# ENVIRONMENTAL PRODUCT DECLARATION

## Outdoor decorative paints

**DAW Italia GmbH & Co KG**

| | |
|---|---|
| Putzgrund | 622 Putz K15 |
| CapaFarbe-W | Rustik Putz K12 |
| Muresko Putz | Muresko |

DEUTSCHE AMPHIBOLIN-WERKE VON ROBERT MURJAHN

CAPAROL


**EPD Programme:** International EPD System (www.environdec.com)
**Programme operator:** EPD International AB
**Reference GPI:** General Programme Instructions IES v3.01
**Reference standard:** ISO 14025, EN 15804:2012+A1:2013
**Reference PCR:** PCR 2012:01 v2.33
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CAPAROL

## Contents

# 1. Introduction

DAW Italia is working on quantifying the environmental impact of its products to improve their technical and environmental performance. For these reasons, the company has considered it essential to study and evaluate its products most in demand on the market, in order to communicate their environmental performance to its customers.

## The company

The Italian headquarters of the DAW group, born in Germany in 1895, is one of the leading manufacturers of paints, varnishes and technological solutions for the building industry in Europe. It was established in 1969 in Rome and moved to its current headquarters in Milan in 2001.

DAW Italy is a multi-brand reality, with the aim of responding to the needs of different types of customers with three highly specialized brands, united by the common mission of developing and offering products and services characterized by qualitative excellence and constant innovation. DAW's mission has always been to bring technological innovation to the professional construction sector through the development of products and solutions that always guarantee the highest quality standard and contribute to energy saving, improvement of living comfort and environmental protection. The DAW Group, through all its divisions, pursues a sustainability strategy based on three pillars:

1. Company. Sustainable management of all business activities and processes, from research and development to the purchase of raw materials, from workplace safety to energy consumption.
2. Products. Development of innovative and high quality products, compatible with the environment, capable of improving living comfort, always with the attention to the health and well-being of consumers.
3. Construction. Support and commitment in spreading the culture of sustainable construction, from the design phase to the construction phase, with particular attention to energy saving, pollution reduction and maintenance of the value of buildings over time.

DAW Italia is certified with ISO 9001 in the field of quality and ISO 14001 in the field of environmental protection.


*Figure 1: DAW Italia.*

## The products

The present study concerns a group of 6 Caparol brand outdoor paint products that can be grouped into four different sub-categories:

1) Acrylic siloxane finish for exteriors (Muresko);
2) Organic finish for exteriors (CapaFarbe W);
3) Thick acrylic siloxane coatings for exteriors (Muresko Putz - 622 Putz K15 - Rustik Putz K12);
4) Finishes for external insulation systems (Putzgrund).

*Putzgrund*


Fine grain size, adhesion promoting primer for interior and exterior suitable for any kind of coats to guarantee better adhesion of the subsequent layers of renders/plasters.

*CapaFarbe-W*


Waterbased acrylic facade paint, equalizing coat, fast drying properties for protection and decoration of facades. Long-term film protection against fungal and algal attack. Suitable both for new and coated renders/plasters. Class W2 and V2 according to EN 1062.

*Muresko Putz K12*


Acryl-silicone resin based render for facades, fiber-structured, high resistance, protection of facades and ETICS systems. Long-term film protection against fungal and algal attack. Suitable both for new and coated renders/plasters. Class W2 and V1 according to EN 1062.

*622 Putz K15*


Acryl-silicone resin based render for facades, grain size 1,5 mm with long-term film protection against fungal and algal attack, suitable for ETICS systems and facades. Class W2 and V2 according to EN 1062.

*Rustik Putz K12*


Acryl-silicone resin based render for facades, grain size 1,2 mm with long-term film protection against fungal and algal attack, suitable for ETICS systems and facades. Class W2 and V2 according to EN 1062.

*Muresko*


Acryl-silicone resin facade paint with high resistance for protection and decoration of facades. Long-term film protection against fungal and algal attack. Suitable both for new and coated renders/plasters. High yield, easy application. Class W3 and V2 according to EN 1062.

## Production process

Putzgrund, CapaFarbe-W, Muresko Putz, 622 Putz K15, Rustik Putz K12, Muresko are formulated in the Vermezzo plant con Zelo by DAW Italy. The production cycle of the products under study can be summarized by the following flow chart:

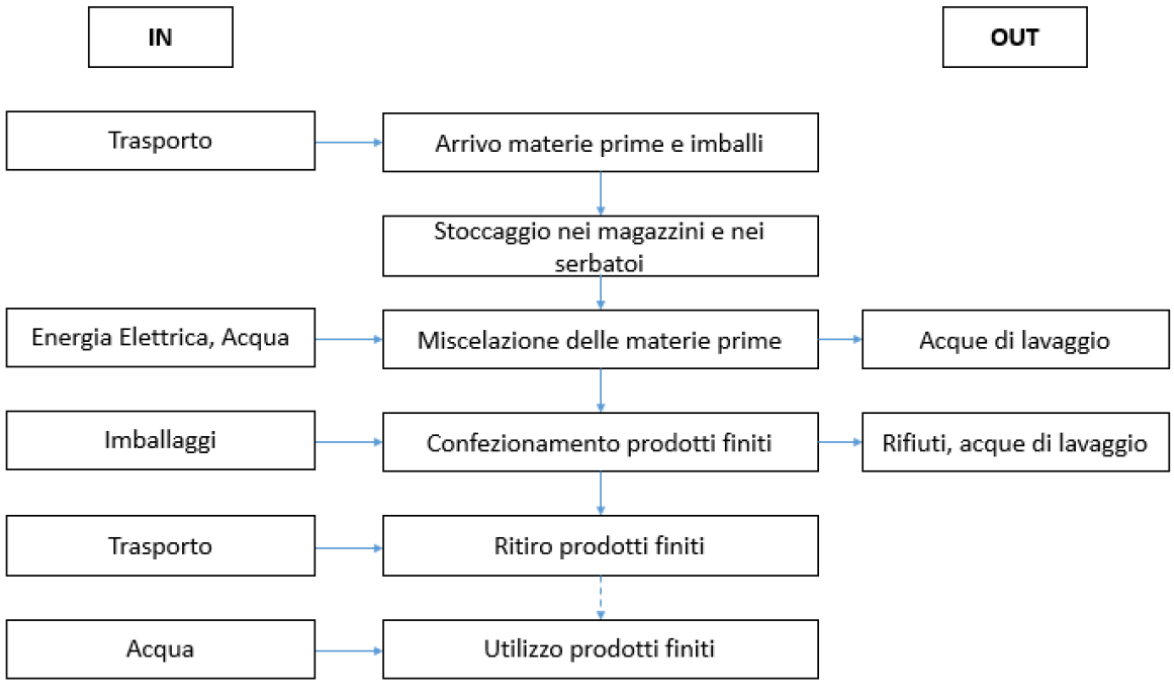


*Figure 2: Flow chart of the production cycle.*

During the use phase of the products, water is added to the products to make them ready for use.

The composition for each of the products analyzed and the relative packaging are shown below.

| | | Putzgrund | CapaFarbe-W | Muresko Putz | 622 Putz K15 | Rustik Putz K12 | Muresko |
|---|---|---|---|---|---|---|---|
| Bulk product | Resin/dispersions | 15.0% | 11.7% | 11.1% | 11.8% | 12.3% | 27.3% |
| | Water | 20.7% | 13.7% | 9.3% | 4.6% | 12.3% | 13.6% |
| | Pigment and fillers | 56.8% | 59.6% | 68.5% | 70.7% | 65.6% | 45.4% |
| | Additives | 1.5% | 5.8% | 4.2% | 4.1% | 4.2% | 4.8% |
| Packaging | PP tank | 3.4% | 4.3% | 3.9% | 4.9% | 3.1% | 4.0% |
| | Steel handle | 0.2% | 0.2% | 0.3% | 0.3% | 0.2% | 0.2% |
| | Carton box | - | 1.1% | - | - | - | 0.8% |
| | PE film | 0.04% | 0.1% | 0.04% | 0.1% | 0.03% | 0.1% |
| | Wood pallet | 2.4% | 3.6% | 2.7% | 3.5% | 2.2% | 3.7% |
| **Total** | | **100%** | **100%** | **100%** | **100%** | **100%** | **100%** |

*Table 1: Composition of products and packaging.*

Table 2 shows the technical information of each product analyzed.

| Product | Coverage ($m^2$/kg) | Density (kg/L) | VOC (g/L) |
|---|---|---|---|
| Putzgrund | 4 | 1.63 | 18.0 |
| CapaFarbe-W | 15.03 | 1.67 | 7.8 |
| Muresko Putz | 2.1 | 1.64 | 9.3 |
| 622 Putz K15 | 2.8 | 1.90 | 17.4 |
| Rustik Putz K12 | 2 | 1.77 | 0.3 |
| Muresko | 10.57 | 1.51 | 37.0 |

*Table 2: Technical information of products analyzed.*

In addition, the indication of the hazardous substances pursuant to Reg. 1272/2008 (CLP) present within the categories of raw materials used, as required by the reference PCR 2012:01 v2.33, is shown below. To calculate the maximum quantity found in the product, the concentration value from SDS was taken and multiplied by the highest concentration of the raw material category among the various products. The remaining raw materials used do not contain dangerous substances and have not been reported.

| Components | Substances | % from SDS | % max in the product | CAS | Classification |
|---|---|---|---|---|---|
| **Resin/ dispersions** | Silicic acid, potassium salt | ≥25-≤40 | 16 | 1312-76-1 | H315, H318 |
| **Additives** | 2-methylisothiazol-3(2H)-one | 3-5 | 0.25 | 2682-20-4 | H301, H311, H314, H318, H317, H330, H400, H410 |
| | 1,2-benzisothiazolin-3-one | 3-5 | 0.25 | 2634-33-5 | H302, H315, H318, H317, H400 |
| | Maleic acid, polymer with diisobutene, sodium salt | 25 | 1.25 | 37199-81-8 | H319 |
| | Gliossale | < 0,01 | 0.0005 | 107-22-2 | H315, H319, H317, H332, H341 |

*Table 3: Hazardous substances present in the products.*

# 2. Environmental Information

## Declared unit

The declared unit taken into consideration is 1 kg of paint, together with its packaging, which allows you to paint a certain internal wall surface.

## System boundaries

This study is a "from cradle to gate with options" analysis. The PCR 2012: 01 v2.33 and the standard EN 15804 used identify the following phases for the life cycle of a construction product:

| BUILDING LIFE CYCLE INFORMATION | | | | | | | | | | | | | | | | SUPPLEMENTARY INFO |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PRODUCT STAGE | | | CONTRUCTION PROCESS STAGE | | USE STAGE | | | | | | | END OF LIFE STAGE | | | | BENEFIT AND LOAD |
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| Raw materials supply | Transport | Manifacturing | Transport | Construction and installation | Use | Maintenance | Repair | Replacement | refurbishment | operational energy use | operational water use | de-construction / demolition | Transport | Waste processing | Disposal | reuse, recovery or recycling |
| X | X | X | X | X | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd | nd |

*Table 4: Information modules for the evaluation of construction products according to the EN15804 standard.*

The *upstream* processes include the extraction and production of raw material for all the main components, the impacts due to the production of electricity, and the production of primary, secondary and tertiary packaging.

The *core* processes include the transport of materials to the production site, the assembly of the final product, the treatment of waste generated at the production site, and the impacts due to the production of electricity used in the module.

The *downstream* processes include transport for the distribution of the finished product, the use of resources to prepare the product and the end of life of the packaging.

The phase of application and drafting of the paint is excluded from the boundaries of the system because it consists of a manual operation of negligible impact. The use modules (B1-B7) were excluded because they were influenced by the conditions in which the products are used and the application surface. The modules relating to the end of life (C1-C4) were not considered as they concern processes, such as demolition and transport, which may vary outside the control of the company. The phase relating to recycling and energy recovery (D) is not applicable to the type of

product being evaluated, which is not considered recyclable as it is not possible to separate the color film from the supporting plaster.

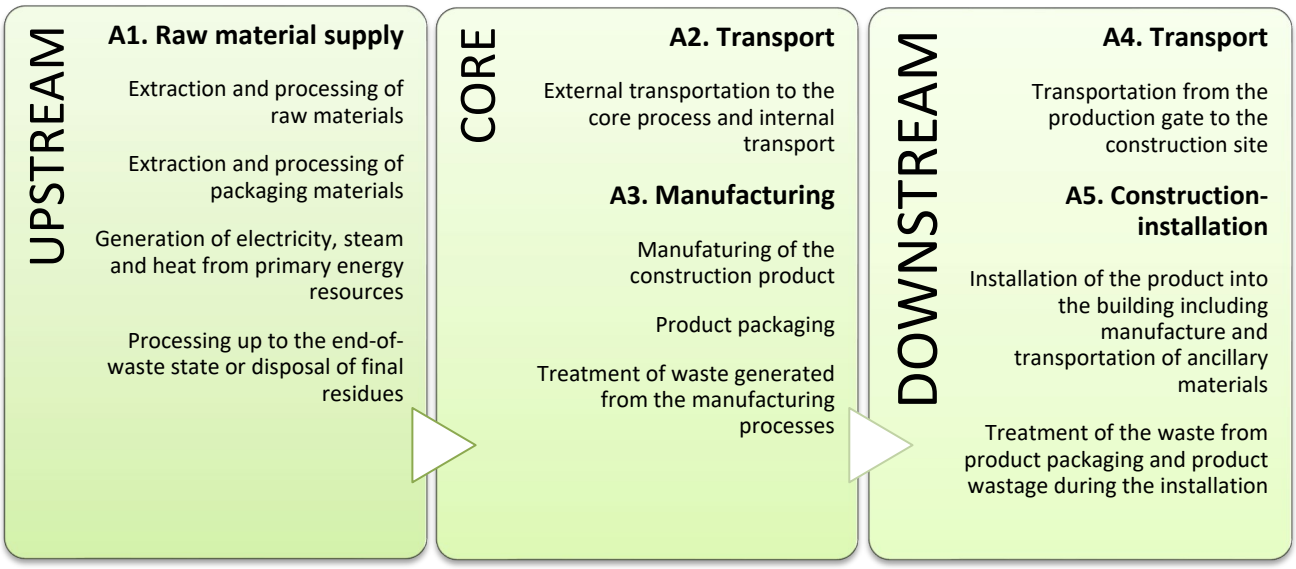


*Figure 3: LCA system boundaries of 1kg of paint according to PCR 2012:01 v2.33..*

## Time boundaries

The primary data were provided by DAW Italy and refer to the year 2020. The secondary data come from the ecoinvent v3.7 database published in 2021.

## Geographic representativeness

The DAW Italia production site is located in the Municipality of Vermezzo con Zelo, in the Province of Milan. Raw materials are purchased from various suppliers throughout Europe, although most of the suppliers are located on the national territory and on Germany. Packaging is purchased in about 80% of cases from suppliers in the country, the remaining 20% is purchased from German suppliers. The finished products object of this study are all formulated in Vermezzo con Zelo plant and are sold in the national territory.

Since the product is sold in Italy, the distribution scenario considers the sales of the reference year.

## Boundaries in the life cycle

As expressed by the PCR 2012: 01 v2.33, the following processes are excluded from the LCA:

- construction of the company's buildings;
- production of work equipment;
- production of capital goods;
- personnel activities.

Infrastructures, when present, such as processes deriving from the ecoinvent database have not been excluded.

## Data quality

Both primary and secondary data were used in the present study. Primary data are collected by DAW Italia in a continuously updated internal management system and provided through the compilation of questionnaires and direct communications; when primary data is not available, secondary data is used.

The ecoinvent v3.7 database, allocation, cut-off by classification and literature data are used for the secondary data used in the study. The ecoinvent database is available in the SimaPro 9.2 software used for the calculations.

The life cycle analysis must consider at least 99% of the total mass and energy flows of the product and its packaging. Proxy data can be used in case data gaps exist, as long as their contribution in the environmental performance assessment does not exceed 10% for each main impact category.

## Allocation rules

Allocation represents the allocation procedure according to which the inputs and outputs of the system are divided among the different products in order to reflect the underlying physical relationships.

The processes that affect the environmental profile of the product during its life cycle must be allocated within the life cycle module in which the process takes place. In this way, the sum of the allocated inflows and outflows corresponds to the sum of the incoming and outgoing flows: double counting is avoided and no omission of incoming and outgoing flows occurs.

For virgin resources, raw materials and production processes are included. No allocation is made for materials subject to recycling. The recycling process is included for the input of recycled resources. Outputs subject to recycling are considered inputs for the next life cycle.

In this study, the data relating to energy and water consumption and waste produced, emissions into the atmosphere and water discharges were attributed based on the quantity of finished product formulated, adopting the mass criterion, obtained by comparing the consumption data per year with the total of kg of finished products formulated in the reference year.

The product formulation process involves the use of virgin raw materials and no waste is produced which is subsequently re-entered into the production cycle. Virgin packaging is used for the packaging phase. For these reasons, no end of life allocation was made.

Furthermore, during the study all the material inputs of the production process were evaluated, therefore no cut-off rules were applied.

## Environmental impact indicators

In assessing the impact of the product, the information obtained from the inventory analysis is aggregated according to the effects relating to the various environmental issues. The method defined by the PCR 2012: 01 v2.33 was used to assess the environmental performance of the products.

The carbon neutrality approach is adopted for atmospheric CO2 emissions from materials of biogenic origin. With this approach, it is assumed that all atmospheric CO2 emissions absorbed during the process will be released into the air during the end-of-life phase. In practice, neither sequestrations nor CO2 emissions related to materials of biological origin are evaluated, assuming a net carbon sequestration equal to zero.

## Inventory

This study is based on primary data for the fundamental aspects of the study, such as composition of finished products (for instance type and quantity of different ingredients), the distances to supply raw materials, ingredients and packaging, company consumption (water, electricity and waste produced), and their quantities in the product, the distribution of the finished product and the application on site. Primary data were collected by questionnaire, exchange of e-mails with reference company personnel, and safety data sheets of raw materials and finished products.

The secondary data are used for all processes for which primary data are not available, for example the production of individual components and packaging, the processing of some raw materials and the disposal of packaging. Reference has been made to the database ecoinvent v.3.7, cut-off by classification.

As foreseen by the PCR 2012: 01 v2.33 the use of generic data (proxy data) has been limited and their contribution does not exceed 10% of the overall impact of the impact categories considered, as can be seen in the Annex 1 of the LCA report.

All the material inputs of the production process were evaluated. No cut-off rules were applied.

# 3. Environmental impact indicator

In the following tables are available the indicators of the environmental impact of the life cycle of 1 kg of paint for each product analyzed, as required by the PCR 2012: 01 v2.33.

The environmental indicators indicated by the PCR 2012: 01 v2.33 consist of:

- Impact categories: global warming, ozone depletion, acidification, eutrophication, photochemical ozone creation, depletion of abiotic resources, depletion of abiotic resources (fossil);
- Resource use indicators: resource consumption (renewable and non-renewable), use of secondary material, use of secondary fuels (renewable and non-renewable), use of water;
- Waste indicators: hazardous waste, non-hazardous waste and radioactive waste.

Impact categories come from the baseline CML and non-baseline CML methods.

The indicators are divided into the contribution of the processes to the different product phases: *upstream* processes (A1), relating to the procurement of raw materials, *core* processes (A2, A3) relating respectively to the transport of raw materials, to the production site, and to the production and packaging, and *downstream* processes (A4, A5) relating to distribution, product application and packaging disposal.

*Putzgrund*


| 1 KG PUTZGRUND | | u.m. | Total | A1 | A2 | A3 | A4 | A5 |
|---|---|---|---|---|---|---|---|---|
| Impact categories | Global warming (GWP100a) | kg $CO_2$eq | 1.55E+00 | 1.36E+00 | 5.42E-02 | 4.17E-02 | 5.26E-02 | 4.95E-02 |
| | Ozone depletion (ODP) | Kg $CFC^{-11}$ | 1.71E-07 | 1.46E-07 | 9.85E-09 | 5.04E-09 | 9.55E-09 | 1.99E-10 |
| | Acidification | kg $SO_2$ eq | 8.05E-03 | 7.54E-03 | 1.92E-04 | 1.16E-04 | 1.86E-04 | 1.07E-05 |
| | Eutrophication | kg $PO_4^{3-}$ eq | 2.02E-03 | 1.78E-03 | 3.89E-05 | 5.88E-05 | 3.77E-05 | 1.08E-04 |
| | Photochemical ozone creation | kg $C_2H_4$ eq | 1.64E-03 | 1.62E-03 | 6.85E-06 | 6.75E-06 | 6.64E-06 | 6.76E-07 |
| | Depletion of abiotic resources | kg Sb eq | 1.72E-05 | 1.68E-05 | 1.97E-07 | 8.06E-08 | 1.91E-07 | 3.99E-09 |
| | Depletion of abiotic resources, fossil | MJ | 2.09E+01 | 1.86E+01 | 8.10E-01 | 6.03E-01 | 7.85E-01 | 1.72E-02 |
| Use of resources | Renewable resources, energy | MJ | 2.12E+00 | 2.07E+00 | 1.12E-02 | 2.44E-02 | 1.08E-02 | 4.67E-04 |
| | Renewable resources, raw materials | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Renewable resources, total | MJ | 2.12E+00 | 2.07E+00 | 1.12E-02 | 2.44E-02 | 1.08E-02 | 4.67E-04 |
| | Non renewable resources, energy | MJ | 2.25E-04 | 1.83E-04 | 1.71E-05 | 8.42E-06 | 1.65E-05 | 2.27E-07 |
| | Non renewable resources, raw materials | MJ | 2.34E+01 | 2.12E+01 | 8.28E-01 | 6.10E-01 | 8.03E-01 | 1.79E-02 |
| | Non renewable resources, total | MJ | 2.34E+01 | 2.12E+01 | 8.28E-01 | 6.10E-01 | 8.03E-01 | 1.79E-02 |
| | Use of secondary material | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of non renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of net fresh water | $m^3$ | 1.68E-02 | 1.62E-02 | 8.95E-05 | 4.16E-04 | 8.67E-05 | 6.72E-05 |
| Waste | Hazardous waste | kg | 3.99E-03 | 3.06E-03 | 4.63E-05 | 3.72E-04 | 4.49E-05 | 4.64E-04 |
| | Non hazardous waste | kg | 3.55E-01 | 2.40E-01 | 3.97E-02 | 9.75E-03 | 3.84E-02 | 2.69E-02 |
| | Radioactive waste | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

*Table 5: Results of the characterization of 1 kg of Putzgrund.*

*CapaFarbe-W*


| 1 KG CAPAFARBE-W | | u.m. | Total | A1 | A2 | A3 | A4 | A5 |
|---|---|---|---|---|---|---|---|---|
| Impact categories | Global warming (GWP100a) | kg $CO_2$eq | 1.73E+00 | 1.49E+00 | 8.88E-02 | 4.17E-02 | 5.26E-02 | 5.76E-02 |
| | Ozone depletion (ODP) | Kg $CFC^{-11}$ | 3.97E-07 | 3.66E-07 | 1.61E-08 | 5.04E-09 | 9.55E-09 | 2.72E-10 |
| | Acidification | kg $SO_2$ eq | 1.32E-02 | 1.25E-02 | 3.14E-04 | 1.16E-04 | 1.86E-04 | 1.44E-05 |
| | Eutrophication | kg $PO_4^{3-}$ eq | 2.52E-03 | 2.23E-03 | 6.36E-05 | 5.88E-05 | 3.77E-05 | 1.30E-04 |
| | Photochemical ozone creation | kg $C_2H_4$ eq | 1.60E-03 | 1.58E-03 | 1.12E-05 | 6.76E-06 | 6.64E-06 | 1.21E-06 |
| | Depletion of abiotic resources | kg Sb eq | 2.67E-05 | 2.61E-05 | 3.23E-07 | 8.07E-08 | 1.91E-07 | 5.47E-09 |
| | Depletion of abiotic resources, fossil | MJ | 2.45E+01 | 2.18E+01 | 1.33E+00 | 6.03E-01 | 7.85E-01 | 2.29E-02 |
| Use of resources | Renewable resources, energy | MJ | 3.17E+00 | 3.12E+00 | 1.83E-02 | 2.44E-02 | 1.08E-02 | 6.57E-04 |
| | Renewable resources, raw materials | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Renewable resources, total | MJ | 3.17E+00 | 3.12E+00 | 1.83E-02 | 2.44E-02 | 1.08E-02 | 6.57E-04 |
| | Non renewable resources, energy | MJ | 4.46E-04 | 3.93E-04 | 2.79E-05 | 8.42E-06 | 1.65E-05 | 3.21E-07 |
| | Non renewable resources, raw materials | MJ | 2.74E+01 | 2.46E+01 | 1.36E+00 | 6.10E-01 | 8.03E-01 | 2.38E-02 |
| | Non renewable resources, total | MJ | 2.74E+01 | 2.46E+01 | 1.36E+00 | 6.10E-01 | 8.03E-01 | 2.38E-02 |
| | Use of secondary material | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of non renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of net fresh water | $m^3$ | 2.34E-02 | 2.27E-02 | 1.47E-04 | 4.16E-04 | 8.67E-05 | 7.23E-05 |
| Waste | Hazardous waste | kg | 5.44E-03 | 4.44E-03 | 7.58E-05 | 3.72E-04 | 4.49E-05 | 5.08E-04 |
| | Non hazardous waste | kg | 5.45E-01 | 3.99E-01 | 6.49E-02 | 9.75E-03 | 3.84E-02 | 3.29E-02 |
| | Radioactive waste | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

*Table 6: Results of the characterization of 1 kg of CapaFarbe-W*

*Muresko Putz*


| 1 KG MURESKO PUTZ | | u.m. | Total | A1 | A2 | A3 | A4 | A5 |
|---|---|---|---|---|---|---|---|---|
| Impact categories | Global warming (GWP100a) | kg $CO_2$eq | 1.84E+00 | 1.64E+00 | 5.26E-02 | 4.17E-02 | 5.26E-02 | 5.37E-02 |
| | Ozone depletion (ODP) | Kg $CFC^{-11}$ | 7.72E-07 | 7.48E-07 | 9.56E-09 | 5.04E-09 | 9.55E-09 | 2.24E-10 |
| | Acidification | kg $SO_2$ eq | 1.07E-02 | 1.02E-02 | 1.86E-04 | 1.16E-04 | 1.86E-04 | 1.20E-05 |
| | Eutrophication | kg $PO_4^{3-}$ eq | 2.56E-03 | 2.30E-03 | 3.77E-05 | 5.88E-05 | 3.77E-05 | 1.19E-04 |
| | Photochemical ozone creation | kg $C_2H_4$ eq | 6.26E-04 | 6.05E-04 | 6.65E-06 | 6.76E-06 | 6.64E-06 | 7.47E-07 |
| | Depletion of abiotic resources | kg Sb eq | 4.83E-05 | 4.79E-05 | 1.91E-07 | 8.06E-08 | 1.91E-07 | 4.43E-09 |
| | Depletion of abiotic resources, fossil | MJ | 2.09E+01 | 1.87E+01 | 7.86E-01 | 6.03E-01 | 7.85E-01 | 1.92E-02 |
| Use of resources | Renewable resources, energy | MJ | 2.89E+00 | 2.84E+00 | 1.08E-02 | 2.44E-02 | 1.08E-02 | 5.00E-04 |
| | Renewable resources, raw materials | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Renewable resources, total | MJ | 2.89E+00 | 2.84E+00 | 1.08E-02 | 2.44E-02 | 1.08E-02 | 5.00E-04 |
| | Non renewable resources, energy | MJ | 2.76E-04 | 2.35E-04 | 1.65E-05 | 8.42E-06 | 1.65E-05 | 2.58E-07 |
| | Non renewable resources, raw materials | MJ | 2.44E+01 | 2.22E+01 | 8.03E-01 | 6.10E-01 | 8.03E-01 | 1.99E-02 |
| | Non renewable resources, total | MJ | 2.45E+01 | 2.22E+01 | 8.03E-01 | 6.10E-01 | 8.03E-01 | 1.99E-02 |
| | Use of secondary material | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of non renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of net fresh water | $m^3$ | 1.98E-02 | 1.92E-02 | 8.68E-05 | 4.16E-04 | 8.67E-05 | 3.91E-05 |
| Waste | Hazardous waste | kg | 5.05E-03 | 4.06E-03 | 4.49E-05 | 3.72E-04 | 4.49E-05 | 5.30E-04 |
| | Non hazardous waste | kg | 4.16E-01 | 3.00E-01 | 3.85E-02 | 9.75E-03 | 3.84E-02 | 2.95E-02 |
| | Radioactive waste | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

*Table 7: Results of the characterization of 1 kg of Muresko Putz,.*

*622 Putz K15*


| 1 KG 622 PUTZ K15 | | u.m. | Total | A1 | A2 | A3 | A4 | A5 |
|---|---|---|---|---|---|---|---|---|
| Impact categories | Global warming (GWP100a) | kg $CO_2$eq | 1.95E+00 | 1.74E+00 | 5.42E-02 | 4.17E-02 | 5.26E-02 | 6.23E-02 |
| | Ozone depletion (ODP) | Kg $CFC^{-11}$ | 4.90E-07 | 4.65E-07 | 9.85E-09 | 5.04E-09 | 9.55E-09 | 2.78E-10 |
| | Acidification | kg $SO_2$ eq | 8.83E-03 | 8.32E-03 | 1.92E-04 | 1.16E-04 | 1.86E-04 | 1.48E-05 |
| | Eutrophication | kg $PO_4^{3-}$ eq | 2.54E-03 | 2.26E-03 | 3.89E-05 | 5.88E-05 | 3.77E-05 | 1.41E-04 |
| | Photochemical ozone creation | kg $C_2H_4$ eq | 1.51E-03 | 1.49E-03 | 6.85E-06 | 6.75E-06 | 6.64E-06 | 9.02E-07 |
| | Depletion of abiotic resources | kg Sb eq | 3.53E-05 | 3.48E-05 | 1.97E-07 | 8.06E-08 | 1.91E-07 | 5.46E-09 |
| | Depletion of abiotic resources, fossil | MJ | 2.50E+01 | 2.28E+01 | 8.10E-01 | 6.03E-01 | 7.85E-01 | 2.36E-02 |
| Use of resources | Renewable resources, energy | MJ | 2.95E+00 | 2.90E+00 | 1.12E-02 | 2.44E-02 | 1.08E-02 | 6.15E-04 |
| | Renewable resources, raw materials | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Renewable resources, total | MJ | 2.95E+00 | 2.90E+00 | 1.12E-02 | 2.44E-02 | 1.08E-02 | 6.15E-04 |
| | Non renewable resources, energy | MJ | 2.87E-04 | 2.45E-04 | 1.71E-05 | 8.42E-06 | 1.65E-05 | 3.26E-07 |
| | Non renewable resources, raw materials | MJ | 2.85E+01 | 2.63E+01 | 8.28E-01 | 6.10E-01 | 8.03E-01 | 2.44E-02 |
| | Non renewable resources, total | MJ | 2.85E+01 | 2.63E+01 | 8.28E-01 | 6.10E-01 | 8.03E-01 | 2.44E-02 |
| | Use of secondary material | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of non renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of net fresh water | $m^3$ | 1.87E-02 | 1.81E-02 | 8.95E-05 | 4.16E-04 | 8.67E-05 | 4.34E-05 |
| Waste | Hazardous waste | kg | 4.76E-03 | 3.67E-03 | 4.63E-05 | 3.72E-04 | 4.49E-05 | 6.25E-04 |
| | Non hazardous waste | kg | 3.65E-01 | 2.42E-01 | 3.97E-02 | 9.75E-03 | 3.84E-02 | 3.51E-02 |
| | Radioactive waste | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

*Table 8: Results of the characterization of 1 kg of 622 Putz K15.*

*Rustik Putz K12*


| 1 KG RUSTIK PUTZ K12 | | u.m. | Total | A1 | A2 | A3 | A4 | A5 |
|---|---|---|---|---|---|---|---|---|
| Impact categories | Global warming (GWP100a) | kg $CO_2$eq | 1.69E+00 | 1.49E+00 | 5.65E-02 | 4.17E-02 | 5.26E-02 | 4.75E-02 |
| | Ozone depletion (ODP) | Kg $CFC^{-11}$ | 4.75E-07 | 4.50E-07 | 1.03E-08 | 5.04E-09 | 9.55E-09 | 1.88E-10 |
| | Acidification | kg $SO_2$ eq | 7.73E-03 | 7.21E-03 | 2.00E-04 | 1.16E-04 | 1.86E-04 | 1.01E-05 |
| | Eutrophication | kg $PO_4^{3-}$ eq | 2.19E-03 | 1.95E-03 | 4.05E-05 | 5.88E-05 | 3.77E-05 | 1.03E-04 |
| | Photochemical ozone creation | kg $C_2H_4$ eq | 1.44E-03 | 1.42E-03 | 7.14E-06 | 6.75E-06 | 6.64E-06 | 6.40E-07 |
| | Depletion of abiotic resources | kg Sb eq | 3.25E-05 | 3.20E-05 | 2.06E-07 | 8.06E-08 | 1.91E-07 | 3.72E-09 |
| | Depletion of abiotic resources, fossil | MJ | 2.17E+01 | 1.95E+01 | 8.45E-01 | 6.03E-01 | 7.85E-01 | 1.62E-02 |
| Use of resources | Renewable resources, energy | MJ | 2.29E+00 | 2.24E+00 | 1.16E-02 | 2.44E-02 | 1.08E-02 | 4.21E-04 |
| | Renewable resources, raw materials | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Renewable resources, total | MJ | 2.29E+00 | 2.24E+00 | 1.16E-02 | 2.44E-02 | 1.08E-02 | 4.21E-04 |
| | Non renewable resources, energy | MJ | 2.36E-04 | 1.93E-04 | 1.78E-05 | 8.42E-06 | 1.65E-05 | 2.12E-07 |
| | Non renewable resources, raw materials | MJ | 2.47E+01 | 2.24E+01 | 8.64E-01 | 6.10E-01 | 8.03E-01 | 1.68E-02 |
| | Non renewable resources, total | MJ | 2.47E+01 | 2.24E+01 | 8.64E-01 | 6.10E-01 | 8.03E-01 | 1.68E-02 |
| | Use of secondary material | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of non renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of net fresh water | $m^3$ | 1.62E-02 | 1.56E-02 | 9.33E-05 | 4.16E-04 | 8.67E-05 | 3.62E-05 |
| Waste | Hazardous waste | kg | 4.07E-03 | 3.14E-03 | 4.83E-05 | 3.72E-04 | 4.49E-05 | 4.61E-04 |
| | Non hazardous waste | kg | 3.20E-01 | 2.05E-01 | 4.13E-02 | 9.75E-03 | 3.84E-02 | 2.57E-02 |
| | Radioactive waste | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

*Table 9: Results of the characterization of 1 kg of Rustik Putz K12.*

*Muresko*


| 1 KG MURESKO | | u.m. | Total | A1 | A2 | A3 | A4 | A5 |
|---|---|---|---|---|---|---|---|---|
| Impact categories | Global warming (GWP100a) | kg $CO_2$eq | 1.80E+00 | 1.56E+00 | 8.56E-02 | 4.17E-02 | 5.26E-02 | 5.72E-02 |
| | Ozone depletion (ODP) | Kg $CFC^{-11}$ | 6.10E-07 | 5.79E-07 | 1.56E-08 | 5.04E-09 | 9.55E-09 | 2.77E-10 |
| | Acidification | kg $SO_2$ eq | 1.85E-02 | 1.79E-02 | 3.03E-04 | 1.16E-04 | 1.86E-04 | 1.47E-05 |
| | Eutrophication | kg $PO_4^{3-}$ eq | 3.03E-03 | 2.74E-03 | 6.14E-05 | 5.88E-05 | 3.77E-05 | 1.31E-04 |
| | Photochemical ozone creation | kg $C_2H_4$ eq | 9.77E-04 | 9.52E-04 | 1.08E-05 | 6.76E-06 | 6.64E-06 | 1.16E-06 |
| | Depletion of abiotic resources | kg Sb eq | 3.65E-05 | 3.59E-05 | 3.12E-07 | 8.07E-08 | 1.91E-07 | 5.65E-09 |
| | Depletion of abiotic resources, fossil | MJ | 2.46E+01 | 2.19E+01 | 1.28E+00 | 6.03E-01 | 7.85E-01 | 2.36E-02 |
| Use of resources | Renewable resources, energy | MJ | 3.49E+00 | 3.44E+00 | 1.76E-02 | 2.44E-02 | 1.08E-02 | 7.13E-04 |
| | Renewable resources, raw materials | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Renewable resources, total | MJ | 3.49E+00 | 3.44E+00 | 1.76E-02 | 2.44E-02 | 1.08E-02 | 7.13E-04 |
| | Non renewable resources, energy | MJ | 4.65E-04 | 4.13E-04 | 2.69E-05 | 8.42E-06 | 1.65E-05 | 3.30E-07 |
| | Non renewable resources, raw materials | MJ | 2.80E+01 | 2.52E+01 | 1.31E+00 | 6.10E-01 | 8.03E-01 | 2.46E-02 |
| | Non renewable resources, total | MJ | 2.80E+01 | 2.52E+01 | 1.31E+00 | 6.10E-01 | 8.03E-01 | 2.46E-02 |
| | Use of secondary material | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of non renewable secondary fuels | MJ | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |
| | Use of net fresh water | $m^3$ | 3.18E-02 | 3.10E-02 | 1.41E-04 | 4.16E-04 | 8.67E-05 | 1.53E-04 |
| Waste | Hazardous waste | kg | 6.76E-03 | 5.73E-03 | 7.31E-05 | 3.72E-04 | 4.49E-05 | 5.38E-04 |
| | Non hazardous waste | kg | 7.35E-01 | 5.90E-01 | 6.26E-02 | 9.75E-03 | 3.84E-02 | 3.34E-02 |
| | Radioactive waste | kg | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 | 0.00E+00 |

*Table 10: Results of the characterization of 1 kg of Muresko.*

# 4. Differences from previous versions

## Revision of 6-10-2021

Compared to the previous version of this EPD:

1. The PCR 2012: 01 v2.32, which expired on 31-12-20, have been replaced by the PCR 2012: 01 v2.33, valid until 31-12-21.
2. The ecoinvent v3.7 database and the SimaPro 9.2 software were used.
3. Descriptions of analyzed products have been added.
4. Modeling and LCA results take into account all product formats.
5. Regarding the upstream processes:
    - the weight of the handle was considered in full, when present in the considered format;
    - the dispersing agent component was modeled on the basis of the information contained in the safety data sheet;
6. Regarding the core processes: the actual distance of suppliers from the production site for each component and packaging material was considered;
7. Regarding the downstream processes: for the transport phase of the finished product (national distribution) the company sales statistics were considered divided by macro area, each identified by a kilometer average.

# 5. Contact and other information

## DAW Italia contacts

The LCA study and this EPD were carried out by DAW Italia, in collaboration with 2B Srl (www.to-be.it).

The company references are:


Lissi Andrea

DAW Italia, the owner of the EPD has sole ownership and responsibility of the EPD

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## Verify e registration

| |
|---|
| EPD programme: International EPD System, www.environdec.com<br>Programme operator: EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden, info@environdec.com |
| Product category rules (PCR):PCR 2012:01 v2.33 "Construction product and construct services"<br>CPC code: 3511 (Paints and varnishes and related products) |
| PCR review was conducted by:The Technical Committee of the International EPD® System.<br>Review chair: Massimo Marino (info@environdec.com).<br>The review panel may be contacted via the Secretariat www.environdec.com/contact. |
| Independent third-party verification of the declaration and data, according to ISO 14025:2006:<br>▪ External □ Internal<br>covering<br>□ EPD process certification ▪ EPD verification |
| Third party verifier:<br>Certiquality SRL, Via Gaetano Giardino, 4, 20123 Milano (MI), 02 806 9171<br>*In case of certification bodies*<br>Accredited by: Accredia con accreditamento 003H rev. 15<br>*In case of individual verifiers*<br>Approved by: The International EPD® System Technical Committee, supported by the Secretariat |
| Procedure for follow-up during EPD validity involves third party verifier:<br>▪ Yes □ No |

*Environmental product declarations within the same product category from different programs may not be comparable.*

*EPDs of construction products may not be comparable if they do not comply with EN 15804.*

# 6. Bibliography


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