

Report

Product Carbon Footprint

Powerdaylight cradle

December 2025

Techcomlight

Introduction

Techcomlight has worked with ClimatePartner to calculate the carbon emissions for the product **Powerdaylight cradle**. The product carbon footprint (PCF) reflects the total carbon emissions generated by a product within the defined system boundaries.

The calculation was based on the guidelines of the Greenhouse Gas Protocol Corporate Accounting and Reporting Standard (GHG Protocol).

Carbon footprint calculation - the basis for climate action

Calculate, reduce, finance climate projects - these are the crucial steps to tackling climate change in accordance with the Paris Agreement.

The foundation of all climate action is calculating emissions. A company that knows the carbon footprint also knows the areas which cause emissions and how high the emissions are.

At the same time, a carbon footprint helps companies to understand which areas have the greatest potential for avoidance and reduction, to set reduction targets, and to develop and implement appropriate reduction measures. Regular calculations allow companies to check their progress against reduction targets and to identify areas where emissions can be further reduced.

Carbon footprint result

The following emissions were calculated for **Powerdaylight cradle** using the functional unit product 1 pc. and the system boundary cradle-to-customer plus end-of-life.

CO₂ emissions

Result	
Overall result	70.21 kg CO ₂

By comparison



The emissions correspond to the carbon footprint of a car that has driven 355 km. On average, a standard car releases per 100 km driven 19.8 kg CO₂.

Methodology of the calculation

Principles

In preparing this carbon footprint and this report, five basic principles were observed in accordance with the Greenhouse Gas Protocol Accounting and Reporting Standard (GHG Protocol):

Relevance: The carbon footprint appropriately reflects the GHG emissions of the subject and enables the user to make informed decisions.

Completeness: The carbon footprint covers all GHG emissions within the selected system boundaries. If relevant emission sources were excluded, this is documented and justified.

Transparency: All relevant aspects are addressed and documented in a factual coherent, clear, and understandable manner.

Consistency: Comparable methodologies are implemented so that emissions can be tracked over time. Changes in data, system boundaries, or methods are transparently documented.

Accuracy: The calculation of GHG emissions is not systematically too high or too low and uncertainties are minimised. The information provided is accurate enough to allow users to make informed decisions.

Data collection and calculation

CO₂ emissions were calculated using consumption data and emission factors researched by ClimatePartner. Wherever possible, primary data were used. If no primary data were available, secondary data from highly credible sources were used. Emission factors were taken from scientifically recognized databases such as ecoinvent and DEFRA.

CO₂ equivalents

The carbon footprint calculates all emissions as CO₂ equivalents (CO₂e), which this report also refers to as "CO₂".

This means that all relevant greenhouse gases, as stated in the IPCC Assessment Report, were taken into account in the calculations. These include carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFC), perfluorocarbons (PFC), sulfur hexafluoride (SF₆), and nitrogen trifluoride (NF₃).

Each gas has a different ability to warm the earth's atmosphere, and each remains in the atmosphere for different lengths of time. To make their effect comparable, they are converted to CO₂ equivalents (CO₂e) as a basic unit and multiplied by their global warming potential (GWP).

The GWP describes how strong a gas can warm the atmosphere compared to CO₂ over a period of time, usually 100 years.

For example, methane has a global warming potential of 28, so the warming effect of methane is 28 times greater than CO₂ over 100 years.¹

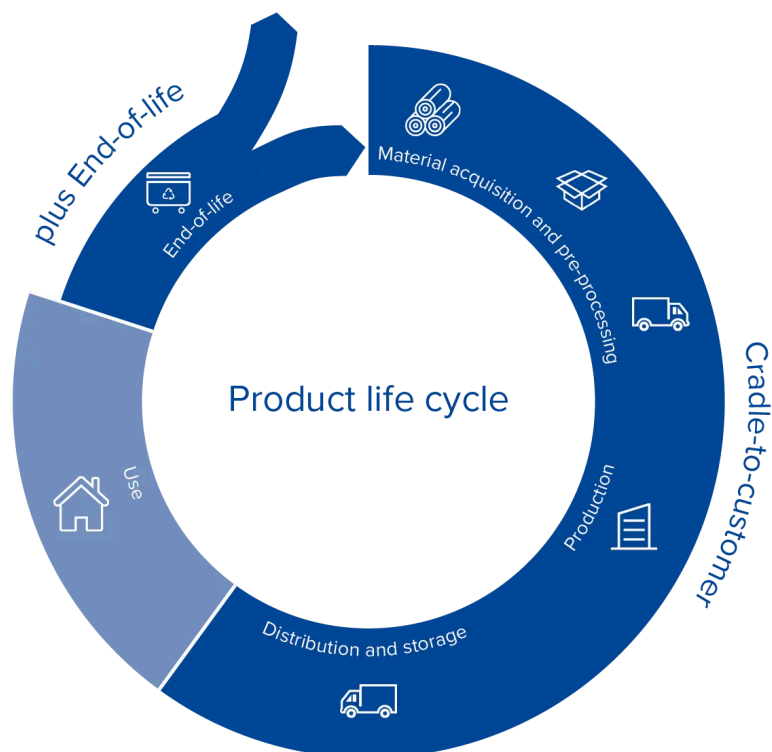
¹) Source: Intergovernmental Panel on climate change, "Climate Change 2021 The Physical Science Basis", S. 1842, https://www.ipcc.ch/report/ar6/wg1/downloads/report/IPCC_AR6_WGI_Full_Report.pdf (retrieved on 31.01.2022)

System boundary

The system boundary applied in this calculation is “cradle-to-customer plus End-of-life”. Thus, emissions were considered according to the following lifecycle stages: Extraction and pre-processing of raw materials and packaging, production, delivery of the product to the first customer as well as any relevant disposal emissions of the product and its packaging.

With this approach, the calculation focuses on the processes that can be influenced by the manufacturer. Emissions from the life or use phase cannot be controlled by the manufacturer and would be subject to assumptions and estimates. They were therefore not included in the overall calculation. In general, a cradle-to-grave approach proves useful for revealing the overall impact of a product.

Emissions that could not be directly attributed to the product but were required for production, such as employee commuting or business travel, were also included in the calculation as “general emissions”.



Carbon footprint result per lifecycle stage

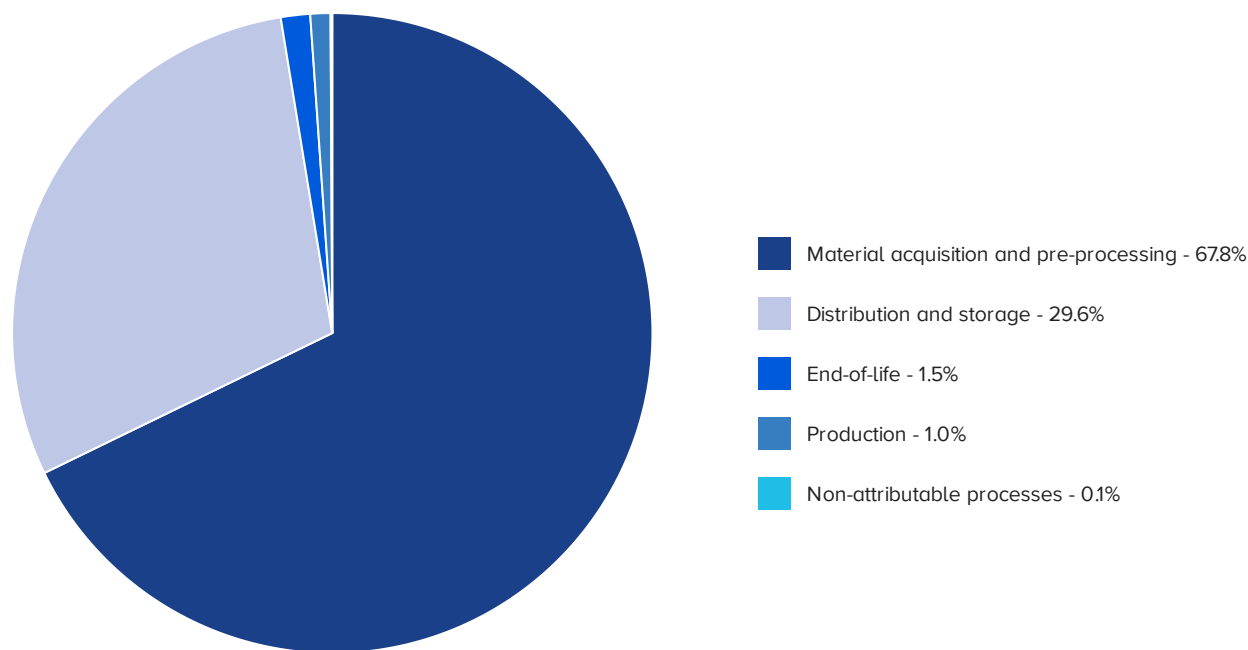
The following emissions were calculated for **Powerdaylight cradle** using the functional unit product 1 pc. and the system boundary cradle-to-customer plus end-of-life.

Emission sources	kg CO ₂	%
Material acquisition and pre-processing	47.60	67.8
Raw materials	31.36	44.7
Inbound logistics	12.83	18.3
Packaging	3.41	4.9
Production	0.71	1.0
Electricity	0.69	1.0
Manufacturing waste	0.02	0.0
Distribution and storage	20.80	29.6
Outbound logistics	20.80	29.6
End-of-life	1.04	1.5
End-of-life	1.04	1.5
Non-attributable processes	0.06	0.1
General emissions	0.06	0.1
Overall result	70.21	100.0

Interpretation of results

The carbon footprint makes it possible to identify the largest emissions sources, also called hotspots. These are the most impactful areas to target when planning reductions.

Breakdown according to lifecycle stages



Next steps

Comprehensive climate action consists of five steps: measure carbon footprint, set reduction targets, implement reductions, finance climate projects and communicate transparently. By calculating the carbon footprint, it is possible to identify the potential for mitigating and reducing emissions and on this basis finance climate projects. Therefore, the company should now use the findings of the calculation for effective climate action. For this purpose, reduction targets should be defined and reduction measures implemented, climate projects should be financed and the climate action commitment should be communicated transparently.

Set reduction targets

The concentration of greenhouse gases in the atmosphere is responsible for global warming so we must reduce our emissions as quickly and broadly as possible. Defining clear and measurable reduction targets are the best way to start. A reduction plan detailing specific actions and team responsibilities will help the organisation to make quick and meaningful progress.

A creative and courageous approach is needed. Reduction targets should be ambitious and reflective of current scientific and technological understanding. ClimatePartner recommends differentiating between short-, medium-, and long-term reduction targets because some measures can be implemented quickly whilst others take time, for example, making changes to processes, product design and supply chains. Creating reduction plans is a continuous, iterative process that should be an integral part of the corporate strategy.

Mitigate and reduce emissions for companies

In general, there are three types of measures to mitigate and reduce emissions. Namely: Avoidance, efficiency, and substitution. Examples are:

1. Avoidance: The product has been redesigned to reduce the amount of material used by a certain percentage and to reduce emissions.
2. Efficiency: A certain percentage of the kilometers for transport and distribution, covered by the company's fleet, have been reduced, e.g. by optimizing routes, consolidating transport or increasing load factors.
3. Substitution: The product has been redesigned by replacing a material to reduce the overall emissions of the product by a certain percentage.

Finance climate projects

We must act now to tackle emissions globally and limit global warming to 1.5 °C. Some of the measures to reduce CO₂ require fundamental changes. They will take time to implement. It is therefore urgent and necessary to finance climate projects in addition to reducing emissions. In this way, companies can take responsibility for their current emissions, while continuing to reduce them.

More than just climate action

Climate projects work in different ways. Some remove CO₂ from the atmosphere, for example, through reforestation projects, while others prevent further CO₂ emissions, for example, through the expansion of renewable energy.

In addition, our high-quality climate projects promote the economic, social, and sustainable development of the region. Each of our projects is certified according to international standards, thus ensuring that they improve the lives of local communities as well as mitigate climate change.

Verified emissions savings

The exact amount of CO₂ saved by each project is verified by independent organisations. Project developers can then sell these CO₂ savings in the form of certified emission reductions.

The resulting income then finances the project, which would not be able to operate without it. Further information is available at: <https://www.climatepartner.com/en/carbon-offset-projects>.

Financial contribution

	kg CO ₂
Overall result	70.21
Confirmed contribution to climate projects	0.00
Remaining contribution to climate projects	70.21
Equivalent financial contribution to climate projects incl. 10% safety margin	77.23

The 10% safety margin is applied to cover the uncertainties in the underlying data that naturally arise from the use of database values and assumptions.

Communicate transparently

In climate action it is important to share successes and make visible what the company has achieved in each of the five steps in climate action – calculating, setting targets, implementing measures, financing climate projects, communicating transparently. This gives consumers, business partners and other interested parties an overview of where the company stands in climate action.

Imprint

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