



ENVIRONMENTAL PRODUCT DECLARATION

**DAPcons® .100.006**



IN ACCORDANCE WITH STANDARDS  
ISO 14.025 and UNE EN 15804 + A1

PRODUCT

**KRION® EAST® K-LIFE Porcelanosa Solid Surface**  
**(interior cladding use)**

COMPANY

**SYSTEMPOOL**  
PORCELANOSA Grupo

PRODUCT DESCRIPTION

KRION® EAST® K-LIFE Porcelanosa Solid Surface is a non-porous and homogeneous surfacing material, composed of two thirds of natural minerals and a low percentage of High-resistance. The new technology used (ECO ACTIVE SOLID TECHNOLOGY®) allows the material to have photocatalytic properties throughout its mass.

PCR REFERENCE

RCP100 - Productos de construcción en general - V.2 (2016)

PRODUCTION PLANT

SYSTEMPOOL, S.A.  
Ctra. Villarreal - Puebla Arenoso (CV20)  
Km 1 12540 Villarreal (Castellón) SPAIN

VALIDITY

From: 22/12/2017  
To: 22/12/2022

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## Environmental Product Declaration KRION® EAST® K-LIFE® Porcelanosa Solid Surface Executive Summary

<p><b>PROGRAM OPERATOR DAPconstrucción®</b></p> <p>Environmental product declarations in the construction sector  <a href="http://www.csostenible.net">www.csostenible.net</a></p>	
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<b>DECLARATION NUMBER:</b>	DAPcons®.100.006
<b>PRODUCT DECLARED</b>	KRION® EAST® K-LIFE Porcelanosa Solid Surface
<p><b>PRODUCT DESCRIPTION</b></p> <p>KRION® EAST® K-LIFE Porcelanosa Solid Surface is a new generation material that has multiple technical and aesthetic qualities that give the material endless possibilities when it comes to working it. It is a non-toxic material and always respectful with the environment. Proof of this is the new technology used, ECO ACTIVE SOLID TECHNOLOGY®, which allows the material to have photocatalytic properties throughout its mass, with the great benefits that this entails.</p>	
<b>REGISTRATION DATE</b>	22/12/2017
<p><b>VALIDITY</b></p> <p>This verified declaration authorises the holder 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. SYSTEMPOOL, S.A. is responsible for the information contained in this declaration.</p>	
<p><b>ENDORSED BY CAATEEB</b></p> <p>Mr. Jordi Gosálves i López, President of the CAATEEB</p>	<p><b>ENDORSED BY AUTHORISED VERIFIER</b></p> <p>Mr. Ferran Pérez, Verifier accredited by the Program Operator DAPconstrucción®</p>
<p>This environmental product declaration complies with standards ISO 14025 and UNE EN 15804 + A1 and contains information of an environmental nature about the life cycle of KRION® EAST® K-LIFE Porcelanosa Solid Surface manufactured by SYSTEMPOOL, S.A. in its production center in Daejeon (Suoth Korea). This declaration is based on the document RCP 100 Productos de construcción en general - Versión 2 - 29.02.2016. The environmental product declaration (DAPcons®) may not be comparable to another EPD if it is not based on the UNE EN 15804 + A1 standard</p>	



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## Environmental Product Declaration KRION® Porcelanosa Solid Surface

### 1. Description of the product and its use

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 interior cladding use.

**Table 1: Main technical characteristics of the product.**

Property	Test Method	Test Result	Units
Density	ISO 1183 ASTM D792	1.71 - 1.77	g/cm <sup>3</sup>
Flexural modulus of elasticity	ISO 178 / ASTM D790	8500 - 11900	MPa
Flexural strength		60 - 78	MPa
Elongation	ISO 178 / ASTM D638	0.7 - 0.85	%
Tensile modulus	ISO 527 / ASTM D638	9380 - 11325	MPa
Tensile strength		40 - 60	MPa
Compressive strength	ISO 604	97 - 117	MPa
Impact resistance (ball drop)	ISO 19712-2 UNE EN 438-2 ISO 4586-2 NEMA LD 3	Satisfactory (No break)	324g ball / Height 1.9m (2m)
Abrasion resistance	UNE EN 438-2 ISO 4586-2	0.028	% mass / Δmass(%) every 25 rev.
Resistance to boiling water	UNE EN 438-2 ISO 4586-2 NEMA LD 3	0.1 - 0.30	% weight
		0.1 - 0.30	% thickness
		Level 5: No change	Levels 1-5
Resistance to bacteria	ISO 846 / ASTM G22	No proliferation	
Resistance to fungi	ISO 846 / ASTM G21		
Anti-slip properties depending of grit finish from (40-600)	UNE ENV 12633	Rd = 40 Class 2 - Rd = 12 Class 0	SR (Roughness) Pendulum
	ASTM C1028	0.8 - 0.69	Dry Static Coefficient
		0.82 - 0.62	Wet Static Coefficient
	ANSI A.137.1:2012	0.7 - 0.35	Wet Dynamic Coefficient
Dimensional stability	ISO 4586-2 UNE EN 438-2	0.02 (90% HR & 23°C)	% change in length
		0.08 (23% HR & 23°C)	
Dimensional stability at high temperatures	UNE-EN 438-2	0.18 (70°C)	% change in length
		0.10 (95% HR & 40°C)	
Linear thermal expansion	ISO 11359-2 ASTM D696 UNE-EN 14581	3.5 x 10 <sup>-5</sup>	λ (mm/m °C)
Coefficient of thermal expansion		0.112	3*λ (mm <sup>3</sup> /m <sup>3</sup> °C)
Resistance to artificial weathering. Xenon arc (3000h)	ISO 4586-2 UNE EN 438-2 ISO 4892-2	Level 5: No change	Grey scale. Levels 1-5
Resistance to ultra-violet light. UV-313 lamp (1500 hrs)	UNE EN 438-2 ISO 4892-3	Level 4.5: Slight change	Grey scale. Levels 1-5
Lightfastness (122 hrs)	ISO 19712-2 UNE 56868:2002	Level 5: No change	Grey scale. Levels 1-5
Colour fastness	ISO-19712-2	>6	"blue wool"
Thermal resistance	UNE EN 12667	q = 104.8	W / m
		R = 0.05	m <sup>2</sup> . K / W
		λ = 0.396	W / m . K
Thermal shock resistance (90 - 20 °C / 194 - 68 °F)	ISO-19712-2	Satisfactory	250 Cycles
Surface resistance to damp heat	ISO 19712-2 ISO 4586-2	Satisfactory Level 5: No change	Levels 1-5
Surface resistance to dry heat	ISO 19712-2 UNE-EN 438-2 ISO 4586-2 UNE 56867 UNE 56842	Satisfactory Level 4: Slight change in gloss degree only visible from certain angles.	Levels 1-5

**Table 2:** Main technical characteristics of the product (continuation).

Boiling water resistance	NEMA LD3	Without visible changes	
High temperature resistance		Without changes	
Surface defects	ISO-19712-2	Satisfactory	No defects
Barcol hardness	ISO-19712-2 ASTM D 2583	60 - 65	Units
Rockwell hardness	ISO-19712-2 ASTM D785 ISO-2039-2	> 85	Units
Falling ball test	ISO-19712-2 ISO-2039-1	240 - 280	N/mm <sup>2</sup>
Resistance to cigarette burns	ISO 19712-2 UNE-EN 438-2	Satisfactory. Level 4: Slight change in gloss degree only visible from certain angles.	Levels 1-5
Load test	ISO-19712-2	Satisfactory (No cracks or fissures were observed after the test)	0.12 mm (residual deflection)
Chemical resistance (Method A)		Satisfactory 5 (In all cases, except acetone with level 4)	Levels 1-5
Chemical resistance (Method B)		27	Cleanliness rating from 0 to 75
Chemical resistance	UNE 56867	Satisfactory	
Fire rating	UNE-EN 13501-1	B s1 d0 (using standard material)	Euroclass
	ASTM E84	Class A	"IBC class"
	DIN 4102-1	B1 (with no restrictions)	
	UL94HB	Satisfactory	
	NFPA 259	Satisfactory	
Scratch resistance	UNE-EN 438-2	4	Levels 1-5
	Eq. Mohs	3	
Cracking resistance	UNE-EN 438-2	5	Levels 1-5
Surface permeability	NFT T 30-801	8	g/m <sup>2</sup> day
Resistance to water vapor	UNE 56867 UNE 56842	Satisfactory (6.04 KJ/g)	
Specific heat	UNE 23721	1.361	J/g K
Water absorption	ASTM D570	0.03	%
Deflection temperature (load 1.82 N/mm <sup>2</sup> )	ASTM D648	>95	°C
Wear & Cleanability	CSA B45.5-11 IAMPO Z124-2011	Complies	
Cutting powder toxicity	UNE-EN ISO 11348-3 MTA/MA - 014 / A11 UNE EN 12457-4	Without effects	



**Illustration 1.** KRION® EAST® K-LIFE Porcelanosa Solid Surface. Interior cladding.

## 2. Description of the life cycle phases

PRODUCT STAGE		CONSTRUCTION PROCESS STAGE			USE STAGE							END OF LIFE STAGE				BENEFITS AND LOADS BEYOND THE LIFE SYSTEM BOUNDARY
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	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X

X= Declared module

### 2.1. Manufacture (A1, A2 and A3)

#### Raw materials (A1 and A2)

The product KRION® EAST® K-LIFE Porcelanosa Solid Surface is composed of 2/3 parts of natural mineral ATH (alumina trihydrate) and 1/3 part of last generation acrylic resins developed by SYSTEMPOOL, S.A. The exclusive composition of KRION®, allows the material to inherit the technical and aesthetic characteristics of the mineral and combine them with the technical characteristics of the polymers, with clear unique characteristics: antibacterial without any type of additive, hardness, resistance, durability, ease of repair, low maintenance and easy cleaning.

The raw materials used in the production of KRION® come from PRC, USA and, mainly, South Korea. For transportation to the productive center of the KRION® of raw materials in South Korea, it is carried out by truck.

The import raw materials (PRC and USA) are transported by truck to the port of departure and from there to the port of Busan by freighter. Finally, by truck to the production center in Daejeon.

#### Manufacture (A3)

##### MIXING PROCESS

Once the raw materials are in the factory, they are first dosed and mixed in the required proportions. Then vacuum is applied to the mixture to eliminate possible air bubbles and thus ensure the compactness of the product.

##### CONTINUOUS CASTING

Then a plate is formed by casting the material in line by continuous steel bands that determine, according to their height, the thickness of each plate. After this, the material undergoes a curing process at room temperature.

##### SUPERFICIAL FINISHING

Once the piece is cold, the surface finishing is carried out, consisting of cutting (if necessary), then sanding and calibrating of the surfaces. Finally, dust is removed with compressed air.

## PACKAGING

Finally, a plastic film is placed on each plate and then stacked on a pallet. The plates stacked are then covered with cardboard and strapped.

## 2.2. Construction

### Product Transport (A4)

The main destination of the KRION® EAST® K-LIFE Porcelanosa Solid Surface manufactured by SYSTEMPOOL, S.A. is Spain, then France, United Arab Emirates and Italy. According to the data provided, there are three transport scenarios for the finished products:

<b>Destination</b>	<b>Type of transport</b>	<b>Percentage (%)</b>	<b>Average kilometers</b>
Spain	27 t truck	33	390
Europe	27 t truck	30	990
	Freighter		730
Rest of the world	27 t truck	37	530
	Transoceanic freighter		8.800
<i>Total</i>		<i>100</i>	

The truck used meets the Euro III standards, consumes 1,25E-05 kg of diesel/kg of cargo and km.

For transcontinental transport, medium-sized transoceanic freighters are considered appropriate.

### Installation Process and construction (A5)

Once the product is unpacked, it can be installed. According to the data obtained and with a view to applying a real scenario, it is established that installation calls for the use of polyurethane adhesive and adhesive KRION® Porcelanosa Solid Surface Adhesives. It is a two component acrylic adhesive for bonding and sealing KRION® material, which is formulated with the most advanced technology for the surface coating industry and offers excellent adhesion on solid surface substrates. The possible mechanical anchoring system has not been accounted for due to its complexity and variability.

## 2.3. Use of product

The use phase is divided into the following modules:

- Use (B1)
- Maintenance (B2)
- Reparation (B3)
- Substitution (B4)
- Rehabilitation (B5)
- Use of operational energy (B6)
- Use of operational water (B7)

Once installed, KRION® EAST® K-LIFE Porcelanosa Solid Surface requires no further energy input for use, nor does it call for maintenance, except normal cleaning operations. For this reason, of all the modules listed above, only the environmental impacts attributable to product maintenance are applicable (module B2) and the environmental benefits generated by the photocatalytic activity during its use phase (module B1).

It has been estimated that the lifespan of the product for the "Interior Cladding" use will be 10 years.

### Use (B1)

Both in the atmosphere and in homes, due to pollution there are certain gases that are dangerous for humans and nature itself. These gases are especially nitrogen oxides (NO<sub>x</sub>), sulfur oxides (SO<sub>x</sub>) and volatile organic compounds (VOCs). When these gases come into contact with the surface of KRION® Eco-Active, a chemical reaction of degradation is initiated which reduces their concentrations.

According to the information provided by SYSTEMPOOL, S.A., and accredited by external laboratories, 1 m<sup>2</sup> of KRION® EAST® K-LIFE Porcelanosa Solid Surface manages to eliminate the following amount of NO<sub>x</sub> from the atmosphere throughout its lifespan (Interior Cladding):

		Unit
NO <sub>x</sub> removed	5,33	kg

### Maintenance (B2)

#### ANTIBACTERIAL ACTIVITY

Bacteria are present in our environment in a habitual way, tending to form colonies and growing in those spaces that are favorable to them, as it happens in porous materials, in joints or surfaces that are difficult to clean, being able to develop diseases dangerous to our health.

Thanks to the new technology KRION® Eco-Active Solid Technology®, not only bacteria can not proliferate in the material, but when they come into contact with the surface of the active material the bacteria are eliminated.



## SELF-CLEANING

Thanks to the revolutionary new technology present in KRION® Eco-Active Solid Technology®, liquids and dirt can be cleaned from the surface of the material more easily and reducing the use of detergents.

Cleaning is done with a damp cloth and, if the surface is dirty or greasy, cleaning agents such as detergents or bleaches can be added. In the present study, the consumption of water and disinfectant was considered for a scenario of use of interior cladding:

Table 3. **Scenarios for the maintenance of KRION® EAST® K-LIFE Porcelanosa Solid Surface (Interior Cladding)**

<b>Cleaning products</b>	<b>Scenario</b>
Water (kg/wash)	0,05
Detergent (kg/wash)	0,0003
Frequency of washing (num. of times/week)	1

### 2.4. End of life

The end-of-life phase includes the following modules:

#### **Deconstruction and demolition (C1)**

Once it reaches the end of its life cycle, the product will be removed, either in the framework of rehabilitation of the building or during its demolition. In the case of the demolition of a building, the impacts attributable to the removal of the product are negligible.

#### **Transport (C2)**

The product waste is transported by truck in compliance with Euro III norms, to its destination at a distance of 50 km. In this estimation of the 50 km between the demolished building and the closest landfill site, only the Spanish market has been taken into account, extrapolating the results to the overall market. At present, Spain has over 80 authorized CDW sites. However, these landfill sites are mostly concentrated in certain areas such as Catalonia (55%), Galicia (12%) and Andalusia (11%). The main Spanish cities are expected to have an installation of this kind nearby.

#### **Disposal (C4)**

It has been considered that 100% of the waste product is sent to landfill.

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## 2.5. Module D: potential environmental benefits and burdens derived from reuse, recovery and recycling activities.

It is considered that impacts are avoided in the manufacture (waste of packaging such as plastic and metal) and installation (waste of packaging such as cardboard, plastic and pallets).

## 3. Life cycle assessment

The life cycle assessment on which this declaration is based was carried out in keeping with ISO standards 14040 and 14044 and the document *RCP 100 Productos de construcción en general Versión 2 - 29.02.2016*.

This LCA is “**cradle to grave**”, that is, it covers the phases of manufacture of the product, construction, use and end of life.

Specific data from the SYSTEMPOOL, S.A. plant (Daejeon, South Korea) corresponding to the year 2016 has been used to inventory the manufacturing phase. For the rest of the phases, generic data has been used, taken mostly from the official database of the DAPconstrucción® Program Operator and the ELCD database.

### 3.1. Functional Unit

The functional unit is “1 m<sup>2</sup> of KRION® EAST® K-LIFE Porcelanosa Solid Surface of 12-mm thick surface for a period of 10 years of use as interior cladding”

### 3.2. System boundaries

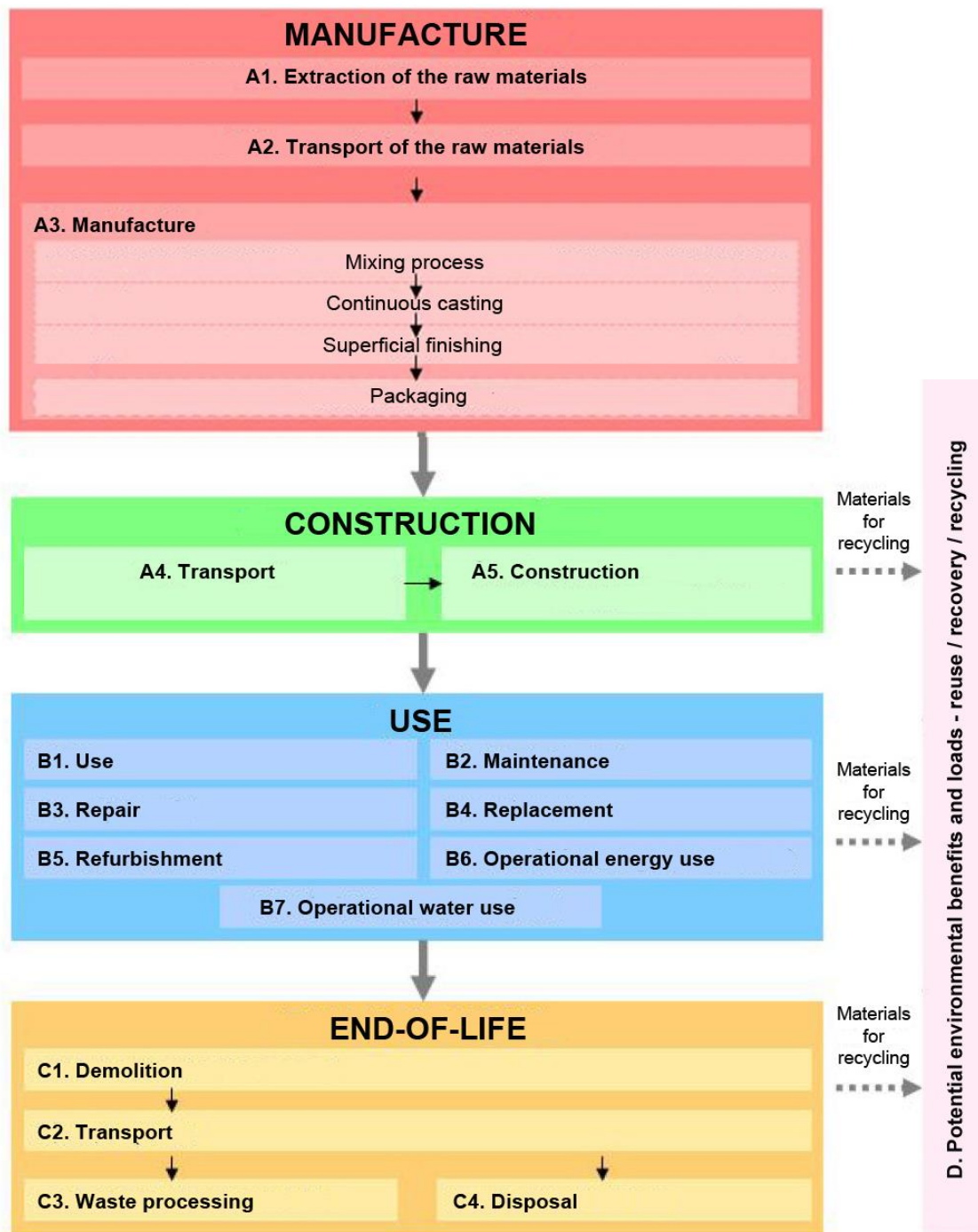


Figure 1. System boundaries

### 3.3. Indicators of the evaluation of impacts

Impact Category	Unit per m <sup>2</sup> of panel	Life Cycle Phase										
		Manufac- ture A1. - A3.	Construction		Use			End Of Life				
			A4.	A5.	B1.	B2.	B3. - B7.	C1.	C2.	C3.	C4.	
<b>Abiotic Resources Depletion Potential (Elements)</b>	Kg of Sb eq.	7,14E-05	7,33E-07	2,53E-06	0,00E+00	1,07E-06	0,00	0,00	4,81E-09	0,00	0,00	1,41E-07
<b>Abiotic Resources Depletion Potential (Fossil fuels)</b>	MJ, net calorific value	1.100,57	45,81	61,63	0,00E+00	1,97	0,00	0,00	1,37	0,00	0,00	3,19
<b>Acidification Potential</b>	Kg of SO <sub>2</sub> eq.	3,60E-01	5,64E-02	2,09E-02	-3,87E+00	1,17E-03	0,00	0,00	6,15E-04	0,00	0,00	9,93E-04
<b>Ozone Depletion Potential</b>	Kg of CFC11 eq.	1,69E-06	4,62E-07	4,16E-07	0,00E+00	3,08E-08	0,00	0,00	1,57E-08	0,00	0,00	3,29E-08
<b>Global Warming Potential</b>	kg of CO <sub>2</sub> eq.	6,81E+01	3,20E+00	3,93	0,00E+00	0,25	0,00	0,00	1,00E-01	0,00	0,00	1,10E-01
<b>Eutrophication Potential</b>	Kg of PO <sub>4</sub> <sup>-3</sup> eq.	6,00E-02	6,43E-03	3,77E-03	-0,72E+00	7,82E-04	0,00	0,00	1,06E-04	0,00	0,00	1,76E-04
<b>Photochemical Ozone Formation Potential</b>	kg of C2H4 eq.	1,74E-02	2,23E-03	1,06E-03	0,00E+00	2,14E-04	0,00	0,00	1,39E-05	0,00	0,00	4,18E-05

A1. Supply of raw materials

B1. Use

B2. Maintenance

B3. Repair

B4. Replacement

B5. Refurbishment

B6. Operational energy use

B7. Operational water use

C1. Deconstruction and demolition

C2. Transport

C3. Waste management for reuse, recovery and recycling

C4. Disposal

### 3.4. Life cycle inventory data (LCI)

Parameter	Unit per m <sup>2</sup> of panel	Life Cycle Phase										
		Manufacture		Construcció		Use			Fin de vida			
		A1. - A3.	A4.	A5.	B1.	B2.	B3. - B7.	C1.	C2.	C3.	C4.	
<b>Use of renewable Total use of renewable primary energy resources, PERT</b>	MJ	1,43E+01	8,36E-01	8,29E+00	0,00E+00	4,80E-01	0,00	0,00	0,00	3,80E-03	0,00	7,66E-02
<b>material. PERE Total use of non-renewable primary energy resources, PENRT</b>	MJ	1,16E+03	4,91E+01	7,43E+01	0,00E+00	3,15E+00	0,00	0,00	0,00	1,49E+00	0,00	3,43E+00
<b>Use of renewable secondary fuels, RSF</b>	MJ	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
<b>Use of non-renewable secondary fuels, NRSF</b>	MJ	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
<b>Net use of fresh water, FW</b>	m <sup>3</sup>	5,21E-02	2,96E-03	1,95E-02	0,00E+00	8,08E-02	0,00	0,00	0,00	3,32E-05	0,00	2,12E-04
<b>Waste production</b>												
Hazardous waste disposed, HWD	kg	2,05E-02	2,21E-05	2,19E-03	0,00E+00	3,09E-06	0,00	0,00	0,00	3,46E-07	0,00	2,15E-06
Non-hazardous waste disposed, NHWD	kg	8,52E+00	4,38E-02	8,92E-01	0,00E+00	3,29E-02	0,00	0,00	0,00	2,60E-04	0,00	2,09E+01
Radioactive waste disposed, RWD	kg	7,99E-04	3,10E-04	2,93E-04	0,00E+00	5,32E-06	0,00	0,00	0,00	1,01E-05	0,00	2,13E-05
<b>Output material for</b>												
Components for reuse, CRU	kg	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Materials for recycling, MFR	kg	2,52E-02	0,00E+00	1,71E-01	0,00E+00	0,00E+00	0,00	0,00	0,00	0,00E+00	0,00	0,00E+00
Materials for energy recovery, MER	kg	0,00E+00	0,00E+00	8,42E-02	0,00E+00	0,00E+00	0,00	0,00	0,00	0,00E+00	0,00	0,00E+00

A1. Supply of raw materials  
 A2. Transport  
 A3. Manufacture according to figure 1)  
 A4. Transport  
 A5. Precesses of installation and construction  
 B1. Use  
 B2. Maintenance  
 B3. Repair  
 B4. Replacement  
 B5. Refurbishment  
 B6. Operational energy use  
 B7. Operational water use  
 C1. Deconstruction and demolition  
 C2. Transport  
 C3. Waste management for reuse, recovery and recycling  
 C4. Disposal

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

**Table 6. Indicators of impact evaluation**

<b>Reuse, recovery and recycling</b>		
<b>Parameter</b>	<b>Unit per m<sup>2</sup></b>	<b>D.</b>
Abiotic Resources Depletion Potential (Elements)	kg Sb eq.	-3,24E-07
Abiotic Resources Depletion Potential (Fossil fuels)	MJ (net calorific value)	-3,77E+00
Acidification Potential	kg SO <sub>2</sub> eq.	-7,22E-04
Ozone Depletion Potential	kg CFC11 eq.	-1,54E-08
Global Warming Potential	kg CO <sub>2</sub> eq.	-1,70E-01
Eutrophication Potential	kg PO <sub>4</sub> <sup>3-</sup> eq	-2,41E-04
Photochemical Ozono Formation Potential	kg de C <sub>2</sub> H <sub>4</sub> eq.	-3,80E-05

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

**Table 7. Life cycle inventory data**

<b>use of resources, waste production and Reuse, recovery and recycling</b>		
<b>Parameter</b>	<b>Unit per m<sup>2</sup></b>	<b>D.</b>
Total use of renewable primary energy resources, PERT	MJ	-9,12E-01
Total use of non-renewable primary energy resources, PENRT	MJ	-4,17E+00
Use of renewable secondary fuels, RSF	MJ	0,00E+00
Use of non-renewable secondary fuels, NRSF	MJ	0,00E+00
Net use of fresh water, FW	m <sup>3</sup>	-1,39E-03
<b>Waste production</b>		
Hazardous waste disposed, HWD	kg	-1,87E-06
Non-hazardous waste disposed, NHWD	kg	-1,75E-02
Radioactive waste disposed, RWD	kg	-5,94E-06
<b>Output material for</b>		
Components for reuse, CRU	Kg	0,00E+00
Materials for recycling, MFR	Kg	0,00E+00
Materials for energy recovery, MER	Kg	0,00E+00

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

### 3.6. Recommendations of this DAP

Construction products should be compared by applying the same functional unit and level of building, i.e. including the product's behaviour throughout its life cycle.

Environmental product declarations of different systems of type III eco-labelling are not directly comparable, as the rules of calculation may be different.

This declaration represents the average behaviour of the product KRION® EAST® K-LIFE Porcelanosa Solid Surface manufactured by SYSTEMPOOL S.A.

### 3.7. Cut-off rules

Over 95% of all the inputs and outputs of mass and energy of the system have been included, excluding, among others, diffuse emissions in the factory.

### 3.8. Additional environmental information

The KRION® EAST® K-LIFE Porcelanosa Solid Surface does not release hazardous substances in indoor air, soil and water during the use phase. It is considered an inert solid waste and can be removed, once its life cycle has finished, as a construction material.

### 3.9. Other data

Waste from this product is included as "non-hazardous waste" in the European List of Waste under LOW code 17 09 04.

## 4. Technical information and scenarios

### A) Transport

Parameter	Parameter expressed by functional unit
Consumption of fuel or transport vehicle used	17 tn truck: 1,19E-05 kg diesel/kgkm 27 tn truck: 1,25E-05 kg diesel/kgkm
Capacity of use (including return full)	85% for road transport and 100% for freighter
Density of load of product transported	1,490 kg/m <sup>3</sup>
Factor for calculating the capacity of the volume used	1,260 kg/m <sup>3</sup> for a truck 1,490 kg/m <sup>3</sup> for a freighter

### B) Processes of installation

Auxiliary materials for installation	Polyurethane adhesive: 71 ml KRION Adhesive: 55 ml
Consumption of other resources	Not detected
Quantitative description of the type of energy and consumption during the process of installing the product	Electricity: 5,7 kwh
Waste on the construction site, generated by the installation of the product	<i>Spain:</i> Cardboard for incineration: 2,77E-03 kg Cardboard for recycling: 2,91E-02 kg Cardboard to landfill sites: 1,43E-02 kg Plastic for incineration: 2,96E-03 kg Plastic for recycling: 4,22E-03 kg Plastic for landfill sites: 1,39E-02 kg Pallet for incineration: 2,91E-02 kg Pallet for recycling: 3,01E-02 kg Pallet for landfill sites: 6,16E-03 kg

	<p><i>Europe:</i></p> <p>Cardboard for incineration: 8,49E-04 kg  Cardboard for recycling: 3,14E-02 kg  Cardboard to landfill sites: 1,02E-02 kg  Plastic for incineration: 5,05E-03 kg  Plastic for recycling: 5,25E-03 kg  Plastic for landfill sites: 9,13E-03 kg  Pallet for incineration: 1,26E-02 kg  Pallet for recycling: 2,40E-02 kg  Pallet for landfill sites: 2,65E-02 kg</p> <p><i>Resto f the world:</i></p> <p>Cardboard for incineration: 1,05E-02 kg  Cardboard for recycling: 5,23E-03 kg  Cardboard to landfill sites: 3,66E-02 kg  Plastic for incineration: 4,79E-03 kg  Plastic for recycling: 2,40E-03 kg  Plastic for landfill sites: 1,68E-02 kg  Pallet for incineration: 1,55E-02 kg  Pallet for recycling: 3,89E-02 kg  Pallet for landfill sites: 2,33E-02 kg</p>
Material output as a result of the processes of waste management in the place of installation. For example: collection for recycling, for energy recovery and disposal	See previous point, "Waste on the construction site, generated by the installation of the product"
Emissions to the air, land and water	Not detected

### C) Operational use of energy and water

Parameter	Parameter expressed by functional unit
Type of energy, for example: electricity, natural gas, use of heat for a district	Not detected
Outputs	Not detected
Net consumption of fresh water	Not detected
Characteristic representation (energy efficiency, emissions, etc.)	Not detected
reference service life	10 years

### D) Maintenance and repair

Parameter	Parameter expressed by functional unit
Maintenance, for example; cleaning agent, type of surfactant	Quantities for cleaning 1 m2 (once): - Detergent 0,0003 kg - Water 0,05 kg
Maintenance cycle	Cleaning for Interior cladding use : once/week*48weeks/year* 10 years = 480 washes
Energy input for the maintenance process	Not detected



Net consumption of fresh water during maintenance or repair	0,024 m <sup>3</sup>
Inspection, maintenance or repair process	Not detected
Inspection, maintenance or repair cycle	Not detected
Auxiliary materials, e.g. lubricant	Not detected
Changing of parts during product life cycle	Not detected
Energy input during maintenance, type of energy, e.g.: electricity, and amount	Not detected
Energy input during the process of repair, renovation, changing parts if applicable and significant	Not detected
Loss of material during maintenance or repair	Not detected
Service life of the product for inclusion as a basis to calculate the number of times a change is needed in the building	10 years

E) End of life



<b>Parameter</b>	<b>Parameter expressed by functional unit</b>
Collection processes	20,88 kg collected together with construction waste
Recycling systems	0 kg
Disposal	20,88 kg of material for disposal including loss of material.

## 5. Information additional

Technical characteristics of the product	<ul style="list-style-type: none"> <li>- Greenguard Gold Certificate 102154-420</li> <li>- Euroclass reaction to fire: B s1 d0</li> <li>- NSF/ANSI 5 Food Equipment Materials Certificate</li> <li>- Reach Compliance HKHL 1501002788JL certificate</li> <li>- Certificates of the company: ISO 9001 (ES15 / 17872) and ISO 14001 (ES15 / 17871)</li> </ul>
Transport and construction	<ul style="list-style-type: none"> <li>- Density of load transported: 1.490 Kg/m<sup>3</sup></li> <li>- Adhesive: 410 ml</li> </ul>
Use and maintenance	<ul style="list-style-type: none"> <li>- Reference service life: 10 years</li> <li>- Photocatalytic activity (NO<sub>x</sub> removal) Report "Krion Eco Active 4. Removal of nitric oxide - ISO 22197-1:2007 Queen's University Belfast, David Keir Building, Stranmillis Road, Belfast, BT9 5AG, UK" 08-03-2017</li> <li>- Antimicrobial activity test of semiconductor photocatalytic materials with KRION ECO ACTIVE (ISO 27447:2009) Instituto Valenciano de Microbiología. Registration number D/16/129</li> <li>- KRION EAST - Measurement of water contact angle - ISO 27448:2009. Queen's University Belfast, David Keir Building, Stranmillis Road, Belfast, BT9 5AG, UK". 18-05-2017</li> <li>- Maintenance and cleaning recommendations: apply 0.05 kg water and 0.0003 kg of detergent per wash. The indicated washing frequency is 1 time per week.</li> </ul>
End of life	LOW code according to European List of Waste (Directive 2000/532/EC): LOW 17 09 04

## 6. PCR and verification

This declaration is based on the document RCP 100 Productos de construcción en general - Versión 2 – 29.02.2016.

RCP 100 Productos de construcción en general - Versión 2 was revised by the Advisory Board of the Program Operator DAPconstrucción®.	
Independent verification of the declaration and data, in accordance with standards ISO 14025 and UNE EN 15804 + A1	
<input type="checkbox"/> Internal <input checked="" type="checkbox"/> external	
Third-party verifier:  - Ferran Pérez Ibáñez	 Oficina d'Accreditació d'Entitats Col·laboradores <u>Verificació VEDAP-001-10</u>
	
Date of verification : 2017, 17 <sup>th</sup> December	

## References

- INFORME DE ANÁLISIS DE CICLO DE VIDA DE KRION® Porcelanosa Solid Surface Y KRION® EAST® K-LIFE Porcelanosa Solid Surface de SYSTEMPOOL. ReMa-INGENIERÍA, S.L. 2017 (not published)

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