

ENVIRONMENTAL PRODUCT DECLARATION

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

Product name:
SMAPOL® – additive for mineral–asphalt mixtures



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

Manufacturer / EPD Holder	Recykl Organizacja Odzysku S.A.
Address	ul. Letnia 3, 63-100 Śrem, POLAND
Contact details	Aleksandra Polaszewska, Sustainability Manager a.polaszewska@recykl.pl
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PRODUCT IDENTIFICATION

Product name	SMAPOL® – additive for mineral-asphalt mixtures
Place(s) of production	Chełm, POLAND

EPD INFORMATION

EPD Poland program operator	Multicert Sp. z o.o. Ul. Mydlarska 47, 04-690 Warszawa, Poland www.epd.org.pl , epd@epd.org.pl
EPD standards	This EPD is in accordance with EN 15804+A2 and ISO 14025 standards.
Product category rules	The CEN standard EN 15804+A2 serves as the core PCR.
EPD verification	Independent verification of this EPD and data, according to ISO 14025: ☐ Internal certification ☒ External verification
EPD verifier	Izabela Sztamberek Sochan, Ph.D.
EPD number	EPD-P 07.10.2025
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Reasons for performing LCA	B2B
Accountability	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 CO₂ reduction and the reintegration of secondary raw materials into the production cycle.

PRODUCT INFORMATION

PRODUCT DESCRIPTION

SMAPOL® is an innovative, sustainable, and effective stabilizing additive for mineral–asphalt mixtures (MMA), designed to improve the durability and performance of asphalt. The product is obtained from high-strength synthetic fibers (polyester, polyamide, polypropylene) recovered through the recycling of end-of-life tires.

The product is supplied in the form of dark-grey cylindrical pellets, which are non-toxic and insoluble in water. The production technology includes multi-stage mechanical cleaning, activation, and modification of the fibers to ensure consistent quality and performance. The material is non-toxic and chemically stable.

By utilizing end-of-life tires as the main raw material, SMAPOL® supports the principles of the circular economy – making use of textile fibers that were previously unprocessed and typically incinerated as alternative fuel.

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

PRODUCT APPLICATION

SMAPOL® is used for:

- preventing segregation, delamination, and binder drain-off;
- providing dispersed reinforcement of the MMA structure, particularly in mixtures with an increased binder content (e.g., SMA, MA);
- reducing binder consumption while achieving improved strength, water and frost resistance, and deformation resistance, compared to cellulose fiber-based additives.

Typical applications include road surfaces such as highways, urban streets, airports, parking lots, driveways, and pavements in all road–climatic zones. The recommended dosage is typically 0.2–0.6% of the mineral aggregate mass (equivalent to 2–6 kg per tonne), depending on the binder type and aggregate grading.

ADDITIONAL TECHNICAL INFORMATION

- Pellet length: 5–25 mm
- Pellet diameter: approx. 6 mm
- Bulk density: 410–460 kg/m³
- Moisture content: ≤ 7%
- Pellet strength: approx. 5–10 kgf
- Content of particles < 5 mm: max. 3%
- Dosage: 0.2–0.6% of the mineral aggregate mass (equivalent to 2–6 kg per tonne), depending on the binder type and aggregate grading. Lightweight yet stable structure allows versatile application and flexible space design.

REFERENCE STANDARDS

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

EN 14243-2:2019 – Materials obtained from end-of-life tyres – Part 2: Granulates and powders – Methods for determining particle size distribution and impurities.

PRODUCT RAW MATERIAL COMPOSITION

Fibers and rubber from end-of-life tires: average composition – about 75% fibers and 15% recycled rubber.

Other components: small amounts of bitumen, wax, and additives (<1%).

Residual rubber provides additional mechanical and acoustic benefits (e.g., noise reduction, durability improvements).

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 SMAPOL®.

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 SMAPOL® 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+A2, such materials do not carry environmental burdens from their previous life cycle. Therefore, no impacts from tire production, use or transport are reported in A1.

Only the materials used for SMAPOL® (500 kg big-bags and LDPE stretch foil) are accounted for according to actual consumption.

Additionally, due to the biogenic carbon content of natural rubber in the processed tires, a biogenic carbon credit of –229 kg CO₂e 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 Chełm. 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 SMAPOL® and other outputs based on economic allocation, reflecting their relative market values.

The recycling process generates multiple co-products:

- SMAPOL®,
- Rubber powder (GREEN POWDER),
- Rubber granulate (GREEN GRAN),
- 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 SMAPOL®. The process involves shredding, steel separation, granulation, textile fiber recovery, and pelletizing. 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 SMAPOL® 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 SMAPOL® contains biogenic carbon originating from the natural rubber present in end-of-life tires, its end-of-life stage must be included in accordance with EN 15804+A2:2019. Accounting for this carbon is essential to ensure that potential biogenic CO₂ emissions occurring after the use phase are correctly reflected in the life cycle assessment.

The end-of-life modelling is based on typical European and Polish asphalt recycling practice in 2025, assumed valid for the next five years. Once incorporated into asphalt mixtures, SMAPOL® fibers and pellets become permanently integrated with mineral aggregates and bitumen. They undergo physical transformation during asphalt production and service life and cannot be technically separated or recovered as an individual product. Consequently, SMAPOL® does not have a distinct end-of-life pathway; its fate is inseparably linked to that of the asphalt pavement into which it is embedded.

For this reason, modules C1–C4 and D are modeled using representative processes for asphalt concrete rather than for SMAPOL® alone. This includes typical European practices such as milling and removal of asphalt layers (C1), transport to processing sites (C2), recovery and recycling of reclaimed asphalt pavement (RAP) into new asphalt mixtures or other civil engineering applications (C3), and final disposal of the small non-recycled fraction (C4). Potential benefits and burdens beyond the system boundary (Module D) are calculated based on the substitution of virgin aggregates and bitumen by RAP, and on the energy recovery or disposal of the residual fraction.

Detailed assumptions regarding recycling and reuse rates (e.g. ~95% reused/recycled, ~5% landfilled or otherwise disposed), as well as the data sources applied (Ecoinvent 3.9.1, Asphalt in Figures 2023), are described in the Estimates and Assumptions section. Because SMAPOL® contains biogenic carbon, the end-of-life stage is modeled in accordance with EN 15804+A2:2019.

LIFE-CYCLE ASSESSMENT

LIFE-CYCLE ASSESSMENT INFORMATION

Period for data	2024 year
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DECLARED AND FUNCTIONAL UNIT

Declared unit	1 tonne (1t)
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Mass per declared unit	1 tonne
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BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	62
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Biogenic carbon content in packaging kg C	-
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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 SMAPOL® is permanently integrated into asphalt mixtures and does not undergo a distinct use phase.

The end-of-life stages (C1–C4) and Module D are modelled at the level of the asphalt pavement into which SMAPOL® is incorporated. This approach is necessary because, once mixed with bitumen and aggregates, SMAPOL® cannot be technically separated or recovered as an individual product. Therefore, typical European end-of-life scenarios for asphalt 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

In accordance with EN 15804:2012+A2:2019, all mandatory modules (A1–A3) are included in the declared system boundary. Modules C1–C4 and D are declared in accordance with EN 15804+A2:2019, as the end-of-life fate of SMAPOL® is linked to the asphalt pavement.

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 are 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 which are stated mandatory in the *EN 15804:2012+A2:2019*. The study does not exclude any hazardous materials or substances.

ESTIMATES AND ASSUMPTIONS

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 (500 kg big-bags), modelled using datasets from the ecoinvent database.

SMAPOL® 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 52.5%. This corresponds to about 7.1% natural rubber per 1 tonne of SMAPOL® which translates to ~62 kg of biogenic carbon and a biogenic carbon credit of –229 kg CO_{2e}/t applied in Module A1.

Module A2:

Transport of EoL tires from collection points to the recycling facility in Chelm 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 (GREEN GRAN, 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:

Demolition of the asphalt pavement is assumed to require diesel fuel consumption with an energy content of 11.46 MJ/t of material removed.

Module C2:

Transport of reclaimed asphalt pavement (RAP) from the demolition site to the processing facility is assumed to be by road, over a distance of 50 km using a 16–32 t EURO 6 truck.

Module C3:

It is assumed that 95 % of the removed asphalt is recycled. This stage includes screening and preparation of the reclaimed asphalt material for use as an input in new asphalt production, with an electricity consumption of 9.6 kWh/t.

Module C4

The remaining 5 % of RAP is assumed to be sent to landfill.

Additionally, close the biogenic carbon loop of the SMAPOL® product system, 229 kg CO₂e/t are released in C4, corresponding to the biogenic carbon credit applied in Module A1.

Module D:

At end-of-life, the reclaimed asphalt pavement (RAP) containing SMAPOL® is assumed to substitute the production of virgin asphalt constituents in new mixtures.

Per 1 tonne of asphalt containing SMAPOL®, the model credits the avoided production of approximately: 37 kg of bitumen adhesive compound, 779 kg of crushed gravel, 9.5 kg of crushed limestone (for milling) and 114 kg of sand.

These avoided burdens are reported as negative flows in accordance with EN 15804+A2:2019, representing the potential environmental benefits of using reclaimed asphalt pavement instead of primary raw materials.

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's facility in Chełm (including SBR granulate, rubber 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. 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 SMAPOL®, 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 SMAPOL® 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, 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 SMAPOL®.

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 SMAPOL®, 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: SMAPOL® additive for mineral–asphalt mixtures

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2

Impact category	Unit	A1	A2	A3	A4-A5 B1-B7	C1	C2	C3	C4	D
GWP-Total	kg CO2 eq.	-2,19E+02	1,27E+00	2,04E+02	MND	1,14E+00	9,25E+00	6,66E+00	2,29E+02	-3,52E+01
GWP-fossil	kg CO2 eq.	1,05E+01	1,27E+00	2,03E+02	MND	1,14E+00	9,24E+00	6,62E+00	1,43E-01	-3,51E+01
GWP-biogenic	kg CO2 eq.	-2,29E+02	1,07E-03	1,11E+00	MND	2,60E-04	8,46E-03	3,68E-02	2,29E+02	-9,01E-02
GWP-luluc	kg CO2 eq.	8,40E-03	6,70E-04	6,04E-02	MND	1,30E-04	4,56E-03	1,97E-03	1,70E-05	-2,18E-02
ODP	kg CFC-11 eq.	1,13E-07	2,76E-08	9,61E-07	MND	1,81E-08	2,01E-07	3,03E-08	2,15E-09	-1,70E-06
AP	mol H+ eq.	4,62E-02	2,67E-03	1,45E+00	MND	1,05E-02	2,02E-02	4,76E-02	1,29E-03	-1,84E-01
EP-freshwater	kg P eq.	2,42E-03	9,85E-05	2,61E-01	MND	3,49E-05	6,60E-04	7,94E-03	7,26E-06	-6,75E-03
EP-marine	kg N eq.	9,03E-03	6,40E-04	2,12E-01	MND	4,89E-03	5,09E-03	6,85E-03	5,80E-04	-4,50E-02
EP-terrestrial	mol N eq.	9,50E-02	6,48E-03	1,84E+00	MND	5,31E-02	5,18E-02	5,97E-02	6,30E-03	-4,78E-01
POCP	kg NMVOC eq.	3,79E-02	4,04E-03	5,32E-01	MND	1,57E-02	3,14E-02	1,72E-02	1,90E-03	-1,71E+00
ADPE (disc.2)	kg Sb eq.	2,37E-05	3,58E-06	6,44E-05	MND	2,20E-07	2,15E-05	2,03E-06	2,79E-08	-7,75E-05
ADPF (disc.2)	MJ, (NCV)	3,06E+02	1,80E+01	2,32E+03	MND	1,50E+01	1,32E+02	7,57E+01	1,84E+00	-1,12E+03
WDP (disc.2)	m3 World eq.	4,13E+00	9,54E-02	4,33E+01	MND	3,71E-02	6,56E-01	1,42E+00	4,76E-03	-1,90E+01
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 experience with the indicator.									

ADDITIONAL ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A5 B1-B7	C1	C2	C3	C4	D
PM	Disease Incidence	4,40E-07	6,00E-08	2,51E-06	MND	2,91E-07	5,50E-07	7,73E-08	3,50E-08	-2,08E-06
IRP (disc.1)	kBq U235 eq.	5,99E-01	3,21E-02	6,59E+00	MND	7,07E-03	1,78E-01	2,17E-01	9,30E-04	-2,13E+00
ETP-fw (disc.2)	CTUe	3,02E+01	9,21E+00	6,23E+02	MND	7,11E+00	6,47E+01	1,96E+01	8,63E-01	-4,48E+02
HTP-c (disc.2)	CTUh	2,59E-09	5,83E-10	6,23E-08	MND	3,46E-10	4,14E-09	2,02E-09	4,47E-11	-2,41E-08
HTP-nc (disc.2)	CTUh	6,90E-08	1,07E-08	2,46E-06	MND	2,18E-09	8,10E-08	7,39E-08	3,21E-10	-3,73E-07
SQP (disc.2)	Dimensionless	2,04E+01	8,33E+00	5,29E+02	MND	1,00E+00	7,93E+01	1,61E+01	2,19E+00	-2,89E+02
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 experience with the indicator.									

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A5 B1-B7	C1	C2	C3	C4	D
PERE	MJ, (NCV)	8,42E+00	3,50E-01	2,11E+02	MND	8,47E-02	2,06E+00	7,00E+00	1,51E-02	-2,11E+01
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)	8,42E+00	3,50E-01	2,11E+02	MND	8,47E-02	2,06E+00	7,00E+00	1,51E-02	-2,11E+01
PENRE	MJ, (NCV)	3,06E+02	1,80E+01	2,32E+03	MND	1,50E+01	1,32E+02	7,57E+01	1,84E+00	-1,12E+03
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)	3,06E+02	1,80E+01	2,32E+03	MND	1,50E+01	1,32E+02	7,57E+01	1,84E+00	-1,12E+03
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	1,89E-01	3,21E-03	6,18E+00	MND	1,33E-03	2,17E-02	2,03E-01	1,70E-04	-6,27E-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 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	0,00E+00	0,00E+00
EEE	MJ	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
EET	MJ	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
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 B1-B7	C1	C2	C3	C4	D
HWD	kg	1,70E-04	1,10E-04	1,54E-03	MND	1,00E-04	8,40E-04	4,52E-05	1,19E-05	-4,74E-03
NHWD	kg	1,70E-02	5,90E-04	7,14E+01	MND	2,80E-04	3,72E-03	1,13E-03	3,40E-05	-1,72E-02
RWD	kg	1,50E-04	7,89E-06	1,62E-03	MND	1,63E-06	4,31E-05	5,34E-05	2,16E-07	-5,20E-04
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 ₂ e / kWh	0,701 kg CO ₂ e / kWh

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

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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 Asphalt Pavement Association (EAPA) (2025). Asphalt in Figures 2023. Brussels, Belgium.

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

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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

Manufacturer representative	Aleksandra Polaszewska Sustainability Manager
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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 07.10.2025



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

SMAPOL® – additive for mineral–asphalt mixtures

manufactured in accordance with standard:

EN 14243-2:2019,

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 is discontinued.

Authenticity of this certificate can be confirmed in the public register at www.epd.org.pl



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



Grzegorz Suwara
CEO Multicert Sp. z o.o.

Warsaw, October 20, 2025