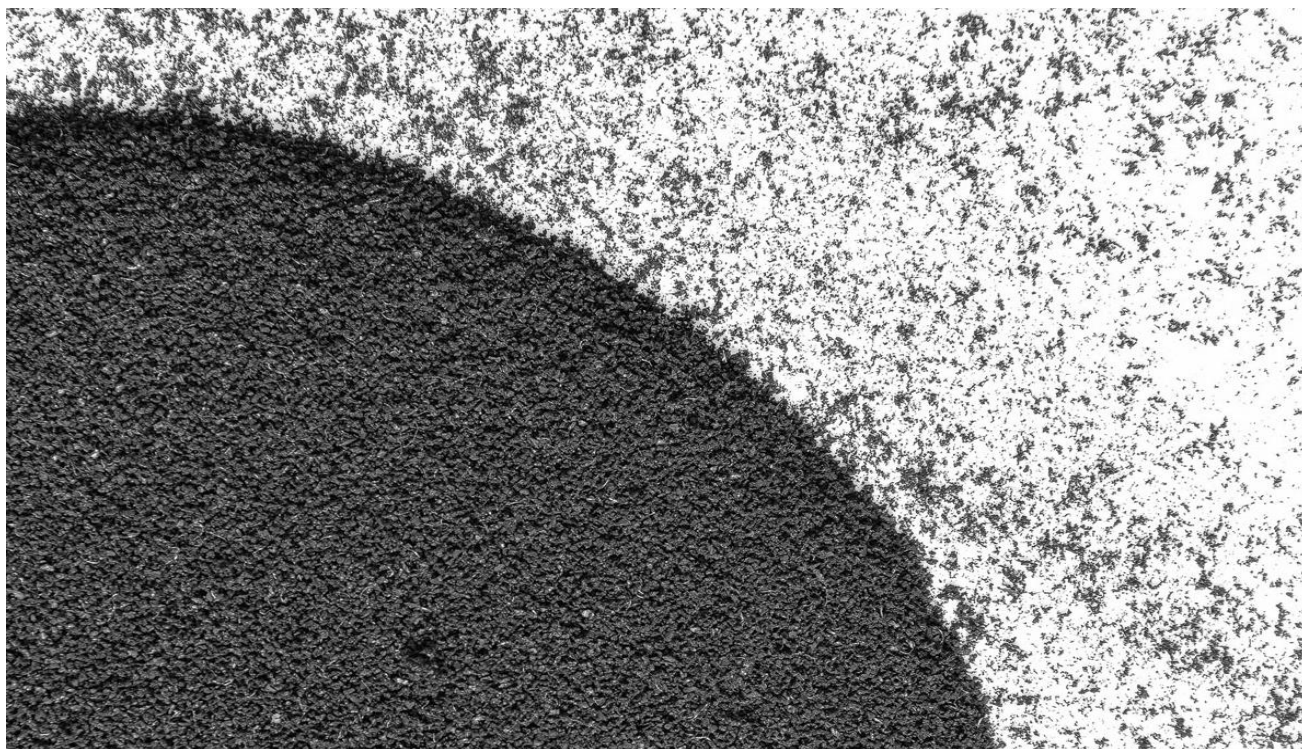




# ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025:2010

**Product name:**  
**GREEN POWDER – rubber powder**



**Producer:**  
**Recykl Organizacja Odzysku S.A.**  
**Address:**  
**ul. Letnia 3**  
**63-100 Śrem**  
**POLAND**



Issued on 20 October 2025  
Valid until 20 October 2030

## GENERAL INFORMATION

### EPD OWNER

|                                  |                                                                           |
|----------------------------------|---------------------------------------------------------------------------|
| <b>Manufacturer / EPD Holder</b> | Recykl Organizacja Odzysku S.A.                                           |
| <b>Address</b>                   | ul. Letnia 3, 63-100 Śrem, POLAND                                         |
| <b>Contact details</b>           | Aleksandra Polaszewska, Sustainability Manager<br>a.polaszewska@recykl.pl |
| <b>Website</b>                   | <a href="https://recykl.pl">https://recykl.pl</a>                         |

### PRODUCT IDENTIFICATION

|                               |                              |
|-------------------------------|------------------------------|
| <b>Product name</b>           | GREEN POWDER – rubber powder |
| <b>Place(s) of production</b> | Chełm, POLAND                |

### EPD INFORMATION

|                                        |                                                                                                                                                                                                                  |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>EPD Polska<br/>program operator</b> | Multicert Sp. z o.o.<br>Ul. Mydlarska 47, 04-690 Warszawa, Poland<br><a href="http://www.epd.org.pl">www.epd.org.pl</a> , <a href="mailto:epd@epd.org.pl">epd@epd.org.pl</a>                                     |
| <b>EPD standards</b>                   | This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.                                                                                                                                              |
| <b>Product category rules</b>          | The CEN standard EN 15804+A2 serves as the core PCR.                                                                                                                                                             |
| <b>EPD verification</b>                | Independent verification of this EPD and data, according to ISO 14025:<br><input type="checkbox"/> Internal certification <input checked="" type="checkbox"/> External verification                              |
| <b>EPD verifier</b>                    | Izabela Sztamberek-Sochan, Ph.D.                                                                                                                                                                                 |
| <b>EPD number</b>                      | EPD-P 06.10.2025                                                                                                                                                                                                 |
| <b>Registration:</b>                   | EPD Polska <a href="http://www.epd.org.pl">www.epd.org.pl</a>                                                                                                                                                    |
| <b>Publishing date</b>                 | 20 October 2025                                                                                                                                                                                                  |
| <b>EPD valid until</b>                 | 20 October 2030                                                                                                                                                                                                  |
| <b>Reasons for performing LCA</b>      | B2B                                                                                                                                                                                                              |
| <b>Accountability</b>                  | The EPD Holder is responsible for the information provided and evidence. Multicert Sp. z o.o. does not hold responsibility for the manufacturer information, life cycle assessment data nor supporting evidence. |

EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

## COMPANY INFORMATION

### HOLDER OF THE EPD

Recykl Organizacja Odzysku S.A.  
ul. Letnia 3, 63-100 Śrem  
POLAND

### COMPANY PROFILE

Recykl Organizacja Odzysku S.A. is part of the RECYKL Group – the largest tire recycling system in Poland and one of the industry leaders in Central and Eastern Europe. The company specializes in the collection, transport, recovery, and recycling of end-of-life tires, converting them into valuable secondary raw materials and industrial products.

RECYKL operates modern facilities located in Śrem, Krosno Odrzańskie, and Chełm, which are among the largest and most advanced tire recycling plants in the region. This infrastructure provides RECYKL with a unique position in Poland and one of the strongest in Europe, enabling the comprehensive processing of end-of-life tires.



*Figure 1: RECYKL's plant in Chełm*

The product portfolio includes rubber granulate and powder, recycled steel, alternative fuels, as well as innovative solutions such as SMAPOL® – a stabilizing additive for mineral-asphalt mixtures (MMA) produced from recovered textile fibers.

RECYKL is listed on the Warsaw Stock Exchange (WSE), which underlines its transparency and commitment to sustainable growth. Through its extensive collection network, in-house logistics, and advanced technologies, the company is a key partner in implementing circular economy principles, contributing to CO<sub>2</sub> reduction and the reintegration of secondary raw materials into the production cycle.

# PRODUCT INFORMATION

## PRODUCT DESCRIPTION

GREEN POWDER is a high-quality rubber powder obtained from the mechanical recycling of end-of-life tires (ELTs). It is produced from carefully selected tires through ambient mechanical grinding and multi-stage separation processes, ensuring homogeneity, purity, and repeatability of the chemical composition.

The product is supplied as a fine black powder, non-toxic and chemically stable. Advanced production lines operating in RECYKL's facilities guarantee consistent particle size distribution and compliance with industry standards.

Production is certified under the ISCC PLUS (International Sustainability and Carbon Certification PLUS) scheme confirming that GREEN POWDER is produced in compliance with sustainability principles and contributes to circular economy objectives.

## PRODUCT APPLICATION

GREEN POWDER is a fine rubber powder (typically 0.0–0.8 mm according to EN 14243) widely used across automotive and industrial sectors. It serves as a versatile raw material for:

- rubber and thermoplastic mixtures
- seals, wiper blades, extruded profiles, and other technical rubber goods
- thermoplastic polymer–rubber composites
- damping and cushioning elements such as shock absorbers, insulation mats, and flooring
- adhesives, construction products, and industrial blends
- regeneration processes to obtain regenerated rubber sheets, strips, or blocks

Thanks to its fine granulometry and high purity, GREEN POWDER ensures excellent processability, helps reduce production costs, and enhances the durability and functional performance of the final products.

## ADDITIONAL TECHNICAL INFORMATION

- Available fractions, typically: 0.0–0.4 mm, 0.0–0.6 mm, 0.0–0.8 mm,
- Bulk density: ~450 kg/m<sup>3</sup>
- Moisture content: ≤ 1%
- Ash content: ≤ 8%
- Purity: minimal steel and textile contamination (<0.1%)
- Color: black
- Packaging: 1000 kg BIG-BAGs

## REFERENCE STANDARDS

The products covered by this Environmental Product Declaration are manufactured in accordance with the following standard:

EN 14243-1:2019 - Materials obtained from end of life tyres - Part 1: General definitions related to the methods for determining their dimension(s) and impurities

## PRODUCT RAW MATERIAL COMPOSITION

Rubbers from end-of-life tires (NR/IR, SBR, BR, IIR): ~53%

Carbon black: ~29%

Mineral substances (ZnO, SiO<sub>2</sub>, CaO, MgO, Fe<sub>2</sub>O<sub>3</sub>): ~8%

Sulfur: ~2%

Organic auxiliaries (antioxidants, oils, processing aids): ~8%

## SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0.1% (1000 ppm).

# PRODUCT LIFE-CYCLE

## DECLARED UNIT AND SYSTEM BOUNDARY

The declared unit (DU) of this EPD is 1 tonne (1 t) of GREEN POWDER.

This EPD is a cradle-to-gate with options declaration in accordance with EN 15804+A2:2019, covering the product stage (A1–A3) and end-of-life stages with potential benefits and loads beyond the system boundary (C1–C4 and Module D).

## RAW MATERIALS ACQUISITION (A1)

**Module A1** The only input material for GREEN POWDER production is end-of-life (EoL) tires, which enter the system as post-consumer waste. According to the cut-off principle defined in EN 15804, such materials do not carry environmental burdens from their previous life cycle. Therefore, no environmental impacts from tires themselves are reported in A1.

Only the packaging materials used for GREEN POWDER (1000 kg big-bags with LDPE foil hood), accounted for in A1 module according to actual consumption.

Additionally, due to the biogenic carbon content of natural rubber in the processed tires, a biogenic carbon credit of –905 kg CO<sub>2e</sub> per 1t of the product is included in Module A1.

## TRANSPORT (A2)

**Module A2** covers the transport of EoL tires from collection points to the recycling facility in Chelm. Transport is carried out mainly by road using diesel trucks. Additionally, the transport of packaging materials to the recycling facility is also included. Since the tires are a shared feedstock for several co-products, the associated impacts are allocated to GREEN POWDER and other outputs based on economic allocation, reflecting their relative market values.

The recycling process generates multiple co-products:

- GREEN POWDER (Rubber powder)
- SMAPOL®,
- GREEN GRAN (Rubber granulate),
- Recovered steel,
- Alternative fuel produced from rubber and textile fractions.

## MANUFACTURING (A3)

**Module A3** includes all processes at the RECYKL Chełm plant where EoL tires are transformed into GREEN POWDER. The process involves shredding, steel separation, granulation, textile fiber recovery, fine grinding and sieving. The inputs to and outputs from production include:

- Electricity (the main input in production) is allocated physically to technological lines based on the actual mass of products generated at each stage. This ensures proportional attribution of energy consumption to GREEN POWDER relative to other co-products.

Other flows that cannot be directly assigned to specific lines are allocated by economic allocation (share of product revenues in 2024). These include:

- Inputs: LPG used for forklifts, tap water.
- Outputs (wastes): water from melted snow in tires, dust/mud washed off tires, municipal sewage.

The final product is stored at the plant until distribution.

## END OF LIFE (C1–C4, D)

Because GREEN POWDER contains biogenic carbon originating from the natural rubber present in end-of-life (EoL) tires, its end-of-life stage is included in accordance with EN 15804+A2:2019. Accounting for this carbon is essential to ensure that potential biogenic CO<sub>2</sub> emissions occurring after the use phase are correctly reflected in the life cycle assessment.

Once incorporated into products containing rubber (e.g. technical rubber goods, elastomeric mixtures), GREEN POWDER becomes an integral part of the final material matrix and undergoes physical and chemical changes during processing and service life. It cannot be technically separated or individually recycled after use. Consequently, GREEN POWDER does not have a distinct end-of-life pathway; its fate is inseparably linked to the rubber products into which it has been incorporated.

For this reason, modules C1–C4 and D are modeled using representative processes for post-consumer rubber products rather than for GREEN POWDER alone. This approach reflects typical European end-of-life practices for rubber materials and uses company-specific primary data from this EPD for transport (Module A2) and recycling (Module A3) of used passenger car tires.

**Module C1** (dismantling/deconstruction) is assumed to be negligible (0), as removal of rubber goods is manual and does not require significant energy or material inputs.

**Module C2** (transport): covers the collection and delivery of post-use rubber to recycling or recovery facilities. Transport modelling is based on the same real-world logistics data as used in Module A2, with distances derived from the company's 2024 delivery records (weighted average distance 275 km).

**Module C3** (waste processing) includes mechanical treatment and material recovery (e.g. shredding, granulation, separation) at facilities such as the RECYKL Chełm plant, using company-specific operational data from Module A3; about 95 % of post-consumer rubber is assumed to be recycled or reused.

**Module C4** covers the final management of the small non-recyclable fraction (~5 %) which is assumed to be incinerated with energy recovery. Additionally, at this stage the biogenic carbon from the natural rubber fraction is released as CO<sub>2</sub>, closing the biogenic carbon loop and offsetting the credit applied in A1.

**Module D** - Potential benefits and burdens beyond the system boundary are calculated based on:

- material substitution of virgin rubber and carbon black, reflecting the actual composition of GREEN POWDER; and
- energy substitution from the recovery of heat and electricity in C4.

By reintroducing secondary rubber and carbon black into elastomeric compounds and recovering energy from the 5 % incinerated fraction, the need for virgin materials and primary energy is reduced and associated environmental burdens are avoided. This modelling follows the cut-off methodology and is consistent with EN 15804+A2:2019.

Detailed assumptions regarding recycling (95 %), energy recovery in C4 (5 %), transport distances and data sources (company-specific operational data and Ecoinvent 3.9.1) are provided in the Estimates and Assumptions section.

# LIFE-CYCLE ASSESSMENT

## LIFE-CYCLE ASSESSMENT INFORMATION

|                        |           |
|------------------------|-----------|
| <b>Period for data</b> | 2024 year |
|------------------------|-----------|

## DECLARED AND FUNCTIONAL UNIT

|                      |              |
|----------------------|--------------|
| <b>Declared unit</b> | 1 tonne (1t) |
|----------------------|--------------|

|                               |         |
|-------------------------------|---------|
| <b>Mass per declared unit</b> | 1 tonne |
|-------------------------------|---------|

## BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

|                                                 |     |
|-------------------------------------------------|-----|
| <b>Biogenic carbon content in product, kg C</b> | 247 |
|-------------------------------------------------|-----|

|                                                   |   |
|---------------------------------------------------|---|
| <b>Biogenic carbon content in packaging, kg C</b> | - |
|---------------------------------------------------|---|

## SYSTEM BOUNDARY

The scope of this EPD is cradle-to-gate with options.

The study includes modules A1 (Raw material supply), A2 (Transport) and A3 (Manufacturing), as well as the end-of-life stages C1–C4 and the module D (potential benefits and loads beyond the system boundary).

Modules A4–A5 are not declared (MND), while use-stage modules B1–B7 are considered not relevant (MNR) for this product, since GREEN POWDER becomes permanently integrated into rubber products and does not undergo a distinct use phase.

The end-of-life stages (C1–C4) and Module D are modelled at the level of typical post-consumer rubber products into which GREEN POWDER is incorporated. This approach is necessary because, once mixed into elastomeric compounds, GREEN POWDER cannot be technically separated or recovered as an individual product. Therefore, representative European end-of-life scenarios for rubber materials are applied for the End-of-Life phases and Module D.

| Product stage  |           | Assembly stage |           |          | Use stage |             |        |             |               |                        |                       | End of life stage |           |                  |          | Beyond the system boundaries |
|----------------|-----------|----------------|-----------|----------|-----------|-------------|--------|-------------|---------------|------------------------|-----------------------|-------------------|-----------|------------------|----------|------------------------------|
| A1             | A2        | A3             | A4        | A5       | B1        | B2          | B3     | B4          | B5            | B6                     | B7                    | C1                | C2        | C3               | C4       | D                            |
| X              | X         | X              | MND       | MND      | MNR       | MNR         | MNR    | MNR         | MNR           | MNR                    | MNR                   | X                 | X         | X                | X        | X                            |
| Raw materials` | Transport | Manufacturing  | Transport | Assembly | Use       | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | Deconstr./demol.  | Transport | Waste processing | Disposal | Reuse / Recycling            |

Modules not declared = MND. Modules not relevant = MNR.

Diagram 1 – System Boundary

## CUT-OFF CRITERIA

All mandatory modules A1–A3 are included. C1–C4 and D are declared in line with EN 15804+A2 due to the biogenic carbon content. Modules C1–C4 and D are declared as the end-of-life fate of GREEN POWDER is linked to the typical recycling and disposal routes of post-consumer rubber products.

The life cycle assessment includes all industrial processes from raw material acquisition through production (A1–A3) and the end-of-life phases (C1–C4) with potential benefits and loads beyond the system boundary (Module D). Distribution, assembly and use stages are outside the declared system boundary.

All major raw material and energy inputs are included. All unit process inputs and outputs for which data were available have been considered in the calculations. No unit process was neglected with a contribution greater than 1 % of the total mass or energy flows, and the sum of all neglected input and output flows does not exceed 5 % of the total energy use or mass.

The following are excluded in accordance with EN 15804+A2:2019: production of capital goods, construction and maintenance of infrastructure, maintenance and operation of production equipment, personnel-related activities, and energy and water consumption related to company management and sales activities. The study does not exclude any modules or processes that are mandatory under EN 15804:2012+A2:2019 and does not exclude any hazardous materials or substances.

## ESTIMATES AND ASSUMPTIONS

### ESTIMATES AND ASSUMPTIONS – GREEN POWDER

This LCA study has been conducted in accordance with the applicable methodological principles, including performance metrics, system boundaries, data quality requirements, allocation procedures, and rules for data inclusion and exclusion. The key assumptions and estimates applied in the modelling are outlined below:

#### Module A1

End-of-life (EoL) tires enter the system as post-consumer waste with no environmental burdens from previous life cycle stages, in line with the cut-off principle of EN 15804.

Therefore, the only inputs considered in A1 are packaging materials (1,000 kg big-bags), modelled using datasets from the ecoinvent database.

GREEN POWDER contains biogenic carbon derived from the natural rubber present in end-of-life tires. Using composition data from ETRMA (typical shares of natural and synthetic rubber in truck, passenger/light truck and specialty tires) combined with the actual 2024 tire collection mix at RECYKL, the weighted average natural rubber content in the processed tires was calculated at 28.1 %. This corresponds to about 281 kg natural rubber per 1 tonne of GREEN POWDER, which translates to approximately 247 kg of biogenic carbon and a biogenic carbon credit of –905 kg CO<sub>2</sub>e/t applied in Module A1.

## Module A2

Transport of EoL tires from collection points to the recycling facility in Chełm is carried out by road using a mix of truck sizes based on company-specific logistics data for 2024: approximately 17 % by trucks <10 t, 64 % by trucks 10–16 t, and 19 % by trucks >16 t (by transported mass). The weighted average transport distance, calculated from actual 2024 delivery records representing 80 % of total shipped volume, is 275 km.

Since EoL tires are the shared feedstock for several co-products (SBR granulate, GREEN POWDER, SMAPOL®, recovered steel, and alternative fuel), transport impacts are allocated using economic allocation based on 2024 revenues.

Transport of packaging materials to the plant is included and allocated according to actual consumption.

## Module A3

Electricity consumption is allocated physically to production lines based on the actual mass of products generated at each stage.

Other inputs and outputs that cannot be directly attributed (LPG for forklifts, tap water, wastes such as melted snow water, dust/mud washed off tires, and municipal sewage) are allocated using economic allocation.

No on-site waste treatment with energy recovery is included in the model. Waste fractions that leave the system are reported according to their treatment pathway (e.g., wastewater treatment, municipal waste handling).

## Module C1

Deconstruction and dismantling of post-consumer rubber products is assumed to be negligible (0), as removal is manual and does not require significant energy or material inputs.

## Module C2

Transport of post-consumer rubber to recycling or recovery facilities is modelled based on primary data from Module A2, assuming weighted average transport distance of 275 km by mix of truck sizes based on company-specific logistics data for 2024.

## Module C3

Waste processing is modelled as mechanical treatment and material recovery (e.g., shredding, granulation, separation) at facilities such as the RECYKL Chełm plant, using company-specific operational data from Module A3. It is assumed that 95 % of post-consumer rubber is recycled or reused.

## Module C4

The remaining 5 % is assumed to be incinerated with energy recovery. During this stage the biogenic carbon contained in natural rubber is released as CO<sub>2</sub>, closing the biogenic carbon balance with the sequestration applied in Module A1.

## Module D

Potential benefits beyond the system boundary include material substitution of virgin rubber and carbon black as well as energy substitution from the recovered electricity and heat generated during incineration in C4. These avoided burdens are calculated using the cut-off system model of Ecoinvent 3.9.1 and are consistent with EN 15804+A2:2019.

### D1. Material substitution (from 95 % recycling):

The recycled GREEN POWDER is assumed to replace virgin rubber and carbon black according to the actual product composition. A quality factor  $\eta = 0.8$  is applied to reflect possible performance differences compared to virgin raw materials.

Per 1 t of GREEN POWDER, this corresponds to approximately 0.41 t of rubber and 0.22 t of carbon black effectively substituted.

### D2. Energy substitution (from 5 % incineration):

The remaining 5 % of the product is assumed to be incinerated with energy recovery assuming heat recovery of 500 MJ and electricity recovery of 44 kWh.

## ALLOCATION

The allocation is carried out in accordance with the provisions of EN 15804+A2. The information provided for the reference year 2024 covers all products generated from the recycling of end-of-life tires at the RECYKL facility in Chełm (including GREEN GRAN, GREEN POWDER, SMAPOL®, recovered steel, and alternative fuel).

For Module A1, no raw material burdens are assigned to end-of-life tires, as they enter the system as post-consumer waste in line with the cut-off principle. Only packaging materials are included, based on actual consumption (1,000 kg big-bags). However, the indicator "Use of secondary materials" corresponds to the allocated share of end-of-life tires (post-consumer waste) attributed to the declared unit of 1 t of GREEN POWDER, calculated using economic allocation. This approach is consistent with EN 15804+A2:2019, which requires reporting of secondary material use even if no upstream burdens are assigned to waste inputs (cut-off approach).

For Module A2, transport impacts are allocated to GREEN POWDER and other co-products using economic allocation, proportional to their market value.

For Module A3, electricity is allocated physically to production lines based on the mass of outputs at each stage, while other inputs and outputs (LPG for forklifts, tap water, wastewater, minor wastes) are allocated economically.

All allocations are consistent with EN 15804+A2:2019 and ISO 14044, ensuring that material and energy flows, as well as emissions, are appropriately distributed to the declared unit of 1 tonne of GREEN POWDER.

## DATA QUALITY

For foreground data, the LCA study relies on high-quality primary data gathered by Recykl Organizacja Odzysku S.A. for the year 2024, covering the recycling of end-of-life tires and the production of GREEN POWDER, including actual energy and fuel consumption, packaging use, production volumes, and transport distances of raw materials (EoL tires and packaging) to the Chełm facility.

All relevant background data sets have been sourced from the ecoinvent 3.9.1 database within the OpenLCA software. This database provides consistent and transparent life cycle inventory data, documented in the ecoinvent online system and supporting database reports.

## GEOGRAPHIC REPRESENTATIVENESS

The specified land or region where the product system is manufactured and managed is Poland, Europe.

## ENVIRONMENTAL IMPACT DATA: GREEN POWDER - rubber powder

### CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

| Impact category | Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | A1        | A2       | A3       | A4-A5<br>B1-B7 | C1       | C2       | C3       | C4       | D         |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------|----------|----------|----------------|----------|----------|----------|----------|-----------|
| GWP-Total       | kg CO2 eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | -8,97E+02 | 1,40E+00 | 1,23E+02 | MND            | 0,00E+00 | 7,69E+01 | 1,16E+02 | 1,06E+03 | -1,79E+03 |
| GWP-fossil      | kg CO2 eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 7,86E+00  | 1,40E+00 | 1,22E+02 | MND            | 0,00E+00 | 7,68E+01 | 1,16E+02 | 1,58E+02 | -1,80E+03 |
| GWP-biogenic    | kg CO2 eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | -9,05E+02 | 1,17E-03 | 6,43E-01 | MND            | 0,00E+00 | 6,35E-02 | 6,11E-01 | 9,05E+02 | 1,11E+01  |
| GWP-luluc       | kg CO2 eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 6,20E-03  | 7,30E-04 | 3,63E-02 | MND            | 0,00E+00 | 3,89E-02 | 3,45E-02 | 8,90E-04 | -1,29E+00 |
| ODP             | kg CFC-11 eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | 8,84E-08  | 3,04E-08 | 6,39E-07 | MND            | 0,00E+00 | 1,67E-06 | 6,07E-07 | 1,73E-07 | -4,73E-05 |
| AP              | mol H+ eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 3,47E-02  | 2,94E-03 | 8,60E-01 | MND            | 0,00E+00 | 1,61E-01 | 8,17E-01 | 2,25E-02 | -8,29E+00 |
| EP-freshwater   | kg P eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1,78E-03  | 1,10E-04 | 1,90E-01 | MND            | 0,00E+00 | 5,73E-03 | 1,80E-01 | 4,00E-04 | -3,74E-01 |
| EP-marine       | kg N eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 6,77E-03  | 7,10E-04 | 1,32E-01 | MND            | 0,00E+00 | 3,93E-02 | 1,25E-01 | 8,88E-03 | -1,53E+00 |
| EP-terrestrial  | mol N eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 7,15E-02  | 7,17E-03 | 1,13E+00 | MND            | 0,00E+00 | 3,98E-01 | 1,08E+00 | 9,62E-02 | -1,53E+01 |
| POCP            | kg NMVOC eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2,78E-02  | 4,47E-03 | 3,29E-01 | MND            | 0,00E+00 | 2,47E-01 | 3,13E-01 | 2,50E-02 | -9,28E+00 |
| ADPE (disc.2)   | kg Sb eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1,80E-05  | 3,87E-06 | 4,26E-05 | MND            | 0,00E+00 | 2,00E-04 | 4,04E-05 | 4,26E-06 | -1,37E-02 |
| ADPF (disc.2)   | MJ, (NCV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2,29E+02  | 1,98E+01 | 1,39E+03 | MND            | 0,00E+00 | 1,09E+03 | 1,32E+03 | 2,26E+01 | -5,10E+04 |
| WDP (disc.2)    | m3 World eq.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 2,81E+00  | 1,04E-01 | 2,56E+01 | MND            | 0,00E+00 | 5,60E+00 | 2,44E+01 | 4,42E+00 | -7,90E+02 |
| Acronyms        | GWP-total – Climate change, total global warming potential; GWP-fossil – Climate change, fossil fuels; GWP-biogenic – Climate change, biogenic carbon; GWP-luluc – Climate change, land use and land use change; ODP – Ozone layer depletion; AP – Acidification of terrestrial and freshwater environments; EP-freshwater – Eutrophication, freshwater; EP-marine – Eutrophication, marine; EP-terrestrial – Eutrophication, terrestrial; POCP – Photochemical ozone formation (smog formation); ADPE – Abiotic depletion, minerals and metals; ADPF – Abiotic depletion, fossil fuels; WDP – Water scarcity (water use deprivation potential); NCV – net calorific value. |           |          |          |                |          |          |          |          |           |
| Disclaimer 2    | The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |           |          |          |                |          |          |          |          |           |

## ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

| Impact category | Unit                                                                                                                                                                                                                                                                                                | A1       | A2       | A3       | A5<br>B1-B7 | C1       | C2       | C3       | C4       | D         |
|-----------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|-------------|----------|----------|----------|----------|-----------|
| PM              | Disease Incidence                                                                                                                                                                                                                                                                                   | 3,32E-07 | 6,69E-08 | 1,77E-06 | MND         | 0,00E+00 | 3,78E-06 | 1,68E-06 | 1,11E-07 | -1,50E-04 |
| IRP (disc.1)    | kBq U235 eq.                                                                                                                                                                                                                                                                                        | 4,17E-01 | 3,49E-02 | 3,86E+00 | MND         | 0,00E+00 | 1,85E+00 | 3,67E+00 | 7,87E-02 | -1,02E+02 |
| ETP-fw (disc.2) | CTUe                                                                                                                                                                                                                                                                                                | 2,28E+01 | 1,01E+01 | 4,15E+02 | MND         | 0,00E+00 | 5,53E+02 | 3,94E+02 | 2,39E+02 | -2,13E+04 |
| HTP-c (disc.2)  | CTUh                                                                                                                                                                                                                                                                                                | 1,91E-09 | 6,37E-10 | 3,84E-08 | MND         | 0,00E+00 | 3,40E-08 | 3,65E-08 | 1,63E-09 | -6,72E-07 |
| HTP-nc (disc.2) | CTUh                                                                                                                                                                                                                                                                                                | 5,24E-08 | 1,18E-08 | 1,83E-06 | MND         | 0,00E+00 | 6,45E-07 | 1,74E-06 | 5,98E-08 | -1,44E-05 |
| SQP (disc.2)    | Dimensionless                                                                                                                                                                                                                                                                                       | 1,39E+01 | 9,33E+00 | 3,81E+02 | MND         | 0,00E+00 | 5,33E+02 | 3,62E+02 | 7,69E+00 | -6,46E+03 |
| Acronyms        | PM – Particulate matter emissions (potential incidence of disease); IRP – Ionising radiation, human health exposure potential; ETP-fw – Ecotoxicity, freshwater; HTP-c – Human toxicity, cancer effects; HTP-nc – Human toxicity, non-cancer effects; SQP – Land use related impacts, soil quality. |          |          |          |             |          |          |          |          |           |
| Disclaimer 1    | This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible                                                                                                                   |          |          |          |             |          |          |          |          |           |
| Disclaimer 2    | The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.                                                                                                                    |          |          |          |             |          |          |          |          |           |

## USE OF NATURAL RESOURCES

| Impact category | Unit                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | A1       | A2       | A3       | A5<br>B1-B7 | C1       | C2       | C3       | C4       | D         |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|-------------|----------|----------|----------|----------|-----------|
| PERE            | MJ, (NCV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5,92E+00 | 3,81E-01 | 1,22E+02 | MND         | 0,00E+00 | 2,02E+01 | 1,16E+02 | 1,14E+00 | -1,43E+03 |
| PERM            | MJ, (NCV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND         | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| PERT            | MJ, (NCV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5,92E+00 | 3,81E-01 | 1,22E+02 | MND         | 0,00E+00 | 2,02E+01 | 1,16E+02 | 1,14E+00 | -1,43E+03 |
| PENRE           | MJ, (NCV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2,29E+02 | 1,98E+01 | 1,39E+03 | MND         | 0,00E+00 | 1,09E+03 | 1,32E+03 | 2,26E+01 | -5,10E+04 |
| PENRM           | MJ, (NCV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND         | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| PENRT           | MJ, (NCV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 2,29E+02 | 1,98E+01 | 1,39E+03 | MND         | 0,00E+00 | 1,09E+03 | 1,32E+03 | 2,26E+01 | -5,10E+04 |
| SM              | kg                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1,00E+03 | 0,00E+00 | 0,00E+00 | MND         | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| RSF             | MJ, (NCV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND         | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| NRSF            | MJ, (NCV)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND         | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00  |
| FW              | m3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | 1,31E-01 | 3,51E-03 | 3,67E+00 | MND         | 0,00E+00 | 1,88E-01 | 3,49E+00 | 2,39E-01 | -2,43E+01 |
| Acronyms        | PERE – Use of renewable primary energy as energy carriers; PERM – Use of renewable primary energy resources as raw materials; PERT – Total use of renewable primary energy resources (PERE + PERM); PENRE – Use of non-renewable primary energy as energy carriers; PENRM – Use of non-renewable primary energy resources as raw materials; PENRT – Total use of non-renewable primary energy resources (PENRE + PENRM); SM – Use of secondary material; RSF – Use of renewable secondary fuels; NRSF – Use of non-renewable secondary fuels; FW – Net use of fresh water; NCV - net calorific value. |          |          |          |             |          |          |          |          |           |

## OUTPUT FLOWS

| Impact category | Unit                                                                                                                                                              | A1       | A2       | A3       | A5<br>B1-B7 | C1       | C2       | C3       | C4       | D        |
|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----------|----------|-------------|----------|----------|----------|----------|----------|
| CRU             | kg                                                                                                                                                                | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND         | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 | 0,00E+00 |
| MFR             | kg                                                                                                                                                                | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND         | 0,00E+00 | 0,00E+00 | 9,50E+02 | 0,00E+00 | 0,00E+00 |
| MER             | kg                                                                                                                                                                | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND         | 0,00E+00 | 0,00E+00 | 0,00E+00 | 5,00E+01 | 0,00E+00 |
| EEE             | MJ                                                                                                                                                                | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND         | 0,00E+00 | 0,00E+00 | 0,00E+00 | 1,60E+02 | 0,00E+00 |
| EET             | MJ                                                                                                                                                                | 0,00E+00 | 0,00E+00 | 0,00E+00 | MND         | 0,00E+00 | 0,00E+00 | 0,00E+00 | 5,00E+02 | 0,00E+00 |
| Acronyms        | CRU – Components for re-use; MFR – Materials for recycling; MER – Materials for energy recovery; EEE – Exported electrical energy; EET – Exported thermal energy. |          |          |          |             |          |          |          |          |          |

## WASTE

| Impact category | Unit                                                                                                   | A1       | A2       | A3       | A5<br>B1-B7 | C1       | C2       | C3       | C4       | D         |
|-----------------|--------------------------------------------------------------------------------------------------------|----------|----------|----------|-------------|----------|----------|----------|----------|-----------|
| HWD             | kg                                                                                                     | 1,20E-04 | 1,30E-04 | 1,21E-03 | MND         | 0,00E+00 | 6,89E-03 | 1,15E-03 | 1,90E-04 | -1,73E-01 |
| NHWD            | kg                                                                                                     | 1,28E-02 | 6,40E-04 | 1,69E+02 | MND         | 0,00E+00 | 3,41E-02 | 1,60E+02 | 2,44E-03 | -6,26E-01 |
| RWD             | kg                                                                                                     | 1,00E-04 | 8,59E-06 | 9,50E-04 | MND         | 0,00E+00 | 4,50E-04 | 9,00E-04 | 2,02E-05 | -2,52E-02 |
| Acronyms        | HWD – Hazardous waste disposed; NHWD – Non-hazardous waste disposed; RWD – Radioactive waste disposed. |          |          |          |             |          |          |          |          |           |

## SCENARIO DOCUMENTATION

### Manufacturing energy scenario documentation

| Scenario parameter                  | Value                                                                                                                                   |
|-------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Electricity data source and quality | Emission Factors for Electricity in Poland reported in December 2024 by KOBiZE - the National Centre for Emissions Management in Poland |
| Electricity CO <sub>2</sub> e / kWh | 0,701 kg CO <sub>2</sub> e / kWh                                                                                                        |

## BIBLIOGRAPHY

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations. Principles and procedures.

ISO 14040:2006 Environmental management – Life cycle assessment – Principles and frameworks.

ISO 14044:2006 Environmental management – Life cycle assessment – Requirements and guidelines.

EN 15804:2012+A2:2019 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.

EN 15978:2011 Sustainability of construction works – Assessment of environmental performance of buildings – Calculation method.

Ecoinvent Centre (2023). ecoinvent database v3.9.1. Swiss Centre for Life Cycle Inventories, Zurich, Switzerland.

European Tyre and Rubber Manufacturers' Association (ETRMA) (2025). Quarterly Replacement Tyre Market Review Q1 2025. Brussels, Belgium.

European Tyre and Rubber Manufacturers' Association (ETRMA) (2023). Natural Rubber and its Supply Chain: Facts and Specificities. Brussels, Belgium.

KOBiZE (2024). Wskaźniki emisyjności CO<sub>2</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO i pyłu całkowitego dla energii elektrycznej. National Centre for Emissions Management (KOBiZE), Warsaw, Poland.

Multicert Sp. z o.o. (2024). General Programme Instructions of the EPD Poland Programme, Warsaw, Poland.

## EPD VERIFICATION:

The verification procedure for this Environmental Product Declaration (EPD) has been carried out in accordance with the requirements of ISO 14025 standards. Once the verification process is complete, the EPD remains valid for a period of 5 years. There is no need to recalculate the parameters contained in the EPD after this period, provided that the data underlying the declaration have not changed substantially.

## EPD CONTRIBUTORS

|                                    |                                                  |
|------------------------------------|--------------------------------------------------|
| <b>Manufacturer representative</b> | Aleksandra Polaszewska<br>Sustainability Manager |
| <b>EPD verifier</b>                | Izabela Sztamberek-Sochan, Ph.D.                 |

**Note:** The sole ownership, liability, and liability of this declaration are with the owner. Construction product declarations may not be comparable if they do not comply with EN 15804. For detailed information on comparability, please refer to EN 15804 and ISO 14025.

## EPD Polska Certificate



# CERTIFICATE

## TYPE III EPD DECLARATION

(ENVIRONMENTAL PRODUCT DECLARATION)

**Reg. No. EPD-P 06.10.2025**



This document confirms that the Environmental Product Declaration developed by **Recykl Organizacja Odzysku S.A.** for

**GREEN POWDER – rubber powder**

manufactured in accordance with standard:

**EN 14243-1:2019,**

meets the requirements of standards **EN 15804:2012+A2:2019** and **ISO 14025**, and that the data contained therein has been prepared correctly.

The Declaration was published on October 20, 2025 and is valid until October 20, 2030, or until it is deregistered or its publication on the website [www.epd.org.pl](http://www.epd.org.pl) is discontinued.

Authenticity of this certificate can be confirmed in the public register at [www.epd.org.pl](http://www.epd.org.pl)



**Izabela Sztamberek-Sochan, Ph.D.**  
EPD Polska Verifier



**Grzegorz Survara**  
CEO Multicert Sp. z o.o.

Warsaw, October 20, 2025