



COSENTINO®
imagine & anticipate



ULTRACOMPACT SURFACES



A product designed by **COSENTINO**



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DEKTON by Cosentino®

For 6 years, Cosentino Research & Development, S.L. has been working on the development of a new large format product. This product consists of a mixture of raw materials that react to high temperatures to obtain a slab with unique technical and aesthetic characteristics.

The product's patent was requested in 2012 and currently a PCT patent has been requested. The trade name of the product is DEKTON® by Cosentino, although it may have different brands depending on the final application. Owing to its properties, DEKTON® is a unique material around the world, as it boasts the highest quality technical characteristics among the different existing construction surfaces on the market.

Manufacturing Process

The factory as a unit includes several phases. Each phase is different depending on the type of product that it is capable of developing. The manufacturing process is explained below from the first phase.

The manufacturing phase consists of the following sections:

Receipt and preparation of raw material: begin the very start of the process, the raw materials are checked for quality and suitability. All raw materials are stored separately to prevent cross-contamination. The raw materials are transported by a conveyor belt system, from the storage areas to a series of hoppers or purification systems exclusively designed for this process.

The raw materials used for DEKTON® have been very carefully chosen, paying particular attention to the physical and chemical parameters. They are supplied from all around the world and in some cases, demand a complex logistics system to prevent contamination or loss in quality.

Grinding and standardisation: the DEKTON® formula is transported from the hoppers or purification systems to a wet grinding process, in which, the different raw materials are mixed in a certain ratio and are ground

to a specific particle size. The particle size completely determines the speed and course of the chemical reaction that gives rise to DEKTON®. It also conditions the final properties of the product. This mixture is stored separately before use, following a pre-determined stabilisation period.

Pigmentation: the pigmentation process is made up of a complex system of mixers, diluters and stirrers. This system is capable of mixing, depending on the colour/finish, inorganic pigments with the rest of the DEKTON® formula. These pigments also form part of the chemical reaction that gives rise to DEKTON®, thus the quality control of its chemical composition is thorough and rigorous.

Atomisation: The already coloured DEKTON® formula is dried by atomisation until a specific size, grain form and a specific humidity are achieved. The different powder products obtained are stored in separate silos.

In this case, the humidity controls the fluidity of these small particles, allowing them to be deposited in the different receptacles that supply some of the subsequent decoration systems. They flow between the channels that supply the other decoration systems or that allow their movement during mixing systems.

Decoration systems: using several unique mechanisms for their design and function, these small particles generated in the previous section, are carefully positioned on different locations on a belt, creating a continuous slab. The decoration mechanisms are what create the different aesthetic effects.

These effects can be produced throughout the thickness of the slab or just on the surface. In total, and in the first phase of the production process, there are 16 different decoration systems that can work independently or simultaneously, or even in groups, resulting in an incredible design versatility.

Shaping system: the continuous slab is separated into several fragments that later will create the finished slab, and that will be subject to an extreme ultra-compaction process. To do so, a unique press worldwide has been designed for its special dimensions and its capacity to compact.



The result of this process is to bring the small coloured particles as close together as possible. This process is fundamental to speed up the chemical process that will occur later.

This process gives the slabs sufficient mechanical resistance to be able to move onto the next section, which is the final thermal process. Before reaching this last section, the ultra-compact slabs pass through different intermediary steps to assist the following steps or to include the aesthetic/decorative content of the piece in some cases.

Thermal process: during this process, the finished slab is given its final physical, chemical and aesthetic properties. This process includes the application of high temperatures so that the different coloured particles react following a pre-established reaction path.

Throughout this process, the raw material and initial pigments are transformed into several intermediary composites. These composites, through the application of heat, are controlled so that they react and so that they can follow the correct synthesis path.

The end result is DEKTON® with a useful surface of

approximately 3200 mm long and 1440 mm wide and a thickness that can vary between 8 and 30 mm depending on the application.

Classification and storage: the last step of the manufacturing process is the classification and storage of slabs. They are classified horizontally in an automatic warehouse.

Chemical Composition

This product does not contain resins or organic additives and therefore polymerisation reactions are not used for its production. The chemical composition of the product is fully inorganic.

Different formulas are used for DEKTON®, depending on the type of product required; this means that the final chemical composition can fluctuate without the physical or chemical properties being affected.

One example of the final chemical composition of DEKTON® is as follows: aluminium silicates, amorphous silica, crystalline silica, zircon and inorganic pigments. The content of crystalline silica in all colours and formula will always be below 11% in weight.

The product is classified with the TARIC tariff code: 6914.90.00.90, nevertheless in accordance with its technical characteristics, it complies with group Bla of standard EN 14411:2006, such as tiles for flooring applications both for indoors or outdoors.

Properties

From the outset, DEKTON® has been designed so that it can be used on practically all existing applications

concerning construction surfaces. Currently its main characteristics are as follows, although new generations

of DEKTON® that are being developed will allow its use in other more specialised technical applications.

High resistance to hydrolysis	Resistance to UV ray exposure (possibility of application outdoors)
High resistance to abrupt temperature changes	Resistance to chemical products and almost entire PH range
High resistance to freezing	Low thermal dilation
High resistance to abrasion and wear and tear	Non-combustible
Flexural strength	Optimal thermal insulation
Extreme resistance to compression	Possibility of cut-to-size products
Resistance to contact with hot objects	Possibility of studying different thicknesses and formats depending on the application

TECHNICAL CHARACTERISTICS 02

DEKTON® Technical Specifications | According to STANDARD EN-14411 Family I (Spectra, Domoos, Sirius, Sirocco, Kadum, Strato, Keranium, Ananké)

TEST	STANDARD	DETERMINATION	UNIT	Family I
Flexural and bending strength	UNE EN ISO 10545-4	Average flexural strength	N/mm ²	60
		Average bending load	N	2548
		Average bending strength	N	14966
Water absorption, open porosity and densities	UNE EN ISO 10545-3	Boiled water absorption	%	0
		Vacuum water absorption	%	0,1
		Open porosity	%	0,2
		Apparent relative density	g/cm ³	2,51
		Apparent density	g/cm ³	2,50
Resistance to deep abrasion	UNE EN ISO 10545-6	Abrasive volume	mm ³	125
Determination of dimensions and surface aspect	UNE EN ISO 10545-2	Length and width	%	0,11 / -0,18
		Thickness	%	0,50 / -0,50
		Straightness of sides	%	0,01 / -0,01
		Rectangularity	%	0,07 / -0,16
		Lateral curvature	%	0,04 / -0,08
		Central curvature	%	0,06 / -0,06
		Warping	%	-0,11
		Surface appearance (Tiles with defects)	%	100
Determination of impact resistance	UNE EN ISO 10545-5	Coefficient of average restitution	-	0,85
Determination of thermal linear dilation	UNE EN ISO 10545-8	Dilatation between 30-100°C	°C ⁻¹	6,5 · 10 ⁻⁶
Determination of thermal shock resistance	UNE EN ISO 10545-9	Damage	-	Approved/No damage
Determination of humidity dilation	UNE EN ISO 10545-10	Maximum expansion	mm/m	0,1
		Average expansion	mm/m	0,0
Determination of freeze resistance	UNE EN ISO 10545-12	Damage	-	Approved/No damage
Determination of chemical resistance	UNE EN ISO 10545-13	CINH ₂ / Cleaning products	Class	UA (no damage)
		Bleach / Salts for pools	Class	UA (no damage)
		HCl (3% v/v)	Class	ULA (no damage)
		Citric Acid (100g/l)	Class	ULA (no damage)
		KOH (30 g/l)	Class	ULA (no damage)
		HCl (18%)	Class	UHA (no damage)
		Lactic Acid (5%)	Class	UHA (no damage)
		KOH (100 g/l)	Class	UHA (no damage)
Determination of stain resistance	UNE EN ISO 10545-14	Agent green	Class	5
		Agent red	Class	-
		Iodine (solution)	Class	5
		Olive oil	Class	5

Slip Resistance Report | According in STANDARD EN-14631 Family 1 (Spectra, Domoos, Sirius, Sirocco, Kadum, Strato, Keranium, Ananké)

Finish	NATURAL		SLATE		WOOD		POLISHED	
Colour	Domoos / Strato / Sirocco / Kadum / Keranium		Sirius		Ananké		Spectra	
Determination	USRV dry	USRV wet	USRV dry	USRV wet	USRV dry	USRV wet	USRV dry	USRV wet
Value	48	23	49	22	44	21	Pending test	Pending test



DEKTON® Technical Specifications

According to ASTM (American Society for Testing Materials) standards
Family 1 (Spectra, Domoos, Sirius, Sirocco, Kadum, Strato, Keranium, Ananké)

TEST	STANDARD	DETERMINATION	UNIT	Family I
Moisture expansion	ASTM C370	Average moisture expansion	%	0,02
Breaking strength	ASTM C648	Average breaking strength	lbf	3.963
Flexural properties	ASTM C674	Average breaking module	psi	10.828
Absorption of water, apparent density, porosity	ASTM C373	Average water absorption	%	0.03 (non-porous)
Co-efficient of adherence and friction (slip resistance)	ASTM C1028	Co-efficient of adherence and dry friction	-	0,80
		Co-efficient of adherence and wet friction	-	0,66
Dynamic co-efficient of dry friction (DCOF)	ANSI A137.1 section 9.6.1	Average DCOF	-	0,57
Resistance to wear (TABER Abrasion)	ASTM C501	Average wear by abrasion index		182,2
Resistance to thermal shock	ASTM C484	Defects	-	No defects
Adhesion strength	ASTM C482	Average adhesion strength	psi	423
Resistance to chemical substances	ASTM C650	Daily use cleaning products	%	0,50 / -0,50
		Acetic acid, 3% (v/v)	-	Unaffected
		Acetic acid, 10% (v/v)	-	Unaffected
		Ammonium chloride, 100 g/l	-	Unaffected
		Citric acid solution, 30 g/l	-	Unaffected
		Citric acid solution, 100 g/l	-	Unaffected
		Lactic acid, 5% (v/v)	-	Unaffected
		Phosphoric acid, 3% (v/v)	-	Unaffected
		Phosphoric acid, 10% (v/v)	-	Unaffected
		Sulfamic acid, 30 g/l	-	Unaffected
		Sulfamic acid, 100 g/l	-	Unaffected
		Chemical pool products	-	Unaffected
		Sodium hypochlorite solution, 20 mg/l	-	Unaffected
		Acids and bases	-	Unaffected
		Hydrochloric acid solution, 3%	-	Unaffected
		Hydrochloric acid solution, 18% (v/v)	-	Unaffected
		Potassium hydroxide, 30 g/l	-	Unaffected
Potassium hydroxide, 100 g/l	-	Unaffected		
Specific absorption and gravity	ASTM C97	Average percentage of absorption per weight	%	0,02
		Average density	lb/ft ³	156
Breaking module	ASTM C99	Average condition of dry breaking	psi	8.128
		Average condition of wet breaking	psi	7.490
Flexural strength	ASTM C880	Average condition of dry flexural strength	psi	6.840
		Average condition of wet flexural strength	psi	6.205
Resistance to compression	ASTM C170	Average condition of dry compression	psi	34.409
		Average condition of wet compression	psi	17.823
Resistance to abrasion	ASTM C1353	Average abrasion index	-	349

Dimensions

The DEKTON® slab comes in a nominal dimension of 3200 x 1440 mm.

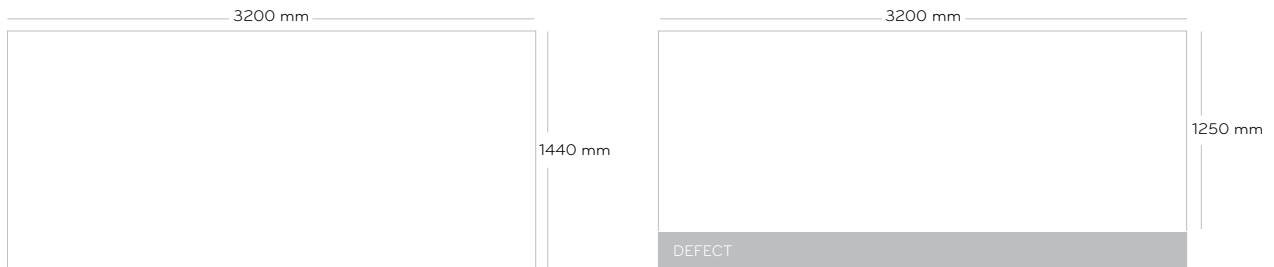
Depending on the type of colour and formula used to manufacture DEKTON®, it is possible that the useful surface is greater than these measurements but never any smaller. In the event of a defect, the surface of the

slab decreases as necessary to remove the defect from what is considered as the useful surface. In other words, the area affected by the defect is removed as shown in the image.

The definition of defect is described in the section "Acceptable criteria" in this section.

DEKTON® slabs are available in 4 different thicknesses: 8, 12, 20 and 30 mm.

The maximum deviation from the nominal value is $\pm 2\%$. As an example, for a 20 mm thick slab, the maximum variation that the slab may have is $\pm 0,5$ mm.



Textures / Finishes

The DEKTON® colours come in different textures, such as, Smooth matte, Textured matte and Polished.

The texture is determined by the name of the colour.

All colours are not available in all textures.

Collection	Colour	Texture
SOLID	SPECTRA	Polished
	DOMOOS	Smooth matte
	SIRIUS	Textured matte
	HALO	Polished
	ZENITH	Smooth matte
	ANANKÉ	Textured matte
	ARIANE	Textured matte
NATURAL	SIROCCO	Smooth matte
	DANAE	
	AURA	Polished
	NAONE	
TECH	STRATO	Smooth matte
	KADUM	
	KERANIUM	



Colour / Tones

Each slab is defined by Colour + Tone. Numbers are established to specify tones in the colours (slight variations in colour intensity). The variation of tone is determined by:

- Solid colours: ΔE variation (control with spectrophotometer: Lab/D65/10°).

- Colours with veins: visual variations (of pattern). The colour and tone are reflected in the slab unit label with Colour and Tone Code.

The label determines the TRACEABILITY of the slab. Its "history" throughout the factory production process through the slab number (batch).

Product Standardisation

The continuous production process of DEKTON® makes variations in the standardisation of the product almost non-existent.

However, owing to the use of natural raw materials, certain irregularities may occur. The following is deemed acceptable provided that they fall into the following ranges:

Type of irregularity	Size	Standard
Similar colour	≤ 3 mm.	Acceptable
Different colour	≤ 1 mm.	Acceptable

In specific cases of irregularities produced by subsequent mechanical processes, defects that can be seen in natural light in a perpendicular direction 1 metre from the slab are deemed non-acceptable.

Flatness

The flatness is controlled with the slab on a totally flat and horizontal surface.

It should not be on a rack or in a vertical position. The flatness is measured with an aluminium ruler/profile and thickness gauges, measuring the point where the arrow is greatest.

The maximum deviation from the nominal value is < 2.0 mm.

As an example, for a 3200 mm long and 1400 wide slab, the maximum arrow would be 2.00 mm.



Certifications

DEKTON® by Cosentino is in the process of certification of the following worldwide institutions.

NSF



NSF International is an independent non-profit organisation devoted to safety in public health and environmental protection. NSF, is a worldwide leader, in the development of standards, product certifications, education and risk management for health and public safety.

Dekton® by Cosentino is being tested and assessed by NSF under international standard 51 for the different products.

Obtaining the NSF certification and thus, the right to use the logo for the certified products, entails, a toxicological evaluation of all the ingredients of all the different products, proficiency testing and successfully passing unannounced audits annually, in all manufacturing sites.

To see the list of products that currently have the certificate, visit the NSF website:

www.nsf.org

GREENGUARD



Greenguard Environmental Institute is a non-profit organisation whose mission is to improve public health and life quality through programmes that improve air quality indoors.

Some of the most harmful contaminants indoors are Volatile Organic Compounds (VOCs), carbon monoxide, particles from cooking and nitrogen oxide. These contaminants can cause sick building syndrome, which causes dizziness, nausea and related illnesses.

The Greenguard Certification programme identifies those products that have been tested to guarantee that their chemical and particle emissions are in line with the strict guidelines for indoor contaminants.

Likewise, Greenguard has another certification, Greenguard Gold, which assesses the sensitive nature of schools along with the characteristics of this type of building. This certification includes maximum control of the requirements with regard to chemical product emissions.

Dekton® by Cosentino has been analysed by Greenguard, proving that it does not emit any type of VOC and thus has achieved the Greenguard Certified (Certificate No. 41572-410) and Greenguard Gold (Certificate No. 41572-420) Certifications. The certifications of the different Cosentino products can be downloaded from the Greenguard webpage:

www.greenguard.org

ETE / ETA



Evaluación Técnica Europea (ETE) European Technical Assessment (ETA)

An European Assessment Document is a document that contains at least a general description of the construction product, the list of essential characteristics, relevant for the intended use of the product provided by the manufacturer and agreed between the manufacturer and the technical assessment body, the methods and criteria for assessment of the product properties in relation to its essential characteristics, as well as controlling factory production.

A request for a European Technical Assessment is performed by a manufacturer of any manufactured product, if that product is not covered or not fully covered by a harmonised standard. This assessment will demonstrate its performance against its essential features and will be assessed by a technical evaluation body.

Dekton® by Cosentino is being assessed by the ITeC (Institute of Construction Technology of Catalonia) as a product for ventilated façades. Once the European Technical Assessment is approved, the CE mark will be applied directly to the product for this type of applications.



HANDLING AND STORAGE 05

DEKTON® slabs must be handled with the proper care and safety to prevent damage to equipment. The table below describes the weight per slab and per metre squared.

When handling slabs, it must be taken into account that they may have sharp edges owing to the nature of the material. For this reason, safety gloves must always be used while handling slabs.

Canvas slings should be used for the correct handling. Given the hardness of the material, there may be sharp edges on some point of the slab and for this reason it is compulsory to combine the canvas slings with protective covers to extend the life of the slings and prevent possible accidents. Protective covers recommended by the sling manufacturer should be used. The use of metallic slings should not be used to handle the material.

For any means of handling, the metallic parts that may touch the surface of the material should be protected from impacts, as shown in the following images.

To open the package or handle the individual slabs, an alligator clip must be used as shown in the image. For any handling system used, the manufacturer's instructions should be followed, as well as respecting the maximum acceptable loads of all elements, and guaranteeing the recommended maintenance/replacement periods in each case depending on use.

Specifications	8 mm thickness	12 mm thickness	20 mm thickness	30 mm thickness
Full slab	Max. 99 kg	Max. 149 kg	Max. 248 kg	Max. 372 kg
Weight per m²	Max. 21 kg	Max. 32 kg	Max. 53 kg	Max. 79 kg
Slabs package (*)	16	16	14	10

(*) Maximum number of slabs considering vertical storage and receipt in centre/customer warehouse.

To open the package or handle the individual slabs, a CAIMAN clip must be used as shown in the image.



When positioning DEKTON® slabs on racks, take extreme care to prevent breaking the edge of the material.

The use of polyethylene supports is compulsory on the racks, as shown in the image on the right. The aim is that this protection buffers the support of the slabs

and also to preserve the condition of the slabs during storage.

The slabs will be placed surface on surface, and wooden strips will be used to separate the packages, as in other large format surfaces as in the case of SILESTONE®.



DEKTON® is a unique product compared to what is currently available on the market. Due to its chemical composition, its main distinguishing feature lies in its extraordinary physical properties, such as its hardness, abrasion and mechanical resistance.

This makes the ultra-compact surface DEKTON® incomparable with any other surface currently on the market whether it be glass, ceramics, earthenware, marble, granite or quartz agglomerate. Due to the fact that this surface is so innovative, tools commonly used in stone industry workshops are not valid for DEKTON®. If the specific tools are not used, it may cause accidents and may affect the material, tool or performance of the machinery.

A consequence of the use of unsuitable tools and their process parameters, is the gradual decrease in the quality of cutting, grinding, bevelling, etc., leading to a possible deterioration of the abrasive material, thereby leaving the tool useless for any another function.

In view of the above, for each type of work, request recommendations on tools, conditions and trade brands before beginning work.

IMPORTANT BEFORE STARTING TO WORK WITH DEKTON®

Trim at least 2 cm of each length of the DEKTON® slabs.

Devise a correct working sequence, first of all separating the worktops or full pieces from the slabs and then making the corresponding holes. Do not do the contrary. If cutting pieces for façades, flooring or cladding, start by cutting full width or length strips of the required pieces, fully separating these strips from the rest of the slab. Then, cut to the required format.

LABEL

Fundamental information appears on the label, such as, the tone, which will be necessary to check when making a worktop with more than one slab, so as to achieve the correct tone.

The batch number is another code to take into account, which identifies the slab and traces it with regard its manufacturing process. This will make any kind of incident easier to solve.



CUTTING WITH A BLADE CUTTER COMBINED MACHINES OR SIMILAR

Before starting, check the following:

- The cutting table should be solid and robust.
- It must be perfectly flat and level (the quality is improved using a rubber or wooden surface, to buffer the blade vibrations).
- Check that the surface that the slab is placed on is in good condition (the piece is perfectly supported and there are no surface irregularities that affects the adhesion of the slab).
- The blade must be in good condition (the tool should be within its product life cycle and there should be no surface damage).

- The cooling process for this type of work is very important. The coolant flow must point directly at the cutting point and not indirectly. Use the maximum flow allowed by the machinery.

- If it is a special machine where the cutting process can be carried out immersed in water, this process should always be used to optimise the cooling process, to improve the surface quality and extend the life of the tool.

The recommended cutting speeds of blades for DEKTON® are as follows:

- For 0.8 cm slabs: 1 – 1.5 m/min*
- For 1.2 cm slabs: 1 – 1.5 m/min*
- For 2 cm slabs: 0.5 – 1 m/min*
- For 3 cm slabs: 0,5 m/min*

*Depending on the type of blade to be used and the brand, it is necessary to adjust the specific revolutions and speeds. To do so, use a suitable blade depending on the type of machinery available. If the machine has a frequency converter, any blade out of those recommended can be used, by simply adjusting the revolutions.



WORKING WITH MANUAL MACHINES

MATTE AND POLISHED EDGES

The abrasives must be in good condition. The cutting table and the piece should be well secured to prevent any movement during polishing.

The water flow must be high and properly directed towards the machined area to keep the material cool and achieve good quality. It is fundamental to ensure that the tool is kept continuously cool and that there is no fault in the coolant supply system.

To improve the final quality of the finish, first of all grind with the diamond blade.

Move the polishing machine continuously over the material without pressing excessively against the material.

For MATTE edges, use standardised brushes for DEKTON®. A regular sequence may be:

- 46 fine brushes (to create texture)
- 60 fine brushes (to create texture)
- 120 thick filament brushes (to create tone and matte finish)

For POLISHED edges use specific sandpaper recommended for DEKTON®. A regular sequence may be: 60, 200, 500, 1000, 2000 and 3000.

CUTTING

Only use standardised blades to cut DEKTON®. Generally, these tools work at extremely slow speeds and are highly cooled.

DRILLING

Only use standardised blades to machine DEKTON®. In general, the tools operate at very slow speeds and are highly cooled (ideally immersed). For which, it is recommended to place a container on the DEKTON® surface, containing the coolant while drilling.

POLISHING EDGES WITH AUTOMATIC MACHINE

The pressure of the heads on the edge should be as low as possible to prevent damaging the abrasives.

The blades with a central coupling thread are used for straight edges, whether they are polished or matte. The blades with a non-centric thread are used for special edges.

MATTE EDGES

For machines with 6 motors, a normal sequence example may be : diamond brushes: 46 and abrasive brushes:36, 36, 36, 46 and 46. For an 8 motor machine, a normal sequence example may be: diamond brush: 120 and abrasive brushes: 36, 36, 46, 46, 60 and 60.

Speed: Approximately 80 cm/min.

Pressure: 1.5 bar for diamond brush and 2 bar for others.

POLISHED EDGES

For machines with 6 motors, a normal sequence example may be: 100, 200, 500, 1000, 2000 and 3000.

For machines with 8 motors, a normal sequence example may be: 100, 200, 500, 1000, 2000, 3000 and extra-shine abrasive.

Speed: Approximately 60 cm/min.

Pressure: 1.5 bar for the first 3 positions and 2 bar for others

All parameters are guidelines, and although they have been tested on standard machinery, they must be adjusted depending on the manufacturer and workshop characteristics in each case. If it is not possible to work with complete sequences, shorten the sequence by eliminating the middle phase.

SPECIAL EDGES

The generators should be in good condition without any deformities to achieve the right profile.

The sequence of tools is the same that is used for MATTE and POLISHED edges, depending on the type of finish that is required.

Speed: Approximately 20-25 cm/min.

Pressure: 5 bar for the generator, for the others 2 to 2.4 bar.

NUMERIC CONTROL

MILLING CUTTER

The use of milling cutters is recommended with conditions between 3500 and 4500 rpm and a speed between 180 and 210 mm/min.

Depending on the type of milling cutter to be used and brand, it is necessary to adjust the specific revolutions and speeds to ensure excellent cutting quality.

DRILLING

The recommended use is 4500 rpm and a perforation speed of 15mm/min. The tool should be sharpened (using an abrasive paste or similar) every 5 or 6 drills to extend the useful life of the tool and ensure the good quality of the cut.

Depending on the type of drill to be used and brand, it is necessary to adjust the specific revolutions and speeds to ensure excellent cutting quality.

Due to the hardness and resistance to the abrasion of DEKTON®, a good cooling system is required for these tools so they are not damaged. If there is no sufficient cooling system, we recommend spot drilling, stopping 2 mm before the end. Use a securing accessory on the rear face that will give added support. Next, sharply hit to remove the filling.

MAKING MATTE AND POLISHED EDGES

To make the edges, the conditions and speeds depend on the type of tool and brand. The general conditions are detailed below, but it is recommended to check the specific conditions of the DEKTON® tools with the supplier.

In general, both for matte and polished finish, 3 or 4 of the highest metallic positions (depending on brand) are used. For these positions, conditions between 4800 and 5000 rpm are recommended, starting with a slow speed and increasing until the recommended speed is reached depending on the brand, which can range from 0.5 and 3 m/min.

For a matte finish, only the use of these metallic positions is necessary. Then, the final matte texture will be achieved with manually sanding.

To obtain the polished finish, the sequence will continue with the following positions: 600, 800 and 1200. The 1200 position will only be used for dark colours.

For the 600 grain position, work with a maximum erosion of -0.1 mm and with feed rates between 0.5 and 1 m/min, and between 1800 and 3400 rpm depending on brand and supplier.

For the 800 and 1200 grain positions, work with maximum erosion of -0.2 mm and with feed rates between 0.3 and 1 m/min, and between 1400 and 2000 rpm depending on brand and supplier.

CUTTING WITH WATER

To cut with water, the following parameters are recommended for a standard machine of 3800 bars:

- Feed rate= 800 mm/min
- Top pressure = 360 bar
- Lowest pressure = 60 bar
- Activate corner control

Use the brackets to prevent pieces moving while cutting.

AFFIXING

To affix the edges, only use putties recommended for DEKTON®. These putties possess special characteristics that adapt perfectly to the zero-porosity products and they are resistant to UV radiation, making them suitable for outdoor use.

Contact your COSENTINTO representative in your nearest CENTER for recommendations on manufacturers of tools, putties and accessories. They will be able to advise you to ensure correct working process.

Correct design of joints

Following these recommendations will help to ensure that the joints are waterproofed with silicone providing the best possible performance for DEKTON®, when used as a worktop:

- Silicone should always have a minimum of 6 mm of contact surface or fixation to ensure adequate adhesion.
- The width of the silicone joint must be a minimum of 6 mm to suitably prepare the surface and filling of the joint. Depending on the movement of the joint, wider joints may be necessary.

- Single-component silicones must be exposed to atmospheric humidity to cure. Silicone should not be applied to hidden joints that are completely concealed.

- The silicone must be applied with a minimum of 2:1 width-depth ratio.

- The depth of the silicone on the material must be a minimum of 6 mm.

- The depth of the material on the silicone must be a maximum of 12 mm even if the width of the joint is greater than 24 mm.

- Avoid the adhesion of 3 sides. The sealer must only be applied to the substrates of the joint and not the rear of the joint. Standard support materials or bond breaker tape should be used to prevent the adhesion of 3 sides.

- For outdoor application, ask Cosentino staff which product to use when sunlight may shine directly on the joint.

How to use

The optimum temperature for application is between +5 and +40°C.

PREPARATION OF THE JOINT

The surfaces are prepared so that when the sealing is applied, the joints are perfectly clean and dry. Stains, loose particles, paint, etc. should be completely removed. Place masking tape on the sides of the joint to prevent the silicone from staining the surface and to achieve a better finish.

Joint filler, according to depth, with a foam base such as polyethylene or polyurethane. This has three main functions:

- Set the optimum size of the joint defining the depth of the sealing.

- Prevent the silicone from sticking to the base of the joint.

- Support the silicone and limit its consumption.

The diameter of the base of the joint must be approximately 1.25 times the width of the joint.

**APPLICATION OF THE SILICONE USING A MANUAL OR PNEUMATIC GUN
SMOOTHING THE JOINT USING A TOOL SOAKED IN WATER AND SOAP**

REMOVE THE MASKING TAPE IMMEDIATELY AFTER THE APPLICATION OF SILICONE, AND IN ANY CASE BEFORE STARTING TO POLYMERISE

Contact your COSENTINO representative in your nearest CENTER for recommendations on manufacturers of silicones and accessories. They will be able to advise you to ensure correct sealing.



PREPARING THE ELEMENTS

Cleaning: Ensure that both the support surface on which you are installing DEKTON®, and the piece of DEKTON®, are free of all foreign matter and they are clean, dry and dust free. Remove the damaged parts and other substances or products unrelated to the supporting surface or DEKTON®.

Levelling: If the surface is uneven, it will need to be levelled by applying adjustment mortars. To fit DEKTON® pieces, the flatness of the substrate must not exceed a 3 mm variation. The adjustment can be done with self-levelling mortar.

On vertical surfaces, the adjustment shall be carried out with another type of mortar, which can be covered in 2h. Regarding DEKTON®, the final appearance of the flooring with a slight bevel, always helps the visual consistency, for this reason Cosentino recommends bevelled edges.

Consistency: the base substrate should be extremely consistent (ensuring high tensile strength). If this were not the case, remove the base substrate and apply a new one until consistent.

Roughness and porosity: the base substrate should provide an adequate level of porosity and surface roughness to ensure the adhesion of the product. The greater the roughness of the base substrate the better the adhesion between it and DEKTON®.

Humidity: humidity ranges specified in the data sheet of the products must be respected. The humidity of the base substrate must be very low when using synthetic materials, while it should be high when using aqueous materials being careful not to cover the base substrate with water. If necessary, due to residual humidity or the fact that the flooring is placed directly on the ground, a vapour barrier will be applied until it reaches saturation

TYPES OF SUBSTRATE

Weak cement substrates or in poor condition: If it is feasible to raise the height of the floor level, a new screed overlay should be applied in 24h. If this is not a possibility, a surface hardener can be used to reinforce the existing concrete. If the substrate is in good condition and clean, proceed with laying the DEKTON® pieces with the chosen adhesive.

Ceramic substrate: if the ceramic surface is well joined, DEKTON® may be used, if you apply a primer before the application of the adhesive cement. If the ceramic surface is not in good condition, you should lift it up and do it properly.

Cement in good condition: make sure that both the area and the materials are clean. Proceed to lay DEKTON® the using recommendations of the adhesive.

To set DEKTON®, the substrate areas must not be subject to variations greater than ± 3 mm. The adjustment of the floor can be carried out using self-levelling mortar.

For wall application, the surfaces must be adjusted using other types of mortars that can be covered in less than 2 hours.

When using any other type of materials in the substrate area, always check the technical specifications of the adhesive manufacturer.

HOW TO APPLY ADHESIVE

It is essential to choose the correct adhesive for each specific base substrate. Cosentino advises to take into consideration that the adhesives meet the classification determined by the UNE 12004 for this choice.

IMPORTANT: Since DEKTON® is a non-porous material, normal physical drying cements cannot be used because of the water evaporation. Hence, only chemical drying cements can be used. The cement dries by chemical reaction and it is not affected by contact with air.

DEKTON® INSTALLATION

The mortar should be applied on the substrate with a notched trowel, with an opening depending on the flatness, which in turn, will influence the type of adhesive used. Installation is carried out by a double-spread technique (adhesive on the piece and substrate) and light pressure is applied along with the lateral movement of the piece, to ensure that the adhesive completely covers the piece.

After installing the pieces, they can be adjusted, if the "open time" of the bonding material has not been exceeded.

Use spacers and leave a joint between the pieces (without filling). Fill in all the corners of the joint preventing the formation of bubbles and spaces.

Taking into account the expansion coefficient of DEKTON®, the joints may be reduced, but the performance of an entire system depends on several factors, including the substrate, anchoring, adhesive, situation, temperature, etc.. So providing a thermal expansion value for the entire system is very difficult, as it depends on the final configuration and factors that do not directly correspond to DEKTON®.

The pieces should never be installed without tile-to-tile joints.

In new renovation projects, do not fit the pieces until structural movements cease completely.

GROUTING

Check that the joints are not filled with adhesives. Seal the joints 24 hours after laying the tiles. The application of the mortar should be done with rubber trowel, pressing so that it successfully penetrates the joint, and with the same trowel removing the excess mortar from the surface of the piece. Once dry, it loses its shine. The joints must be cleaned and smoothed with a damp sponge and finally, left to harden.

There are several types of joints, such as expansion joints, structural and perimeter joints. Structural and perimeter joints should always be respected, both in the substrate and in the covering. The sealing of the joints must be carried out with elastic materials or suitable prefabricated profiles. Leaving a perimeter joint between 0.5 and 1 cm between the flooring and vertical surfaces is recommended.

Expansion joints in interior flooring must be placed every 30 m² apart.

The expansion joints should match the joints of the interior flooring of the building. These joints should not be coated with any rigid coating. Every five years, there will be a joint inspection to check for cracks, fissures, etc.

Contact your COSENTINO representative in your nearest CENTER for recommendations on manufacturers of cements and adhesives. They will be able to advise you to ensure correct work.

Due to its very low porosity, the new ultra-compact surface DEKTON® by Cosentino is a surface highly resistant to stains caused both in the home, such as chemicals, making it ideal for use as a kitchen worktop and work surfaces.

For the daily cleaning of DEKTON® by Cosentino, the use of Q-Action along with a soft scouring pad is recommended. If this product is not available, the best option is using water and a neutral soap. It is important to rinse with a clean, damp cloth (preferably microfibre) in a good condition.

For colours with a polished finish, it is recommended to dry the surface with a paper or clean cotton cloth after cleaning.

Although DEKTON® by Cosentino offers high resistance to aggressive chemicals, such as bleach, acids, etc. extreme caution is recommended when using these products and ensure that contact time on the surface is as short as possible.

Cleaning stubborn stains

Of the two finishes of DEKTON® available, the matte finish is not affected by any common household product, making it practically impossible to stain.

On the other hand, the polished finish also has high resistance to stains, but it may stain when it comes into contact with a highly coloured, aggressive or adhesive substance for more than 24 hours.

In these cases, it is advisable to use more specific products such as: Cream detergents with abrasive particles or solvents (e.g. acetone or universal solvent).

Possible staining agents such as cleaning products recommended in each case are indicated in the table below. Avoid contact with hydrofluoric acid (HF) Avoid using metal scouring pads.

Do not polish. The use of this type of product can lead to the loss of the product guarantee.

As acidic cleaners, acidic products and descalers can be used etc., for alkaline products, basic cleaning product, ammonia, etc., For solvents, products such as universal solvents, thinner, turpentine, acetone, alcohol, etc. and as oxidant, products such as hydrogen peroxide or diluted bleach.

Stain	Cleaning product
Grease	Alkaline detergent/solvent
Dye	Solvent
Rust	Acid
Limescale	Acid
Wine	Alkaline detergent/acid
Pneumatic rubber	Solvent
Ice cream	Alkaline detergent
Resin/enamel	Solvent
Coffee	Alkaline detergent/solvent
Candle wax	Solvent
Shoe polish	Solvent
Cement residue	Acid
Plaster	Acid
Epoxy adhesive	Solvent
Cola soft drink	Oxidant
Fruit juice	Oxidant
Tar	Oxidant
Nicotine	Solvent/oxidant

Precautions

Avoid contact with hydrofluoric acid (HF)

Avoid using metal scouring pads

Do not polish

The use of this type of product can lead to the loss of the product guarantee



DEKTON® MSDS

01 Identification of the Article and the Company

Name of Material: DEKTON®

Use of Material: Ultra-compact surface for indoor and outdoor use, primarily in work tops and bathrooms, flooring, tiling and façades.

Name of the company:

COSENTINO, S.A. Ctra. A-334. Km 59 Cantoria (Almería)
Tel: +34 950 44 41 75/ Fax: +34 950 44 42 26

Emergency telephone: Toxicological Information

Service: +34 91 562 04 20
www.cosentinogroup.net

02 Identification of Hazards

CLP Regulation (EC) no. 1272/2008, does not include any risk associated with the finished DEKTON® material. Nevertheless, machining operations can generate dust containing respirable crystalline silica. Respirable crystalline silica causes damage to the lungs, such as silicosis, after prolonged or repeated exposure by inhalation (Hazard H372).

To prevent or minimise exposure, it is essential to adopt a series of preventive measures.

Content in crystalline silica < 11%

**H372 HAZARD**

Causes damage to the lungs after prolonged or repeated exposure (by inhalation).

GHS08
STOT RE1

**PREVENTION**

P260 Do not inhale the dust generated when cutting, shaping or polishing the material.
P264 Wash your hands and face carefully after handling the product.
P270 Do not eat, drink or smoke while using it.
P284 Wear respiratory protection for particles (P3).

**FIRST AID**

P314 4 Seek medical advice if you feel unwell.
P 501 Remove remains according to local regulations.

Classification according to directive 1999/45/CE



Xn

R20 Harmful by inhalation
R48 Risk of serious damage to health by prolonged exposure
S22 Do not breathe dust.
S38 Wear P3 respiratory protection

03 Composition / Information of components

General description of components: DEKTON is composed of aluminium silicates, amorphous silica, crystalline silica, zircon and inorganic pigments. The content in crystalline silica (SiO₂) is lower than 11%.

CRYSTALLINE SILICA - QUARTZ:

CAS 14808-60-7 / EINECS 238-878-4

Special measures are not required for the finished material, but they are for the production process, as indicated below:

Contact with eyes: Hold eyelids open and flush thoroughly with water.

Contact with skin: Wash with soap and water.

Contact by inhalation: Take employee to a well ventilated area. Use assisted ventilation, if injured person has a serious reaction. Correctly ventilate the work area.

Seek medical advice if you feel unwell.



04 First Aid

05 Fire-fighting Measurements

Fire resistance : Category A1 / A1_n.

Extinguishing agents:

Any suitable agent for type of surrounding fire.
Multi-purpose powder extinguishers are recommended.

Personal protective equipment: Depending on surrounding fire.

06 Accidental spillage Measurements

The finished product does not present any risk of spillage.

DEKTON® MSDS

07 Handling and Storage Manual Handling

The handling of DEKTON demands special requirements. The user should be responsible for carrying out a risk assessment, in accordance with health and safety regulations.

The following instructions are recommended:

- Use safe handling systems (crane, rack with safety bars, etc.).
- Slings must have good protection and be resistant, as this material has more cutting capacity than natural stone.
- PPEs must be used.

Wear a safety helmet, safety shoes, safety glasses and anti-cut gloves during handling and storage of DEKTON.

Warning: the material can be very sharp, especially the broken pieces.

- The slabs must be handled and prepared using anti-cutting gloves and safety goggles.
- Waste material should be handled with care.
- Avoid banging the waste material to reduce its size.

Precautions for environmental protection.

Water-cooled tools must be used to prevent the formation of dusty environments.

Storage.

No specific conditions are required for safe storage, except storage in a closed and covered space. Avoid strong impacts that may cause the material to break.

08 Exposure Controls and Staff Protection

Exposure limit values.

The user should be responsible for carrying out a risk assessment for exposure to dust, in accordance with health and safety regulations. According to the above and adhering to directive 2000/39/EC and RD 374/2001 which refers to the values published by the Spanish Institute for Safety and Hygiene in the Work Place (INSHT), the following values exist:

**Occupational exposure limits in mg/m³
8 Hours TWA – Respirable dust**

Daily exposure limit values. (VLE-ED)	
Respirable fraction dust	3 mg/m ³
Quartz (free silica)	0,1 mg/m ³
Cristobalite	0,05 mg/m ³

NB: Exposure limits for Spain View current limits according to the regulations of each country.

Prolonged inhalation and/or mass of respirable crystalline silica may cause pulmonary fibrosis, pneumoconiosis and silicosis, as well as a worsening of other lung diseases (bronchitis, emphysema, etc.).

Exposure control. (Manufacturing and Installation).

The manufacturer recommends the manufacturing and installation of the material using wet production methods. The dust generated during the manufacturing processes contains respirable crystalline silica (SiO₂).

Prolonged exposure to dust from cutting and manufacturing processes, without using the appropriate protective measures, can cause serious health damage, including pneumoconiosis and silicosis, as well as a worsening of other pulmonary diseases (bronchitis, emphysema, etc.).

Exposure to dust should be monitored and controlled with appropriate control measures such as:

- Avoid or minimise the generation of dust. In machining operations, always use equipment with a water supply system. The water should be clean, abundant and directed to the points of cutting, shaping and polishing,

- Mark and identify areas of risk.

- Regular monitoring of ambient concentrations of respirable crystalline silica.

- Natural and/or forced ventilation systems to ensure air renewal in the workplace.

- Cleaning and maintenance. Using vacuum and/or water cleaning systems, avoid sweeping and the use of compressed air, as these are methods which create dusty environments. Preventive maintenance programmes for the installations to ensure the correct orderliness, cleanliness and working methods of the teams.

- Always use respiratory protection for P3 type particles according to EN 143:2001 and EN 143/AC and

amendments in EN 143/AC 2002, EN 143/AC 2005, including working with water and dust-reducing agent for the preparation of Dekton®.

- Hand protection. Wear mechanical protective gloves to avoid cuts while handling pieces.

- Eye protection. Wear eye protection, according to standard EN166: 2001.

- Skin protection. The use of work clothing to prevent dust contact with skin is recommended. Wash hands and face with soap and water to remove dust before breaks and at the end of the shift.

- Work clothes: do not clean with compressed air, use vacuum cleaning methods.

- Do not eat or drink in the workplace.

- Change out of work and/or protection clothes and wash before eating.

- At the end of the day, wash, shower, if necessary, and put on clean clothes before leaving work.

- Establish a specific health monitoring system.

- Pieces must leave the workshop fully finished and ready to be fitted by the installer.



09 Physical and Chemical Properties 10 Stability and Reactivity

Appearance: Solid, according to commercial range.

Colour: commercial range.

Odour: Odourless.

pH: Not applicable

Miscibility (in water): Not applicable.

Water absorption: (ISO 10545-3): 0,05%

Density: 2400-2600 kg/m³

Flexural strength: (ISO 10545-4): 60 N/mm²

Ignition temperature: Not applicable.

Inflammation point: Not applicable

Conditions to avoid:

Avoid contact with surfaces above 300 °C.

Avoid strong impacts that may cause the material to break.

Decomposition products: None known.

11 Toxicological Information

Toxicological Information Service (Spain):
+34 91 562 04 20

The dust generated during the manufacturing processes contains respirable crystalline silica (SiO₂). Prolonged inhalation and/or mass of respirable crystalline silica may cause pulmonary fibrosis, pneumoconiosis and silicosis, as well as a worsening of other lung diseases (bronchitis, emphysema, etc.). The main symptom of silicosis is the loss of lung capacity. People with silicosis have increased risk of lung cancer.

12 Ecological Information

DEKTON® has no risk of ecotoxicity.

13 Considerations Relating to Disposal

According to European Directive 91/156/EEC and 199/31/EEC and Law 10/98 of 21 April and its RD 1481/2001, of 27 December, the product does not meet quality standards can be deposited in inert waste landfill sites.

The packaging of DEKTON® material should be disposed of following national regulations. Generally, it can be deposited in plastic or paper containers depending on whether it can be recycled.

14 Transportation Information

The material is not classified as hazardous under transport regulations of land, sea and air.

UN number	unassigned	Sea shipment
Packaging group	none	IMDG/IMO unrestricted

Shipment by road and rail	Shipment by air
ADR/RID	ICAO/IATA unrestricted
TPC/TPF unrestricted	

15 Regulatory Information

CLP Regulation (EC) no. 1272/2008 under which this Material Safety Data Sheet (MSDS) has been prepared.

16 Other Information

Please check with Cosentino, S.A. before using or supplying the material for other applications, other than those mentioned above.

The information contained in this document is to the best of our knowledge, true and accurate. But, any recommendations or suggestions made here are made without our guarantee, as the conditions of product use are beyond our control.

In addition, any of the content of this safety data sheet shall be construed as a recommendation to use

any material, breaching the laws, safety practices or patents in force of any material or its use.

Recipients of our material shall see, under their responsibility, the corresponding rules and regulations. In any case, the data contained in this Safety Data Sheet do not constitute a guarantee of specific properties nor create any contractual relationship. This Safety Data Sheet (MSDS) is in line with CLP Regulation (EC) no. 1272/2008.

For more information follow the instructions in the Guide to Good Practice for Manufacturing published by the manufacturer. Information available at www.dekton.com.

Further information is available at www.nepsi.eu and the Guide to Good Practice for the protection of the health of the worker, for the proper handling and use of crystalline silica and products containing it, edited by NEPSI.



ULTRAOLOGY

ULTRASIZE



ULTRATHICKNESS



ULTRADEEP



FULL BODY COLOR

ULTRACOMPACT

ZERO WATER ABSORPTION	COLOUR STABILITY	DIMENSIONAL STABILITY	COMPRESSIVE STRENGTH	FLEXURAL STRENGTH	IMPACT-RESISTANT

ULTRAPERFORMANCE

ABRASION-RESISTANT	STAIN-RESISTANT	RESISTANCE TO FREEZING AND THAWING	HIGHLY SCRATCH-RESISTANT	HIGHLY UV-RESISTANT	MAXIMUM RESISTANCE TO FIRE AND HEAT



A product designed by **COSENTINO**



ULTRACOMPACT SURFACES



COSENTINO®

imagine & anticipate



ULTRACOMPACT SURFACES

www.dekton.com

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