Generic EPD – a reasonable solution for Locks- and Hardware Products?

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Key goals of the EPD-Project

- Creating EPDs for 230 member organisations in 14 countries with maximum effect and minimum cost

- Satisfy customers’ needs of reliable environmental & health information for the building certification process

- The EPDs shall be based on EN15804 and enable the customer to potentially show compliance with the BWR No. 7 and 3 in the CPR

- Achieve broad acceptance of the documents in Europe through ECO Platform
Pragmatic approach

Drawing up EPD can be greatly simplified, by using ready made LCA calculation tools thus saving resources, human and economic!

- Average EPD
- EPD templates / i-reports
Simplified EPD at IBU

1. Declaration of one Manufacturer:
   1a) Declaration of a specific product from one manufacturer’s plant
   1b) Declaration of a specific product as an average from several of one manufacturer’s plants
   1c) Declaration of an average product from one manufacturer’s plant
   1d) Declaration of an average product as an average from several of 1 manufacturer’s plants

2. Declaration of a group of Manufacturers:
   2a) Declaration of an individualised product as an average from several manufacturers’ plants
   2b) Declaration of an average product as an average from several manufacturers’ plants

3. A standard or reference product:
   Declaration of a specific (usually typical) product
LCA simplifying software

- Specification of product materials and processes
- Database generic data
- LCA calculation tool EN 15804
- EPD master EN 15804
- EPD results

Umwelt-Produktdeklaration

Franz Schneider Brakel GmbH + Co KG
LCA simplifying software

Example Average EPD
European mineral wool

Representative data on materials and processes

Statistical assessment of specific sites throughout Europe

LCA calculation tool

Database European International

EPD results
LCA tool for average EPD, manufacturer’s end

- Average European EPD: ensure good representation by considering
  - At minimum 50% production volume, include manufacturers from a diversity of European regions in order to capture
    - All relevant processes weighted by production volume to include 95% of environmental impact
    - Distribution of sites in EU for correct distribution of energy provision data
    - Distribution of raw material and commodity provision among sites, in order to capture regional production traditions
LCA tool for average EPD, manufacturer’s end

- Average European EPD:
  - Unit 1 kg of product
  - for easier communication product groups should match with tangible properties: function, appearance.
  - Describe end of life scenario in order to capture recycling benefits for metals
LCA simplifying software

Example
Individualised EPD with a fixed template
Mortar

Sensitivity assessment for influence of composition on LCA

Definition of groups of products, fixed composition

Individual composition of manufacturer must fit

LCA calculation tool EN 15804

Database European

EPD results
Including individual logo
LCA tool for average EPD, manufacturer’s end

• Template EPD : ensure matching of products and templates
  o Unit: 1 kg of product
  o Define sensitivity of composition to LCA in order to understand and later control which compositions fit and which do not fit
  o Products should be grouped according to those processes that dominate the results. With locks and fittings: provision of raw materials / commodities, energy?
  o for easier communication product groups should match with tangible properties: function, appearance.
  o Describe end of life scenario in order to capture recycling benefits for metals
LCA simplifying software

Example
Individualised EPD template
Lighting systems

Bill of materials per product

LCA calculation tool EN 15804

EPD results

Sensitivity assessment for influence on LCA

Database of generic data adapted to cover all potential BOM
Individualised LCA tool, manufacturer’s end

- Template EPD lighting system example: LCA program tool provides data sets for all materials and proper grouping
  - Web based tool
  - Manufacturer enters his own composition
  - Tool should be verified as such + verification of EPD or
  - EPD states composition, in that case only the tool needs to be verified, random sample verifications
A pragmatic approach..

- Define the product groups to create average type EPDs which cover many products at once - while the data quality stays robust.
- Minimize the effort for data collection by focussing on processes that are of relevant environmental importance.
- Collect data from the most contributing companies by product volume.
- Use and expand already existing LCA models and LCA background data to reduce work & costs.
Benefits for ARGE

- ARGE can build on work that has already been accomplished for the German Fachverband Schlosser und Beschläge.
- Using the knowledge about the technical specialties of the products and the production lines for which LCAs are to be carried out.
- Get a baseline for an Environmental Assessment Tool, which could be further used to e.g. assess the variance of alternative scenarios for defined environmental parameters.
The steps towards the EPDs

Average European EPD for locks and builders hardware
General Process

1. Goal & Scope + Decision for EPD and Program Operator

2. Product specific requirements – Product Category Rule (PCR) – available

   - Yes

   - No

   - Program operator organizes Product Group Forum and public consultation (participate: producers, public, verification board)

   - PCRs include guidelines which must be complied with while setting up an EPD

3. Calculate LCA, write LCA report and prepare EPD

4. Verification of EPD through independent verifier

   - Background report

   - EPD
Step 1: Defining scope and study boundaries

- Pragmatic approach first defines the general representative product types, based on market shares (e.g. different door closer types, sales share of these types in Europe).
- Then for the defined types, representative material compositions will be identified, based on data from at least 50% of the products sold to the market.
- Research as well as surveys on association and company level, preferably during face to face meetings is needed.
- Deliverable of this step should be the definition of product families for the PCR and the selection of product types for the EPDs.
Step 2: Selecting the EPD Program Operator

- The selection of the program operator should be based on the following criteria:
  - High recognition in ARGE’s member companies’ target markets.
  - Active membership in the ECO Platform.
  - Reasonable verification cost and other fees in accordance with good additional services for members or EPD holders.
  - Experiences and references in EN 15804 compliant EPD verifications.
  - Preferably already disclosed EN 15804 compliant Product Category Rules document (PCR) for locks and builders hardware.

Deliverable of this step is the application for registering the EPDs to be developed at the chosen EPD program operator.
Step 2: ECO Platform

- Platform for EPD program holders, founded as European association June 4th 2013

- Members:
  - 11 European program operators as full members
  - European Associations
  - LC practitioners and other experts

- Mission:
  - Mutual agreements on European core EPD
  - Reduced effort for industry by harmonisation
ECO Platform

- Input for Rating Schemes from products via EPDs (original situation)

EPDs

Green Building Rating Schemes
ECO Platform

• Input for Rating Schemes from products via EPDs (aspired situation)
Step 3: Developing the PCR

- The Product Category Rules define the requirements for EPDs of specified product categories. It supports transparency and comparability between different EPDs based on the same PCR.

- Goal is:
  - to have one single PCR for all ARGE products representing ARGE’s manufacturing activities
  - To open the possibility of a seed document for the appropriate CEN Technical Committees for BWR 7 and 3

- Deliverable of this step is one single PCR for all declared products.
Step 4: Collecting data and calculating LCA results

- Data collection can be done online by using specialised data collection tools.
- Sector specific knowledge is needed to reduce the number of technical data that is required from companies.
- To further minimize the effort of data collection, only the most contributing companies - measured on the production volume - will have to deliver data.
Step 4: Collecting data and calculating LCA results

Identify Needs & Drivers

Define Goal & Scope

Data Collection

Refine Goal & Scope

Modeling

Run Analysis

Quality Control & Check

Review and Edit Model

Final Analysis & Interpretation

- Product Definitions Goals
- Functional Unit Boundaries
- Data Requirements Exclusions
- Mapping the System

Types of inputs (Materials, Energy, Costs, etc.)
Information from business units & suppliers (EH&S, Purchasing, Process Engineering, Technical Support, R&D, etc.)

Evaluate environmental indicators, such as:
- Global Warming Potential
- Primary Energy Demand
- Acidification
- Eutrophication
- Smog
- Toxicity

Develop Product Profiles, Communicate to Customers, Integrate with ISO 14001, etc.
Step 4: Collecting data and calculating LCA results

- Deliverable of this step are tables with LCA results for the defined product types and the definition of number of EPDs to be generated. The results are presented to ARGE in an intermediate meeting.
Step 5: Generating EPD

• Written documents:
  o the LCA sections for the EPD
  o the project report that includes all details of the LCA calculation and
  o support verification documentation.

• To be decided: 1 average EPD for all products at ARGE, or a product family

• When verified, an XML dataset for any national database should be created, (like Ökobau.dat LCA database the only 15804 based publicly available national data base today).

• Deliverables of this optional step are: verified EPD and XML dataset.
Option: Generating an online environmental assessment tool

• The LCA model could be expanded into a tool, which could be applied to generate specific EPD for individual member companies

• The proposed approach for data collection and averaging would not allow generating site specific EPDs with the tool (much more detailed data collection and LCA model specification required).