

# LCI Review report (reviewed against "ILCD Data Network - entry-level requirements")

## Draft template

**Table 1: General review reporting items**

REVIEW REPORTING			
<b>General information</b>			
Data set name	<b>Poly methyl methacrylate (PMMA) “at gate”</b> - PMMA resin - PMMA extruded sheet - PMMA cast sheet		
Data set UUID and version number	To be determined		
Data set locator (e.g. Permanent URI, URL, contact point, or database name and version, etc.)			
Data set owner	<b>Product Group MSG, CEFIC</b>		
Review commissioner(s)	<b>CEFIC/Product Group MSG</b>		
Reviewer name(s) and affiliation(s), contact	<b>Matthias Schulz</b> <b>DEKRA Assurance Services GmbH</b>		
Review type applied	<b>Independent external</b>		
Date of review completion (DD/MM/YYYY)	<b>29/01/2015</b>		
Reviewed against / Compliance system name	<b>ILCD Data Network - Entry-level requirements</b>		
<b>Reviewer assessment:</b>			
<b>Aspect</b>	<b>Yes</b>	<b>No</b>	<b>Comments</b>
Quality compliance (aspects of ISO 14040 & 14044) fulfilled (see table 2)	X		
Method compliance (as in ISO 14040 & 14044) fulfilled and documented in data set	X		
Nomenclature compliance (see table 3) fulfilled	X		
Documentation compliance (see table 3) fulfilled	X		
Review compliance (Independent external review OR independent internal review + review report) fulfilled	X		
Overall compliance with ISO 14040 & 14044	X		
Overall compliance with "Compliance system"	X		
Date, location, reviewer signature	Stuttgart, 29/01/2015		

**Table 2: Specific/detailed review reporting items for LCI data set: Quality compliance (ISO 14040 & 14044). Please note that for aggregated LCI result data sets, this includes key processes in the background system.**

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><b>Good</b></p> <p>Foreground: 12 months averages representing the year 2011, 2012 or 2013.</p> <p>Background: 2005—2014.</p> <p>Maximum temporal validity until end of 2017.</p> <p>(p.14)</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><b>Good</b></p> <p>European + Israeli production average (data from 12 production sites in 9 countries from 5 companies; one company and site from Israel).</p> <p>Fuel and energy inputs in the system reflect average European conditions and whenever applicable, site specific conditions were applied, to reflect representative situations.</p> <p>(p.14)</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><b>Very Good</b></p> <p>Technology mix representing European + Israeli production (see above).</p> <p>Specific production technologies according to contribution to reference mix were considered, i.e. mass process and suspension process for production of PMMA resin, casting process for production of PMMA cast sheets and extrusion process for production of PMMA extruded sheets)</p> <p>(p.14)</p>
<p>Precision:</p> <p>“measure of the variability of the data values for each data expressed (e.g. variance)”</p>	<p><b>Very Good</b></p> <p>Relevant foreground data is primary data, or modelled based on primary information sources of the owners of the technologies.</p> <p>(p. 15)</p>
<p>Completeness:</p> <p>“percentage of flow that is measured or estimated”; assessed on level of process</p>	<p><b>Very Good</b></p> <p>Primary data collected for the 5 participating organisations plus additional data collected for the elaboration of this Eco-profile (filling previously existing data gaps).</p> <p>In Ecoinvent datasets, waste for recycling is generally cut off. Furthermore, expenses for capital equipment were not considered in this Eco-profile. Consequently, an influence of cut-offs less than 1 % on the total is expected.</p>

ITEMs	Comments
	(p.15)
<p>Consistency:</p> <p>“qualitative assessment of whether the study methodology is applied uniformly to the various components of the analysis”</p>	<p><b>Very Good</b></p> <p>To ensure consistency, only primary data of the same level of detail were used. While building up the model, cross-checks ensured the plausibility of mass and energy flows. The methodological framework is consistent throughout the whole model as the same methodological principles are used both in foreground and background system.</p> <p>The basis for this European + Israeli average PMMA Eco-profile were 5 individual LCA studies which had been performed by 5 participating PMMA producers. In order to consolidate the 5 individual studies into one PMMA Eco-profile (resin, cast sheet and extruded sheet), the individual studies were analysed and methodological differences identified. Then, a best practice methodological approach was defined that aligns with 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). The main methodological harmonisation issues related to the inclusion of cut-off flows.</p> <p>(p.14)</p>
<p>Sources of the data; Appropriateness of use primary/secondary data source</p>	<p>This Eco-profile is based on 5 individual LCA studies performed independently by the 5 main European + Israeli producers of PMMA. The primary data used in these studies and then in this Eco-profile comes from 12 plants located in 8 different European countries and Israel and is site-specific gate-to-gate production data.</p> <p>Hence, this Eco-profile uses average data representative of the respective foreground production process, both in terms of technology and market share.</p> <p>Concerning the upstream supply chain until the precursors and all relevant background data (such as energy and auxiliary materials), the 5 individual LCA studies used for this Eco-profile were based on datasets coming from different databases. For consistency reasons, datasets used in the 5 studies were harmonised. Thus, for this Eco-profile, all the datasets are taken from the ecoinvent database 2.2 with the exception of acetone production dataset (for the production of MMA – see respective Eco-profile), which is taken from the GaBi 5 database.</p> <p>(p.14-15)</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.</p> <p>Data of relevant background processes were predominantly</p>

ITEMs	Comments
	measured at several sites as far as accessible.  Reliability of the collected primary data can be considered very high due to almost exclusively measured data across the entire sample. Furthermore, the background data can be considered very precise.  (p.15)
Others	

**Table 3: Specific/detailed review reporting items for LCI data set: Nomenclature and Documentation**

ITEMs	Comments
<b>Nomenclature</b>	
Correctness and consistency of applied nomenclature (Preferred use of ILCD flows etc.; Correct nomenclature of other flows; Exclusion of not permissible waste flows, sum indicator elementary flows etc.)	<p>Yes – database format is aligned and compatible with ILCD requirements (consistent nomenclature) -- conducted spot checks on the LCI (xls and ILCD xml)</p> <p>Only elementary waste flows (final deposits after treatment).</p>
<b>Documentation</b>	
Appropriateness of documentation (see Document “Documentation of LCA data sets”)	Yes – meta-data completed and appropriate; documentation aligned with ILCD standards.
Appropriateness / correctness of documentation form (ILCD Format)	Yes – Database format is aligned and compatible with ILCD requirements (consistent format of meta-data and content) -- spot checks were conducted on dataset.