

DECLARACIÓN AMBIENTAL DE PRODUCTO ENVIRONMENTAL PRODUCT DECLARATION

DAPcons®.
According to ISO 14025
and UNE EN 15804 + A1



COL·LEGI D'APARELLADORS,
ARQUITECTES TÈCNICS
I ENGINYERS D'EDIFICACIÓ
DE BARCELONA

| |
|---|
| Product |
| Owner |
| Product description |
| PCR Reference |
| Production plant |
| Validity From: To: |
| |

ENVIRONMENTAL PRODUCT DECLARATION

EXECUTIVE SUMMARY

| | |
|--|---|
| <p>PROGRAMME OPERATOR DAPconstrucción® Environmental product declarations of construction sector www.csontenible.net</p> | |
| <p>Administrator of Programme Operator Col·legi d'Aparelladors, Arquitectes Tècnics de Barcelona i Enginyers de l'Edificació (CAATEEB) Bon Pastor, 5 · 08021 Barcelona www.apabcn.cat</p> | |
| <p>Owner of the Declaration</p> | |
| <p>Declaration carried out by:</p> | |
| <p>Declaration Number</p> | |
| <p>Declared Product</p> | |
| <p>Product description</p> | |
| <p>Registration date</p> | |
| <p>Validity This verified declaration authorises the owner to use the DAPcons® eco-label logo. The declaration is applicable exclusively to the product in question and for five years as of the date of registration. The responsible for the information contained in this declaration is:</p> | |
| <p>Endorsed by CAATEEB</p> | <p>Endorsed by authorised verifier</p> |
| <p> </p> | |

ENVIRONMENTAL PRODUCT DECLARATION

1. PRODUCT DESCRIPTION AND APPLICATION

KRION® Porcelanosa Solid Surface is a pleasant and warm to the touch material similar to natural stone. It is made of two thirds of natural minerals (ATH - alumina trihydrate) and a low percentage of high strength resins. This composition gives Krion® a series of exclusive features: product without pores, durable, resistant and easy to repair, it only requires minimal maintenance and is easy to clean.

In addition, KRION® EAST® K-LIFE Porcelanosa Solid Surface has photocatalytic properties in all the volume of its sheets thanks to the patented Krion® Eco-Active Solid Technology® technology. These properties have been certified under the standards of ISO 22197 (Air Purification), ISO 27447 (Antibacterial), ISO 10678 (Chemical Degradation) and ISO 27448 (Self-Cleaning Properties).

KRION® is a material that can be worked in a similar way to wood, allowing us to cut the sheets, join them and thermoforming them to create curved sections. It can also be cast during the production process obtaining shapes (sinks, bathtubs ...), making it possible to create different designs and projects unimaginable to achieve with other materials. KRION® has been classified as Euroclass B S1 d0 according to UNE-EN 13501-1: 2003 and as unrestricted material B1 according to DIN 4102

It has been declared non-toxic material by external laboratories and certified Greenguard Gold by UL, ANSI 51 "Food Equipment Materials" by NSF, REACH by SGS and free of Bisphenol A among others certificates.

This product is available in a wide range of colors and sheets of different thickness (3 mm, 6 mm, 9 mm, 12 mm and 19 mm).

The main recommended uses for this product are: exterior cladding, interior cladding and furniture. The results expressed in this declaration correspond to the furniture use.

Table 1: Main characteristics of the included products

Mechanical, structural and security properties

These properties refer to the ability of the material to withstand an external force. The mechanical properties are fundamental when making structural calculations and determining the design limits.

Below there are the fundamental KRION® tests normally used:

| Property | Testing method | Result |
|--|-------------------------------------|---|
| Flexion modulus | ISO 178 / ASTM D790 | 9300 - 12000 MPa |
| | | 1348850 - 1740452 psi |
| flexion resistance | ISO 178 / ASTM D790 | 68 - 78 MPa |
| | | 9862 - 11312 psi |
| Elongation at break (flexion) | ISO 178 / ASTM D790 | 1% - 1,50% |
| Traction modulus | ISO 527 / ASTM D638 | 9500 - 11500 MPa |
| | | 1377858 - 1667933 psi |
| Traction resistance | ISO 527 / ASTM D638 | 40 - 50 MPa |
| | | 5800 - 7250 psi |
| Elongation at break (tension) | ISO 527 / ASTM D638 | 0,6% - 0,7% |
| Compression resistance | ISO 604 / ASTM C365 | 98-115 MPa |
| | | 14213 - 16679 psi |
| Ball impact resistance | ISO 19712-2(324g) / NEMA LD3 (224g) | >200 cm |
| IZOD impact resistance | ISO 180 / ASTM D256 | 4,2 kJ/m ² |
| Slip resistance (friction coefficient) | UNE 12633 / ASTM C1028 | Coefficiente estáti o seco: 0,8-0,69 Coeficiente estático húmedo: 0,82-0,62 |
| Load test | ISO 19712-2 | Successful |
| Dimensional stability at 20 °C | ISO 4586-2 / NEMA LD3 | Successful |
| Cracking resistance | UNE 438-2 | Successful |
| Frost resistance | ISO 10545 - 12 | Successful |

Table 2: Main characteristics of the included products

Physical properties of use and durability

Physical properties are those that are related to the behaviour of the material against external actions. They are intrinsic properties of the material that characterize it and determine its use and application.

Below are the most relevant tests that help the application and use of KRION®:

| Property | Testing method | Result |
|--|---------------------------------------|---|
| Density | ISO 1183 / ASTM D792 | 1,73-1,76 g/cm ³ |
| Rockwell hardness | ISO 19712 (UNE-EN 2039-2) / ASTM D785 | > 90 |
| Barcol hardness | ISO 19712 / ASTM D2583 | 65-70 |
| Brinelli Hardness | ISO 19712 (UNE-EN 2039-1) | 250-290 N/mm ² |
| Thermal expansion | ISO 11359-2 (EN 14581) / ASTM D696 | 3,5±0,3 · 10 ⁻⁵ °C ⁻¹ |
| | | 1,9±0,3 · 10 ⁻⁵ °F ⁻¹ |
| first deflection under load | ISO 75 / ASTM D648 | 95 – 105°C |
| | | 203 – 221°F |
| Thermal conductivity | EN 12667 / ASTM C518 | 0,18 – 0,40 W/m · K |
| Dry heat resistance | ISO 19712 | Successful |
| Humid heat resistance | | |
| Cigarette resistance | | |
| Thermal shock resistance | | |
| High temperature resistance (dry heat) | NEMA LD3 | Successful |
| Wear resistance | ISO 4586 | 0,028% / 25 rev |
| Boiling water resistance | ISO 4586 / NEMA LD3 | Successful |
| Water absorption | ASTM D570 | 0,02% - 0,04% |
| Light stability (Arc Xenon) (3000h) | UNE-EN 438 / ISO 19712 | Successful |
| Colour stability | NEMA LD3 | Successful |
| General acoustic insulation | ISO 717-1 | 33,5 dBA |
| Resistance and electric resistivity | UNE-EN 61340 | 2 · 10 ¹² Ω |

Table 3: Main characteristics of the included products

Hygienic, maintenance and sustainability properties

These properties usually condition the application of the materials for sensitive designs such as applications in clinics and hospitals or direct contact with food. In the same way, they give light on the cleaning and maintenance that the material will need during its useful life.

The most relevant KRION® tests that demonstrate its easy maintenance and high hygienic capacity are shown below:

| Property | Testing method | Result |
|---|---------------------------------------|------------------------|
| Bacterial resistance | ASTM G22 | Does not admit growing |
| Fungus resistance | ISO 856 / ASTM G21 | Does not admit growing |
| Microbiological resistance within construction materials | UL 2824 (ASTM D6329) | Does not admit growing |
| Wear and ease of cleaning | CSA B45.5-11 IAMPO Z1214-2011 | OK |
| stain resistance (washability) | NEMA LD3 | Successful |
| Chemical agents resistance | ISO 19712 (Method A) | Successful |
| Stain resistance to W.C. products | UNE 56867 | Successful |
| Photocatalytic resistance to bacteria* | ISO 27447 | Active |
| Self-clean photocatalytic* | ISO 10678 | Active |
| photocatalytic depuration of the air* | ISO 22197 | Active |
| Wear of chemical products* | ISO 10678 | Active |
| Migration | Reglamento 10/2011 de la Comisión | Successful |
| Cut toxicity | MTA/-014/A11 | Not toxic |
| | UNE-EN 12457-4 | |
| | UNE-EN ISO 11348-3 | |
| SiO₂ | Instituto Nacional de Silicosis (INS) | Not found |

* Only in Snow White 1100 EAST

Table 4: Main characteristics of the included products

Performance properties against fire

Fire is a dangerous element that is indirectly fought by the construction materials, preventing the propagation of the same and the generation of smoke derived from combustion. Flammability or flame spread are some of the parameters that the different regulations to take into account when allowing the installation of building materials in buildings.

The following are the most outstanding KRION® tests that demonstrate the good properties of the material against fire:

| Property | Testing method | Result |
|--|---------------------|----------------------------|
| Specific heat | UNE-EN 23721 | 1,361 J/g·K |
| Thermal resistance | UNE-EN 12667 | 0,064 m ² · K/W |
| Naval | IMO Certificate | Mod.B & Mod.D |
| Naval. Smoke toxicity | IMO FPTC Part 2 | Pass |
| Ventilated façade | UNE-EN 13501-1 | B-s1,d0 |
| Fire reaction | UNE-EN 13501-1 | B-s1,d0 (without support) |
| Flammability | UL94HB | Pass |
| | UL94V | V0 |
| Burnt surface | ASTM E84 (NFPA 255) | Flame propagation 0 |
| | | Smoke produced 5 |
| Burnt floor surface | CAN/ULC-S102.2 | Flame propagation 0 |
| | | Smoke produced 0 |
| Classification at fire | DIN 4102-1 | B1 without restrictions |
| Calorific potential | ISO 1716 / NFPA 259 | 9,3 MJ/kg |
| Ignition | NFPA 268 | Pass |
| Flammability. Superficial combustion characteristics of the construction materials | NFPA 101 | Class A |
| temperature ignition flame | ASTM D1929 | 440°C |
| Auto ignition temperature | ASTM D1929 | 490°C |
| Unique test of article in combustion for materials and construction products | GB/T20284-2006 | Pass |
| Gosudarstvennyy rule | GOST | Pass |

Results for plates of solid colours and 12 mm thickness. The values are informative, based on tests carried out in external laboratories and checked periodically in the internal laboratories of KRION®, its purpose is not to serve as a basis for engineering calculations, for precise calculations, please contact KRION®.

2. LIFE CYCLE PHASES DESCRIPTION

2.1. Manufacture (A1, A2 and A3)

Raw materials (A1 and A2)

Manufacturing (A3)

2.2. Construction (A4 and A5)

Product transport to the building site (A4)

Table 1. Transport scenarios of product to the building site

| Destination | Type of transport | Percentage (%) | Average Km |
|-------------------|-------------------|----------------|------------|
| Spain | | | |
| Europe | | | |
| Rest of the world | | | |
| | | Total 100% | |

Construction and instalation process (A5)

2.3. Product use (B1-B7)

2.4. End-of-life (C1-C4)

2.5. Benefits and loads beyond the system boundary (D)

3. LIFE CYCLE ASSESSEMENT

3.1. Declared unit

3.2. System boundary

Table 2. Declared modules

| Product stage | | | Construction Process Stage | | Use stage | | | | | | | End of life stage | | | | Benefits and loads beyond the system boundaries |
|----------------------|-----------|---------------|----------------------------|-------------------------------------|-----------|-------------|-----------|-------------|---------------|------------------------|-----------------------|-------------------|-----------|------------------|-----------|---|
| Raw materials supply | Transport | Manufacturing | Transport | Construction – Installation process | Use | Maintenance | Repair | Replacement | Refurbishment | Operational Energy use | Operational water use | De-construction | Transport | Waste processing | Disposal | Reuse, recovery, recycling potential |
| A1 | A2 | A3 | A4 | A5 | B1 | B2 | B3 | B4 | B5 | B6 | B7 | C1 | C2 | C3 | C4 | D |
| | | | | | | | | | | | | | | | | |

X = Included in LCA MND = Module Not Declared

3.3. Data analysis for the life cycle (ACV)

Table 3. Indicators of the environmental impact

Raw materials supply Manufacturing Product Transport Construction – Installation process Use Maintenance Repair Replacement Refurbishment Operational Energy use Operational water use Decosntruction and dermolition Transport Waste processing Disposal Reuse, recovery, recycling potential

| | | | |
|---|----------------------------|---|--------------------------|
| A1. Raw materials supply | B1. Use | C1. Decosntruction and demolition | MND. Module not declared |
| A2. Transport | B2. Maintenance | C2. Transport | |
| A3. Manufacturing Product | B3. Repair | C3. Waste management for reuse, recovery and recycling. | |
| A4. Transport | B4. Replacement | C4. Disposal | |
| A5. Construction – Installation process | B5. Refurbishment | | |
| | B6. Operational Energy use | | |
| | B7. Operational water use | | |

Table 4. Indicators of resources use

| | | | |
|---|----------------------------|---|--------------------------|
| A1. Raw materials supply | B1. Use | C1. Decostruction and demolition | MND. Module not declared |
| A2. Transport | B2. Maintenance | C2. Transport | |
| A3 Manufacturing Product | B3. Repair | C3. Waste management for reuse, recovery and recycling. | |
| A4. Transport | B4. Replacement | C4. Disposal | |
| A5. Construction – Installation process | B5. Refurbishment | | |
| | B6. Operational Energy use | | |
| | B7. Operational water use | | |

3.4. Potential environmental benefits and impacts derived from activities of reuse, recovery and recycling

Table 5. Indicators of impact evolution. Reuse, recovery and recycling

| Parameter | Unit expressed by functional unit or declared unit | D. |
|---|--|----|
| Potential depletion of abiotic resources (ADP-elements)* | Kg Sb eq | |
| Potential depletion of abiotic resources (ADP-fossil fuels)* | MJ, net calorific value | |
| Potential acidification of the ground and water resources, AP | Kg SO ₂ eq | |
| Ozone depletion potential, ODP | Kg CFC-11 eq | |
| Global warming potential, GWP | Kg CO ₂ eq | |
| Eutrophication potential, EP | Kg (PO ₄) ₃ eq | |
| Photochemical ozone creation potential, POCP | Kg ethene eq | |

* ADP-elements: including all the non-renewable abiotic material resources

* ADP-fossil fuels: Including all the fossil resources

Table 6. Life cycle inventory data. Reuse, recovery and recycling

| Parameter | Unit expressed by functional unit or declared unit | D. |
|--|--|----|
| Use of renewable primary energy, excluding the resources of non-renewable primary energy used as a raw material | MJ | |
| Use of renewable primary energy used as raw material | MJ | |
| Total use a renewable primary energy (primary energy and resources of renewable primary energy used as raw materials) | MJ | |
| Use of non-renewable primary energy, excluding the resources of non-renewable primary energy used as a raw material | MJ | |
| Use of non-renewable primary energy used as raw material | MJ | |
| Total use of non-renewable primary energy (primary energy and resources of renewable primary energy used as raw materials) | MJ | |
| Use of secondary materials | kg | |
| Use of renewable secondary fuels | MJ | |
| Use of non-renewable secondary fuels | MJ | |
| Net use of fresh water | m ³ | |
| Hazardous waste disposed | kg | |
| Non-hazardous waste disposed | kg | |
| Radioactive waste disposed | kg | |
| Components for its reutilization | kg | |
| Materials to recycle | kg | |
| Materials for the energetic valorization | kg | |
| Exported energy | MJ | |

MJ, net calorific value

3.5. Recommendations of this DAP

3.6. Cut-off rules

3.7. Additional environmental information

3.8. Other data

4. TECHNICAL INFORMATION AND SCENARIOS

4.1. Transport from the factory to the building site (A4)

| Parameter | Parameter expressed by declared unit |
|---|--------------------------------------|
| Type and consumption of fuel or vehicle used | |
| Distance | |
| Utilization of the vehicle (including the empty return) | |
| Density of the transported product | |
| Factor of calculating the capacity of the volume used | |

4.2. Installation processes (A5)

| Parameter | Parameter expressed by declared unit |
|--|--------------------------------------|
| Auxiliary materials for installation | |
| Water consumption | |
| Consumption of other resources | |
| Quantitative description of the type of energy and consumption during the installation process | |
| Waste in the construction site, generated by the installation of the product (specify types) | |
| Material output as a result of the waste management processes in the place of installation. For example: collection for recycling, for energetic recovery and final disposal | |
| Emissions to the air, ground or water | |

4.3. Reference service life (B1)

| Parameter | Parameter expressed by declared unit |
|--|--------------------------------------|
| Reference service life | |
| Properties and characteristics of the product | |
| Requirements (maintenance frequency, ways of using, repair, etc.) | |

4.4. Maintenance (B2), repair (B3), replacement (B4) or refurbishment (B5)

| Parameter | Parameter expressed by fdeclared unit |
|--|---------------------------------------|
| Maintenance, for example: cleaning agent, type of surfactant | |
| Maintenance cycle | |
| Auxiliar materials for the maintenance process | |
| Energy input for the maintenance process | |
| Net consumption of fresh water during the maintenance or repair process | |
| Inspection, maintenance or repair process | |
| Inspection, maintenance or repair cycle | |
| Auxiliary materials, e.g. lubricant | |
| Changing of parts during the product life cycle | |
| Energy input during the process of maintenance, type of energy, e.g. electricity and quantity | |
| Energy input during the process of reparation, renovation, replacement, if it is applicable and significant | |
| Loss of material during maintenance or repair | |
| Service life of the product for inclusion as a basis to calculate the number of times a change is needed in the building | |

4.5. Operational use of energy (B6) and water (B7)

| Parameter | Parameter expressed by declared unit |
|--|--------------------------------------|
| Energy type, for example: electricity, natural gas, use of heat for a district | |
| Output power potential of equipments | |
| Net consumption of fresh water | |
| Characteristic representation (energy efficiency, emissions...) | |

4.6. End of life (C1-C4)

| Process | Parameter expressed for declared unit of the components, products or materials |
|----------------------|--|
| Collection processes | |
| Recycling systems | |
| Disposal | |

5. ADDITIONAL INFORMATION

6. PCR AND VERIFICATION

| |
|--|
| <p>This declaration is based on the Document</p> |
| <p>Independent verification of the declaration and data according to ISO 14025 and UNE EN15804 + A1</p> <p><input type="checkbox"/> Internal <input type="checkbox"/> External</p> |
| <p>Independent verifier appointed</p> |
| <p>Verification date</p> <p> / /</p> |
| <p>References</p> |

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