Proving environmental impact of our products:

EPD

The global awareness of the impact of energy and materials consumption is immensely rising. This is being reflected in the decision making/buying behaviour in our markets. Our stakeholders are demanding for clear and validated information about the products they purchase or are searching for mechanisms that do so.
Thermaflex has the ambition to become the reference for sustainability. We want our products to have a high environmental lifecycle performance: from extraction of raw materials through the end of life. In order to make this tangible, we have quantified this performance and obtained external verification on this quantification: an Environmental Product Declaration (EPD).
This document aims to inform you of all aspects of the EPD:

1. What is an EPD?
2. Why an EPD? (What is in it for us?)
3. Why EPD instead of 'green labels'?
4. What is the difference between LCA and EPD?
5. What are the benefits for our market?
6. What is it based on?
7. How should I use it?
8. Next steps?
9. More information

1. What is an EPD?

An Environmental Product Declaration, EPD, is an externally verified document that contains the core information and results of a Life Cycle Assessment (LCA) study. A LCA reports the environmental data of all life cycle stages of the product, from the "cradle" to its end-of-life-stage.

2. Why an EPD?

- It is in line with Thermaflex brand and philosophy – being open, honest and putting emphasis on sustainability, and taking care of the environment.
- The interest in EPD has grown dramatically in the last two to three years, particularly in certain sectors and markets. For example in Scandinavia providing EPDs may be necessary to win orders. Growing standardisation and policy by the European Commission, that is now piloting a "Product Environmental Footprint", whose goal is to enable the production of comparable environmental performance information for all types of products that can be used throughout the European single market.
- To position our products on our inherent mainstream market can broaden our customer appeal and enhance Thermaflex likelihood for market success.
- EPDs will become increasingly necessary for LEED and BREEAM projects. These standards serve as a differentiator in the building sector and an example of commitment to sustainable construction practices. Pressure from project owners and governmental agencies will increase in terms of differentiating different products, demonstrating their value and how they may impact the environment.
- An EPD provides relevant and verified information in a standardized way to meet the various communication needs. It also allows comparison of products and services by its environmental performance.
- EPDs can reflect the continuous environmental improvement of products and services over time and are able to communicate and add up relevant environmental information along a product's supply chain (see Figure 1).

3. Why an EPD instead of 'green labels'?

- EPD provided general and open information according to set international standards and is product life cycle specific. Labels indicate product 'greenness' but obscures more specific details that makes labels open to abuse. Large variety of labels in different countries lessens the ability to compare products properly - "Eco-friendly", "Green", "Low Carbon".
  - Licensed Marks or Eco-labels is only Type I environmental declaration ISO 14024.
  - Verified EPDs are Type III environmental declaration ISO 14025.

- Since the awareness of different environmental aspects linked to products is increasing, EPDs have an important role to play in market communication strategies. Having an EPD can indicate that a company is able to prove their understanding, control and improvement of the environmental performance of their products or services to external interested parties.
- The environmental impacts of products take various forms like - energy consumption, consumption of materials and natural resources or related negative contribution to climate change, waste generation and release of hazardous substances to the environment. The integration of environmental considerations at the design phase

of product can be seen as a good way to improve the environmental performance of products and the ways company conducts its business activities in general.

4. What is the difference between LCA and EPD?

- A Product Life Cycle Assessment is an elaborate scientific study of a product measuring all life cycle stages from cradle-to-grave. In order to use LCA study properly it is conducted following international standards and covers scientific information about product which is usually confidential for external parties.
- The EPD methodology, including a structured and well-defined procedure based on LCA study for mapping all relevant environmental aspects in a life-cycle perspective will automatically give a science-based information on remaining environmental aspects candidates for future inclusion within the framework of the effective environmental management work.
- EPDs can be used as a beneficial part of value proposition. Client specific scenarios can be used to model environmental impacts based on same methodology as an EPD though adding value to value propositions.
- For parties creating EPDs and providing information to the market provide opportunities for giving quantitative and verified information about the environmental performance of products viewed from a comprehensive life cycle perspective. The following advantages can specifically be outlined:
  - Objective - through the use of scientifically accepted and valid methods based on international standards for life cycle assessment (LCA).
  - Non-selective and neutral - because no claims of valuations or predetermined environmental performance levels must be met.
  - Flexible - through enabling any change or improvement of the EPD as required by the company/organisation after due external review and verification.

5. What are the benefits for our market?

- The building industry has put a growing emphasis on green building transparency, raising the need for Environmental Product Declarations. Additionally, regulatory requirements in the European market are one of the reasons why more and more manufacturers are voluntarily choosing to generate EPDs.
- Currently Thermaflex' competitors have not published their product EPD's. That gives Thermaflex a head start to enter 'green' projects with ThermaSmart PRO, ENEV and ThermaECO. Only ISOVER has EPD (**link**) for their pipe insulation product.
- The business and governmental sector as well as other parts of society have a need for an international recognised systems approach, which enables communication of relevant and credible information about environmental performance of products. EPDs are being developed with the overall purpose to meet these demands and to serve these needs.
- EPDs are considered to be a useful tool in **GREEN** purchasing and procurement within both the public and business sector - LEED, BREEAM, Green Globes. EPDs currently help contribute to credits in green building systems - LEED and Green Globes.
- Since EPDs contain factual-based and verified information about the environmental performance of products and services they can be used as source information for various purposes. The following advantages can specifically be outlined:
  - Comparable - because the information in EPDs are being collected and calculated based on international accepted and harmonised calculation rules. Credible - through the requirements for routine inspections, review, approval and follow-up by an independent verifier. Thermaflex' EPD is verified by UL Environment, a global independent safety science company, and Industrial Ecology Consultants.
  - Accurate - because the information has to be continuously-updated based on in-company routines for documentation and follow-up procedures.

6. What is it based on?

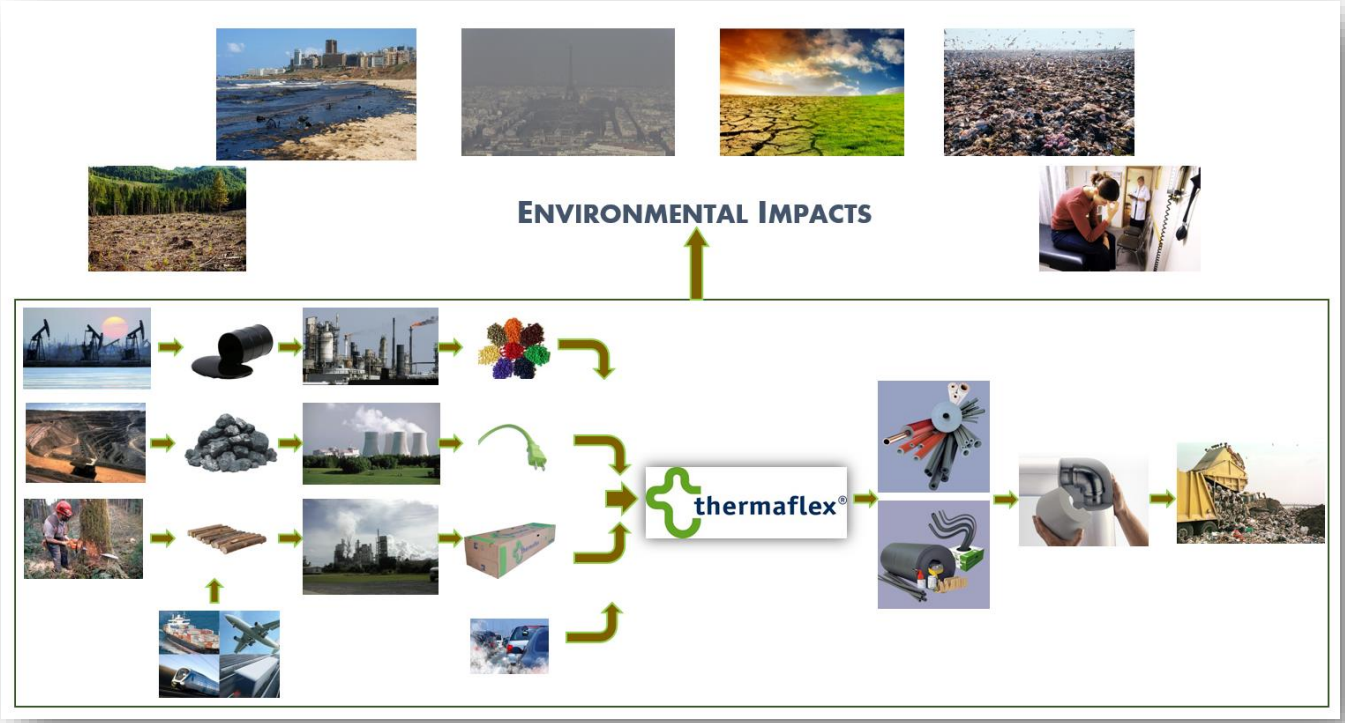
- EPD is built following Product Category Rules (PCRs), which are a set of requirements, rules, and guidelines for developing Environmental Product Declarations (EPDs) for one or more product categories[1].
- EPD is based on actual product life cycle assessment (LCA) study, which includes all life cycle phases from extraction (cradle) to its end of life (grave) conducted in accordance with the international standard ISO14025 (Type III Environmental Declarations). Key characteristic of EPD is based on a requirement to follow internationally accepted and validated method and standards (like ISO14025, **EN15804**) that allows it to be

[1] A Product Category is a group of products that can fulfil equivalent functions e.g. floor finishes, concrete blocks, or insulation.

objective, credible, neutral, comparable, open to all interested parties, environmental impact-oriented and instructive.

- LCA study information was compiled using data from ThermaSmart PRO, ENEV and ThermaECO and the Thermaflex production sites in Poland and the Netherlands.
- Figure 1 shows the scope of life cycle stages of our products - starting from extraction or natural resources then manufacturing of raw materials, packaging or energy and delivery to Thermaflex production site where these resources are used in product production. EPD as well covers environmental impact data of product delivery to customer, product installation and used materials used, and product final disposal.

Figure 1 - Supply chain perspective - LCA visualisation Cradle-to-Grave.



All activities in the supply chain are influencing the environment, creating air, water and/or soil pollution and affecting people and animal wellbeing.
For Thermaflex insulation foam tubes LCA stages covered Environmental Impacts in EPD due to:

- Production and transport of all raw materials (polyolefins, isobutene and cardboard packaging) to Thermaflex;
- Manufacturing, degassing and packaging processes of insulation tubes (covering all emissions created due to production and energy consumption);
- Transportation to the customer (scenario based on transport from Europe up to South America);
- Installation procedure of insulation tubes and use of adhesive (covering all emissions during insulation, plus production and use of LEED® adhesive[2]);
- Notifies impact due to use of insulation in the indoor environment (no VOC emissions or other substances released that could negatively influence people wellbeing);
- Dismantling of insulation at the end of life with transportation and final disposition in the landfill.

Beware that:

- In general, EPD results do not include the enormous positive effects due to energy savings from insulation in the use phase. It is defined that way in the LCA and EPD standards to limit misuse of LCA data. Nevertheless the EPD contains an indication of energy saving (w/m in hour) table for different insulation foam ranges in 1 specific scenario(according to EPD standard).

[2] Water based adhesive use estimated.

- Recycled content of 30% is modelled for production of products in the EPD. Recycled content from production waste is used instead of end of life recycled product.
- Worst case scenarios are modelled. E.g. Transportation of finished product – modelled distance Europe to South America covering more than 10,000km. Installation of product at building site using highest estimated amount of adhesive. Disposal of products in landfill. Country energy mix for the manufacturing processes is assumed even though Thermaflex in Poland and the Netherlands purchase green energy.

7. For more information

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Video about LCA / EPD:

- **Video1**
- **Video2**
- **Story of Stuff** video.

Links to documents:

- **EPD on UL website with Sustainable Product Guide** – **ThermaSmart Pro**, **ThermaSmart ENEV**, **ThermaEco ZZ**, **ThermaEco FRZ**
- **EPD on The EPD Registry**