# Environmental Product Declaration

In accordance with ISO 14025:2006, EN 15804:2012+A2:2019/AC:2021 and ISO 21930:2017 for:

## Polyproof Ultra TSD

from

| | |
|---|---|
| Programme: | The International EPD System, www.environdec.com |
| Programme operator: | EPD International AB |
| Type of EPD: | EPD of a single product from Henkel AG & Co. KGaA |
| EPD registration number: | EPD-IES-0022927:001 |
| Version date: | 2025-07-08 |
| Validity date: | 2030-07-07 |
| | *An EPD may be updated or depublished if conditions change. To find the latest version of the EPD and to confirm its validity, see www.environdec.com* |

# GENERAL INFORMATION

| Programme Information | |
|---|---|
| **Programme:** | The International EPD® System |
| **Address:** | EPD International AB<br>Box 210 60<br>SE-100 31 Stockholm<br>Sweden |
| **Website:** | www.environdec.com |
| **E-mail:** | support@environdec.com |

| **Product Category Rules (PCR)** |
|---|
| CEN standard EN 15804 serves as the Core Product Category Rules (PCR) |
| Product Category Rules (PCR): *PCR 2019:14 Construction products, version 2.0.1 Published on 2025.06.05 valid until: 2030-04-07 and UN CPC code: 36330* |
| PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members.<br><br>Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/support. |

| **Third-party Verification** |
|---|
| Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:<br><br>☒ Individual EPD verification without a pre-verified LCA/EPD tool<br>Third-party verifier: *Silvia Vilčeková, SILCERT, Ltd.*<br>*silcertsro@gmail.com*<br><br>Approved by: International EPD System |
| Procedure for follow-up of data during EPD validity involves third party verifier:<br><br>☒ Yes ☐ No |

The EPD owner has the sole ownership, liability, and responsibility for the EPD. The current EPD complies also with ISO 21930:2017, Sustainability in buildings and civil engineering works -- Core rules for environmental product declarations of construction products and services.

EPDs within the same product category but published in different EPD programmes, may not be comparable. For two EPDs to be comparable, they shall be based on the same PCR (including the same first-digit version number) or be based on fully aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have identical scope in terms of included life-cycle stages (unless the excluded life-cycle stage is demonstrated to be insignificant); apply identical impact assessment methods (including the same version of characterisation factors); and be valid at the time of comparison.
For further information about comparability, see EN 15804 and ISO 14025.

# INFORMATION ABOUT EPD OWNER

Owner of the EPD:

Henkel AG & Co. KGaA

Address:

Henkelstraße 67
40589 Düsseldorf
Deutschland

Contact: Julia Al-jenabi
henkelpolybit@henkel.com

Description of the organisation:
Henkel AG & Co. KGaA, commonly known as Henkel, is a German multinational chemical and consumer goods company headquartered in Düsseldorf, Germany.

Henkel Adhesive Technologies Construction is a division of Henkel which offers, among others, a wide choice of Self Adhesive HDPE Tape systems tailored to varied needs. This EPD is focused on the key components of HDPE Tape. These components are mainly sold under the brand of Henkel Polybit.

For more information, please visit: www.henkelpolybit.com

Product-related or management system-related certifications: The plant, located Pune in India, holds certificates for ISO 9001.

# PRODUCT INFORMATION

Product name: Polyproof Ultra TSD

Product identification: Polyproof Ultra TSD, is a double-sided, self-adhesive HDPE tape, protected with a release liner to be used in conjunction with the Polyproof Ultra FB system. The carrier is coated with a pressure sensitive adhesive on both sides with excellent adhesion to the Polyproof Ultra Plus membrane.

| Typical Applications | | Standards |
|---|---|---|
| Dimension | 20m x 100mm, 1.6 kg | |
| Thickness, mm | 0.6 | ASTM D 3652 |
| Tensile strength [N/mm$^2$] | >3 | ASTM D 412 |
| Elongation at break, [%] | >100 | ASTM D 412 |
| Application temperature, [°C] | 5 to 45 | |


UN CPC code: 36920

Product description: Polyproof Ultra TSD is used as a Double-sided, self-adhesive HDPE tape on the following applications: End overlaps on the Polyproof Ultra FB system, Pile head, penetrations, and corner detailing on the Polyproof Ultra FB system. The application temperature should be between 5°C to 45°C. While application procedures may vary slightly depending upon site conditions.

Location of production site(s):
278/1/A, MIDC Phase III,
Chakan, Behind L&L Products,
Pune 410501, Maharashtra, India

# CONTENT DECLARATION

| Product content | Mass, kg | Post-consumer recycled material, mass-% of product | Biogenic material, mass-% of product | Biogenic material, kg C/declared unit |
|---|---|---|---|---|
| Organics, nonvolatiles | 0.67 | 0 | 0 | 0 |
| Inorganics | 0.13 | 0 | 0 | 0 |
| **TOTAL** | **0.80** | **0** | **0** | **0** |

| Packaging materials | Mass, kg | Mass-% (versus the product) | Biogenic material, kg C/declared unit |
|---|---|---|---|
| Paper and cardboard | 9.41E-02 | 1.03E+01 | 4.70E-02 |
| Plastic | 2.19E-02 | 2.39E+00 | 0 |
| **TOTAL** | **1.16E-01** | **1.27E+01** | **4.70E-02** |

### Information on biogenic carbon content

| Results per functional or declared unit | | |
|---|---|---|
| **BIOGENIC CARBON CONTENT** | **Unit** | **QUANTITY** |
| Biogenic carbon content in product | kg C | 0 |
| Biogenic carbon content in packaging | kg C | 4.70E-02 |

None of the components present in the final product are included in the "Candidate List of Substances of Very High Concern (SVHC) to the REACH Regulation (EC) No 1907/2006". The conversion factor to convert from kg carbon to kg $CO_2$ = 44 kg CO2/12 kg C.

# LCA INFORMATION

Declared unit: 1 square meter (1 $m^2$) of packed HDPE tape, applied into the building with a mass per unit area of 0.80 kg/$m^2$.

The weight per 1 $m^2$ HDPE tape is 0.8 kg and the conversion factor to 1 kg is 1.25.

Time representativeness: All specific data related to the production plants and used for the study date from 2023.

Geographical scope: Global.

Database(s) and LCA software used: This EPD is based on specific data and system information. The primary inventory data has been directly obtained from Henkel and corresponds to the product mentioned above. The product analysed in this study is manufactured in manufacturing plant located in Pune, India.

The secondary data has been extracted from the generic Ecoinvent version 3.11 database, included in the SimaPro v10.2. software which is internationally recognised. Wherever possible, inventory data related to specific countries or on its absence, from Global in general has been selected. This has been used for the stage of production and transport of raw materials, as well as for electricity generation or waste management processes, over which the manufacturer has no direct influence.

Description of system boundaries: Cradle-to-gate with modules C1-C4, module D and optional modules A4 and A5, covering the modules of extraction and processing of raw materials (A1), their transportation to the production plant (A2), the manufacturing process (A3), transport to construction site (A4), installation (A5), end of life (C1-C4) and potential benefits and loads from the reuse and recycling of the products at its end of life (D).

Product stage (A1-A3):

- Raw material supply (A1): this module considers the extraction and processing of raw materials used for the manufacture of the products.
- Transport of the raw materials (A2): this module consists of the transportation of all raw materials covered by module A1, from the extraction, production, and treatment site to the factory, considering the specific distances of each material supplier.
- Manufacturing of products (A3): this module refers to the production process of the self-adhesive HDPE tape in the production plants. The manufacturing of Polyproof Ultra TSD, TS, and Ultra Plus TS tapes begins with the production of high-density polyethylene (HDPE) film, which serves as the carrier layer. A pressure-sensitive adhesive is then applied to one or both sides of the film depending on the tape type. For tapes like Ultra Plus TS, a sanded surface is added for compatibility with sanded membranes, while others receive a plain or smooth finish. A silicon-coated release liner is laminated onto the adhesive side to protect it during handling. The finished material is then slit into rolls of the desired width and length, rewound, and packaged for distribution. The chosen packaging type is the most representative in terms of sales volume. It also serves as the standard reference for all other packaging options analyzed for this product.

Installation stage (A4-A5):

- Transport from factory to construction site (A4): this module considers the distribution of the product and its packaging to the construction site

| Scenario information | Unit (by declared unit) |
|---|---|
| Fuel type and consumption of the vehicle | 16-32 tons trucks, with 34 L per 100 km fuel consumption |
| Distance | 2935 km |
| Capacity Utilization | 100% |
| Bulk density | 1333.34 kg/m$^3$ |
| Volume capacity utilisation factor | 1 |

- Installation (A5): this module considers the preparation of the product in order to be installed. No additional raw materials or processes are needed for installation.

- Additional technical information on module A5 according to EN 15804

| Scenario information | Unit (by declared unit) |
|---|---|
| Auxiliary materials for installation | Polyproof Ultra TSD: none |
| Water use | Polyproof Ultra TSD: no consumption |
| Use of other resources | None |
| Energy consumption during the installation | Polyproof Ultra TSD: no consumption |
| Wastes and output flows as result of the waste treatment at the demolition point | No consumption |
| Direct emissions to air, soil and water | No applicable |

Polyproof Ultra TSD is a double-sided, self-adhesive HDPE tape, needs to be applied should be free of oil, water and dust. The presence of any of these contaminants affects the adhesive properties of the tape. Cut the tape into the desired width and length and stick it to the surface by removing the release film. Use an iron roller over the tape to enhance the bonding.

End of life stage (C):

- Deconstruction or demolition (C1): this stage considers the dismantling of the products after its use. The consumption of energy and natural resources is negligible for deconstruction of the end-of-life product, as demolition of membrane roofing is assumed to be done manually. Thus, the impacts of demolition are assumed zero.
- Transport to the waste processing site (C2): this module considers a default distance of 50 km between the building where the product was installed and the waste manager facility (landfill).
- Waste processing (C3): this module includes the reconditioning of the products waste for its reuse or recycling. However, in this study it is assumed that the products cannot be reused nor recycled after its end of useful life. Thus, there are not environmental impacts allocated to this module. On the other hand, following the "polluter pays" principle, if there were impacts due to the reuse/recycling of this product, they would not be attributed to its life cycle.
- Disposal (C4): this module includes the final discharge of waste that has not been destined for recovery or treatment processes. It has been assumed that the 100% of the product are finally disposed in the landfill after its end of useful life.

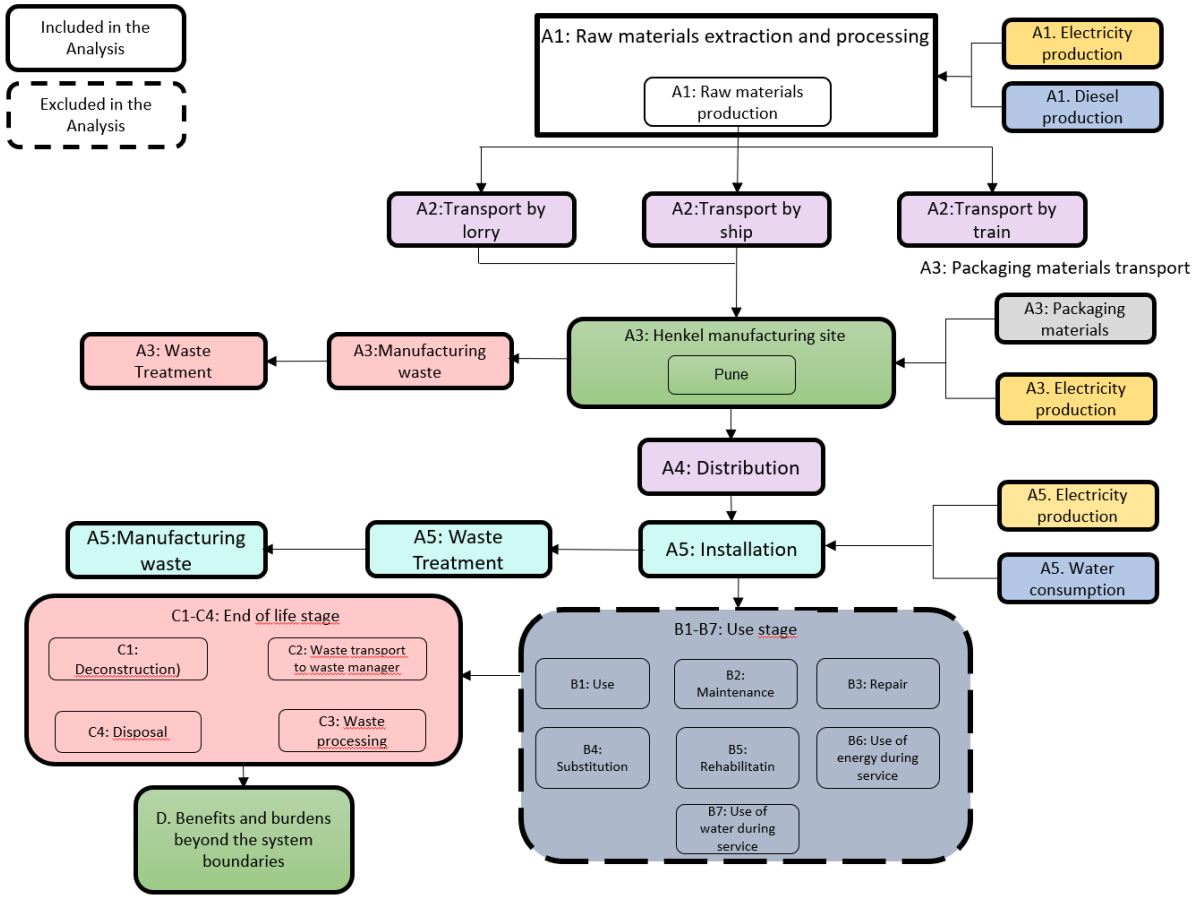
Benefits and loads beyond the system boundary (D): This module analyses the benefits and burdens related to the processes of recovery, reuse or recycling of waste from the products under study at their end of life, which could form part of the life cycle of a new product. In this the entire product is landfill so mule D is assumed as 0 contribution.
The scenarios for modules C1-C4 and D are realistic and representative of one of the most probable alternatives. The scenarios do not include processes or procedures that are not in current use or whose feasibility have not been demonstrated.

The module collects the most likely scenarios based on the best knowledge currently available. Considerations about the end of life of the representative average product:

| Parameter | Units per declared Unit (kg) | Value (per 0.8 kg) |
|---|---|---|
| Waste collection process, specified by type | kg collected separately | 0.00 |
| | kg collected mixed with demolition waste | 0.8 |
| Recovery process waste, specified by type | kg for reuse | 0.00 |
| | kg for recycling | 0.00 |

| | | |
|---|---|---|
| | kg for energy recovery | 0.00 |
| Waste disposal | kg to landfill | 0.8 |
| Considerations for scenarios development | Distance to waste manager (km) | 50 |

Process flow diagram:




More information:

Company website for more information: https://www.henkel.de/

Name and contact information of LCA practitioner:

Henkel AG & Co. KGaA
Henkelstraße 67
40589 Düsseldorf
Deutschland

Cut-off rules: In accordance with the provisions of the Product Category Rules (PCR): PCR 2019:14 Construction products, version 2.0.1 Published on 2025.06.05 valid until: 2030-04-07, UNI-EN 15804:2012+A2:2020, at least 95% of total inflows (raw materials and energy) and outflows per module have been considered. The packaging for the distribution of the products has also been included.

The "polluter pays" principle has been applied.

The following processes have not been included in the scope of the study:

- Manufacture of equipment used in production, buildings or any other assets.
- Business trips.
- Maintenance activities at the production plants and research and development sites.
- Transportation of personnel to and within the plants.
- Diffuse particle emissions during the transport and storage of raw materials.

The hypotheses made during the study are detailed below:

- All the primary data used in this study correspond to 2023.
- Regarding the transport of raw materials (module A2), specific distances have been introduced by supplier and material.
- The plant of Pune in India, uses electricity production mix. For this reason, the Ecoinvent database has been used to model the electricity production mix.

| Source | Pune |
|---|---|
| GWP-GHG (kg CO2 eq./kWh) | 1.29 |

- For the transport of waste from production plant, specific distances have been introduced for each waste management facility.
- For the distribution to the customer site, Henkel has indicated that the manufacturing sites supply to a radius of 2935 km.
- The End-of-Life scenario for the products has been provided by Henkel, where it is assumed that the 100% goes to landfill.
- This EPD is based on specific data and system information

Data quality requirements: “Good" data quality has been obtained (4.00 out of 5). The method used to assess the representativeness of the data is found in “Table E.1 — Data quality level and criteria of the UN Environment Global Guidance on LCA database development” in the Annex E of the EN 15804+A2 standard.

The share of primary data is calculated based on GWP-GHG results. It is a simplified indicator for data quality that supports the use of more primary data, to increase the representativeness of and comparability between EPDs. Note that the indicator does not capture all relevant aspects of data quality and is not comparable across product categories.

| Process | Source type | Source | Reference year | Data category | Share of primary data, of GWP-GHG results for A1-A3 |
|---|---|---|---|---|---|
| A1 module | Collected data | EPD Owner | 2023 | Primary data | 20.9% |
| A2 module | Database | Ecoinvent v3.11 | 2023 | Primary data | 1.3% |
| A3 module | Collected data | EPD Owner | 2023 | Primary data | 0.1% |

Modules declared, geographical scope, share of specific data (in GWP-GHG results) and data variation (in GWP-GHG results):

| | Product stage | | | Construction process stage | | Use stage | | | | | | | End of life stage | | | | Resource recovery stage |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Raw material supply | Transport | Manufacturing | Transport | Construction installation | Use | Maintenance | Repair | Replacement | Refurbishment | Operational energy use | Operational water use | De-construction demolition | Transport | Waste processing | Disposal | Reuse-Recovery-Recycling-potential |
| **Module** | **A1** | **A2** | **A3** | **A4** | **A5** | **B1** | **B2** | **B3** | **B4** | **B5** | **B6** | **B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| Modules declared | X | X | X | X | X | ND | ND | ND | ND | ND | ND | ND | X | X | X | X | X |
| Geography | IN | IN | IN | GLO | GLO | ND | ND | ND | ND | ND | ND | ND | GLO | GLO | GLO | GLO | GLO |
| Primary data used | 22.3% | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation – products | 0% | | | | | - | - | - | - | - | - | - | - | - | - | - | - |
| Variation – sites | 0% | | | | | - | - | - | - | - | - | - | - | - | - | - | - |

# ENVIRONMENTAL PERFORMANCE

## LCA results of the product(s) - main environmental performance results

The environmental information related to the analysed products has been calculated with the SimaPro software version 10.2. As required by PCR 2019:14[1], the characterization factors indicated in Annex C of the EN 15804:2012+A2 standard have been used to estimate the potential environmental impacts (method EN 15804 + A2 Method V1.02 / EF 3.1 normalization and weighting set) . With respect to the results corresponding to the rest of the parameters under study, the following methodologies have been used: inventory data to calculate waste production, CED (Cumulative Energy Demand) to calculate energy use and inventory data for output flows. For the additional ISO 21930 indicators, TRACI (Tool for Reduction and Assessment of Chemicals and Other Environmental Impacts) and inventory data (for waste indicators) have been used.

The environmental results corresponding to the representative product of the waterproofing membrane family manufactured and commercialized under the brand Polybit are shown below. These are divided by modules, covering the stages defined above in the system boundary section (A1-A3+A4-A5+B1-B7+C1-C4+D), and considering all the impact categories required by the PCR 2019:14 Construction products, version 2.0.1.

Estimated impact results are only relative statements that do not indicate impact category endpoints, exceedances of assessed thresholds, safety margins, or risks.

Results obtained in both the product stage (modules A1-A3) and installation stage (modules A4-A5) should not be used without considering those results obtained in modules C1-C4. Regarding C4 module, locally and additional calculation will be necessary based on the local applicable waste treatment scenario.
All infrastructure and capital goods are excluded for all the upstream, core and downstream processes

[1] *Product Category Rules (PCR): PCR 2019:14 Construction products, version 2.0.1 Published on 2025.06.05 valid until: 2030-04-07.*

## Mandatory impact category indicators according to EN 15804

| Results per declared unit | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1-A3** | **A4** | **A5** | **B1-B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| GWP-fossil | kg CO2 eq. | 6.12E+00 | 1.57E-01 | 3.23E+00 | MND | 0.00E+00 | 1.26E-02 | 0.00E+00 | 7.82E-03 | 0.00E+00 |
| GWP-biogenic | kg CO2 eq. | -1.03E-01 | 1.06E-01 | 1.03E-01 | MND | 0.00E+00 | 4.06E-06 | 0.00E+00 | 3.83E-06 | 0.00E+00 |
| GWP-luluc | kg CO2 eq. | 5.22E-03 | 7.34E-05 | 1.90E-03 | MND | 0.00E+00 | 5.67E-06 | 0.00E+00 | 4.45E-06 | 0.00E+00 |
| GWP-Total | kg CO2 eq. | 6.02E+00 | 1.57E-01 | 3.28E+00 | MND | 0.00E+00 | 1.26E-02 | 0.00E+00 | 7.83E-03 | 0.00E+00 |
| ODP | kg CFC 11 eq. | 1.88E-06 | 2.09E-09 | 1.46E-06 | MND | 0.00E+00 | 1.65E-10 | 0.00E+00 | 2.18E-10 | 0.00E+00 |
| AP | mol H+ eq. | 2.70E-02 | 1.40E-03 | 1.37E-02 | MND | 0.00E+00 | 4.80E-05 | 0.00E+00 | 5.48E-05 | 0.00E+00 |
| EP-freshwater | kg P eq. | 2.80E-03 | 1.49E-05 | 6.92E-04 | MND | 0.00E+00 | 1.38E-06 | 0.00E+00 | 6.85E-07 | 0.00E+00 |
| EP-marine | kg N eq. | 5.62E-03 | 3.91E-04 | 2.37E-03 | MND | 0.00E+00 | 1.63E-05 | 0.00E+00 | 2.10E-05 | 0.00E+00 |
| EP-terrestrial | mol N eq. | 5.52E-02 | 4.30E-03 | 2.58E-02 | MND | 0.00E+00 | 1.77E-04 | 0.00E+00 | 2.30E-04 | 0.00E+00 |
| POCP | kg NMVOC eq. | 2.26E-02 | 1.34E-03 | 1.37E-02 | MND | 0.00E+00 | 6.51E-05 | 0.00E+00 | 8.29E-05 | 0.00E+00 |
| ADP-minerals and metals* | kg Sb eq. | 2.77E-05 | 4.45E-07 | 2.33E-05 | MND | 0.00E+00 | 4.14E-08 | 0.00E+00 | 1.14E-08 | 0.00E+00 |
| ADP-fossil* | MJ | 1.10E+02 | 2.13E+00 | 7.24E+01 | MND | 0.00E+00 | 1.75E-01 | 0.00E+00 | 1.92E-01 | 0.00E+00 |
| WDP* | m3 | 1.70E+00 | 8.96E-03 | 1.25E+00 | MND | 0.00E+00 | 8.09E-04 | 0.00E+00 | 8.35E-03 | 0.00E+00 |
| Acronyms | GWP-fossil = Global Warming Potential fossil fuels; GWP-biogenic = Global Warming Potential biogenic; GWP-luluc = Global Warming Potential land use and land use change; ODP = Depletion potential of the stratospheric ozone layer; AP = Acidification potential, Accumulated Exceedance; EP-freshwater = Eutrophication potential, fraction of nutrients reaching freshwater end compartment; EP-marine = Eutrophication potential, fraction of nutrients reaching marine end compartment; EP-terrestrial = Eutrophication potential, Accumulated Exceedance; POCP = Formation potential of tropospheric ozone; ADP-minerals&metals = Abiotic depletion potential for non-fossil resources; ADP-fossil = Abiotic depletion for fossil resources potential; WDP = Water (user) deprivation potential, deprivation-weighted water consumption | | | | | | | | | |

** Disclaimer: The estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.*

## Additional mandatory and voluntary impact category indicators

| Results per declared unit | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1-A3** | **A4** | **A5** | **B1-B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| GWP - GHG[3] | kg CO2 eq. | 5.70E+00 | 1.56E-01 | 3.22E+00 | MND | 0.00E+00 | 1.25E-02 | 0.00E+00 | 7.77E-03 | 0.00E+00 |
| PM | disease inc. | 2.34E-07 | 1.08E-08 | 1.59E-07 | MND | 0.00E+00 | 9.88E-10 | 0.00E+00 | 1.26E-09 | 0.00E+00 |
| IRP[2] | kBq U-235 eq | 2.19E-01 | 1.57E-03 | 1.09E-01 | MND | 0.00E+00 | 1.41E-04 | 0.00E+00 | 1.15E-04 | 0.00E+00 |
| ETP-fw[1] | CTUe | 3.14E+01 | 3.47E-01 | 2.27E+01 | MND | 0.00E+00 | 3.20E-02 | 0.00E+00 | 1.39E-02 | 0.00E+00 |
| HTP-c[1] | CTUh | 2.09E-09 | 2.77E-11 | 1.61E-09 | MND | 0.00E+00 | 2.11E-12 | 0.00E+00 | 1.41E-12 | 0.00E+00 |
| HTP-nc[1] | CTUh | 4.52E-08 | 1.17E-09 | 2.55E-08 | MND | 0.00E+00 | 1.08E-10 | 0.00E+00 | 3.17E-11 | 0.00E+00 |
| SQP[1] | Pt | 3.34E+01 | 1.05E+00 | 9.41E+00 | MND | 0.00E+00 | 1.03E-01 | 0.00E+00 | 3.76E-01 | 0.00E+00 |

PM = Particulate matter; IRP = Ionizing radiation, human health; ETP-fw = Ecotoxicity freshwater - organic; HTP-c = Human health, carcinogenic effects; HTP-nc = Human health, non-carcinogenic effects; SQP = Land use; NR = Non relevant

[1]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.

*[2]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 nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator*

*[3]The indicator includes all greenhouse gases included in GWP-total but excludes biogenic carbon dioxide uptake and emissions and biogenic carbon stored in the product. This indicator is thus almost equal to the GWP indicator originally defined in EN 15804:2012+A1:2013*

## Resource use indicators

| Results per declared unit | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1-A3** | **A4** | **A5** | **B1-B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| PERE | MJ | -9.41E+00 | 2.72E-02 | 1.75E+01 | MND | 0.00E+00 | 2.42E-03 | 0.00E+00 | 1.79E-03 | 0.00E+00 |
| PERM | MJ | 1.57E+01 | 0.00E+00 | -1.57E+01 | MND | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| PERT | MJ | 6.25E+00 | 2.72E-02 | 1.83E+00 | MND | 0.00E+00 | 2.42E-03 | 0.00E+00 | 1.79E-03 | 0.00E+00 |
| PENRE | MJ | 2.83E+02 | 3.16E+01 | 2.33E+00 | MND | 7.80E+01 | 0.00E+00 | 1.86E-01 | 3.23E+00 | 2.04E-01 |
| PENRM | MJ | 3.29E+00 | -6.35E-02 | 0.00E+00 | MND | 0.00E+00 | 0.00E+00 | 0.00E+00 | -3.23E+00 | 0.00E+00 |
| PENRT | MJ | 2.86E+02 | 3.16E+01 | 2.26E+00 | MND | 7.80E+01 | 0.00E+00 | 1.86E-01 | 0.00E+00 | 2.04E-01 |
| SM | 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 |
| RSF | 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 |
| NRSF | 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 |
| FW | $m^3$ | 4.66E-02 | 2.71E-04 | 3.29E-02 | MND | 0.00E+00 | 2.43E-05 | 0.00E+00 | 1.99E-04 | 0.00E+00 |
| Acronyms | PERE = Use of renewable primary energy excluding renewable primary energy resources used as raw materials; PERM = Use of renewable primary energy resources used as raw materials; PERT = Total use of renewable primary energy resources; PENRE = Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials; PENRM = Use of non-renewable primary energy resources used as raw materials; PENRT = Total use of non-renewable primary energy re-sources; SM = Use of secondary material; RSF = Use of renewable secondary fuels; NRSF = Use of non-renewable secondary fuels; FW = Use of net fresh water | | | | | | | | | |

## Waste indicators

| Results per declared unit | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1-A3** | **A4** | **A5** | **B1-B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| Hazardous waste disposed | kg | 1.09E-03 | 1.38E-05 | 9.28E-04 | MND | 0.00E+00 | 1.18E-06 | 0.00E+00 | 1.22E-06 | 0.00E+00 |
| Non-hazardous waste disposed | kg | 5.11E-01 | 8.13E-02 | 1.48E+00 | MND | 0.00E+00 | 8.10E-03 | 0.00E+00 | 1.25E+00 | 0.00E+00 |
| Radioactive waste disposed | kg | 5.74E-05 | 3.84E-07 | 2.72E-05 | MND | 0.00E+00 | 3.44E-08 | 0.00E+00 | 2.80E-08 | 0.00E+00 |

## Output flow indicators

| Results per declared unit | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1-A3** | **A4** | **A5** | **B1-B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| Components for re-use | 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 |
| Material for recycling | 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 |
| Materials for energy recovery | 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 |
| Exported energy, electricity | 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 |
| Exported energy, thermal | 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 |

## Additional ISO 21930 mandatory impact categories and indicators

| Results per declared unit | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Indicator** | **Unit** | **A1-A3** | **A4** | **A5** | **B1-B7** | **C1** | **C2** | **C3** | **C4** | **D** |
| High-Level radioactive waste | kg | 5.74E-05 | 3.84E-07 | 2.72E-05 | MND | 0.00E+00 | 3.44E-08 | 0.00E+00 | 2.80E-08 | 0.00E+00 |
| Intermediate/low-level radioactive waste | 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 |
| Global warming potential (GWP 100) | kg CO2 eq | 6.03E+00 | 1.55E-01 | 3.19E+00 | MND | 0.00E+00 | 1.24E-02 | 0.00E+00 | 7.63E-03 | 0.00E+00 |
| Ozone depletion potential (ODP) | kg CFC-11 eq | 1.71E-06 | 2.21E-09 | 1.32E-06 | MND | 0.00E+00 | 1.74E-10 | 0.00E+00 | 2.30E-10 | 0.00E+00 |
| Eutrophication potential (EP) | kg N eq | 2.92E-03 | 2.10E-04 | 1.30E-03 | MND | 0.00E+00 | 8.69E-06 | 0.00E+00 | 1.12E-05 | 0.00E+00 |
| Acidification potetential (AP) | kg SO2 eq | 2.41E-02 | 1.21E-03 | 1.25E-02 | MND | 0.00E+00 | 4.34E-05 | 0.00E+00 | 4.95E-05 | 0.00E+00 |
| Photochemical oxidant creation potential (POCP) | kg O3 eq | 3.05E-01 | 2.47E-02 | 1.45E-01 | MND | 0.00E+00 | 1.02E-03 | 0.00E+00 | 1.33E-03 | 0.00E+00 |

# ABBREVIATIONS

| Abbreviation | Definition |
|---|---|
| **General Abbreviations** | |
| EN | European Norm (Standard) |
| EPD | Environmental Product Declaration |
| EF | Environmental Footprint |
| GPI | General Programme Instructions |
| ISO | International Organization for Standardization |
| LCA | Life Cycle Assessment |
| PCR | Product Category Rules |
| c-PCR | Complementary Product Category Rules |
| CEN | European Committee for Standardization |
| CLC | Co-location centre |
| CPC | Central product classification |
| GHS | Globally harmonized system of classification and labelling of chemicals |
| GRI | Global Reporting Initiative |
| **Environmental Impact Indicators (EN 15804)** | |
| GHG | Greenhouse gas |
| GWP | Global Warming Potential (kg $CO_2$ eq.) |
| GWP-fossil | Global Warming Potential from fossil sources (kg $CO_2$ eq.) |
| GWP-biogenic | Global Warming Potential from biogenic sources (kg $CO_2$ eq.) |
| GWP-luluc | Global Warming Potential from land use and land use change (kg $CO_2$ eq.) |
| GWP-total | Total Global Warming Potential (kg $CO_2$ eq.) |
| GWP-GHG | Global Warming Potential for greenhouse gases (kg $CO_2$ eq.) |
| ODP | Ozone Depletion Potential (kg CFC-11 eq.) |
| AP | Acidification Potential (mol $H^+$ eq.) |
| EP | Eutrophication Potential |
| EP-freshwater | Freshwater eutrophication potential (kg P eq.) |
| EP-marine | Marine eutrophication potential (kg N eq.) |
| EP-terrestrial | Terrestrial eutrophication potential (mol N eq.) |
| POCP | Photochemical Ozone Creation Potential (kg NMVOC eq.) |
| ADP | Abiotic Depletion Potential |
| ADP-minerals&metals | Abiotic depletion potential for non-fossil resources (kg Sb eq.) |
| ADP-fossil | Abiotic depletion potential for fossil resources (MJ) |
| WDP | Water Deprivation Potential ($m^3$) |
| **Resource Use Indicators** | |
| PERE | Use of renewable primary energy excluding renewable primary energy resources used as raw materials (MJ) |
| PERM | Use of renewable primary energy resources used as raw materials (MJ) |
| PERT | Total use of renewable primary energy resources (MJ) |
| PENRE | Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials (MJ) |
| PENRM | Use of non-renewable primary energy resources used as raw materials (MJ) |
| PENRT | Total use of non-renewable primary energy resources (MJ) |
| SM | Use of secondary material (kg) |
| RSF | Use of renewable secondary fuels (MJ) |
| NRSF | Use of non-renewable secondary fuels (MJ) |
| FW | Use of net fresh water ($m^3$) |
| Waste Indicators | |
| HW | Hazardous Waste (disposed) (kg) |
| NHW | Non-Hazardous Waste (disposed) (kg) |
| RW | Radioactive Waste (disposed) (kg) |
| **Output Flow Indicators** | |
| CFR | Components for Reuse (kg) |
| MR | Material for Recycling (kg) |

| | |
|---|---|
| MER | Materials for Energy Recovery (kg) |
| EEE | Exported Energy, Electricity (MJ) |
| EET | Exported Energy, Thermal (MJ) |
| **Lifecycle Stages / Modules** | |
| A1 | Raw material supply |
| A2 | Transport |
| A3 | Manufacturing |
| A4 | Transport to site |
| A5 | Construction/Installation |
| B1 | Use |
| B2 | Maintenance |
| B3 | Repair |
| B4 | Replacement |
| B5 | Refurbishment |
| B6 | Operational energy use |
| B7 | Operational water use |
| C1 | Deconstruction/Demolition |
| C2 | Transport to waste processing |
| C3 | Waste processing |
| C4 | Disposal |
| D | Reuse-Recovery-Recycling potential |
| **Other Relevant Terms** | |
| SVHC | Substances of Very High Concern |
| EC No. | European Community Number |
| CAS No. | Chemical Abstracts Service Number |
| MJ | Megajoule |
| kg | Kilogram |
| $m^3$ | Cubic Meter |
| NMVOC | Non-Methane Volatile Organic Compounds |
| Sb eq. | Antimony Equivalents |
| P eq. | Phosphorus Equivalents |
| N eq. | Nitrogen Equivalents |
| CFC-11 eq. | Chlorofluorocarbon-11 Equivalents |
| $CO_2$ eq. | Carbon Dioxide Equivalents |
| kg C | Kilograms of Carbon |
| kg $CO_2$ eq. | Kilograms of Carbon Dioxide Equivalent |
| ND | Not Declared |

# REFERENCES

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# VERSION HISTORY

**Original Version of the EPD, 2030-07-08**

This document corresponds to the first version of the EPD of the Polyproof Ultra TSD product.

EPD
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