

VILPE® IO Air Intake & Exhaust Wall Elements

IO PRODUCT CARBON FOOTPRINT

Carbon Footprint calculations for all six VILPE IO product models were executed in 2022 by Ramboll, an independent outside agency. Carbon Footprint refers to the total of greenhouse gas emissions caused during the life cycle of a product.

The study follows the standardized methods of Life Cycle Assessment (LCA) and guidelines of the standard ISO 14067:2018 Carbon footprint of products. Results are calculated per one piece of product in kilograms of CO₂ equivalent (kg CO₂-eq).

The following life cycle stages were considered when calculating the carbon footprints of the products:

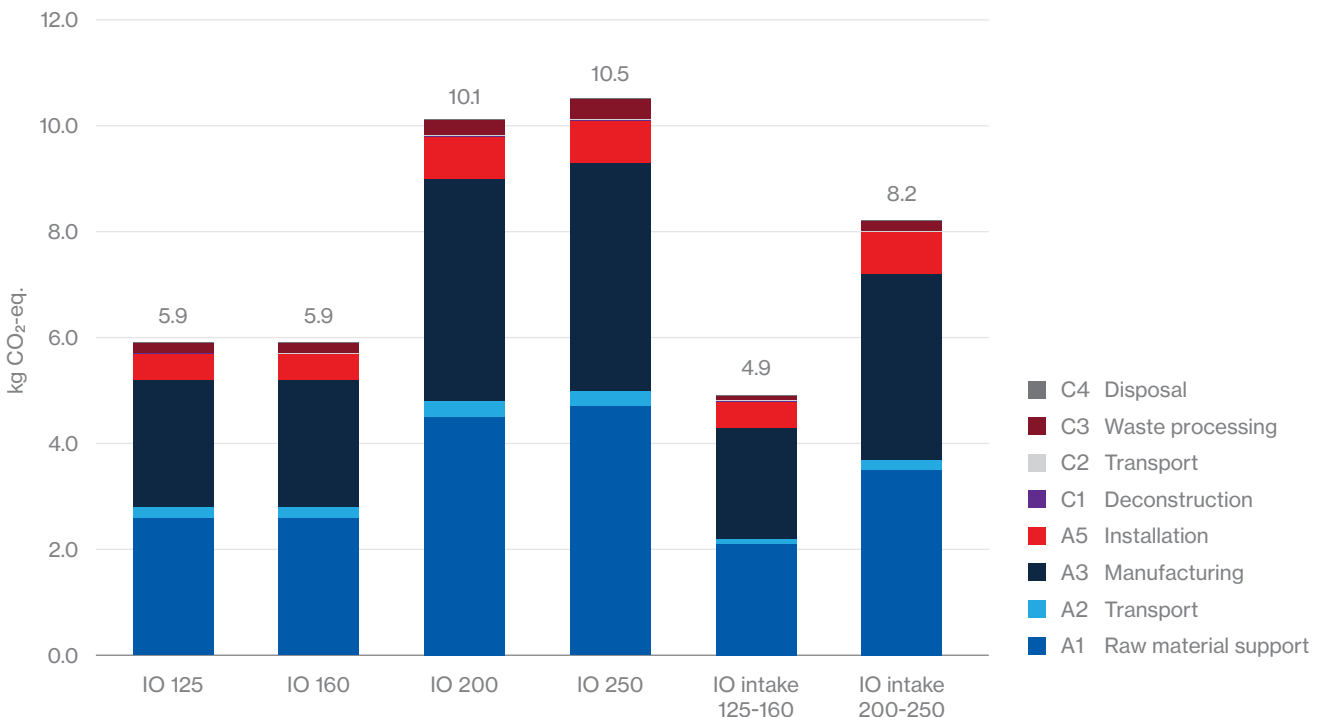
- Raw material supply
- Raw material transportation to manufacturing
- Manufacturing
- Installation
- End of life stage (deconstruction, transport to waste processing, waste processing and disposal)

Optional distribution and use stages were excluded; during the use, IO products are low maintenance, and their emissions are considered very low.

RESULTS

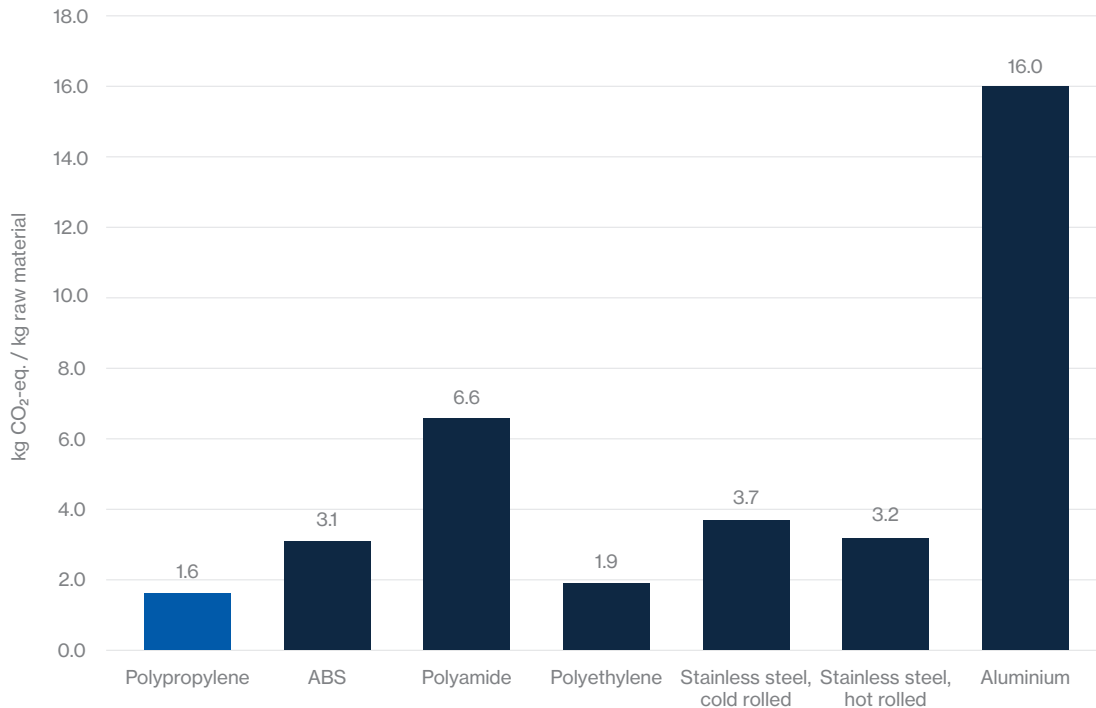
The IO products are made of similar raw materials at the same production facility but vary in size. 42–45 % of the emissions are related to the raw material supply, and manufacturing emissions at VILPE's production facility in Mustasaari form approximately 41–42 %. Installation stage forms 8–11 % of the product carbon footprint, whereas the remaining calculated life cycle stages are only 5–7 %.

Product carbon footprint of the IO product family



Most of the raw material supply related emissions come from polypropylene, the main raw material used in the IO products. Polypropylene's emissions are, however, lower compared to other raw material alternatives – for example, one kilogram of polypropylene is 1.6 kg CO₂-eq, when one kilogram of aluminium is 16 kg CO₂-eq.

Alternative raw material supply



NB. Presented raw material supply related emissions are indicative and based on generic data from Plastics Europe, Eurofer and International Aluminium Institute (IAI).

Most of the manufacturing emissions come from electricity consumption in VILPE's factory. The data for the study was collected in 2021, while installation of ground source heat pump system to VILPE's factory was still in progress. The system began operations in autumn 2021 and has reduced the factory's CO₂ emissions significantly. Combined, both the ground source heat pump cooling and heating systems allow VILPE to efficiently cool its factory buildings, production machinery and molds using ground source energy, with some of the heat from this process being then stored in the bedrock beneath the factory to then be used to help heat the buildings during the colder months of the year.