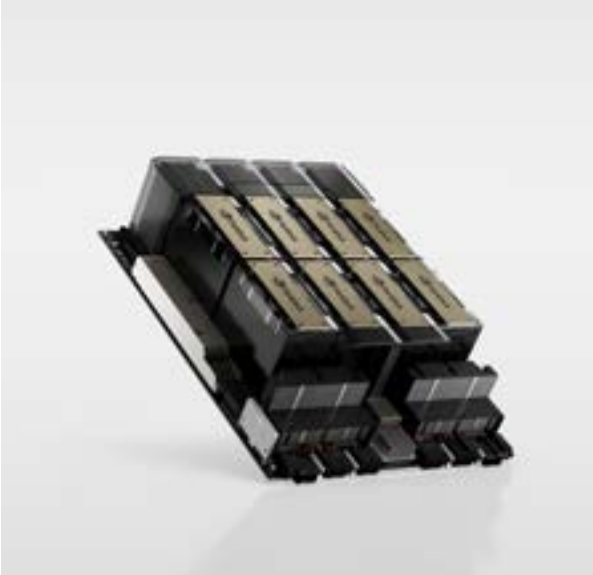




Product Carbon Footprint (PCF) Summary for NVIDIA HGX H100



At NVIDIA, we are working to reduce the greenhouse gases (GHG) associated with our products. Carefully determining the impacts of our products is a critical step in that process.

This summary provides insights into the emissions associated with one **NVIDIA HGX H100** baseboard from raw material extraction, material transport, production of components, to final assembly of the GPU baseboard (cradle-to-gate). This summary is based on an ISO-conformant, third-party reviewed product carbon footprint (PCF)¹ commissioned by NVIDIA and performed by WSP.

About the Product

The NVIDIA HGX H100 is an accelerated computing platform designed for artificial intelligence (AI), high performance computing (HPC), and data analytics workloads. It features eight H100 GPUs, each with 80GB of HBM3 memory, and utilizes NVLink and NVSwitch for high-speed interconnects. This system is optimized for large-scale datacenters and hyperscalers.

The NVIDIA HGX H100 baseboard has been used by many organizations as the foundation for their accelerated servers and datacenters. This PCF summary intentionally excludes use-phase and end-of-life emissions due to the variability in those emissions based on customer usage.

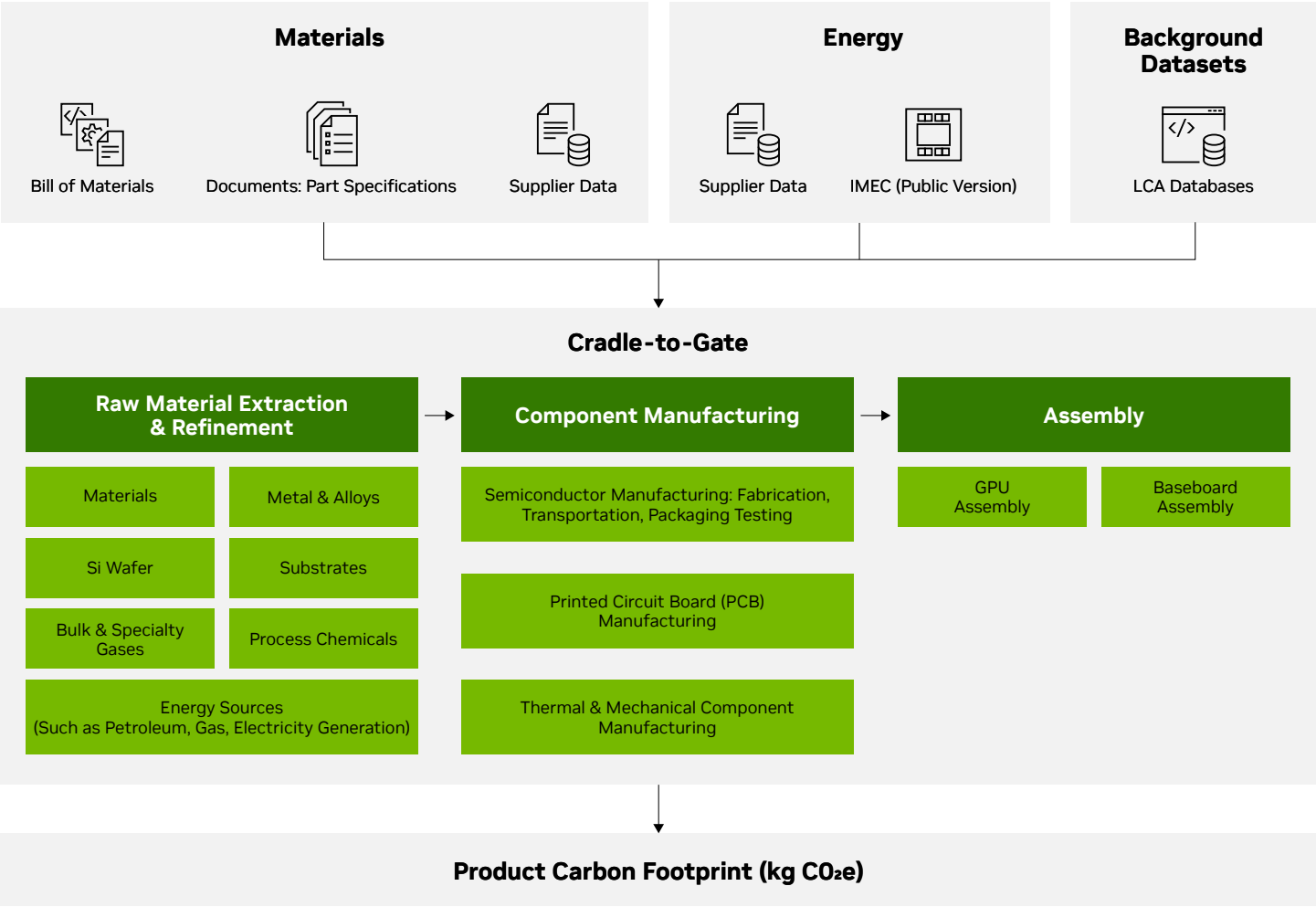
HGX H100 baseboard

Product weight	24 kg
Typical power consumption	5600 W
Form Factor	8x NVIDIA H100 SXM
FP8 Tensor Core ¹	32 PFLOPS
INT8 Tensor Core ¹	32 POPS
FP 16/BFLOAT16 Tensor Core ¹	16 PFLOPS
TF Tensor Core ¹	8 PFLOPS
FP32	540 TFLOPS
FP64	270 TFLOPS
FP64 Tensor Core	540 TFLOPS
Memory	640GB HBM3
GPU Aggregate Bandwidth	27GB/s
NVLink	Fourth Generation
NVSwitch™	Third Generation
NVSwitch GPU-to-GPU Bandwidth	900GB/s
Total Aggregate Bandwidth	7.2TB/s

¹ With sparsity

¹ A Product Carbon Footprint (PCF) quantifies the total greenhouse gas (GHG) emissions associated with a product throughout its lifecycle, potentially encompassing emissions from raw material extraction, manufacturing, transportation, usage, and end-of-life disposal or recycling. The results are typically expressed in terms of carbon dioxide equivalents (CO₂e), which account for all relevant GHGs based on their Global Warming Potential (GWP).

Scope and Methodology



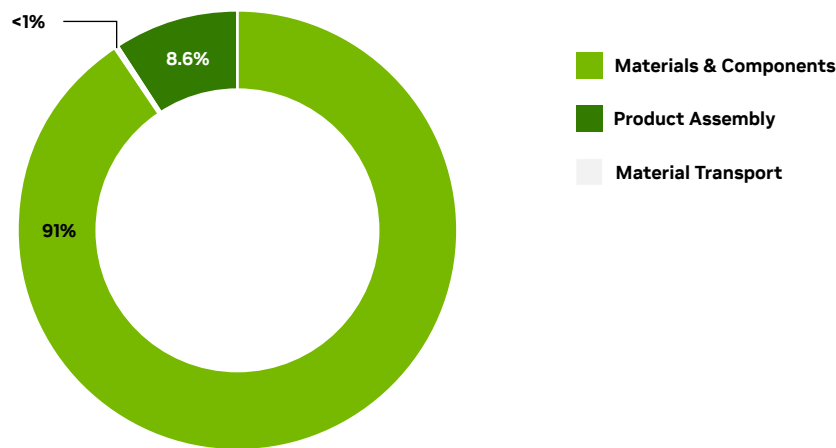
The PCF² was critically reviewed in conformance to ISO Standard 14067 on carbon footprints and is aligned with ISO standards 14040 and 14044 on life cycle assessments (LCA). To calculate the carbon footprint, we developed custom PCF models based on primary data from suppliers of critical components (GPU and networking chip fabrication and packaging, thermals, PCBs, interconnects, key ICs, GPU and baseboard assembly). We collected primary data, including material composition data and production energy consumption, for components representing over 92% of the product by weight. This data was combined with secondary data sources including imec’s net.zero tool for fabrication related emissions, as well as ecoinvent 3.10 and Sphera’s LCA databases (Professional Database 2024 and Extension Database XI: Electronics 2024) for modeling materials, transportation, and energy.

² The PCF was performed using the cradle-to-gate Life Cycle Assessment (LCA) methodology, covering emissions from raw material extraction to the point where it leaves the manufacturing facility.

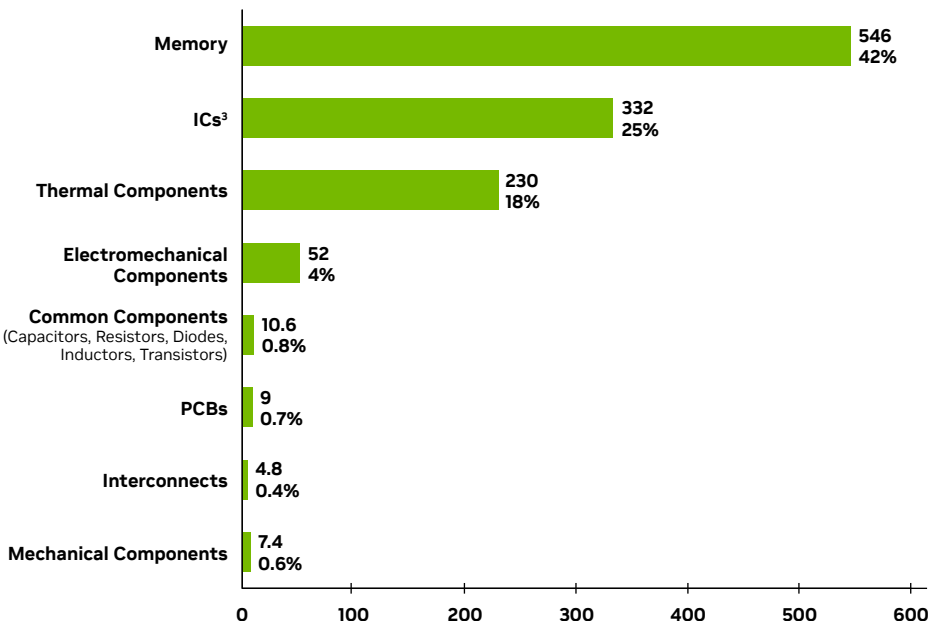
Results

Our PCF determined that the carbon footprint from cradle-to-gate for one HGX H100 GPU baseboard is 1,312 kg CO₂e. The central contributors to these emissions are materials and components, accounting for 91% of the total emissions. The production of high bandwidth memory (42%), integrated circuits (25%) and thermal components (18%) are significant drivers of the carbon footprint. Additionally, the assembly process contributes 8.6% of the total emissions, while transportation accounts for only 0.4%.

% Breakdown by Life Cycle Stage



HGX H100 PCF: Material Breakdown by Component Type (Kg CO₂e/Unit)



Disclaimer: The information in this document is solely for informational purposes and provides a general overview of potential emissions associated with the NVIDIA HGX H100 baseboard. NVIDIA's estimates in this document are based on currently available data. The information may contain estimates and certain data points and estimation methodologies are subject to change.

³ICs: Includes GPUs, network processors, and other integrated circuits.

References

International Organization for Standardization. (2018). Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification," International Organization for Standardization (ISO Standard No. 14067:2018). Available at: <https://www.iso.org/standard/71206.html>

Interuniversity Microelectronics Centre, 2024. Methodology - Overview. [Online] Available at: <https://netzero.imec-int.com/methodology> [Accessed 3 March 2025].

Sphera. Sphera Product Sustainability Files [Online] 2023. Available at: <https://lcadatabase.sphera.com>

Weidema, B. P. et al., 2013. Overview and methodology - Data quality guideline for the ecoinvent database version 3. [Online] Available at: <https://vbn.aau.dk/en/publications/overview-and-methodology-data-quality-guideline-for-the-ecoinvent> [Accessed 3 March 2025].

Wernet, G. et al., 2016. The ecoinvent database version 3 (part I): overview and methodology. The International Journal of Life Cycle Assessment, Volume 21(9), p. pp.1218–1230. Available at: <https://link.springer.com/article/10.1007/s11367-016-1087-8>

Ready to Get Started?

To learn more about the NVIDIA H100 Tensor Core GPU, visit:
www.nvidia.com/h100

