CLIMATE &STRATEGY

CERTIFICATE

THE CLIMATE&STRATEGY FOUNDATION CERTIFIES THAT THE GREENHOUSE GAS EMISSIONS OF THE ACTIVE SERIES PLAYGROUND NO. 3024

Buglo Play Sp. z o.o

amount to:
908,43 kg CO2e/playground

The cradle-to-grave carbon footprint calculation included emissions generated at all stages of the product life cycle: from material acquisition & pre-processing, through production and distribution, to the use phase and end of life.

Greenhouse gas emissions from products were calculated in accordance with the Greenhouse Gas Protocol. Product Life Cycle Accounting and Reporting Standard, September 2011. World Resources Institute and World Business Council for Sustainable Development.

GREENHOUSE GAS PROTOCOL

wbcsd

Agnieszka Liszka-Dobrowolska

Board member

DR AGNIESZKA LISZKA - DOBROWOLSKA

FUNDACJA CLIMATE&STRATEGY
UL. JANA HEWELIUSZA 11/811
80-890 GDAŃSK
NIP: 5833395214
REGON: 386032848
KRS: 0000840739

Łukasz Broniewski

Board Member

ŁUKASZ BRONIEWSKI

Status of carbon footprint calculations as of 05.12.2025

Date: 05.12.2025

Author: Climate&Strategy Foundation

Standard: The Greenhouse Gas Protocol. "Product Life Cycle Accounting and Reporting Standard", September 2011. World Resources Institute and World Business Council for Sustainable Development.

Carbon footprint: Refers to greenhouse gas emissions from the Active series playground number 3024 at all stages of the product life cycle: from material acquisition & pre-processing, through production and distribution, to the use phase and end of life.

Carbon footprint calculation boundaries: The boundary of the calculations was determined using the cradle-to-grave method and is divided into the following stages:

- Material acquisition and pre-processing – greenhouse gas emissions from the extraction, processing, and transport of raw materials necessary for the production of playground components.

The carbon footprint of the playground takes into account emissions related to the production of construction and packaging materials for the playground, the transport of construction and packaging materials to the Buglo facility, and WTT (Well-to-Tank emissions - all greenhouse gas emissions resulting from the extraction, production, transport, processing, and distribution) of electricity.

- Production – greenhouse gas emissions resulting from the processing of products, i.e., the consumption of utilities, as well as the transport and disposal of waste generated during production.

The playground production stage includes emissions resulting from electricity consumption, as well as emissions related to the production and consumption of operational consumables used in the production process. The disposal stage uses general disposal and waste transport scenarios, drawing data from Environmental Product Declaration (EPD) cards.

- Distribution and storage – greenhouse gas emissions associated with the transport of finished products to the customer's gate.

Due to the lack of complete operational data on actual transport routes to the customer, emissions from the transport of the finished product were calculated based on partial operational data and conservative model assumptions, which resulted in an overestimation of the footprint in this category.

- Use – greenhouse gas emissions generated during product use.

This primarily includes the assembly of the playground at the installation site, including the ground anchoring of the structure in the ground using concrete or flanges. During its service life, the playground does not generate significant greenhouse gas emissions, as it does not require energy supply, does not emit substances into the environment, and no regular maintenance work related to the consumption of materials or utilities is expected during its life cycle. For this reason, the impact of the use phase is limited to emissions generated during the installation process (travel by installers, concrete production, disposal of packaging materials, and fuel consumption from installers' travel).

- End of life – greenhouse gas emissions associated with the transport of used components to recycling plants or landfills, and waste recycling and disposal processes.

This includes the disposal of concrete and construction materials in accordance with the disposal scenarios for individual materials indicated in the environmental product declarations (EPDs).

The carbon footprint includes all greenhouse gas emissions, except those from excluded activities (see "Exclusions").

Data sources:

1) Activity data: Data on electricity consumption, the quantity and type of raw materials and materials needed for the production of products, transport data, and other data for calculations came from the company's internal records and from suppliers. They were provided by Buglo Play Sp. z o.o. both in email correspondence and in data collection templates.

2) Emission factors: OEKOBAU.DAT, EPD cards, GLEC, DEFRA 2024, GEMIS 5.1 v. 03.2023, Idemat 2025, the full list of sources is available in Appendix 1.

Data quality:

1) Activity data:

- calculations were based on primary data, supplemented where necessary by estimates and physical allocation. A detailed description of data quality for each stage of the analysis is included in the report,
- for construction materials, the closest available emission factors in the databases were used,
- the assumptions used by the Climate&Strategy Foundation were verified by members of the project team from Buglo Play Sp. z o.o.

2) Emission factors:

- Selected to best reflect the state of technology, time and geographical reference. The emission factors come from publicly available databases that are known and approved. The full list is provided in Appendix 1.

Methodology:
The carbon footprint calculation was based on the GHG Protocol's "Product Life Cycle Accounting and Reporting Standard" (see "Standard" above). It is based on five main principles:

1) relevance: the calculated carbon footprint accurately reflects the emissions of the product and serves the decision-making needs of users,
2) completeness: the calculated carbon footprint covers all relevant greenhouse gas emissions within the specified system boundaries. Greenhouse gas emissions not included have been documented and justified accordingly,
3) consistency: the methodology, data, and assumptions used ensure the comparability of the carbon footprint over time,
4) transparency: the collection, compilation, and calculation of data has been carried out in a transparent manner. The data and the methods of obtaining and using it have also been documented in a transparent manner,
5) accuracy: the data used is accurate, i.e., it is not systematically or intentionally inaccurate. Care has been taken to achieve the highest possible degree of accuracy, and uncertainties have been kept to a minimum.

Exclusions:
The verification found that the difference between the total weight of construction materials, taking into account technological losses, and the total weight of the playground is 0,63%. This value is within the accepted tolerance of 3% and does not significantly affect the carbon footprint calculation.

Process-related natural gas consumption (no activity data available) and the life cycle of consumables and construction materials for which no relevant emission factors have been identified were excluded from the analysis. The group of construction materials without assigned indicators accounts for approximately 4% of all items in the material list. In addition, emissions related to the operation of tools during product assembly at the target location were omitted. It has been estimated that the total share of all excluded elements in the total carbon footprint is marginal and does not significantly affect the final result.

Appendix 1, Sources

Emission factors

GEMIS 5.1 v. 03.2023: https://iinas.org/en/downloads/gemis-downloads/

Idemat 2025RevA8: https://www.ecocostsvalue.com/data-tools-books/

DEFRA 2024: https://www.gov.uk/government/publications/greenhouse-gas-reporting-conversion-factors-2024

GLEC (Global Logistics Emissions Council): https://smart-freight-centre-media.s3.amazonaws.com/documents/GLEC_FRAMEWORK_v3.1_March_2025_1-3.pdf

IPCC AR5 WGIII: https://www.ipcc.ch/assessment-report/ar5/

ENEA fuel structure: https://www.enea.pl/media/1696/struktura-paliwpdf.pdf

Other sources
EPD cards (LCA A1-A3: raw material supply, transport, manufacturing and C1-C4: deconstruction/demolition, transport, waste processing/recovery, disposal):

- OEKOBAU.DAT: https://www.oekobaudat.de/no_cache/en/database/search.html
- All other EPD cards, sourced from publicly available online sources, are included in the carbon footprint calculator's source documentation.

Other parameters needed to calculate the quantity or weight of materials were taken from technical data sheets and information on the manufacturer's websites. Documentation of these parameters is available in the project documentation provided to Buglo Play sp. z o.o.