCA practitioner and the reviewer was held, including a model and database review, and spot checks of data and calculations.

Specific comments on the results include:

- The nitrous oxide (laughing gas, N₂O) emission abatement in terms of technologies used, their elimination efficiency, and degree of use was subject to review and received due attention. It became apparent that adoption of such technologies is at quite different stages across industry, in some cases being very recent developments, which may partly explain the disparities in reported N₂O levels. Further, the monitoring of N₂O levels varied from continuous to intermittent, adding some uncertainty to reported levels in a few cases. Due to the substantial variation of reported N₂O emissions, particular attention was on cross-checking high and low values. Also, an effort was made to confirm the reported N₂O emission with reports under the ETS scheme. Hence, the average N₂O emission and its range found here appear reliable – this, however, confirms suspicions that previously reported levels (2005) were probably substantially too low.
- The differentiation of the water inventory by source and destination (allowing for a water balance and supporting water footprints) should be included in future updates.

Compliance with ILCD Entry-level Requirements

Table 20: General review reporting items (reproduced with kind permission of JRC)

REVIEW REPORTING			
General information			
Data set name	Polyamide 6.6 (PA6.6)		
Data set UUID and version number	n/a		
Data set locator (e.g. Permanent URI, URL, contact point, or database name and version, etc.)	n/a		
Data set owner	PlasticsEurope aisbl		
Review commissioner(s)	PlasticsEurope aisbl		
Reviewer name(s) and affiliation(s), contact	Dr.-Ing. Ivo Mersiowsky, DEKRA Consulting GmbH		
Review type applied	Independent external		
Date of review completion (DD/MM/YYYY)	13/12/2013		
Reviewed against / Compliance system name	ILCD Data Network – Entry-level requirements		
Reviewer assessment:			
Aspect	Yes	No	Comments
Quality compliance (ISO 14040 & 14044) fulfilled (see Table 21)	X		
Method compliance (ISO 14040 & 14044) fulfilled and documented in data set	X		
Nomenclature compliance (see Table 22) fulfilled	X		
Documentation compliance (see Table 22) fulfilled	X		
Review compliance (Independent external review report) fulfilled	X		
Compliant with ISO 14040 & 14044	X		
Overall compliant with compliance system	X		
Date, location, reviewer signature	13 December 2013, Stuttgart, Germany		

Table 21: Specific/detailed review reporting items for LCI data set: quality compliance (ISO 14040 & 14044; reproduced with kind permission of JRC)

ITEMs	Comments
<p>Time-related coverage/representativeness:</p> <p>“age of data and the minimum length of time over which data should be collected”</p> <p>“qualitative assessment of the degree to which the data set reflects the true population of interest”</p>	<p>Very Good</p> <p>Foreground: 12 month averages representing the years 2010–2012.</p> <p>Background: 2010—2012 (tbc based on list of secondary datasets).</p> <p>Maximum temporal validity until 2018.</p> <p style="text-align: right;">(p.10)</p>
<p>Geographical coverage/representativeness:</p> <p>“geographical area from which data for unit processes should be collected to satisfy the goal of the study”</p> <p>“qualitative assessment of the degree to which the data set reflects the true population of interest”</p>	<p>Very Good</p> <p>European production average (data from four producers with five sites in four different European countries; supplemented by average from literature).</p> <p style="text-align: right;">(p.11)</p>
<p>Technology coverage/representativeness:</p> <p>“specific technology or technology mix”</p> <p>“qualitative assessment of the degree to which the data set reflects the true population of interest”</p>	<p>Very Good</p> <p>Technology mix representing European production (see above).</p> <p>79 % of the European production capacity (EU-27) in 2010–2012.</p> <p style="text-align: right;">(p.10)</p>
<p>Precision:</p> <p>“measure of the variability of the data values for each data expressed (e.g. variance)”</p>	<p>n/a</p> <p>Relevant foreground data is primary data, or modelled based on primary information sources of the owners of the technologies.</p> <p>See Uncertainty below for explanation of “n/a” rating.</p> <p style="text-align: right;">(p. 11)</p>
<p>Completeness:</p> <p>“percentage of flow that is measured or estimated”; assessed on level of process</p>	<p>Very good</p> <p>Primary data used for the gate-to-gate production covered all relevant flows in accordance with the cut-off criteria, i.e. at least 95 % of mass and energy of the input and output flows, and 98 % of their environmental relevance (according to expert judgment) were considered.</p> <p style="text-align: right;">(p.11)</p>
<p>Consistency:</p> <p>“qualitative assessment of whether the study methodology is applied uniformly to the various components of the analysis”</p>	<p>Very Good</p> <p>Primary data of the same level of detail and background data from DEAM and other databases were used. While building up the model, cross-checks ensured the plausibility of mass and energy flows. Due to the relevance of background datasets from different databases and the inclusion of literature data, the overall consistency rating is reduced.</p> <p style="text-align: right;">(p.11)</p>
<p>Sources of the data;</p> <p>Appropriateness of use primary/secondary data source</p>	<p>The main data source was a primary data collection from European producers, providing site-specific gate-to-gate production data for processes under operational control of the participating companies. Data for the upstream supply chain until the precursors are taken from several databases (DEAM, PlasticsEurope, GaBi, ecoinvent).</p> <p style="text-align: right;">(p.11)</p>
<p>Uncertainty of the information (e.g. data, models and assumptions).</p>	<p>Variation of single data was not recorded. Variation of the model/dataset not applicable due to vertical average of production lines and technologies. Hence, Precision above was rated “n/a”. (p.9–10)</p> <p>Critical elements within the model include:</p> <ul style="list-style-type: none"> • level of N₂O emissions (based on effectiveness and use of abatement technologies as well as completeness of monitoring)

Table 22

Specific/detailed review reporting items for LCI data set: nomenclature and documentation
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ITEMS	Comments
Nomenclature	
Correctness and consistency of applied nomenclature	Yes
Documentation	
Appropriateness of documentation extent (see document "Documentation of LCA data sets")	Yes
Appropriateness of documentation form (ILCD Format)	Yes

Review Summary

This Eco-profile is considered a representative, reliable and high-quality quality representation of PA6.6 production in Europe. Compared with the previous version, a correction of the N₂O emissions was substantiated by the new survey; an uncertainty margin of approximately ±10% on the GWP remains. The critical review confirms that this Eco-profile adheres to the rules set forth in the PlasticsEurope's Eco-profiles and Environmental Declarations – LCI Methodology and PCR for Uncompounded Polymer Resins and Reactive Polymer Precursors (PCR version 2.0, April 2011).

Reviewer Name and Institution

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