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Polestar 5

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Carbon footprint
Summary

Introduction

This document illustrates the carbon footprint of Polestar 5 and is taken from the Life Cycle Assessment report. That report, which can be considered a more in-depth analysis, can be read and downloaded at: polestar.com/sustainability.

The carbon footprint report is critically reviewed by Ricardo PLC. Data is based on Polestar 5 at the Start of Production (SoP) at the beginning of 2026.

Introduction
Transparency

Polestar is dedicated to ensuring transparency regarding the environmental impact of its vehicles. This document aims to promote openness to all audiences by disclosing the carbon footprint associated with our passenger vehicles. This is a summary of the full Life Cycle Assessment report, available at: polestar.com

Read the full report →

Introduction
Carbon footprint

A carbon footprint is the total amount of greenhouse gas emissions, expressed in CO_2 equivalents, caused throughout the entire life cycle of a vehicle.

In the cradle-to-gate calculations we include:

- Material production and refining. From raw materials to components (including battery).
- Manufacturing and logistics. Energy used in assembly plant, transport of parts to the manufacturing plants and finished vehicles delivered directly to the dealer.

For the cradle-to-grave calculations we add on and include:

- Use phase. Electricity consumed during assumed 200,000 km of driving over 15 years.
- Maintenance. Parts replaced during the vehicle lifetime.
- End-of-life. Dismantling and disposal of the vehicle.

By assessing the full life cycle, we can identify the processes and materials with the greatest climate impact, enabling us to make better design choices and drive decarbonisation across our value chain.

Use phase calculation based on

15 years

200 000 km

Introduction
Reviewing the data

How do we measure it?
Our assessments follow the ISO 14067 standard and use the 100-year global warming potential (GWP) factors from the IPCC (2021). The functional unit is one vehicle kilometre (vkm), with a lifetime distance of 200,000 km assumed over 15 years. Energy use is based on WLTP electricity consumption figures. We apply a recycled content approach: emissions from recycled material inputs are included, but no credits are given for recycling at end-of-life.

Who reviews this data?
The Polestar 5 LCA has been critically reviewed by independant third party Riccardo PLC in accordance with ISO 14067. This critical review strengthens credibility and ensures transparency towards customers, investors, and other stakeholders.

Why does it matter?
A carbon footprint is more than a number. It gives us clarity on where emissions occur, guides material and process choices, and helps accelerate our journey to climate-neutral mobility.

The product
Technical details

Technical details	Dual motor
Powertrain	Electric
Drive type	All wheel drive
Power	550 kW (748 hp)
Max speed	250 km/h
0 - 100 km/h	3.9 s
WLTP range	678 km
Energy consumption, WLTP	17.8-18.3 kWh/100 km
Battery capacity (gross)	112 kWh
Battery modules weight, (Chemistry)	476 kg, (NMC)
Vehicle weight in study	2 444 kg

Model shown in image is Performance version.

Carbon footprint
To car handover

The cradle-to-gate carbon footprint represents all processes occurring up until the point the vehicle arrives at the dealership for customer handover. When the Polestar 5 reaches its customer, the average carbon footprint totals 23.8 tCO_2e.

The largest share, 60%, comes from various materials extraction and production such as aluminium, steel, copper, plastics, electronics, and rubber used in the vehicle (excluding the battery modules). Li-ion battery modules are the next biggest contributor, responsible for 29% of the impact. Logistics account for 10%, while less than 1% comes from the manufacturing processes occurring in the assembly plant thanks to the use of renewable electricity.

The carbon footprint from logistics varies depending on which market the Polestar 5 is shipped to. The total figure of 23.8 tCO_2e include the average logistics emissions across all markets.

Cradle-to-gate carbon footprint
tCO_2e

Total carbon footprint

23.8 tCO_2e

Carbon footprint
During lifetime

The cradle-to-grave carbon footprint is calculated based on all processes occurring over an assumed 200,000 km lifetime of the Polestar 5, including end-of-life treatment.

The carbon footprint of the use phase is highly dependent on how the electricity used to charge the Polestar 5 is generated.

Using the global average electricity mix, the GHG emissions from the use of the vehicle results in 12.0 tCO_2e, while the European average electricity mix results in 3.5 tCO_2e. Customers can make significant reductions to their climate impact by charging with renewable electricity, charging exclusively with wind power electricity results in 0.5 tCO_2e.

Both the Global and European electricity mixes include carbon intensity reductions that are estimated to occur during the assumed 15-year lifetime of the vehicle. Data sourced from the International Energy Agency (IEA) according to their STEPS Scenario.

Cradle-to-grave carbon footprint

Total*

* Due to rounding, totals may not correspond with the sum of the separate figures.

Carbon footprint
Measures to reduce

To get to the result of 23.8 tCO_2e, Polestar has set high requirements on its suppliers to reduce the carbon footprint of aluminium and battery modules. The figures to the right show the measures Polestar has taken to reduce the carbon footprint of the Polestar 5.

If Polestar did not take steps to reduce its carbon footprint, the impact would be significantly higher. Mostly because the average aluminium production in some regions, such as China, tends to have a higher carbon intensity.

Decarbonisation measures effect on Polestar 5

Cradle-to-gate carbon footprint