toughtrough®

Product Carbon Footprint

With our innovative approach and product design we want to contribute to meet one of the most pressing challenges of our time – the sustainable future of the world's energy supply. Our goal is to support the further development of renewable energy technologies in a reliable and cost-effective way and to act eco-friendly as well as socially and economically responsible.

To keep greenhouse gas emissions as low as possible, we are engaged in a systematic calculation and publication of specific values of our products. Even though there is no standardized method for the determination of the total set of emissions yet, we consider it our responsibility to handle the Carbon Footprint of our industrial products openly. The Carbon Footprint gained importance over the past years as an appropriate instrument to evaluate climate impacts of products, services, and everyday human behavior.

> **"A Product Carbon Footprint (CO_2 footprint) is the outcome of the analysis of greenhouse gas emissions throughout the entire life cycle of a product in a defined application and in relation to a defined functional unit."[1]**

Greenhouse gas emissions are atmospheric gases to which the Intergovernmental Panel on Climate Change (IPCC) attributed a coefficient for their global warming potential. The product life cycle includes the complete value creation chain: from extraction of natural resources to manufacturing and transport of raw materials over production and distribution up to utilization and disposal. For business-to-business relationships such as we are involved in, it is sufficient to evaluate the partial emissions until the product leaves the factory gate.

The constant evaluation and improvement of our products' Carbon Footprint helps to minimize greenhouse gas emissions and is our contribution to reach worldwide climate goals. Furthermore, toughTrough's solar mirrors are used to generate green energy that avoids further emissions of carbon dioxide through conventional electricity resources.

[1] Definition from the draft standard ISO 14067 "Carbon Footprint of Products".

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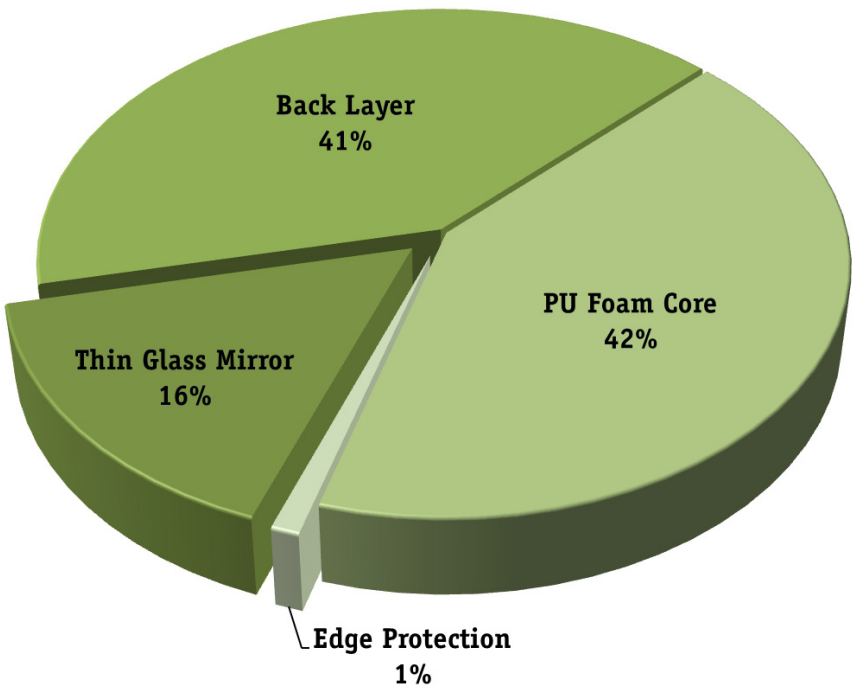
CO_2 Emissions of its Main Components

The following diagram shows the percentage of each component for the Product Carbon Footprint of 1 m² of the toughTrough® solar mirror solution for parabolic troughs, heliostats, dish and Fresnel systems. All data refer to an assumed total lifetime (TLT) of 25 years. Detailed specifications are available on request.



What do these figures mean and how to rate them?

The CO_2 relevance of a light-weight toughTrough® solar mirror is comparatively low:
It causes only 35% of the amount of CO_2 that a comparable standard parabolic trough mirror produces.

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