Bonalife
Muebles de baño

Krion K-LIFE 1100

FICHA ESPECIFICACIÓN

INDEX

01 PRODUCT NAME AND MANUFACTURER

Product Name: **Krion® K-LIFE 1100**

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02 DESCRIPTION AND USE

Krion® K-LIFE 1100 is a new generation solid surface developed by KRION SOLID SURFACE, S.A.U., a company of the Porcelanosa Group. It is a material with a high mineral content and a low percentage of natural pigments, which give it an excellent level of whiteness. All this is bound with high-quality acrylic resins.

This formulation gives Krion® K-LIFE 1100 performance similar to natural stone, but it can be worked with wood tools. It is presented in the form of sheets of different formats and thicknesses.

Krion® K-LIFE 1100 is a material exclusively manufactured and marketed by KRION SOLID SURFACE, S.A.U. It offers great performance in both the residential and commercial and/or healthcare fields with low and easy maintenance, taking shape in multiple application possibilities in furniture, equipment, countertops, interior and exterior cladding. With a high potential for design and transformation in shapes and finishes that allows it to adapt to each space in a unique way.

03 PRESCRIPTIVE DESCRIPTION

Krion® K-LIFE 1100 with Euroclass B-s1-d0 fire resistance according to UNE-EN 13501-1, B1 without restrictions according to DIN 4102 and Class A according to ASTM E84 with a FSI<10 SDI<10. It contributes to the improvement of the surrounding air due to its low VOC emissions with Greenguard Gold 102154-420 certification according to UL 2818, its A+ classification according to ISO16000-6 and the criteria of French decree no. 2011-321 (23/11/2011) and its tests according to ISO 22197. It complies with the REACH Compliance regulation SVHC certified HKHL 1501002788J and is free of Bisphenol A. Declaration of a medical device (HPD) with identification 24934 and labelled as DECLARE LBC-COMPLIANT. No hazardous crystalline silica is detected in its composition according to INS report MM_2017046. It is also considered to have low ecotoxicity for the environment according to OECD 201, 202, 203, 207, 208. Listed in Materials for food equipment according to NSF/ANSI 51 for all types of food contact. And considered aseptic due to the non-proliferation of bacteria and viruses on its surface according to ISO 846, ASTM G21, ISO 27447, UL2824 and TCID50.

04 COMPOSITION

Krion® K-LIFE 1100 is composed of 2/3 parts of high purity natural mineral ATH (alumina trihydrate), 1/3 part of highly resistant thermoplastic acrylic resins; and a series of natural pigments that give the material great whiteness and special characteristics. This mixture of polymeric and mineral components gives Krion® K-LIFE 1100 an exclusive composition that results in special technical and aesthetic characteristics such as: A whole mass with a homogeneous appearance and free of reinforcing fibers. With almost zero porosity and with a high bacterial, viral and fungal resistance. Resistant to stains and a wide variety of chemical products, low maintenance, easy to clean and with a renewable surface by sanding. A highly durable material resistant to extreme environments. Non-toxic for the end user and not toxic for its transformation.

05 PLATE FORMATS

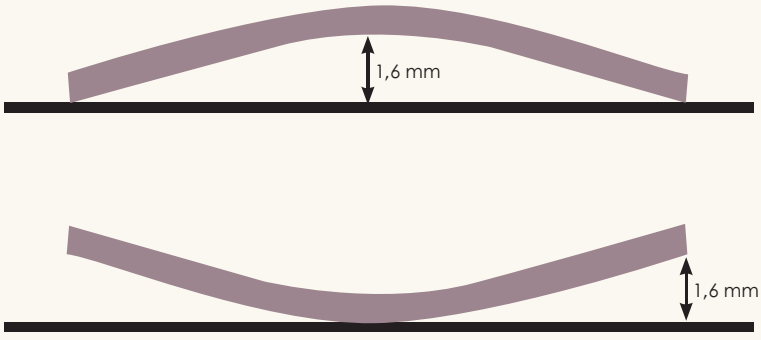
KRION® K-LIFE 1100					
Formatos	Thicknesses				
	3 mm (1/8")	6 mm (1/4")	9 mm (3/8")	12 mm (1/2")	19 mm (6/8")
2500x760 mm (98x30")	✓	✓	-	-	-
2500x930 mm (98x36")	✓	✓	-	-	-
2500x1350 mm (98"x53")	-	✓	-	-	-
3680x760 mm (145x30")	-	✓	✓	✓	✓
3680x930 mm (145x36")	-	✓	-	✓	-
3680x1350 mm (145x53")	-	✓	-	✓	-
3680x1520 mm (145x60")	-	-	-	✓	-

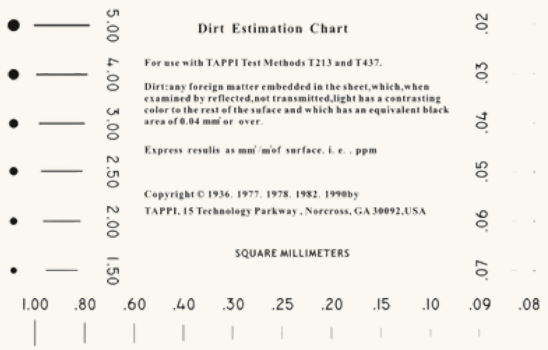
06 TOLERANCES AND SUPPLY CONDITIONS

Krion® K-LIFE 1100 sheets are solid sheets of KRION material surface covering that can be used for vertical, horizontal applications or furniture manufacturing, both indoors and outdoors and in wet or dry areas. And with them, all kinds of projects can be carried out taking into account the properties and characteristics of the material.

Below are the properties and tolerances that the Krion® K-LIFE 1100 material must meet. A quality lower than that specified can end up affecting the end customer and the processing time of the material itself, which is why it is important to inspect all materials before they are used:

PROPERTIES		SPECIFICATION	TOLERANCE	CHECK
Thickness		3,0 /6,0 / 9,0 / 12,0 / 19,0 mm	- 0,3 / + 0,7 mm -3 / + 20	Caliber 0,1 mm
Length		2500 / 3680 mm	mm -3 / +10 mm < 1,6 mm	Tape measure 1 mm
Width		760 / 930 / 1350 / 1520 mm	Corner breakage < 8 mm	
Deformation		0 mm		
Corner damage		0 mm		
Front Face	**Black/White Dots (Only for Snow White)**	None	Improves what is indicated in the ISO 19712 Standard Total covered area < 0.7 mm² / m²	Visual (TAPPI Graphic Template)
	Defects: Pores, voids		Less than 3 pores ≤ 0.1 mm² / Sheet	Visual
Back Face	**Defects: Pores, voids**		< 15 mm² / Sheet	Visual (TAPPI Chart Template)
Exposed Face: Color / Consistency Pattern on the Same Sheet		No difference	No tolerance	Visual
Exposed Face: Color / Same Lot			ΔE ≤ 1	Visual or (Spectrophotometer)
Exposed Face: Color / Different Lot			ΔE ≤ 2	





Check that the boards arrive well packaged* and without any damage. Although the packaging is suitable for the material it contains and has passed rigorous technical controls, a severe defect on the outside of the packaging may end up affecting the material contained inside. The materials leave the factory in perfect condition. If you detect any anomaly on the outside, immediately make a claim to the carrier.

* See technical note on storage.

07 MAIN PROPERTIES AND FEATURES

7.1 MECHANICAL, STRUCTURAL AND DURABILITY PROPERTIES.

- Resistant to Flexure, Tension and Compression.
- Resistant to Flexure at different temperatures, after aging and by fatigue.
- Impact resistant, wear resistant.
- Dimensional stability, coefficient of expansion and HDT.
- Resistance to frost, cracking, radiant, dry and humid heat.
- Resistance to accelerated aging UV and Xenon.
- Resistance to boiling water, thermal shock and water absorption.
- (Porosity) Critical angle sliding, pendulum and American.

7.2 HYGIENIC, SAFETY AND SUSTAINABILITY PROPERTIES.

- Ecotoxicity.
- Resistance to bacteria, fungi, viruses and microorganisms.
- Contribution to environmental improvement of surroundings. (COVS Greenguard, A+, Air improvement).
- Food contact, chemical and specific migration.
- Resistance to staining in bathroom and kitchen products and chemical agents.
- Toxicity of cutting dust and decomposition gases. SIO 2 (Others)
- Life Cycle Assessment (LCA)

7.3 AESTHETIC, USE AND MAINTENANCE PROPERTIES.

- Estabilidad y consistencia del color.
- Reflectancia solar.
- Aislamiento acústico. (Mejora del aislamiento, impacto, etc)
- Conductividad Térmica.
- Resistencia y resistividad eléctrica Idoneidad hospitalaria, en laboratorios, para baños, cocina y mobiliario urbano.
- Idoneidad para fachadas.
- (CSTB, EOTA, CWCT, IAMPO) Ensayo y contacto con obras de arte (ODDY TEST).
- Solo el Snow White.

7.4 FIRE CHARACTERISTICS.

- Calorific potential.
- Standard test method for determining flammability of exterior wall assemblies NFPA 268.
- Flame ignition and autoignition temperatures.
- Flammability of plastic materials. ULHB & UL94V
- Fire rating Europe. (Euroclasses) Facade or bonded and different thicknesses.
- ASTM E84 CLASS A.
- NFPA 255 Flame spread and developed smoke.
- Burned floor surface Canada.
- Fire rating Germany DIN 4102-1.
- Fire rating China.
- Fire rating Russia.
- Fire rating Australia.
- Report and analysis of gases after combustion of Krion® K-LIFE 1100.
- IMO AND RAILWAY.

08 CERTIFICATES, STATEMENTS AND LIBRARIES

8.1 PRODUCT CERTIFICATES.

GREENGUARD GOLD

The Greenguard Environmental Institute is an independent organization that verifies the low emissions of products. This institution certifies that products comply with the criteria of the reference standard and with the certification requirements. The certification guarantees that the products comply with the strict limits of chemical emissions for use indoors, contributing to the creation of healthier environments.

FRENCH ENVIRONMENTAL LABEL ON VOC EMISSIONS INTO INDOOR AIR

The French regulation on emissions of volatile organic compounds (VOC) according to the ISO 16000 series of standards has required since 2012 that any product intended for construction or decoration sold on the French market must have a new environmental label. Depending on the emissions detected in the regulatory test, an eco-label with the corresponding classification is assigned.

NSF

NSF (National Science Foundation) certifies, through documentary audits and formulation analysis based on the NSF/ANSI 51 standard entitled "Materials for food equipment", the minimum health and food protection requirements that must be met by materials intended for direct contact with food.

BISPHENOL A

This test measures the concentration of this component present in a product. Bisphenol A is a product that has been widely used in the plastics and polymers sector. Its use has now been restricted because it is related to adverse effects on human health and the environment.

REGISTRATION, EVALUATION, AUTHORISATION AND RESTRICTION OF CHEMICAL SUBSTANCES (REACH) REGULATION

REACH stands for Registration, Evaluation, Authorisation and Restriction of Chemical Substances or Mixtures. This regulation regulates the continued use of "Substances of Very High Concern" (SVHCs) and their potential impacts on both human health and the ecosystem. This test ensures that none of the SVHC substances are present in more than 0.1% of the mass of the product.

DECLARE

The Declare self-declaration offers maximum transparency for customers about the composition, sources and life cycle of a product. It offers certainty about the components and the dangers they may pose to human health and the environment.

HPD

The HPD is a type II eco-label (environmental self-declaration) where the primary composition of the material and associated health information are disclosed. This declaration has been developed for both Krion® Sheet and Krion® Adhesive products.

ETA

ETA is a document that provides information from a manufacturer on the technical assessment of a product or kit regarding the essential characteristics that are applicable for the intended use. ETA is prepared in accordance with the European Assessment Document-EAD, which covers the product and its intended uses, allowing the CE marking and the declaration of performance of the product or system. It is a tool to obtain the CE marking of innovative products not standardised on the European market. Krion® has ETA for the C-BOLT and K-FIX systems developed by Butech.

CSTB

The French certification body CSTB (Centre Scientifique et Technique de Constructie) is one of the most important French bodies for the certification of products and raw materials for construction, recognised at European level as synonymous with the quality of products and company processes. Krion® Lux obtains the QB and ATec "Avis Technique" certification for façade applications together with the C-Bolt and K-Fix fixing systems from BUTECH.

IAPMO UES

IAPMO UES (Uniform Evaluation Systems), a company accredited by the American National Standards Institute (ANSI) and a leader in the development of North American codes and standards, has evaluated Krion® as an exterior and interior wall covering through tests on durability, safety, structural characteristics, among others, and general properties of the material itself. Krion® has obtained the certificate (ER-403) that enables it to be used on exterior facades and interior coverings after verifying compliance with the codes and regulations on type V construction products in the United States and those specific to California, Florida and Los Angeles. This certificate is reviewed annually through audits by the certifying company IAPMO UES.

ISO 19712

Krion® successfully complies with ISO 19712 tests on solid decorative materials for surface coating - Part 2: Determination of properties - Laminated products.

SiO2 FREE

The dust particles from the transformation of Krion® do not present toxicity according to ISO 11348 and the material can be considered as free of crystalline silica, endorsed by the INS (National Institute of Silicosis).

IMO

The International Maritime Organization (IMO) through the SOLAS Convention establishes the minimum requirements for the construction of ships. Krion® obtains the certificate corresponding to MODULE B, which is responsible for evaluating that the product to be certified complies with the applicable requirements, focusing on the tests and the applicable technical documentation, and MODULE D, which evaluates the quality management system applied to the product to be certified through audits of the production process.

ECOTOXICITY

Environmental toxicology is the branch of toxicology that studies the possible damage that chemical substances or products can cause to living organisms. KRION SOLID SURFACE, S.A.U. has carried out external tests in a recognised laboratory to confirm that Krion® K-LIFE 1100 and the by-products derived from its processing are inert to the environment, thus not affecting a possible accidental release into the natural environment, and also responding to a growing demand from society. A series of tests guarantee the safety of the material on living organisms, including tests on organisms present in both terrestrial and aquatic ecosystems.

8.2 PRODUCT DECLARATIONS.

DAP

Environmental Product Declarations (EPD) provide quantitative information on the environmental impacts of a product throughout its life cycle. They are known as "Eco-labels" type III. The information contained in an EPD is based on the life cycle analysis (LCA) of a material according to ISO 14040. Through these declarations, KRION SOLID SURFACE, S.A.U. offers quantitative environmental information on its materials, verified and audited by a third party.

ECO Platform

ECO Platform is a European Association formed by EPD Verification Programme Managers, industry associations and life cycle analysis experts, which guarantees the quality and compliance of the Environmental Declarations of construction products. This seal corroborates the verification of the EPDs carried out at Krion.

FDES

FDES is a standardized document that presents the results of the Life Cycle Analysis of a product, as well as health information with a view to calculating the environmental and health performance of the building for its eco-design, framed under the AFNOR NF EN 15804+A1 standard.

FOOD CONTACT

Krion® K-LIFE 1100 complies with the relevant requirements of Regulation (EC) 1935/2004 and Regulation (EC) 10/2011. It has been manufactured in accordance with good manufacturing practice as defined in Regulation (EC) 2023/2006. It has been manufactured only with monomers, other starting materials and additives that are authorised under Regulation (EC) 10/2011. It contains other intentionally added substances, which are not required to be included in the Union list, which comply with the relevant requirements of Regulation (EC) 1935/2004 after a risk assessment has been carried out in accordance with Article 19 of the Plastics Regulation. It complies with the Global Migration Limit. The tests have been carried out in accordance with the current analysis regulations, UNE-EN1186 by the AIMPLAS laboratories, according to report NV-12-2295-13-0581. It complies with the organoleptic requirements established in Regulation (EC) 1935/2004. It contains the following substances with restrictions in Annexes I or II of Regulation (EC) 10/2011: MMA & Titanium Dioxide. It complies with the Specific Migration Limit. The tests have been carried out in accordance with the current analysis regulations, UNE-EN 13130-1 by the AIMPLAS laboratories, according to report AT-0935/19. Therefore, Krion® K-LIFE 1100 can be considered as a material suitable for occasional contact with food, such as a kitchen countertop or a sink. For other uses, specific studies should be carried out for the indicated purpose.

8.3 PRODUCT LIBRARIES.

Below are the material libraries where Krion® K-LIFE 1100 is included:

8.3.1 Sustainable Materials Library Sweden. (Byggvarubedömningen)

Byggvarubedömningen is a unique phenomenon in the construction industry, as it has brought together many actors around a common and important theme: building non-toxic and sustainable for the generations of today and tomorrow. The story goes back to the early 2000s, when the industry experienced major challenges, health risks and costly decontamination due to the use of substances such as asbestos and PCBs. Meanwhile, knowledge of the substances and their potential impact was generally low.

At that time, two associations, Milab and Byggdmiljö, were working in parallel on risk minimisation and chemical substitution. The first association was mainly made up of private actors, while the second was mainly represented by the public sector. Byggvarubedömningen was formed in 2007 through the merger of these two associations, and now Sweden's largest and most important owners have launched a standard for the environmental assessment of building materials. Evaluation criteria were developed on which products would be evaluated, as well as a database to collect all evaluations in one place.

8.3.2 Friendly Materials

Friendly Materials® is the result of research that objectively analyses a series of chemical compounds, materials, construction systems and even the entire space, evaluating how they affect health. Based on the parameters obtained, architectural spaces can be designed and built that actively contribute to the health of their occupants. In this library, Krion® K-LIFE 1100 obtains a Gold rating of 91 points out of 100. This analytical assessment tool also allows existing spaces to be objectively evaluated and improvements to be proposed.

8.3.3 Ecovadis

EcoVadis is the world's most trusted provider of corporate sustainability performance improvement tools, intelligence and ratings for global supply chains. Supported by a powerful technology platform and a global team of subject matter experts, EcoVadis' easy-to-use and actionable sustainability scorecards provide detailed insight into environmental, social and ethical risks across 200+ purchasing categories and 160+ countries. EcoVadis provides a holistic corporate sustainability rating service delivered through a global cloud-based software-as-a-service platform.

The EcoVadis Rating covers a broad range of non-financial management systems, including environmental impacts, labour practices and human rights, ethics and sustainable procurement. Each company is assessed on material aspects relevant to the company's size, location and sector.

These evidence-based assessments are refined into easy-to-read evaluation cards that provide scores between zero and one hundred (0-100) and medals (bronze, silver and gold) where applicable. In addition, the evaluation cards provide guidance on strengths and areas for improvement that the assessed companies can use to focus their sustainability efforts and develop Corrective Action plans to improve their sustainability performance. KRION SOLID SURFACE,
S.A.U. obtains the silver medal in 2020 for its ongoing commitment to sustainability:

To foster supply chain sustainability, large multinational corporations partner with EcoVadis, leveraging the influence of spending as a positive force to drive trading partners beyond simple compliance. The assessed company can see how its score compares to the values of its industry. Combining the scorecard results with areas for improvement triggers a "race to the top" in which entire industries compete to achieve global best practice.

8.3.4 Green building council España

GBCe (Green Building Council Spain) is the main sustainable building organisation in Spain. Established in 2008, they are the benchmark in the transformation towards a sustainable model in the building sector.

They belong to a broad, growing and diverse global network, with a presence in more than 70 countries and 36,000 members representing the entire value chain: World Green Building Council, WorldGBC.

The Materials Platform is a GBCe service for professionals and companies, which aims to facilitate environmental information on construction products and systems, displaying their environmental, social and economic benefits. The Platform presents in an agile and clear manner the information and documentation required by the VERDE, LEED and BREEAM certification seals, to accredit the environmental performance of products and systems, and their contribution to the environmental quality of buildings. In this way, the work of professionals and developers in the selection and evaluation of materials is facilitated.

BREEAM® promotes more sustainable construction that has economic, environmental and social benefits for all people involved in the life of a building (tenants, users, developers, owners, managers, etc.) while transferring the company's Corporate Social Responsibility to society and the market in an unequivocal and easily perceptible way.

LEED, an acronym for Leadership in Energy and Environmental Design, is changing the way we think about how buildings and neighborhoods are designed, built, operated and maintained. Leaders around the world have made LEED the most widely used third-party verification for green buildings, with around 170,000 m2 certified daily worldwide.

VERDE is the Spanish certification that distinguishes sustainable buildings in our country. This GBCe tool helps developers and professionals every day to achieve buildings with better performance and less environmental impact, improve the quality of life of their occupants and meet the environmental, economic and social challenges of our society.

The WELL BUILDING STANDARD™ is a certification protocol focused on improving the health and well-being of people inside the building. Its function is to provide health and comfort to its occupants, analyzing the relationship between people and spaces by implementing strategies, programs and construction and design technologies that improve nutrition, fitness, mood, sleep patterns, etc. of its occupants. It is administered by the third-party certified International WELL Building Institute ™ (IWBI ™) through collaboration with Green Business Certification Inc. (GBCI).

09 STANDARDS OF REFERENCE

NORMAS INTERNACIONALES

1. ISO 1183	Plastics - Methods for determining the density of non-cellular plastics.
2. ISO 178	Plastics - Determination of flexural properties.
3. ISO 527	Determination of tensile properties of plastics. Test conditions for moulding and extrusion plastics.
4. ISO 604	Plastics. Determination of compressive properties.
5. ISO 19712	Plastics. Decorative solid surfacing materials.
6. ISO 4586	High-Pressure decoratives laminate - Sheets made from thermosetting resins.
7. ISO 846	Plastics. Evaluation of the action of microorganisms.
8. ISO 11359-2	Plastics - Thermomechanical analysis (TMA) Determination of coefficient of linear thermal expansion and glass transition temperature.
9. ISO 4892-2	Plastics. Methods of exposure to laboratory light sources. Xenon-arc lamps.
10. ISO 4892-3	Plastics. Methods of exposure to laboratory light sources. Fluorescent UV lamps.
11. UNE-EN ISO 2039-2	Plastics. Decorative solid surfacing materials.
12. UNE-EN ISO 2039-1	Plastics. Determination of hardness. Part 2: Rockwell hardness.
13. ISO 6506	Metallic materials. Brinell hardness test.
14. ISO 22197	Test methods for air-purification performance of semiconductor photocatalytic materials.
15. ISO 27447	Fine ceramics advanced technical ceramics –Test method for antibacterial activity of semiconducting photocatalytic materials.
16. ISO 27448	Test method for self-cleaning performance of semiconductor photocatalytic materials - measurement of water contact angle.
17. ASTM D792	Standard Test Methods for Density and Specific Gravity (Relative Density) of Plastics by Displacement.
18. ASTM D790	Standard Test Methods for Flexural Properties of Unreinforced and Reinforced Plastics and Electrical Insulating Materials.
19. ASTM D638	Standard Test Method for Tensile Properties of Plastics.
20. ASTM G22	Standard Practice for Determining Resistance of Plastics to Bacteria (Withdrawn 2002).
21. ASTM G21	Standard Practice for Determining Resistance of Synthetic Polymeric Materials to Fungi.
22. ASTM C1028	Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method (Withdrawn 2014).
23. ASTM D696	Standard Test Method for Coefficient of Linear Thermal Expansion of Plastics Between −30°C and 30°C with a Vitreous Silica Dilatometer.
24. ASTM D 2583	Plásticos. Materiales decorativos sólidos para el revestimiento de superficies.
25. ASTM D785	Standard Test Method for Rockwell Hardness of Plastics and Electrical Insulating Materials.
26. ASTM E84	Standard Test Method for Surface Burning Characteristics of Building Materials.
27. ASTM D570	Standard Test Method for Water Absorption of Plastics.
28. ASTM D648	Standard Test Method for Deflection Temperature of Plastics Under Flexural Load in the Edgewise Position.
29. UL94	Flammability Standard.
30. ASTM D1929	Standard Test Method for Determining Ignition Temperature of Plastics.
31. NFPA 101	Life Safety Code.
32. NFPA 268	Standard Test Method for Determining Ignitiability of Exterior Wall Assemblies Using a Radiant Heat Energy Source.
33. NFPA 259	Standard Test Method for Potential Heat of Building Materials.
34. UNE-EN 438	High pressure decorative laminates. Sheets based on thermosetting resins (normally called laminates).
35. UNE-EN 14581	Test method for natural stone. Determination of the linear coefficient of thermal expansion.
36. UNE-EN 12667	Construction materials. Determination of thermal resistance by the stored hot plate method and the heat flow meter method. Products with high and medium thermal resistance.
37. UNE 56867	Bathroom furniture. Testing of surface coatings.
38. UNE 56842	Kitchen furniture. Testing of surface coatings.
39. UNE-EN 12633	Method for determining the slip resistance value of polished and unpolished floors.
40. UNE 23721	Fire reaction tests on building materials. Radiation test applicable to rigid or similar materials (cladding materials) of any thickness and to flexible materials with a thickness greater than 5 mm.

41. UNE-EN 12457-4	Waste characterisation. Leaching. Compliance test for leaching of granular waste and sludge. Single-stage batch test with a liquid-solid ratio of 10 l/kg for materials with a particle size less than 10 mm (with or without size reduction).
42. UNE-EN ISO 11348-3	Water quality. Determination of the inhibitory effect of water samples on the luminescence of Vibrio fischeri (luminescent bacteria test). Method using freeze-dried bacteria.
43. ASTM C365	Standard Test Method for Flatwise Compressive Properties of Sandwich Cores.
44. ISO 180	Plastics. Determination of the Izod impact resistance.
45. ASTM D256	Standard Test Methods for Determining the Izod Pendulum Impact Resistance of Plastics.
46. NEMA LD3	High-Pressure Decorative Laminates.
47. DIN 51130	Testing of floor coverings - Determination of the anti-slip property - Workrooms and fields of activities with slip danger - Walking method - Ramp test.
48. ASTM D3459	Standard Test Method for Humid-Dry Cycling for Coatings on Wood and Wood Products.
49. ISO 10545	Ceramic tiles. Determination of frost resistance.
50. JC/T 908	Professional Standard - Building Material-Solid Surface materials.
51. UNE-EN 14617-11	Agglomerated stone. Test methods. Part 11: Determination of the linear coefficient of thermal expansion.
52. ISO 75	Plastics. Determination of the bending temperature under load. Part 1: General test method.
53. ASTM C518	Standard Test Method for Steady-State Thermal Transmission Properties.
54. UNE-EN 13329	Laminated floor coverings. Elements with a surface layer based on thermosetting aminoplastic resins. Specifications, requirements and test methods.
55. ISO 2812-2	Paints and varnishes. Determination of resistance to liquids. Part 2: Water immersion method.
56. UNE-EN 927-5	Paints and varnishes. Coating materials and coating systems for exterior wood. Part 5: Evaluation of liquid water permeability.
57. UNE-EN 927-4	Paints and varnishes. Coating materials and coating systems for exterior wood. Part 4: Evaluation of water vapour permeability.
58. UNE-EN 927-6	Paints and varnishes. Coating materials and systems for exterior wood. Part 6: Artificial ageing of wood coatings by exposure to fluorescent UV lamps and water.
59. ISO 717-1	Acoustics. Evaluation of sound insulation in buildings and construction elements. Part 1: Airborne noise insulation.
60. ASTM E903-12	Standard Test Method for Solar Absorptance, Reflectance, and Transmittance of Materials Using Integrating Spheres.
61. ASTM C1371-15	Standard Test Method for Determination of Emittance of Materials Near Room Temperature Using Portable Emissometers.
62. ASTM E1980-11	Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-Sloped Opaque Surfaces.
63. ASTM G155	Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials.
64. UNE-EN ISO 10140	Acoustics. Laboratory measurement of sound insulation of construction elements.
65. UNE-EN 61340	Electrostatics. Protection of electronic components from electrostatic phenomena. General requirements.
66. UNE-EN 424	Resilient floor coverings. Determination of the effect of simulated movement of a furniture leg.
67. UNE-EN 425	Resilient and laminate floor coverings. Chair-with-wheel test.
68. UNE-EN ISO 24343-1	Resilient and textile floor coverings. Determination of footprint and residual footprint. Part 1: Residual footprint.
69. UNE-EN 13329	Laminate floor coverings. Specifications, requirements and test methods.
70. UL 2818	GREENGUARD Standard for Building Materials, Finishes And Furnishings.
71. ISO 16000-6	Indoor air. Part 6: Determination of volatile organic compounds in indoor air and test chambers by active sampling with Tenax TA adsorbent, thermal desorption and gas chromatography using MS or MS-FID.
72. UL 2824 (ASTM D6329)	Standard Guide for Developing Methodology for Evaluating the Ability of Indoor Materials to Support Microbial Growth Using Static Environmental Chambers.
73. TCID50	Median Tissue Culture Infectious Dose assay is a method used to verify the viral titer of a testing virus.
74. GB 6566	Limits Of Radionuclides In Building Materials.
75. ISO 1716	Reaction to fire tests for products — Determination of the gross heat of combustion (calorific value).
76. NF ISO 5660-1	Reaction-to-fire tests — Heat release, smoke production and mass loss rate — Part 1: Heat release rate (cone calorimeter method) and smoke production rate (dynamic measurement).
77. NF ISO 19702	Guidance for sampling and analysis of toxic gases and vapours in fire effluents using Fourier transform infra-red (FTIR) spectroscopy.
78. UNE-EN 13823	Reaction to fire tests of construction products. Construction products, excluding floor coverings, exposed to thermal attack by a single burning object.
79. UNE-EN ISO 11925-2	Reaction to fire tests. Flammability of products when subjected to the direct action of flammable flame. Part 2: Testing with a single flame source.

80. NFPA 255	Standard Method of Test of Surface Burning Characteristics of Building Materials.
81. GB 8624	Fire Test to Building material and products.
82. DIN 4102-1	Fire behaviour of building materials and components - Part 1: Classification of building materials.
83. AS 5637.1	Determination of Fire Hazard Properties - Wall and Ceiling Linings.
84. AS/NZS 3837	Method of test for heat and smoke release rates for materials and products using an oxygen consumption calorimeter.
85. UNE-EN 45545-2+A1	Railway applications. Fire protection of railway vehicles. Part 2: Requirements for the fire behaviour of materials and components.

10 TESTS IN INTERNAL LABORATORIES

The physical properties of Krion® K-LIFE 1100 as tested internally and periodically at the KRION SOLID SURFACE, S.A.U. characterisation laboratory are shown below. The results of the tests for these characteristics verify that the material complies with the specifications and tolerances of Krion® K-LIFE 1100. All the results indicated refer to sheets of 3, 6, 9, 12 and 19 mm thickness in different formats, tested immediately after being manufactured and the results being offered as an average of several batches manufactured over time. Therefore, this data may be subject to variations, updates or specific changes.

Krion® K-LIFE 1100 is a material with an organic component, so external factors or the passage of time can cause variations in these values. All the values shown are for information purposes only and for more information you can contact the R&D&C Department. The values indicated are not intended to be used for engineering calculations. For these calculations, numerous external factors (geographical, atmospheric, etc.) must be taken into account that can affect the material. If you need help, please contact the KRION A&D® Department.

PROPERTY	UNITS	RESULTS				
Nominal thickness	**mm**	**19**	**12**	**9**	**6**	**3**
Color L*	Unidad	95,84	95,84	95,84	95,84	95,84
Color a*	Unidad	-1,21	-1,21	-1,21	-1,21	-1,21
Color b*	Unidad	1,57	1,57	1,57	1,57	1,57
Boiling Water Absorption	%	0,060	0,076	0,086	0,128	0,222
Translucency (LED)	Lx (Luxes)	7	66	196	551	720
Density	g/cm3	1,736	1,732	1,732	1,727	1,737
Impact. Blows.	Unidad	10	10	1	1	1
Impact. Height.	mm	1900	1900	1700	1000	400
Rockwell hardness	u	93	93	93	94	91
Tensile Modulus	MPa	3207	3513	3348	3530	3943
Tensile Strength	MPa	48	50	49	50	46
Tensile Elongation	%	1,6	1,6	1,6	1,6	1,4
Insertion Pull-Out	Mpa	-	3378	-	-	-
Flexural Modulus	MPa	9540	9498	9396	9691	10131
Flexural Strength	MPa	73	70	71	73	75
Flexural Elongation	%	0,8	0,8	0,8	0,8	0,8
ΔE24h (Thermoforming)	Unidad	0,4	0,7	0,8	0,8	0,8
Accelerated Aging ΔE ^{300h}	Unidad	0,8	0,6	0,6	0,6	0,9

*** * Spectrophotometer: BYK spectro2guide d:8°**

11 TESTS IN EXTERNAL LABORATORIES

The present data and tests carried out in external laboratories serve to help understand and characterise Krion® K-LIFE 1100. These are carried out in these centres due to their experience, instrumentation and accreditations. Likewise, the information in the tables may be modified in order to adapt them to technical developments, as well as any improvements that allow the incorporation of a greater number of data for the sake of improving the content. Results for 12 mm thick sheets. Krion® K-LIFE 1100 is a material with an organic part, so subjecting it to external conditions or the mere passage of time can cause variations in these values. All the values shown are informative and for more information you can contact the R&D&C Department. The values indicated are not intended to be used for engineering calculations. For these calculations, numerous external factors (geographical, atmospheric, etc.) must be taken into account that can affect the material. If you need assistance, please contact the KRION A&D® Department.

These properties refer to the material's ability to withstand an external force. Mechanical properties are essential when performing structural calculations and determining design limits. Below are the fundamental tests for Krion® K-LIFE 1100 that are commonly used: contacto con el Dpto. de KRION A&D®.

PROPERTY	TESTING METHOD	RESULT			
Flexural strength	ISO 178	77,3 MPa			
	ASTM D790	9.650 psi			
Tensile strength	ISO 527	40 MPa			
	ASTM D638	6.700 psi			
Compressive strength	ISO 604	99,1 MPa			
	ASTM C365	Up to 23,200 psi without damage			
IZOD impact strength	ISO 180	3,9 KJ/m²			
	ASTM D256	4,2 KJ/m²			
Ball impact strength	ISO 19712-2 (324 g) / NEMA LD3 (224 g)	> 200 cm			
Dry and wet rubbing strength	UNE-ENV 12633	SANDING GRIT	40	R_d=48	CLASS 3
			180	R_d=19	CLASS 1
			500	R_d= 9	CLASS 0
Slip resistance (Friction coefficient)	ASTM C1028	SANDING GRIT	40	COEFFICIENT OF FRICTION IN DRY MEDIUM	0,80
			180		0,71
			600		0,69
		SANDING GRIT	40	COEFFICIENT OF FRICTION IN HUMID MEDIUM	0,82
			180		0,68
			600		0,62
Slip resistance (Critical angle) (Ramp)	DIN 51130 Apdo 5	3,6°			
Load test	ISO 19712-2	Overcome			
Dimensional stability at humidity changes 20°C	NEMA LD3	Longitudinal Variation: 0,034%			
		Transverse Variation: 0,017%			
Resistance to Humidity-Dryness cycles	ASTM D 3459	No apparent change. Color variation after 10 cycles of 48 hours each cycle: ΔE=0.13			
Dimensional stability at elevated temperature	EN 438-2	Longitudinal Variation: 0,18%			
		Transverse Variation: 0,10%			
Fastness to dry and wet rubbing	ISO 11640	No visible change. Grayscale			
Cracking resistance	UNE-EN 438	Grade 5. No cracks			
Frost resistance	ISO 10545-12	Overcome			
Blister formation resistance	NEMA LD3	> 600 seconds. No deterioration			
Radiant heat resistance. (Roll)	NEMA LD3	> 600 seconds. No deterioration			
Radiant heat resistance. (Strip form)	NEMA LD3	> 600 seconds. No deterioration			
Postforming at 163°C	NEMA LD3	Radius of curvature parallel to the 50 mm side: 16 mm. No breaks			
Various tests Artificial Stone. China	JC/T 908	Excellent Grade A			

Please note that finishes with coarser grits will provide greater slip resistance but may negatively affect the easy cleaning of the surface.

Physical properties are those that are related to the behavior 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® K-LIFE 1100

PROPERTY	TESTING METHOD	RESULT	
Density	ISO 1183	1,736 g/cm³	
	ASTM D792	1,740 g/cm³	
Rockwell hardness	ASTM D785	> 90	
Barcol hardness	ISO 19712 / ASTM D2583	68	
Linear thermal expansion coefficient	ASTM D696	(-30 a +30) °C	4,5 · 10-5ºC
		(-22 a +86) °C	2,5 · 10-5ºC
	ISO 11359-2	(-30 a +105) °C	3,7 · 10-5ºC
	UNE-EN 14617-11	(+30 a +60) °C	4,2 · 10-5ºC
		(+20 a +130 °C	5,5 · 10-5ºC
Deflection temperature under load 1.82 N/mm²	ISO 75 / ASTM D648	> 94ºC	
Thermal conductivity	UNE-EN 12667 / ASTM C518	(0 a 40)ºC	0,10-0,22 W/m K
Dry heat resistance 180ºC	NEMA LD3	Grade A No visible change	
	ISO 19712	Grade 5 No visible change	
Damp heat resistance 100ºC	ISO 19712	Grade 5 No visible change	
Cigarette resistance		Grade 4 Slight change in brightness, only visible at certain viewing angles and slight brown spot.	
Thermal shock resistance 250 cycles. (90-10)ºC		Satisfactory. No defects observed	
Linear scratch resistance	NEMA LD3	Load 200 gr. No visible scratches	
Scratch resistance	UNE-EN 438-2	Load (N): 5 Grade Index: 4	
Abrasion resistance	UNE-EN 13329 Anexo E	PI (cycles) > 8500 Mass loss (mg/100 cycles) = 120	
	NEMA LD3	No layers detected. Loss of gloss due to abrasion	
Wear resistance	ISO 4586	0,028 %/25 rev	
Boiling water resistance	ISO 4586 / NEMA LD3	Grade A Grade 5 No visible change	
Water absorption	ASTM D570	24 hours	0,07%
		1000 hours	0,35%
		2000 hours	0,46%
		3000 hours	0,50%
Water immersion resistance	ISO 2812-2	Score 5. No visible changes or surface defects	
Liquid water permeability	UNE-EN 927-5	Score 5. No deterioration. Water absorbed after 8 days: 1.2 mg/cm2	
Water vapour permeability	UNE-EN 927-4	Score 5. No deterioration. Water absorbed after 14 days: 2.3 mg/cm2 Water desorbed after 14 days: 1.3 mg/cm2	

PROPERTY	TESTING METHOD	RESULT		
Solar reflectance	ASTM E903-12	RS=73,0% ± 0,3		
Emissivity	ASTM C1371-15	0,84 ± 0,04		
SRI Index	ASTM E1980-11	Convection coefficient	Air speed	SRI
		Low (5 W/m2K)	0-2 m/s	87,8 ± 1,3
		Medium (12 W/m2K)	2-6 m/s	88,5 ± 0,9
		High (30 W/m2K)	6-10 m/s	89,1 ± 0,6
Color resistance to light (72h)	NEMA LD3	Grade a No visible change		
Light fastness. Method A (122h)	ISO 19712	No changes observed. Grayscale index: 4-5		
Exposure to xenon arc light. (1,000h)	ASTM G155	Appearance Good. Grayscale index: 5		
Resistance to UV ultraviolet light. (1500h)	UNE-EN 438 / ISO 4892-3	Appearance Good. Grayscale index: 4-5		
Artificial aging (2000h)	UNE-EN 927-6	Appearance rating: 5 (No change)		
		Brightness variation: ΔB= -16.5 (60º)		
		Color variation: ΔE= 0.55		
		Blisters: 0 ; Cracking: 0 ;		
		Flaking: 0 ; Plastering: 0;		
Artificial Weathering Resistance (3000h)	UNE-EN 438 / ISO 4892-2	No change in appearance		
		Grey scale index: 5 R(A) = 33.5		
Global acoustic insulation	ISO 717-1	dBA		
Acoustic reduction improvement index	UNE-EN ISO 10140	Plaster wall + Krion 12mm ΔR(A) (DB-HR) = 10 dBA		
		Hollow brick wall + Krion 12mm ΔR(A) (DB-HR) = 8 dBA		
Impact noise insulation (footsteps)	UNE-EN ISO 10140-1 Anexo H	17 dB		
Electrical resistance and resistivity	UNE-EN 61340	$2 \cdot 10^{12}$ Ω		
Furniture sliding	UNE-EN EN 424	Correct (32 kg)		
Chair with casters effect	UNE-EN EN 425	Correct (25000 cycles)		
Static punching	UNE-EN ISO 24343-1	Indentation < 0.01 mm / No deterioration		
Surface tear-off	UNE-EN 13329 Anexo D	> 2.1 N/mm2 No starting		

These properties often determine the application of materials for sensitive designs such as applications in clinics and hospitals or direct contact with food. They also shed light on the cleaning and maintenance that the material will need during its useful life. Below are Krion® K-LIFE 1100 tests that demonstrate its easy maintenance and high hygienic capacity:

PROPERTY	TESTING METHOD	RESULT
Emission of volatile organic compounds	**UL 2818-2013**	**Greenguard Gold**
	ISO 16000-6 French Legislation	**Clasification A+**
Nitric oxide removal	**ISO 22197-1**	**NOx degradation < 0.5 µmoles**
Sanitary and hygienic evaluation. (Russia)	**VOCS Assessment**	**Does not exceed the marked limits**
	Resistance to microorganisms	**Does not stimulate the growth of microorganisms: (E. Coli, S.Aureus, Ps. Aeruginosa & S. Enteriditis)**
Bacteria resistance	**UNE-EN ISO 846 (Método C)**	Bacteria Gram-negativa Pseudomonas aeruginosa Bacteria Gram-positiva Staphylococcus aureus **No growth of the test bacteria**
Fungal resistance	**UNE-EN ISO 846 (Método A) / ASTM G21**	Aspergillus niger van Tieghem, Penicillium funiculosum Thom, Paecilomyces variotii Bainier; Gliocladium virens Miller, Chaetomium globosum Kunze, Aureobasidium pullulans; Fusarium fujikuroi **No fungus in the test supports growth**
Microbiological resistance in construction materials	**UL 2824 (ASTM D6329)**	Penicillium brevi-compactum (UL isolate) **Resistant to mold growth.** Log (CFU) ≤ 5.5 and > 2.5 at 3 weeks
Antimicrobial activity of materials	**ISO 27447**	Staphylococcus aureus: RL=0.16 / ΔR=0.15 **Bacterial Lethality:: 3,11%**
		Escherichia coli: RL=0.13 / ΔR=0.12 **Bacterial Lethality: 2.45%**
Viral stability on surface over time	**TCID50 (tissue culture infectious dose 50)**	**CORONAVIRUS NL63 Reduction in infectivity in 48h > 97%**
		INFLUENZA A Reduction in infectivity in 48h > 99%
Wear and ease of cleaning	**CSA B45.5-11 | IAPMO Z124-2011**	**Pasa**
Stain resistance-washability	**NEMA LD3**	**Washability: SUMA 9**
		Stain resistance. No changes.
Chemical agent resistance	**ISO 19712 (A Method)**	**Agent results ≥ 4**
	ISO 19712 (B Method)	**Cleaning index = 27**
Stain resistance in bathroom products	**UNE 56867**	**Satisfactory**
Stain resistance in kitchen products	**UNE 56842**	**Satisfactory**
Self-cleaning performance. Drop angle.	**ISO 27448**	**Test 1: t 0h = 76° t48h = 66°**
		Test 2: t 0h = 47° t48h = 32°

PROPERTY	TESTING METHOD	RESULT
Global Migration (Simulants)	Commission Regulation 10/2011	Below limits
Specific Migration. (Metals)		Below limits
Specific Migration. (MMA)		Below limits
Food Contact	NSF / ANSI-51 "Food equipment"	FOOD ZONE
RoHS Directive (EU) 2015/863	Annex II Directive 2011/65/EU	Complies with established limits
REACH Regulation	European Regulation 1907/2006	SVHC are ≤ 0,1% (w/w)
Determination of BPA content	Gas-mass chromatograph (GC-MS)	Bisfenol A (mg/kg) < 0,10
Radionucleide limits in construction materials	GB 6566	I_{RA} < 0,1 (Pass) Clase A
Cutting dust toxicity	MTA/MA-014/A11	Not toxic
	UNE-EN 12457-4	
	UNE-EN ISO 11348-3	
SiO2 content (Crystalline)	National Silicosis Institute (INS)	Quartz < 1%
		Tridymite < 2%
		Cristobalite < 1%
Ecotoxicity (terrestrial and aquatic environments)	OECD 202	Not toxic
	OECD 203	
	OECD 201	
	OECD 207	
	OECD 208	

Fire is a dangerous element that is fought indirectly by construction materials, preventing the spread of fire and the generation of smoke resulting from combustion. Fire reaction properties, flammability or flame spread are some of the parameters that different regulations around the world take into account when allowing the installation of construction materials in buildings. Below are the most notable tests of Krion® K-LIFE 1100 that demonstrate the good properties of the material against fire:

PROPERTY	TESTING METHOD	RESULT	
Specific heat	AIDIMA METTLER	1,361 J/g·K	
Calorific potential	ISO 1716 / NFPA 259	9,3 MJ/kg	
Flame ignition temperature	ASTM D1929	440 ºC	
Temperatura de auto ignición		490 ºC	
Gas analysis under controlled irradiation	NF ISO 5660-1 NF ISO 19702	Inflammation up to 9 minutes: CO2, CO NH3, SO2, HBr, CH4, NOx. COV's	
Reaction to fire test. Euroclasses	UNE-EN 13501-1+A1 UNE-EN 13823 UNE- EN ISO 11925-2 (Walls and ceilings)	Thickness tested	Classification
		3 mm 6 mm 12 mm 19 mm	B s1 d0
	UNE-EN 13501-1+A1 UNE-EN 13823 UNE- EN ISO 11925-2 (Ventilated Facade)	Thickness tested	Classification
		12 mm	B s1 d0
Surface burning characteristics of building materials	ASTM E84 NFPA 255 UL 723 UBC 8-1	Flame spread 5	
		Smoke developed 5	
	NFPA 101	Class A	
Flammability of exterior wall assemblies	NFPA 268	Meets acceptance criteria	
Surface combustion of coatings	CAN/ULC-S102.2	Flame spread 0	
		Smoke developed 0	
Flammability of plastic materials	UL94HB	Pasa	
	UL94V	V0	
Fire performance classification of building materials and products in China	GB 8624	B1 (B s1 d0)	
Technical Regulations on Fire Safety Requirements (Federal Law No. 123-FZ of July 22, 2008) Rusia	GOST 30402-96	Smoke formation: D1	
	GOST 12.1.044-89	Smoke toxicity: T3	
	GOST 30244-94	Combustibility: G1	
Fire behaviour of building materials and elements. Germany	DIN 4102-1	B1 fire resistant building material	
Determination of fire hazard properties. Australia & New Zealand	AS 5637.1 AS/NZS 3837	Group 3 Extinction Area: 2,7 m2/Kg	
Reaction to fire tests.	NF P 92-501	M2	
France Smoke density and toxicity.	NF x 10-702 NF x 70-100	F0	
France Naval	IMO Certificate	Mod.B & Mod. D	
Naval. Smoke toxicity	IMO FPTC Part 2	Pasa	
Railway applications. Fire protection in railway vehicles.(*) (*) : Only 1104 and on special request	UNE-EN 45545-2 + A1	R1	HL1Y HL2
		R2	HL1, HL2 Y HL3
		R3	HL1, HL2 Y HL3
		R7	HL1Y HL2
		R17	HL1Y HL2

12 USE, CLEANING, MAINTENANCE AND RESISTANCE TO SUBSTANCES

Krion® K-LIFE 1100 is a material that requires low maintenance costs due to its almost zero porosity, allowing for quick and easy daily cleaning. Polymeric materials, in general, are affected by chemicals in different ways. Although Krion® K-LIFE 1100 has good chemical resistance to everyday products, it can undergo changes in appearance attributable to the conditions of exposure, the concentration of chemicals or the duration of exposure.

Below are the substances and products that have been tested on the surface of the material to see the degree of resistance to them. To carry out this test, drops of the products were deposited on the surface of the material for a period of 18 hours. The stains were then cleaned using the products developed by KRION SOLID SURFACE, S.A.U. for the maintenance and cleaning of Krion® Lux in general.

- Type 1 substances: The stain can be removed with a cloth and K-Clean.
- Type 2 substances: The stain can be removed with a cloth and K-Cream.
- Type 3 substances: The stain can be removed with a white scouring pad and K-Cream.
- Type 4 substances: The stain can only be removed by regenerating the surface.

TYPE 1	TYPE 2	TYPE 3	TYPE 4
Cottonseed oil	Olive oil	Turpentine	Ethyl acetate
Mineral oil	Pine oil	Isopropyl alcohol	Acetone
Cooking oil	Amyl acetate	Cellosolve	Acetic acid (98%)
Acetic acid 10%	Citric acid 10%	Cigarette (nicotine)	Hydrofluoric acid (40%)
Tannic acid	Amyl alcohol	Drain cleaner	Formic acid (> 50%)
Uric acid	Betadine	Acid decanters	Phosphoric acid (75%)
Bleaching agents and hair dyes	Coffee	Household bleach	Nitric acid (> 6%)
Distilled water	Cleaning bang	Methyl orange 1%	Perchloric acid (60%)
Aromatic alcohol	Ferric chloride 10%	Parachlorophenol camphorado (4-Chlorophenol)	Sulfuric acid (> 33%)
Aluminon	Food colors	Nail polish remover (nail polish remover)	Aqua regia
Ammonia (10%)	Chlorinated detergent	Washable inks	Methylene blue
Ammonia 30%	Carbon disulfide	Trichloroethane	Benzene
Saffron	Ethyl ether	Wine	Chlorobenzene
Sodium azide	Eucalyptol	Hydrochloric acid (> 20%)	Chloroform
Sugar	Dishwashing liquids/powders	Butyl alcohol	Methylene chloride
Bromothymol blue	Pencil lead	Aromatic ammonia	Cresol mixture of isomers (85%)
Lipstick	n-hexane	Potassium permanganate (2%)	Methylene chloride derivatives (strippers)
Liquid shoe polish	Teav	Salfumán	Dimethylformamide
Black shoe polish	Viacal	Malachite green	Dioxano 1,4 dioxano (99,5%)
Sodium disulfide	Vinegar	Eosin B	Ethanol
Zn chloride 10%	Lemon juice / vegetables and fruits	Nail polish	Ammonium phosphate
Gram stain	Nitric acid (6%)	Wright's blood stain	Furfural
Quaternary ammonium compounds	Picric acid	Negrosin	Sodium hydroxide flakes
Cream with zinc oxide	Pyric acid 1.2% (0.05M)	Phosphorus pentoxide	Sodium hydroxide (> 5%)
Sodium chromate	Trypan blue	Monsel's solution	Iodine
EDTA	Eosin 2%	Ballpoint pen inks	Methyl methacrylate
Eosin blue 5% in alcohol	-	-	Methanol
Ethylene glycol	-	-	Methyl ketone
Phenofthalein	-	-	Acridine orange
Formaldehyde	-	-	Silver nitrate (10%)
Formaldehyde 40%	-	-	MEK peroxide
Formalin	-	-	Methylene chloride products
Formol 10%	-	-	Methyl red (ethanol sol.)
Sodium phosphate 30%	-	-	Permanent marker
Trisodium phosphate 30%	-	-	Safranin O

TYPE 1	TYPE 2	TYPE 3	TYPE 4
Gasoline	-	-	Tetramethylammonium hydroxide solution
Glutaraldehyde	-	-	Sudan III
Ammonium hydroxide 28%	-	-	Tetrachloroethane 1, 1, 2, 2 98%
Ammonium hydroxide 5%	-	-	Carbon tetrachloride
Calcium hydroxide	-	-	Tetrahydrofuran
Sodium hypochlorite 15%	-	-	Thymol blue
Sodium hypochlorite	-	-	Timol en alcohol
Household soaps	-	-	Hematoxylin tincture
Ketchup	-	-	Mecurochrome tincture
Bleach 1% and soap solution	-	-	Iodine tincture
Mustard	-	-	Crystal violet (or gentian violet)
Naphtha	-	-	Xylene
Naphthalene	-	-	Iodine (1% alcohol)
Urine	-	-	-
Paraffin	-	-	-
Toothpaste	-	-	-
Hydrogen peroxide	-	-	-
Procaine	-	-	-
Kerosene	-	-	-
Karl Fischer reagent	-	-	-
Cresol red	-	-	-
Methyl red 1%	-	-	-
Soy sauce	-	-	-
Tomato sauce	-	-	-
Blood	-	-	-
Shower Power	-	-	-
Benedict's solution	-	-	-
Salt solution (NaCl)	-	-	-
Ringer's lactic acid solution	-	-	-
Copper sulfate	-	-	-
Sodium sulfate (10%)	-	-	-
Phosphate buffered saline (PBS)	-	-	-
Tetramethylrhodamine	-	-	-
Giemsa stain	-	-	-
Merthiolate stain	-	-	-
Calcium thiocyanate (78%)	-	-	-
Sodium thiocyanate	-	-	-
Sodium thiosulfate	-	-	-
Toluene	-	-	-
Chromium trioxide	-	-	-
Urea 6%	-	-	-
Vitroclean	-	-	-

Despite the instructions given regarding cleaning the material, it must be noted that any stains from Type 3 and 4 products must be cleaned immediately. Defects resulting from exposure to Type 4 products will not be covered by the Krion® LUX warranty. There are products not listed in the table above, but similar to them. To check this, check the label or the Safety Data Sheet of the products. In case of doubt and for special products, it is recommended that they be tested before carrying out the final project and the desired application. The information presented refers to 18-hour exposures. Longer exposures may have different effects. Take into account and use measures to avoid such exposures (avoid dripping and spilling, etc.)

13 STORAGE, TRANSFORMATION AND INSTALLATION

Krion® K-LIFE 1100 sheets are recommended to be stored horizontally (flat), as delivered, to prevent them from taking shape during long-term storage. When storing Krion® pallets, they should not be stacked more than the amount indicated on the packaging. The storage location should be at room temperature, dry and not exposed to direct sunlight, heat or inclement weather.

All Krion® K-LIFE 1100 material has a control number that can be used to find out all the details of the production process, as well as the raw materials used for its production. It should be noted that due to the manufacturing method of Solid Surface, and the use of raw materials of natural origin, slight colour variations may occur between different productions. These are inherent to the product, whether in the same sheet or between several of the same colour. For the development of any product or project, it is recommended to follow the consecutive numbers that appear on the sheets, or to use the sheets with the closest numbering, in order to minimise these possible variations. Manufacturing batches should not be mixed without prior communication to the client, and their acceptance, as this is a factor that can influence the final result of the project.

The material may expand or contract depending on the temperature at which it has been stored; care must be taken to acclimatize the material in both temperature and humidity before processing.

Krion® K-LIFE 1100 can be worked like wood, allowing the sheets to be cut and joined very easily and thermoformed to create exclusive designs. In addition, it does not contain any hazardous substances in its formulation and the cutting powder is inert, making it safe to use and process. All workshops that work with Krion® are trained to understand the particularities of the material and can continue to use tools designed for wood.

14 LIMITATIONS

KRION SOLID SURFACE, S.A.U. provides its customers with a series of technical notes and a transformer manual containing all the relevant recommendations regarding the design, installation, use and maintenance of the KRION LUX material. Sheet thicknesses of 3 and 6 mm are reserved for very specific applications such as furniture cladding or vertical applications. The thicknesses of 9, 12 and 19 mm are worked as standard for the different applications. A large part of Krion® is a natural product, so there may be small colour variations between batches. To avoid this, sheets from the same batch should be worked with and, if possible, consecutive sheets. In high-traffic applications, gloss and high-gloss finishes may show signs of wear. Since the surface of Krion® K-LIFE 1100 has almost no porosity, it does not allow chemical attack from different products. However, in this same sheet you can consult the products not recommended for coming into contact with Krion® K-LIFE 1100.

15 LEGAL CONDITIONS

The images, texts and data are the property of KRION SOLID SURFACE, S.A.U., with registered office at Carretera Vila-real – Puebla de Arenoso (CV-20), 12.540 Vila-real (Castellón). Your express written consent is required for the use and disclosure, whether partial or total, of the aforementioned content. KRION SOLID SURFACE, S.A.U. has the exclusive right to exploit them in any way, and in particular the rights of reproduction, distribution, public communication and transformation. All this material is protected by intellectual property legislation and its misuse may be subject to sanctions, including criminal penalties. KRION SOLID SURFACE, S.A.U. reserves the right to make changes and updates to the information contained in this document and to its presentation at any time and without prior notice. Likewise, the characteristics of the document may be modified in order to adapt them to technical developments, as well as any improvements that allow the incorporation of a greater number of data for the sake of improving the content. KRION SOLID SURFACE, S.A.U., assumes no responsibility for the results obtained or the risks incurred by the use of the information contained in this specification document, whether in whole or in part by the transformer, architect, designer, owner and/or user of the Krion® K-LIFE 1100 material. Any and all responsibilities for a design fall on the architect, designer, transformer and/or user. The purpose of this document is merely informative and does not imply the granting, in any way, of a guarantee regarding the use of products manufactured using Krion® K-LIFE 1100. All test results presented in this document, unless otherwise indicated, refer to 12 mm thick sheets, tested immediately after being manufactured. Krion® K-LIFE 1100 is an organic material, so external factors or the passage of time can cause variations in these values. All the values given in sections 11 and 12 are for information purposes only and were obtained from tests carried out in external laboratories. The values indicated are NOT intended to be used for engineering calculations. These calculations must take into account numerous external factors (geographical, atmospheric, etc.) that can affect the material. If you need help, please contact the KRION A&D® Department.

16 WARRANTY

Krion® K-LIFE 1100 is an innovative material that, in addition to meeting all quality standards, is manufactured following meticulous production processes. The quality of the material is monitored throughout the production process based on the quality management requirements of the ISO 9001 standard and the environmental requirements of the ISO 14001 standard, as well as taking into account energy efficiency as shown by ISO 50001, and above all the requirements established by KRION SOLID SURFACE, S.A.U. Krion® K-LIFE 1100 material is sold in the form of sheets. If any problem should arise during the warranty period, please read the official warranty document carefully.

KRION SOLID SURFACE, S.A.U., with registered office at Ctra. 1, C.P. 12.540, Vila-real, Castellón, (hereinafter referred to as "KRION") guarantees to the owner of the original installation of any Krion® K-LIFE 1100 sheet, that it will repair or replace free of charge at its discretion, solely and exclusively the Krion® K-LIFE 1100 material, provided that the problem is attributable to a defect or lack of manufacturing conformity of the material itself, for ten (10) years from the date of delivery thereof.

This guarantee will apply exclusively to Krion® K-LIFE 1100 sheets intended for private, individual, residential or domestic use and which have been transformed and installed by a KRION ASSOCIATE FABRICATOR who holds this status at the time of transformation, KRION being the only entity authorised to certify and validate transformers as KRION ASSOCIATE FABRICATOR. This guarantee does not apply to products from other manufacturers. All these installations of Krion® K-LIFE 1100 material must have been transformed, installed, used and maintained according to the technical documentation available on the website www.krion.com. This guarantee applies from the date on which the product manufactured with Krion® K-LIFE 1100 was installed for the first time. Unless proven otherwise, this date will be the one reflected on the final customer's purchase invoice. Coverage under this warranty is limited to the following products, time periods and actions by KRION: KRION® LUX planks: from the first to the third year from the date of purchase, KRION will cover 100% of the cost of materials and labor. From the fourth to the sixth year from the date of purchase, KRION will cover 75% of the cost of materials and 50% of labor. From the seventh to the ninth year from the date of purchase, KRION will cover 50% of the cost of materials and 25% of labor. From the tenth year from the date of purchase, KRION will cover 25% of the cost of materials and 0% of labor.

For more information on the warranty coverage of Krion® K-LIFE 1100, please refer to the OFFICIAL KRION® LUX WARRANTY CERTIFICATE.

17 OTHER INFORMATION

The handling, storage, use or disposal of the product will be carried out under the control and supervision of the owner of the material, exempting KRION SOLID SURFACE, S.A.U. from liability for loss, damage or expenses caused as a result of improper use. This document has been prepared and must be used only for Krion® K-LIFE 1100. If the product is used as a component of another product, all this information may not be applicable. For more information about this material, read the Krion Safety Data Sheet.

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