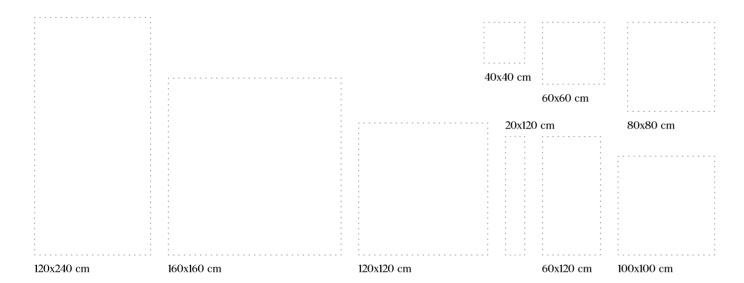
# GENERAL CATALOG

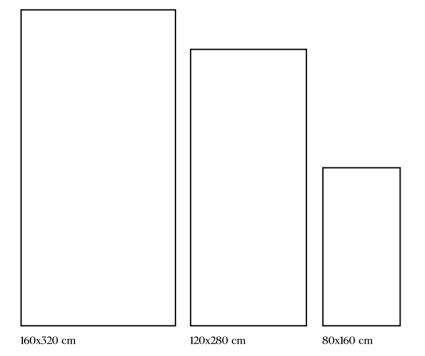
Pishgaman Memari Arya Company heading towards widening its range of products, relying on the valuable trust of its customers, has established an office in Castellon Spain. This new attempt facilitates access to raw materials and enables an approach to the new European export market. Pishgaman Memari Arya's avant-garde brand "IMPERIO DE CERAMICA" targets the luxurious and modern market of residential projects, villas, boutiques, hotels, etc. In search of beauty, Imperio finds the sensual support of nature's most precious materials to induce ostentatious luxury or sophisticated use of materials for a much more modern elegance. Imperio interprets the environment emphasizing the search for individual pleasure through beauty by each and every new design in its range of series.

Along with the world's industry leaders, Imeprio is the choice of those who immerse themselves in glamour, sensuality, and novelty; seeking luxury, elegance, modernity, and decisive styles through exclusive and original designs from the most prominent Spanish and Italian design studios. Each porcelain ceramic tile in this collection embodies a new story. Their pattern expresses innovative, stylistic, and contemporary trends that are different but matched by the constant reference to a warm and welcoming atmosphere.

By Order \*

Standard





### General Index

2.5 Technical Details

1.	Products	06	80x160 cm	120x280 cm	160x320 cm
1.1	Blue Roma	08		✓	✓
1.2	Ocean Blue - BM	14		✓	
1.3	Perla Venata - BM	20		✓	
1.4	Miracle Green	26		✓	
1.5	Vena Vecchia - BM	32		✓	
1.6	Aurora	38		✓	
1.7	Invisible Gold	44		✓	
1.8	Mystic Black	50	✓	✓	
1.9	Polaris	56	✓	✓	<b>✓</b>
1.10	Atlantis Black - BM	62		✓	
1.11	Fantastic Grey	68		✓	
1.12	Liquid Marble	74		✓	
1.13	Panda - BM	80		✓	
1.14	Hypnotize	84		✓	
1.15	Viola	90		✓	
1.16	Норе	96		✓	
1.17	Viva	102		✓	
1.18	Mystery	108		✓	
1.19	The Style	114		✓	
2.	Technical Information	122			
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 $<sup>\</sup>hbox{$\star$ Not included decor products ( Hypnotize, Viola, Hope, Viva, Mystery, The Style )}\\$ 

PRODUCT



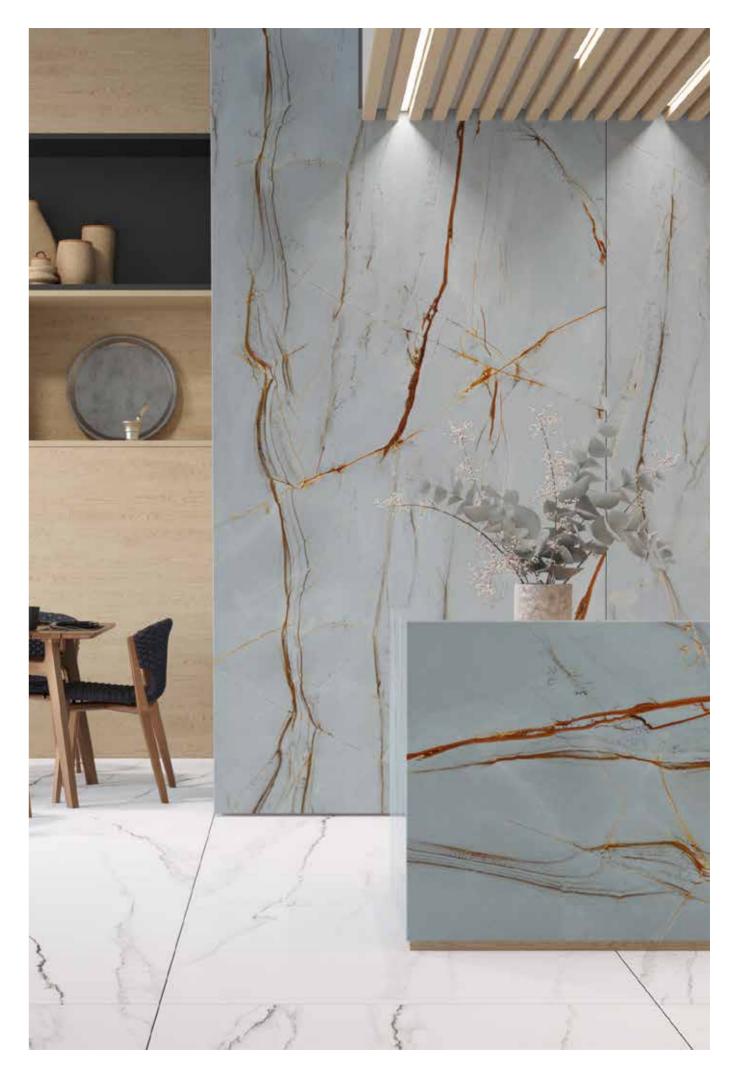


#### Blue Roma

Blue Roma is another quartzite treasure from northeast Brazil. Its spectacular blueish-grey background with criss-crossed and graceful copper veins represents an enriched surface. The complemented contrast of the vein and background depicts an avant-garde style in your spaces. With the amazing essence of the Blue Roma texture, which represents a vibrant blue and copper mixture, you will experience a luxurious and elegance.

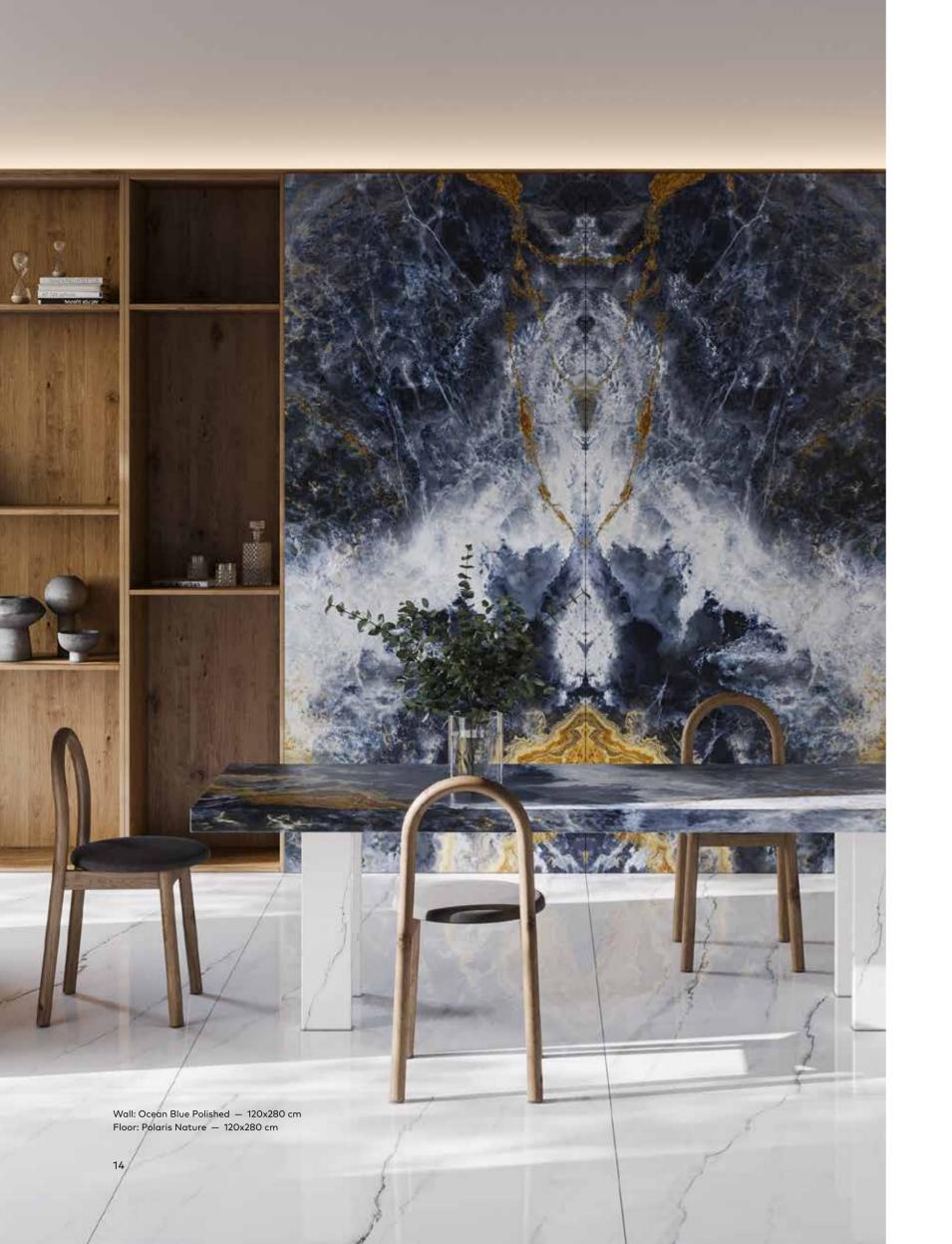


Wall: Blue Roma Natural — 160x320 cm Floor: Polaris Natural — 160x320 cm





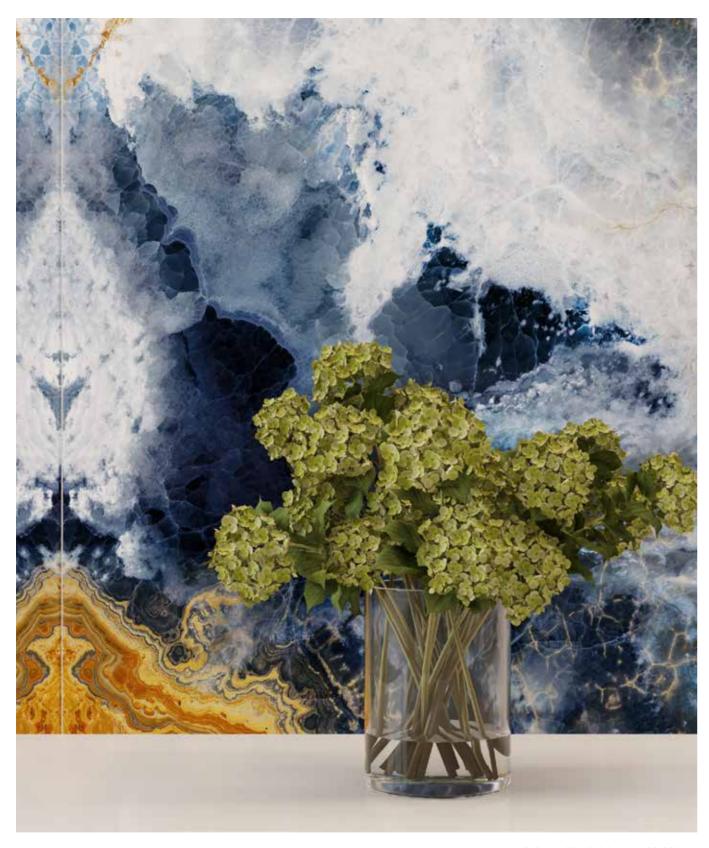




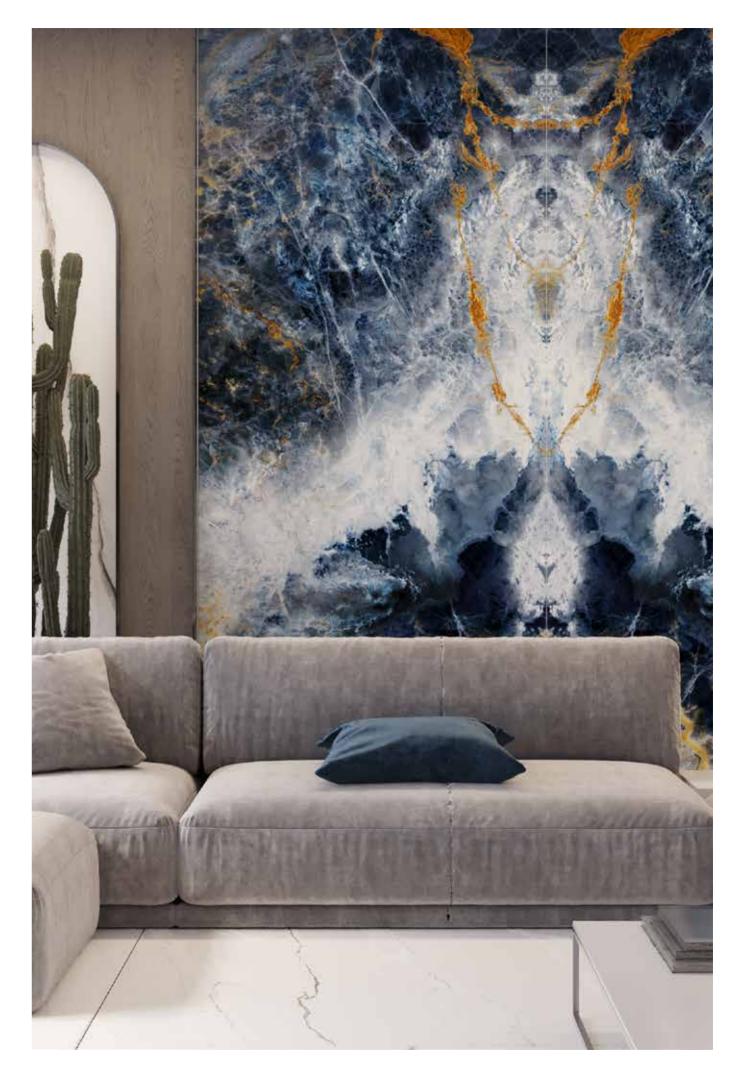


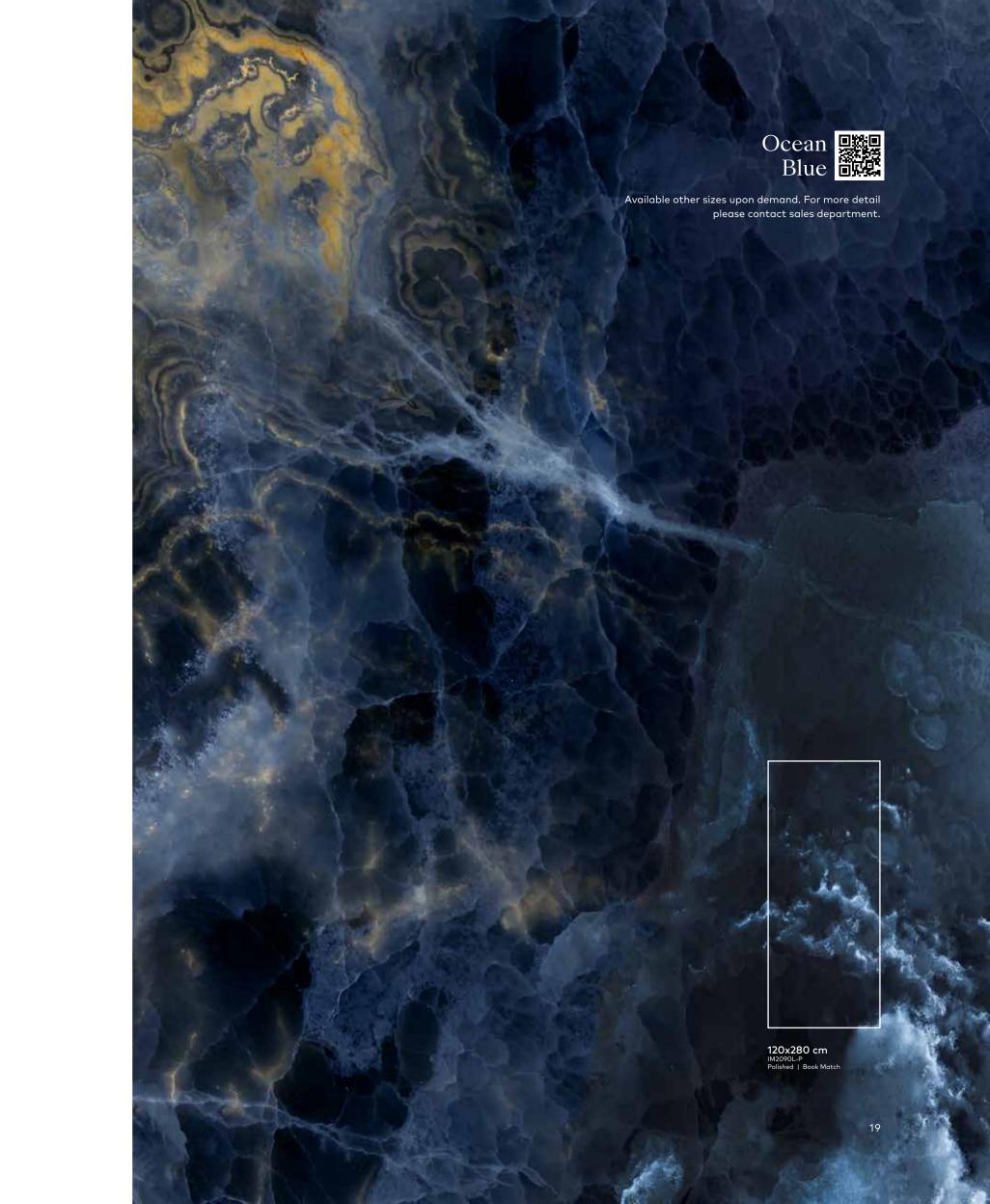
#### Ocean Blue

Ocean Blue has a unique shade of blue that is complemented by special orange highlights, creating an unforgettable and inspiring combination. Its chromatic depth evokes the enchanting waves and swirling shades of the sea. Explore its intricate details and mesmerizing colors from every angle, as the blue large slabs are guaranteed to elevate any surface, imparting a luxurious aesthetic to the objects or spaces you cherish.



Wall: Ocean Blue Polished — 120x280 cm Floor: Polaris Nature — 120x280 cm

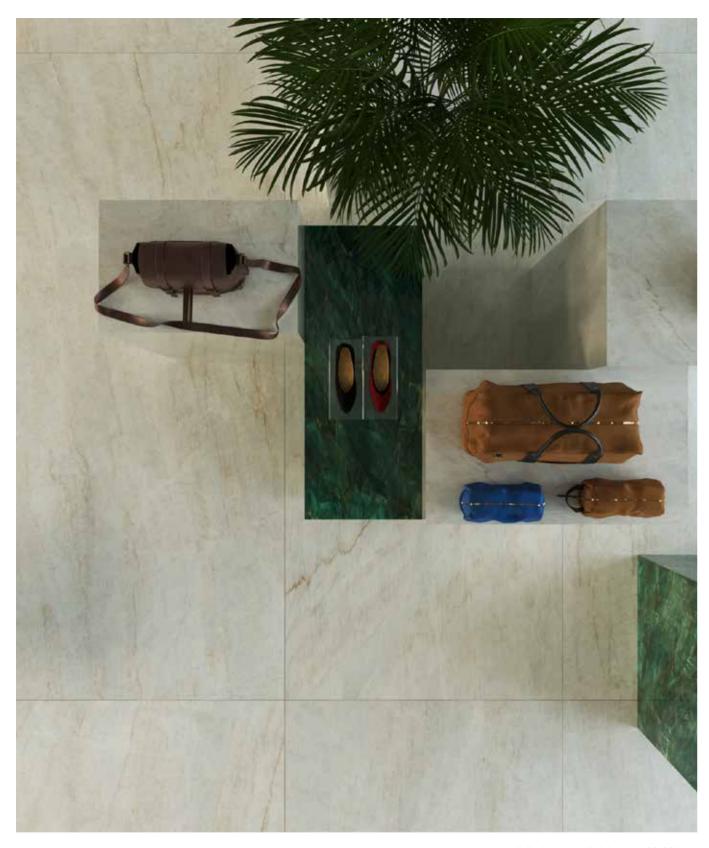




Wall: Ocean Blue Polished — 120x280 cm

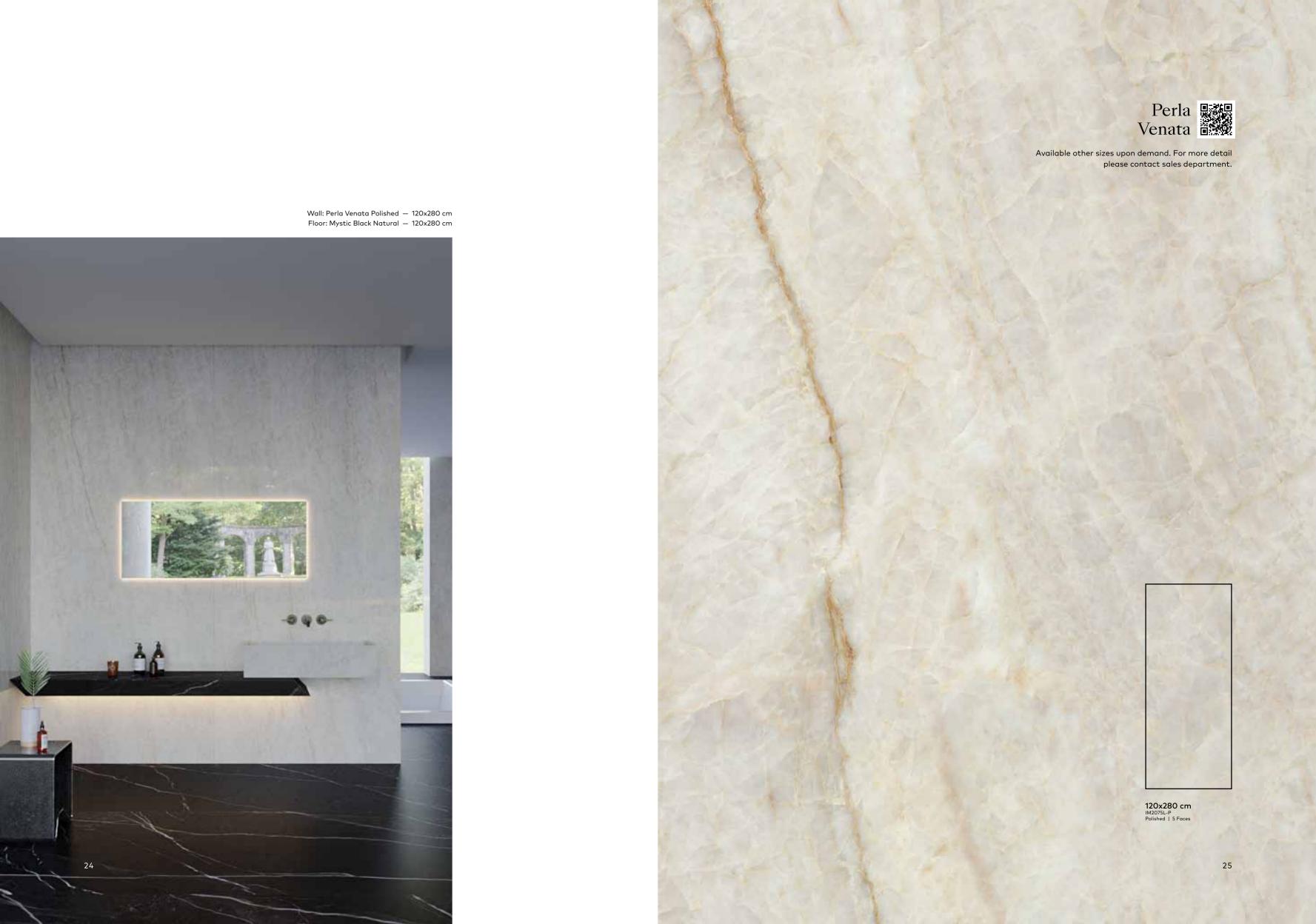






Wall: Perla Venata Polished — 120x280 cm Floor: Perla Venata Polished — 120x280 cm









### Miracle Green

Miracle Green is a stunning porcelain masterpiece that draws inspiration from the timeless elegance of Avocado Brazilian quartzite. Its rich and vibrant green backdrop, adorned with intricate white veins that gracefully traverse the surface, imbues a feeling of opulence and sophistication. These natural patterns exude both serenity and power, creating a sense of tranquility and authority. The captivating color palette of Miracle Green captures the very essence of nature, infusing your surroundings with a revitalizing and refreshing atmosphere.



Wall: Miracle Green Polished — 120x280 cm Floor: Polaris Natural — 120x280 cm

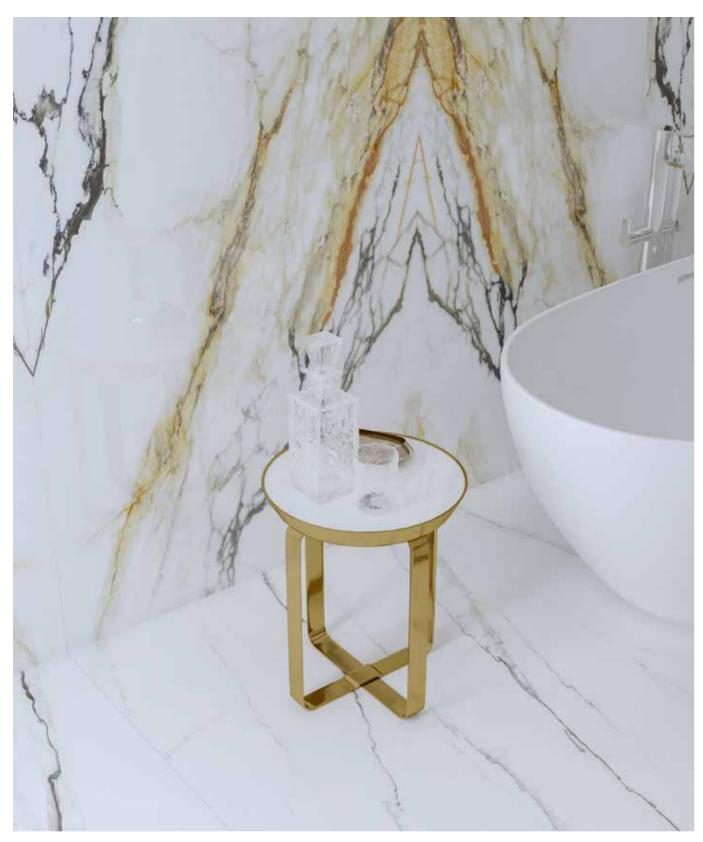




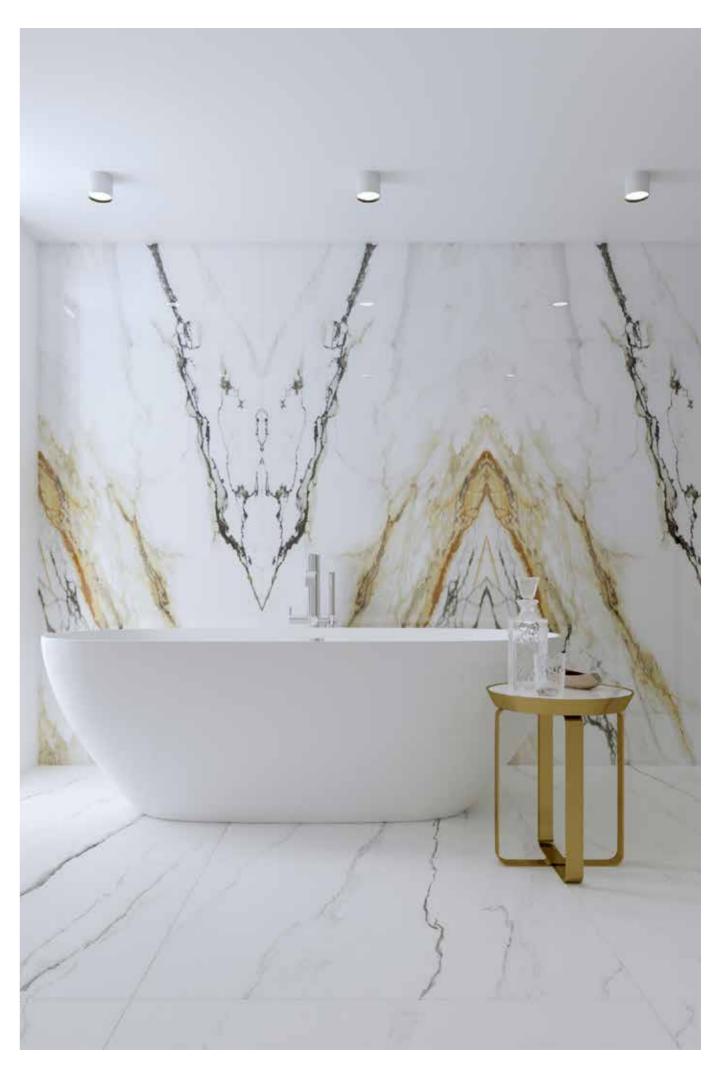


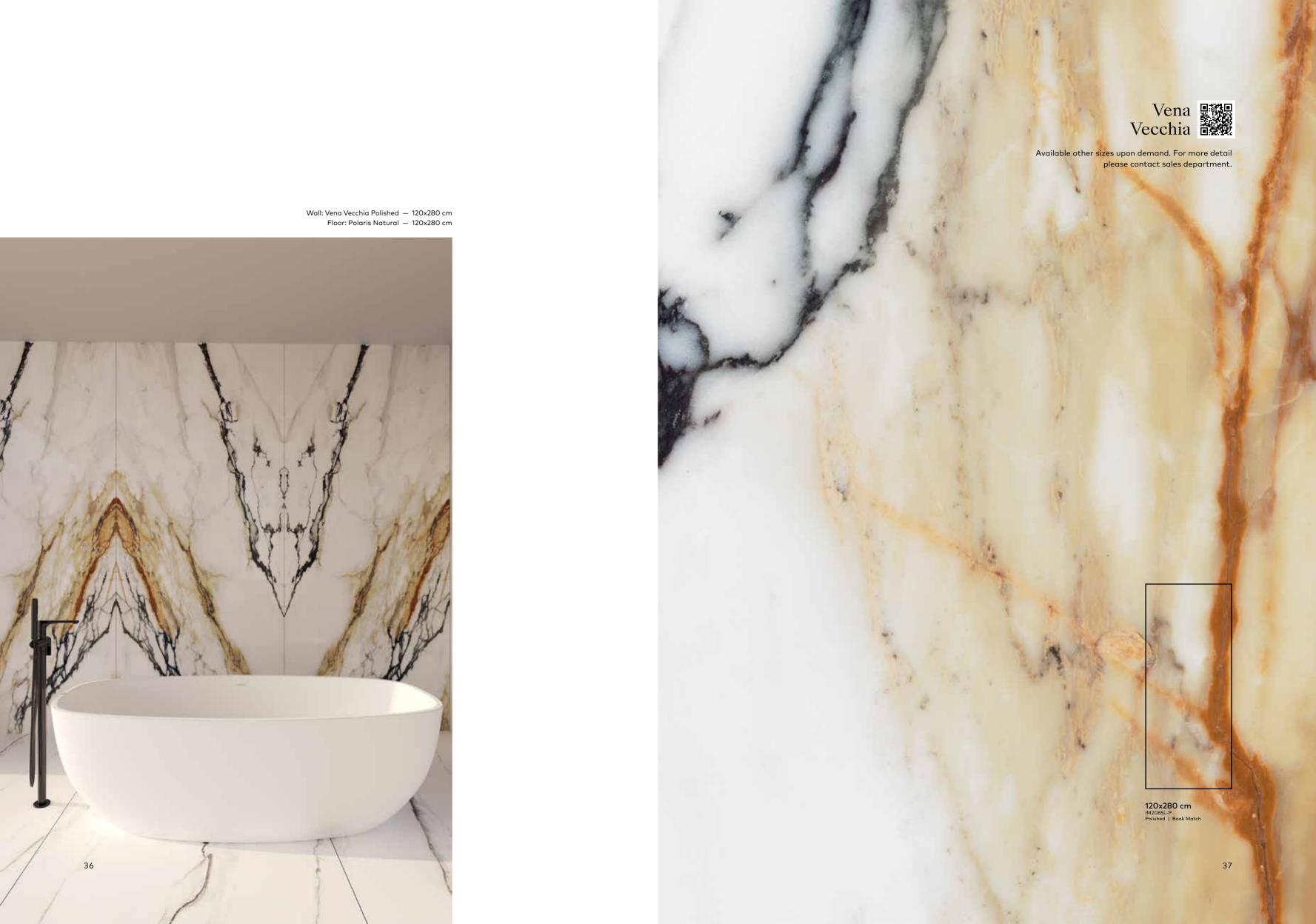
#### Vena Vecchia

Vena Vecchia is a remarkable natural stone design that boasts an elegant ivory appearance complemented by a delicate combination of caramel and merlot veins. golden flecks interspersed throughout the stone add a touch of glamour, making this marble a timeless classic with high decorative value. This exquisite marble is sourced from the Carrara region of Italy. varying intensities of grey and rusty gold veins beautifully wind their way across a beige backdrop, contributing to the unrivaled character of each slab. The result is a stunning and inimitable design that is sure to make a statement in any space.



Wall: Vena Vecchia Polished — 120x280 cm Floor: Polaris Natural — 120x280 cm



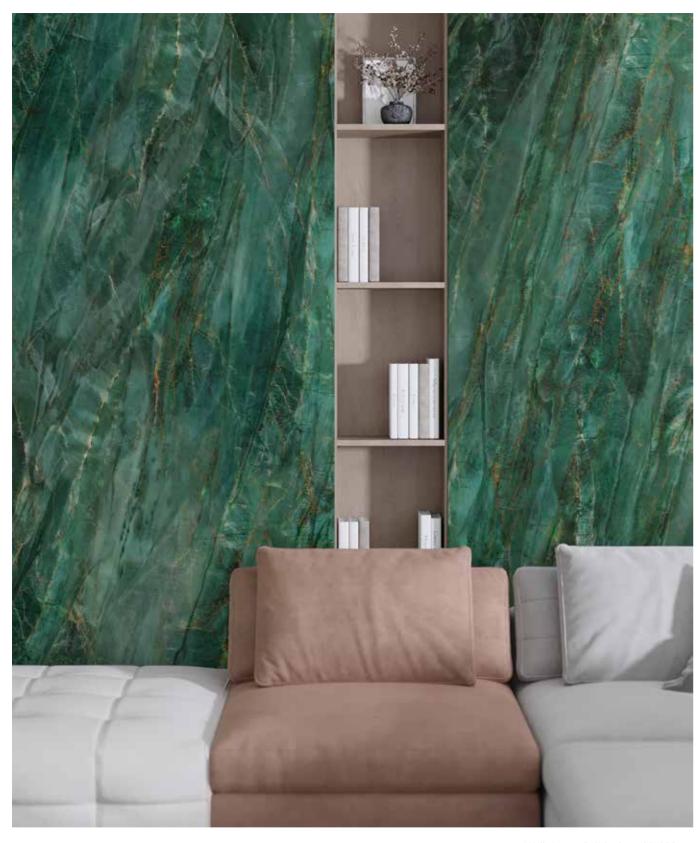




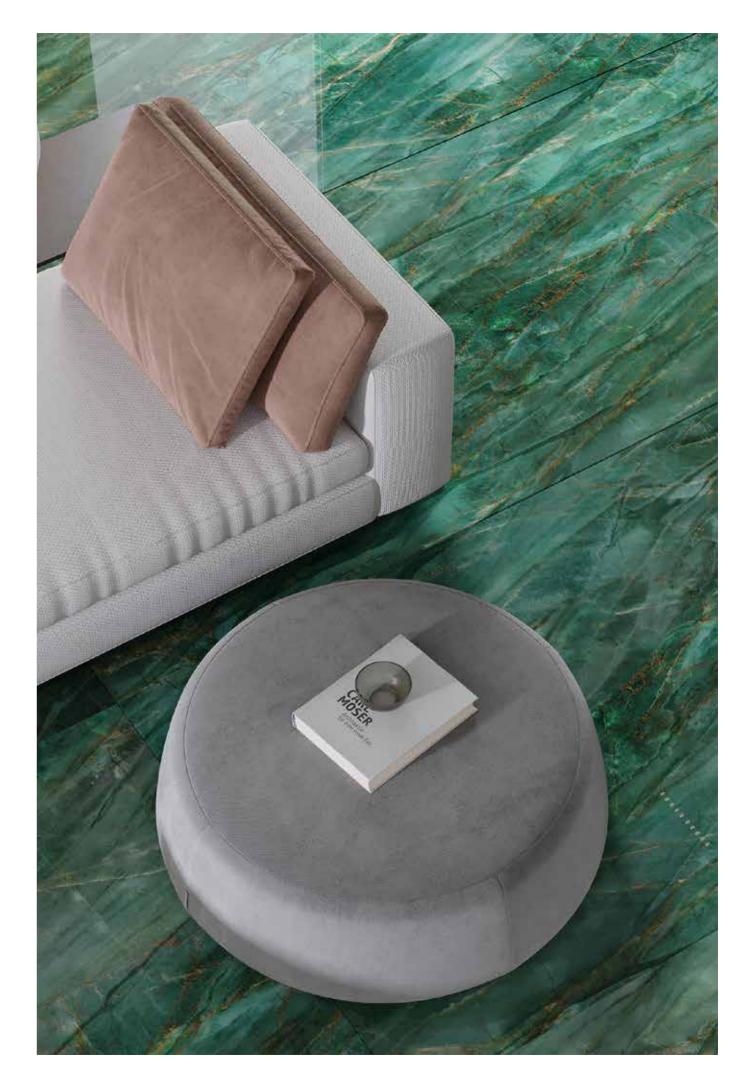


#### Aurora

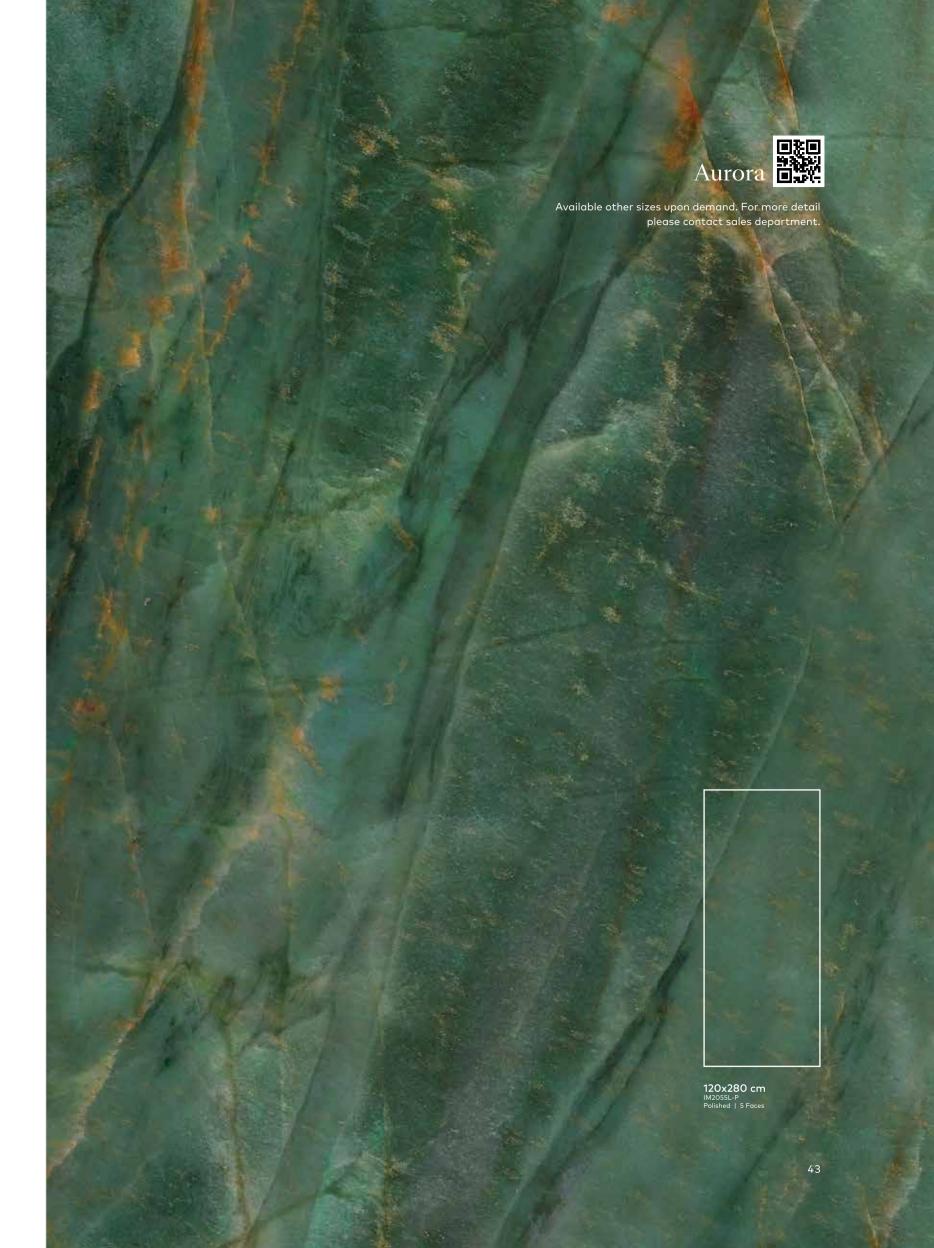
Aurora was born by extraordinary details from amalgamating luxury green color, highlighting the golden veins, to lighting up golden shades of the material. To design and develop Aurora an exceptional amount of work has gone into researching and technically perfecting the final product. The outcome is a luxurious and glamorous masterpiece in each and every slab, a perfect choice to enrich interior designs.



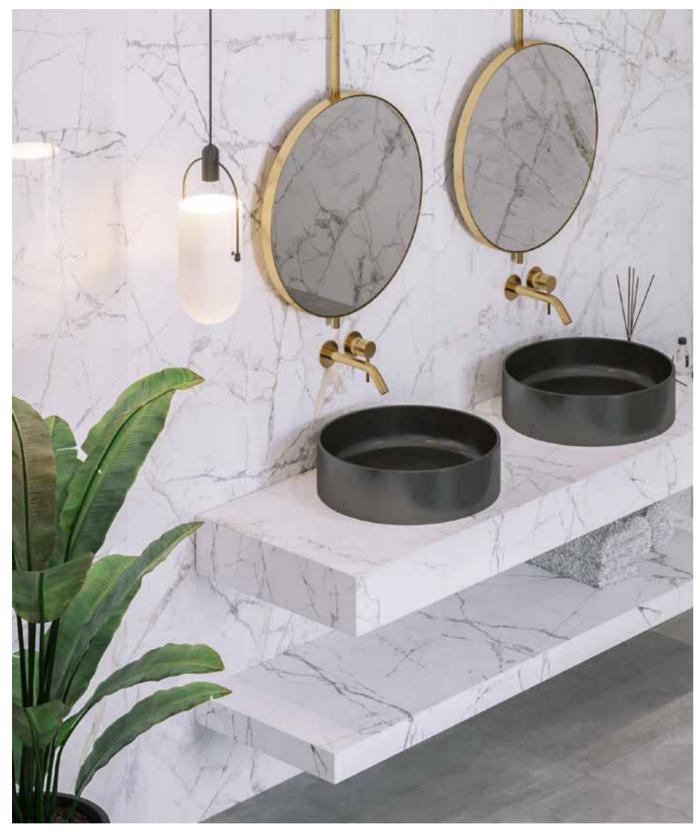
Wall: Aurora Polished — 120x280 cm Floor: Aurora Polished — 120x280 cm



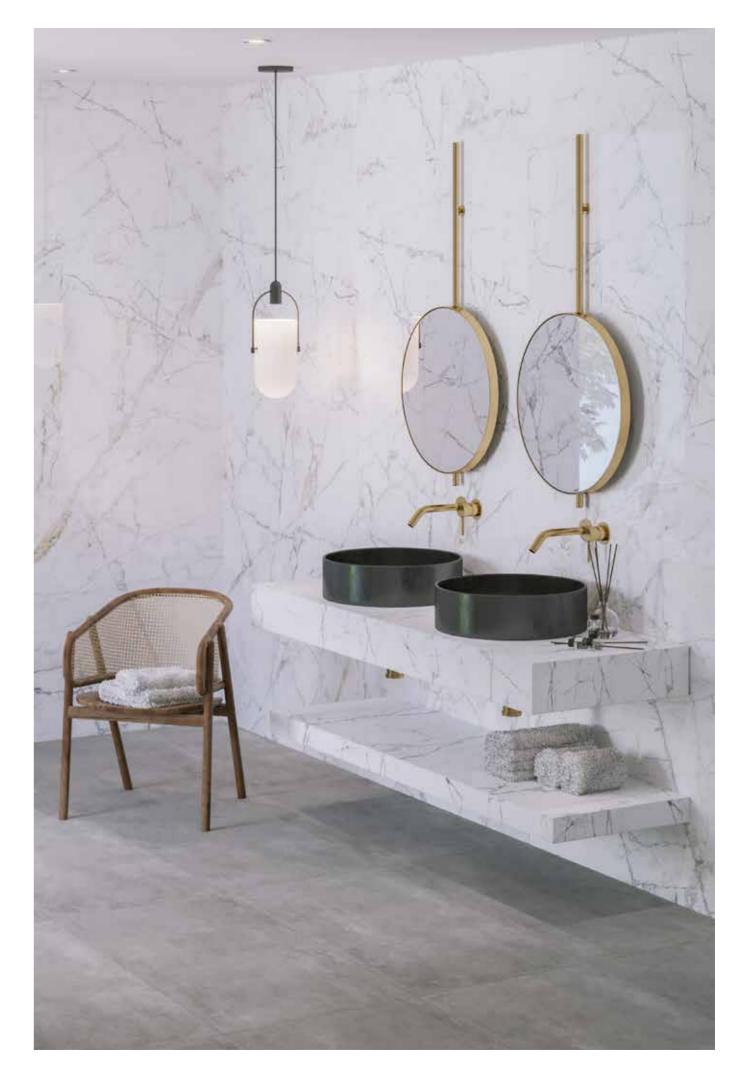








Wall: Invisible Gold Polished — 120x280 cm





Wall: Invisible Gold Polished — 120x280 cm Floor: Invisible Gold Polished — 120x280 cm







## Mystic Black

Mystic Black is an artistic marble with unique white and golden longitudinal delicate veins and deep black background. The contrast of its background and veins accompanied with moderate shades produce a refine and irreplaceable material in the world of modern luxury.



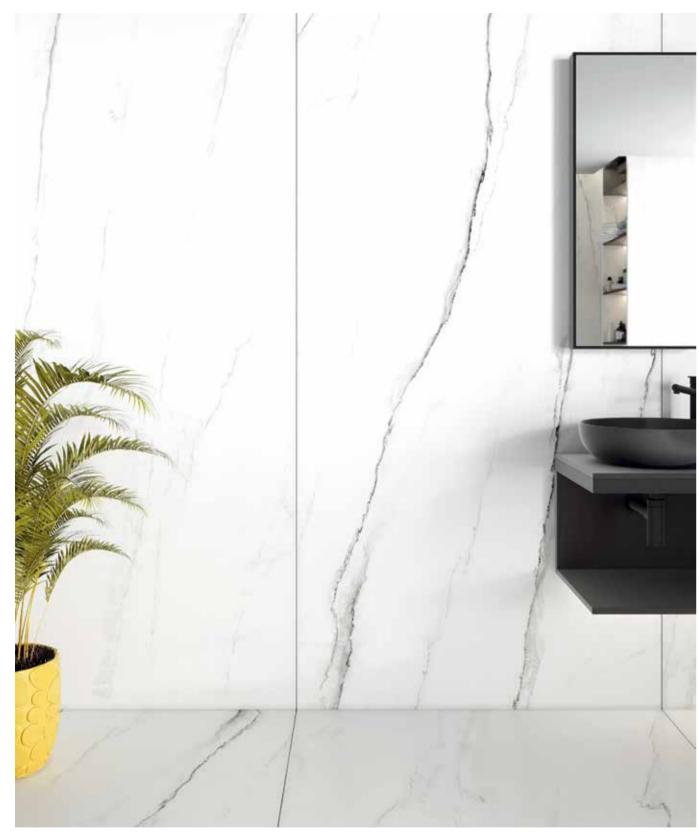
Mystic Black Available other sizes upon demand. For more detail please contact sales department. Wall: Mystic Black Polished — 120x280 cm Floor: Polaris Natural — 120x280 cm 80x160 cm IM2020C-P polished | 6 Faces 120x280 cm IM2020L-P Polished | 5 Faces



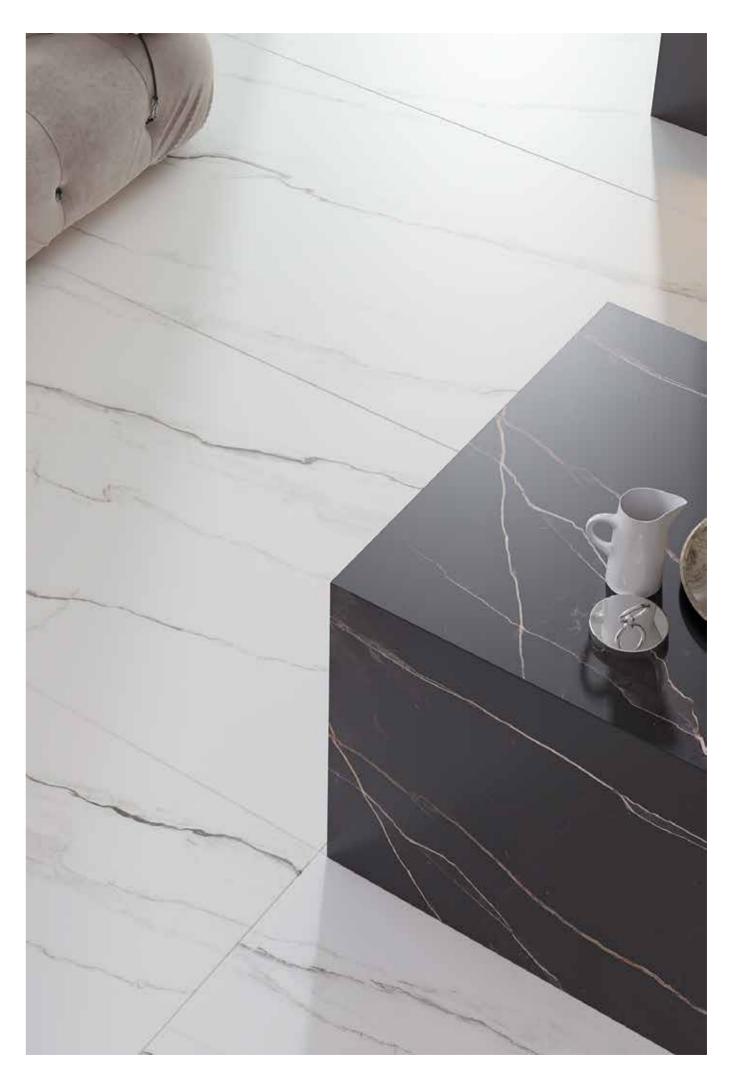


#### Polaris

Polaris is a new approach to modernity. Polaris has a pure white and homogeneous texture and exceptional charming linear black veins that brings minimal and modern concepts to your settings. Black and white dualism is the heart of Polaris. It sums up the purity and beauty of natural materials that creates functional and modern environments in multi-faced designs.

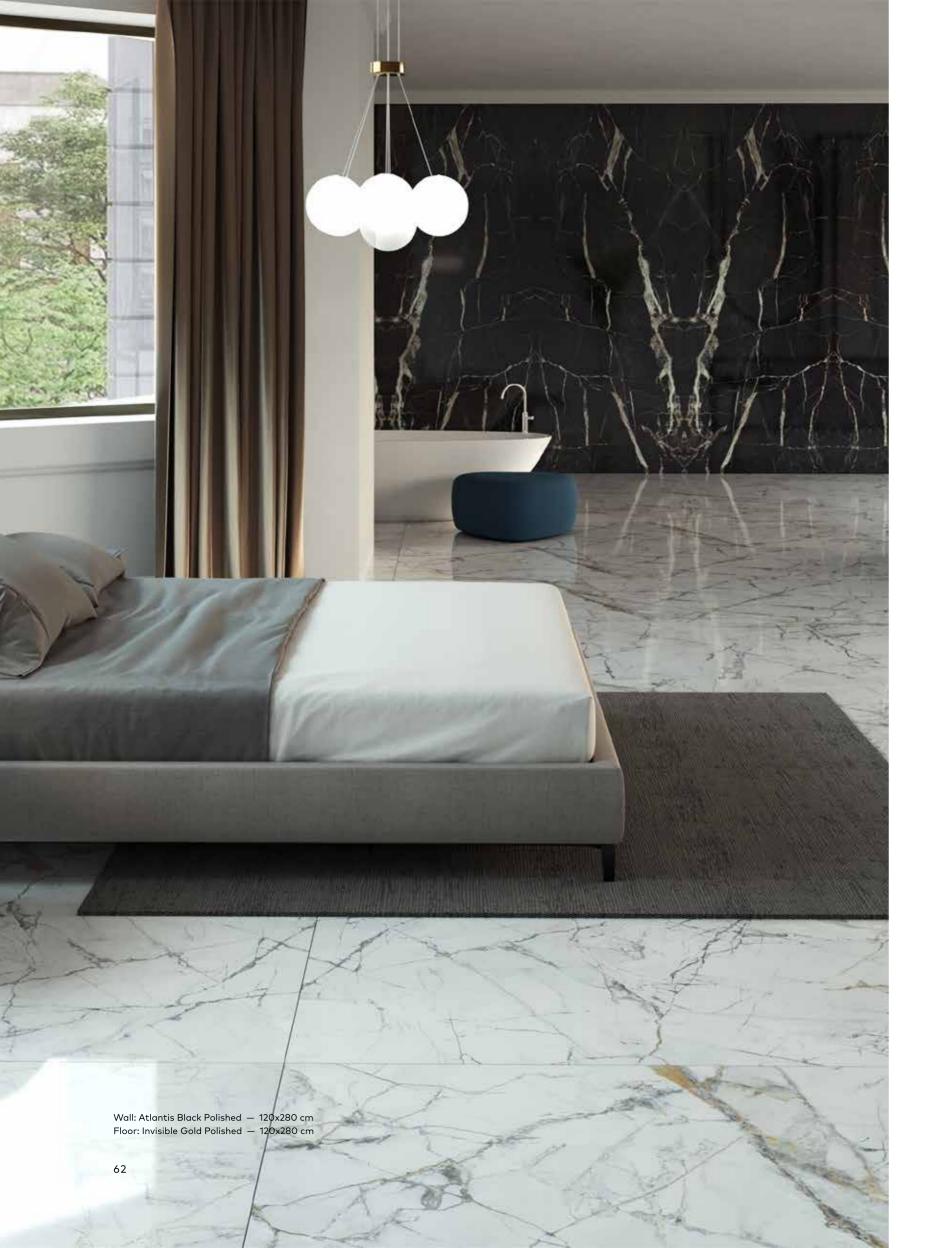


Wall: Polaris Natural — 120x280 cm Floor: Polaris Natural — 120x280 cm





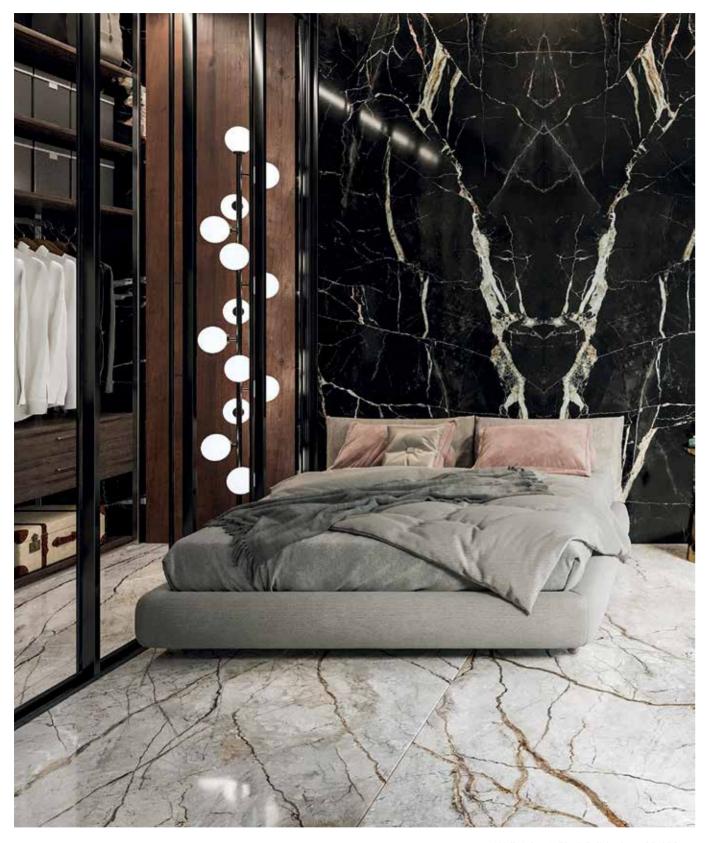






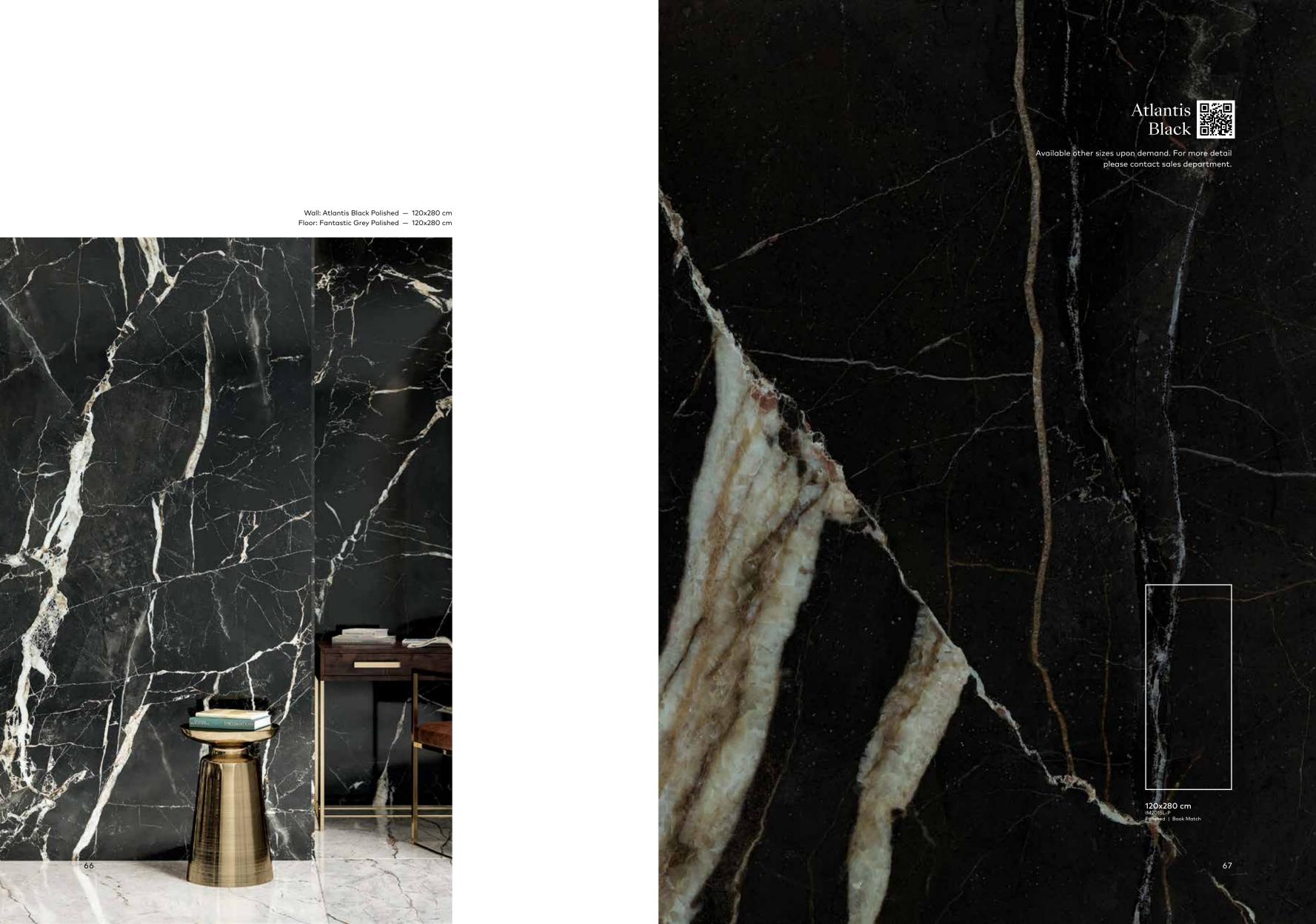
### Atlantis Black

Atlantis Black with a strong personality will add a great accent to stylish and elegant projects. Its saturated nature, sharp and vivid veins and dense background provide a visually charismatic pattern which makes this product a great choice for designers with different tastes.



Wall: Atlantis Black Polished — 120x280 cm Floor: Fantastic Grey Polished — 120x280 cm

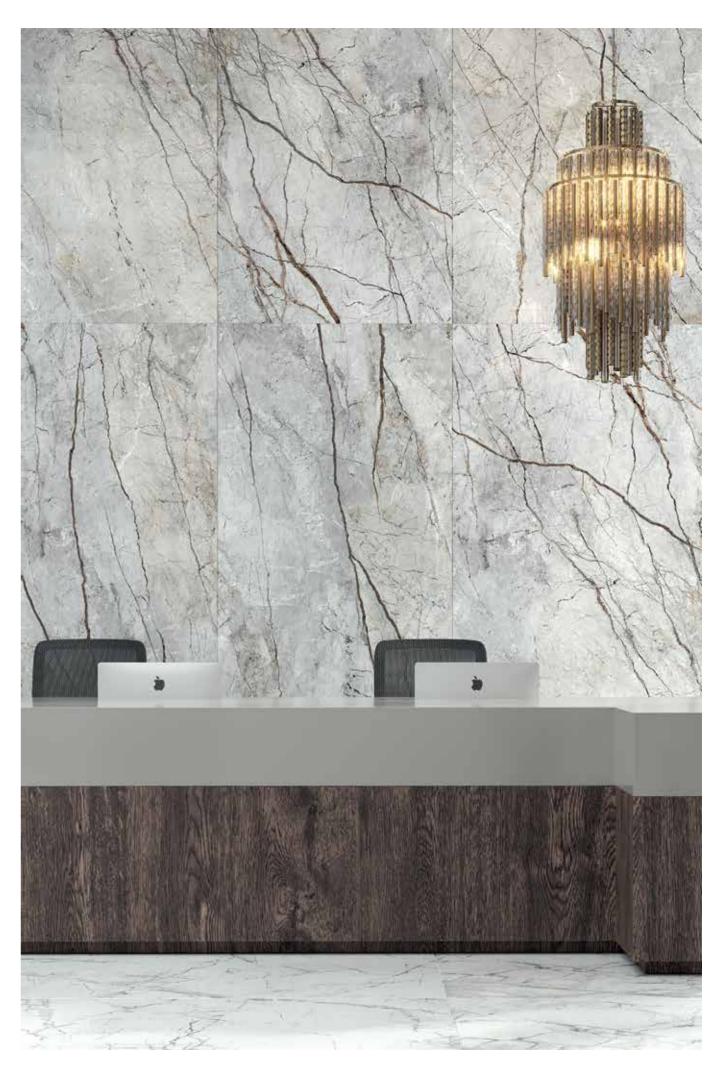








Wall: Fantastic Grey Polished — 120x280 cm Floor: Invisible Gold Polished — 120x280 cm



Fantastic Grey Available other sizes upon demand. For more detail please contact sales department. Wall: Fantastic Grey Polished — 120x280 cm Floor: Polaris Natural — 120x280 cm 120x280 cm IM2045L-P Polished | 5 Faces





# Liquid Marble

Liquid Marble represents an artwork that inspires a sense of naturality. White surface with precise details, blended golden and grey textured patterns that fluctuate, constantly evolve, and continuously change, inbreed liquid character. Liquid Marble is dedicated to high-end decoration with harmony and creativity adding a unique and subtle character to your interior design.



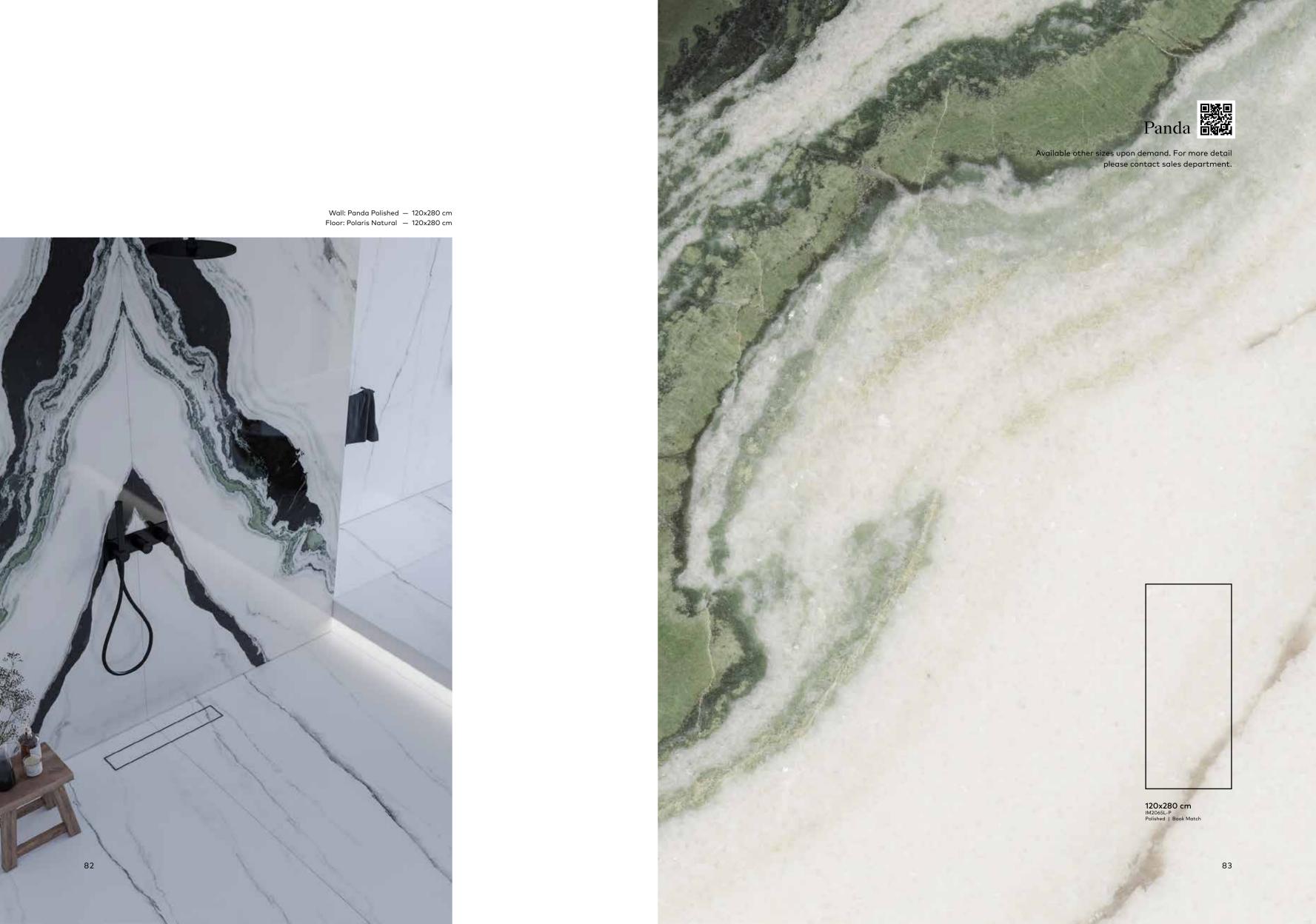






# Panda

Panda reflects the art of nature, a white marble with black and green shades moving across its surface. Its eye-catching black veins motivate senses by inviting the viewers to feel its sophisticated chromatic intensity. Black and white combination along with green shades and inclusions in different faces makes a careful balanced pattern and veining that provides a strong personality to the interiors.







# Hypnotize

Hypnotize captures the enchanting allure of a vintage Persian carpet, where the traces of natural wear and tear over the years have gracefully faded away. The mesmerizing patterns blur together, inducing a hypnotic effect that liberates the mind and beckons tranquility. The antique white lines, reminiscent of the carpet's warp and woof, serve as a reminder of the Natural Evo-dry technology employed in select areas, enhancing their sensitivity to touch and feel.





Available other sizes upon demand. For more detail please contact sales department.





120x280 cm IM2175L-N Natural Evo-dry | 2 Faces



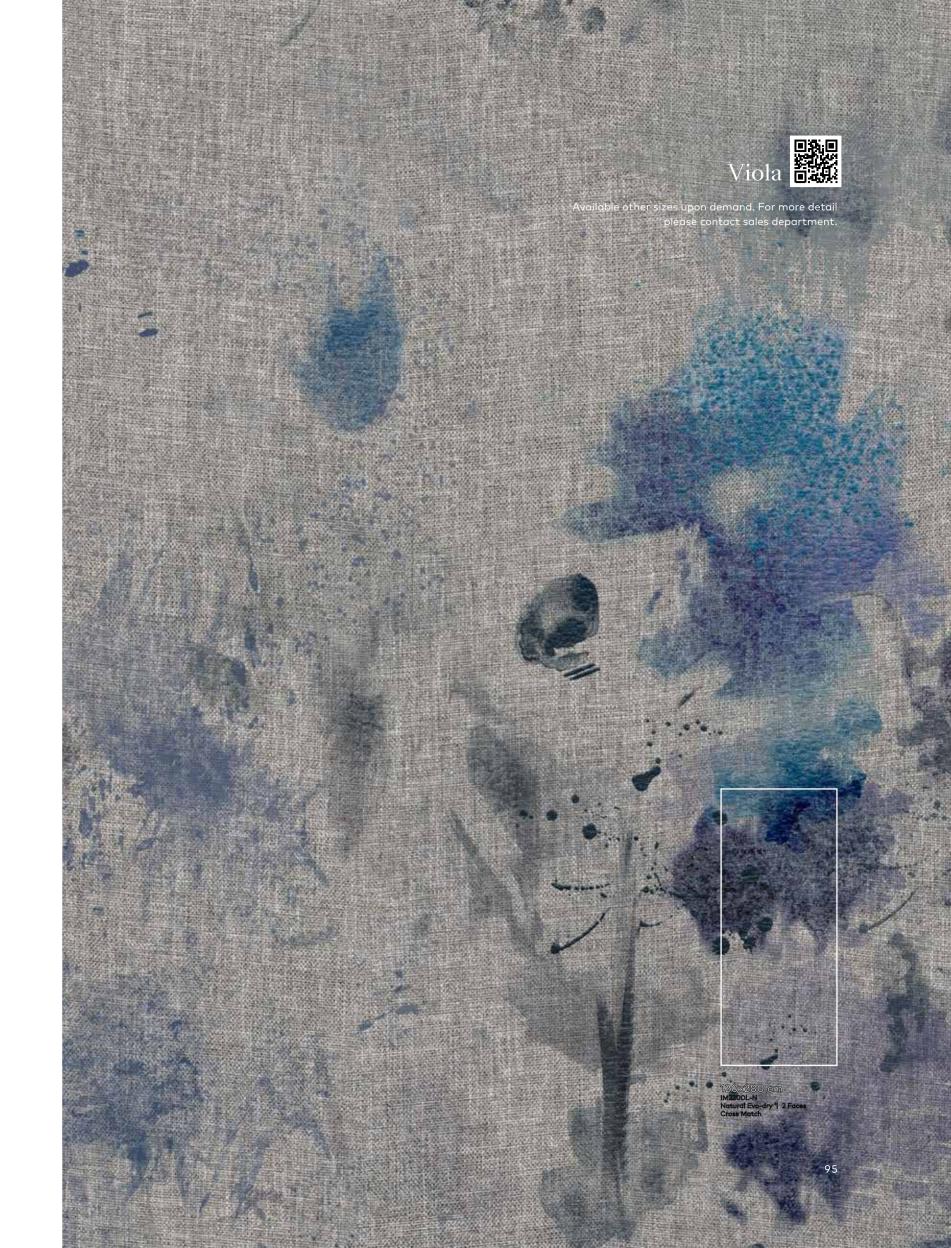


# Viola

Viola is an enchanting pattern featuring a harmonious blend of vibrant and deep blue leaves, delicately painted in a watercolor style. The design gracefully descends down the wall, while its colorful petals unfurl as if swayed by a gentle breeze, evoking a sense of captivating foliage. A backdrop of shimmering silver fabric beckons you to explore beyond the surface and uncover the enchantment of the lush vegetation depicted. Imagine ethereal flowers suspended in mid-air, their delicate hues enhancing the timeless and romantic allure of this pattern. The playful and light-hearted design infuses any space with a dreamy ambiance, infusing movement and vibrancy into its surroundings.





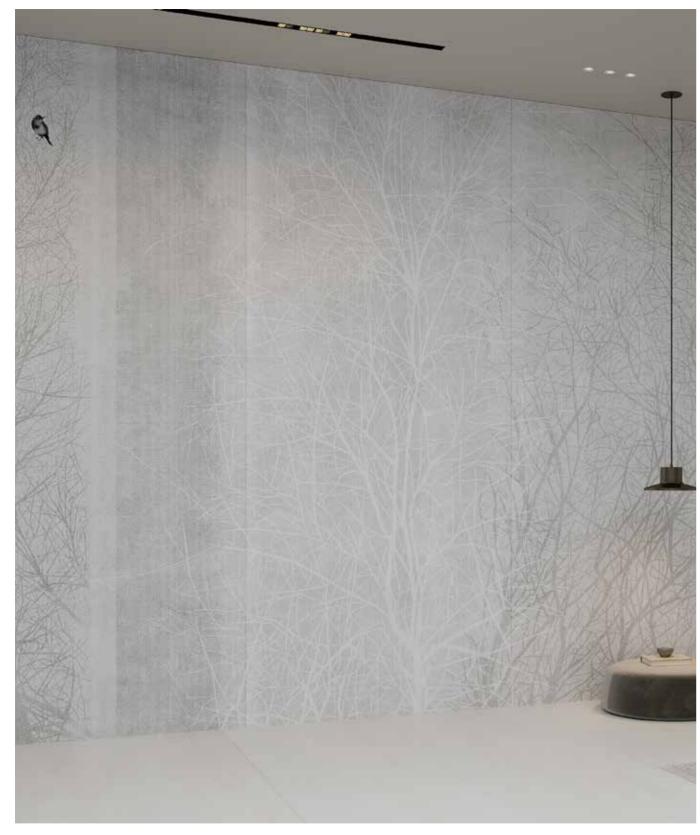




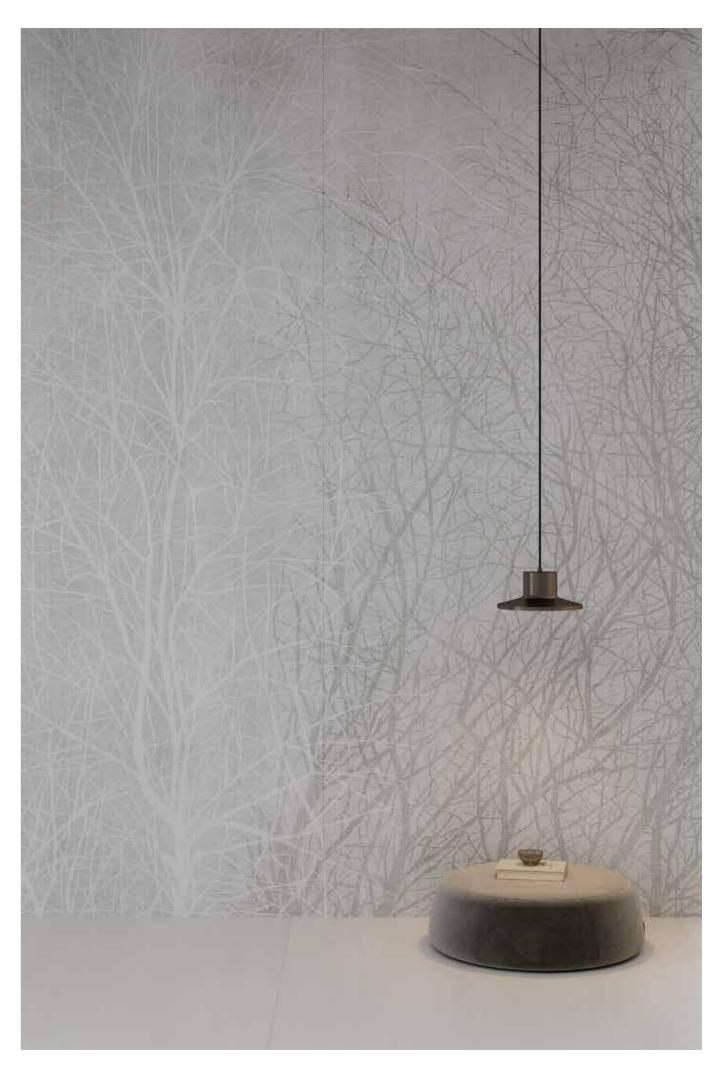


# Hope

Hope is a source of tranquility and serves as an inspiration for this forest-themed design. The design showcases a harmonious arrangement of natural elements, creating a serene atmosphere that is perfect for relaxation areas. Allow yourself to be captivated by the silent interplay of intricately designed branches, adding a touch of elegance to any space. The delicate yet dynamic pattern, achieved through the use of the inspiring Partial Color technique, allows contrasting elements to effortlessly stand out against the background. The resulting ambiance is intimate and pure, offering a unique material effect that can enhance a multitude of sophisticated environments.



Wall: Hope Natural Evo-dry — 120x280 cm



9'8

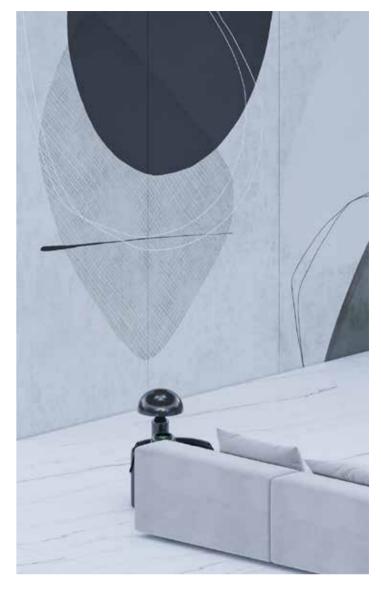






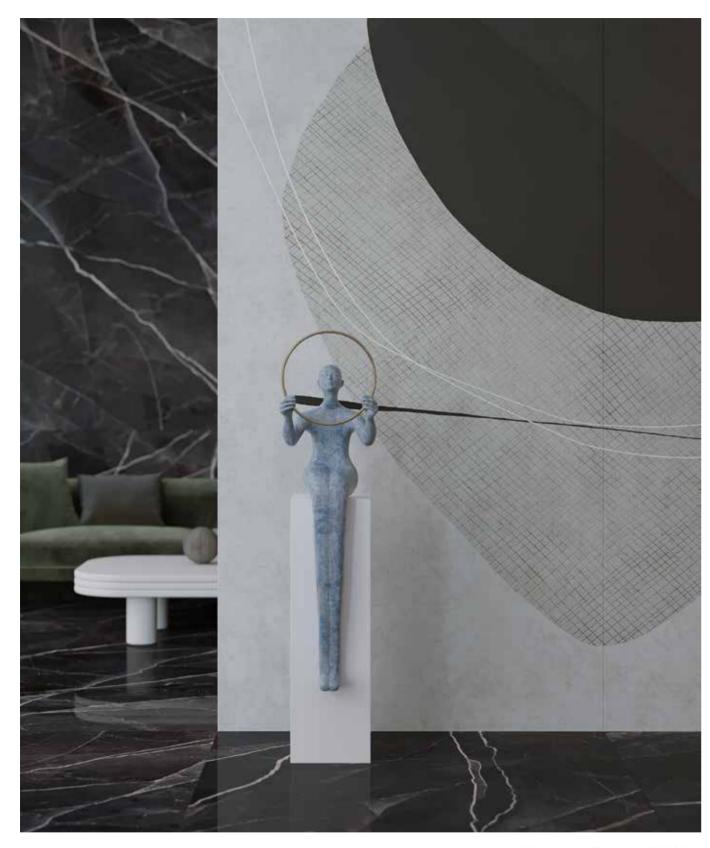
piedse contact sales department



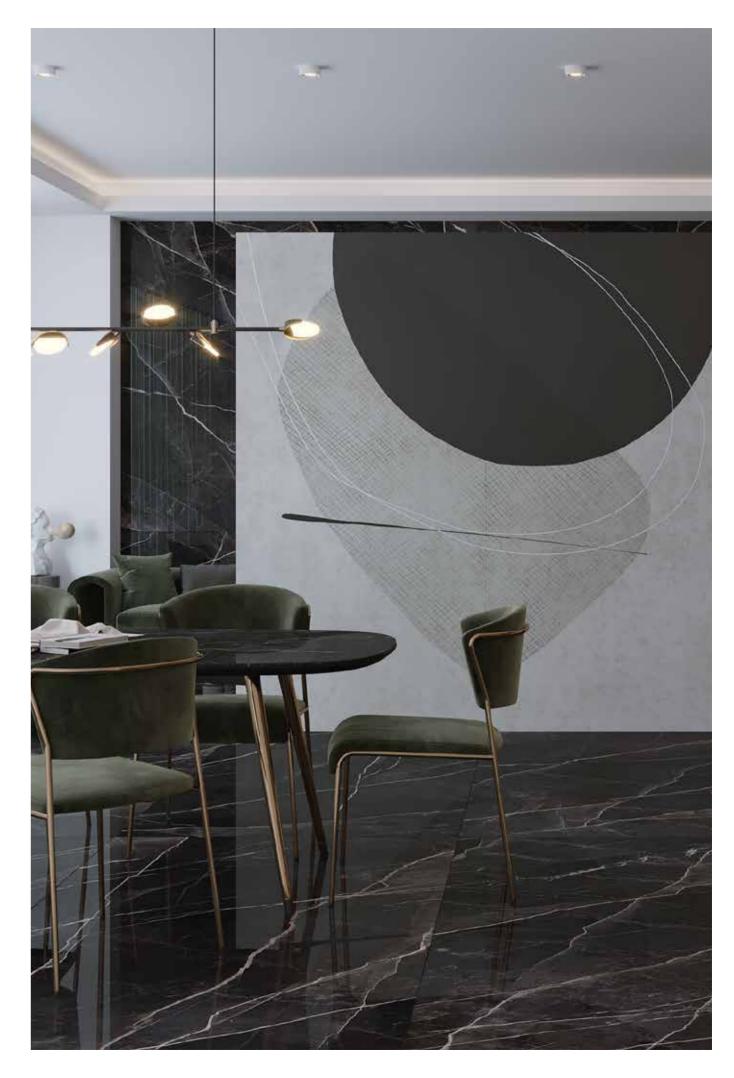


# Viva

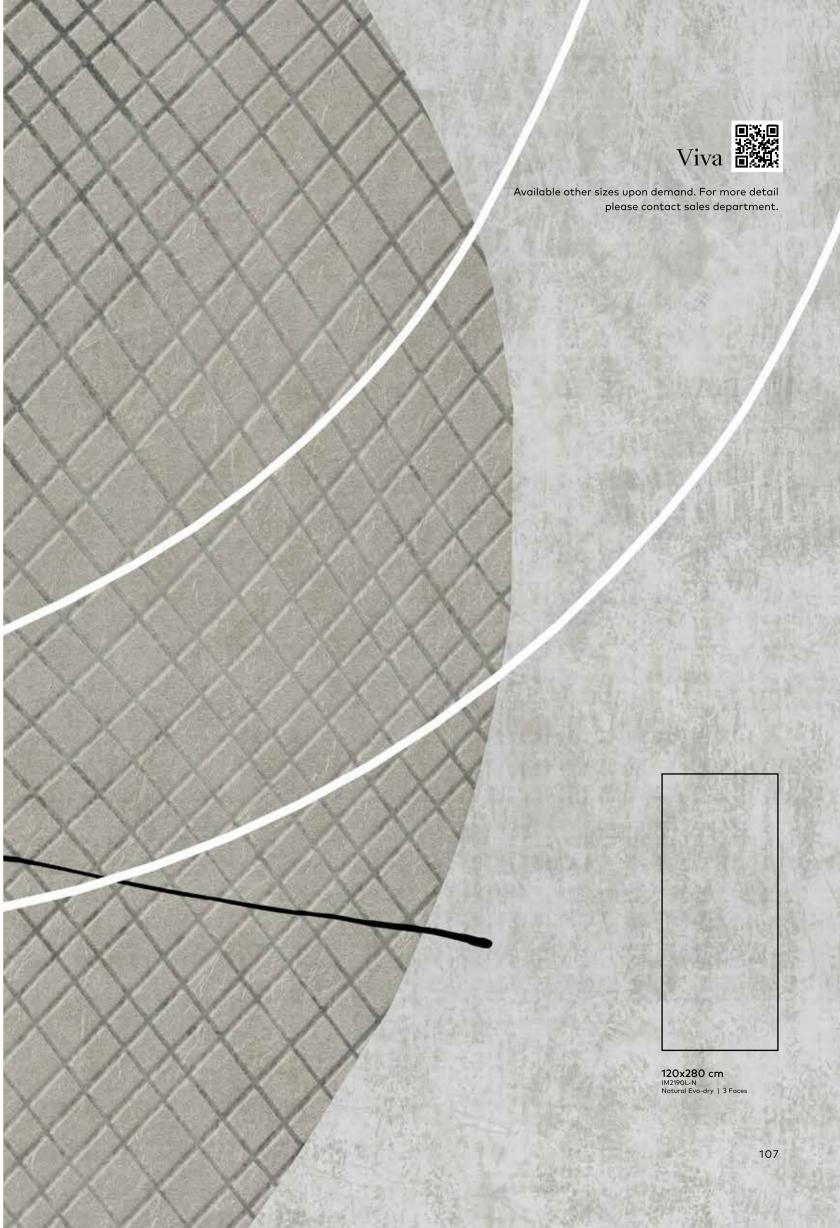
Viva is a modern and unique design that features elegant overlapping layers of geometric shapes and thin lines. It invites exploration of the space beyond the porthole with its composition based on the juxtaposition of straight lines and curved shapes, imparting a strong dynamism. Inspired by the architectural movement of the 1950s, Brutalism, Viva incorporates elements such as pure, rigorous narrative patterns, monochrome shades, and texture. The rough texture variation on the surface, along with its irregular and extravagant characteristics, adds to the distinctiveness of the Viva design.



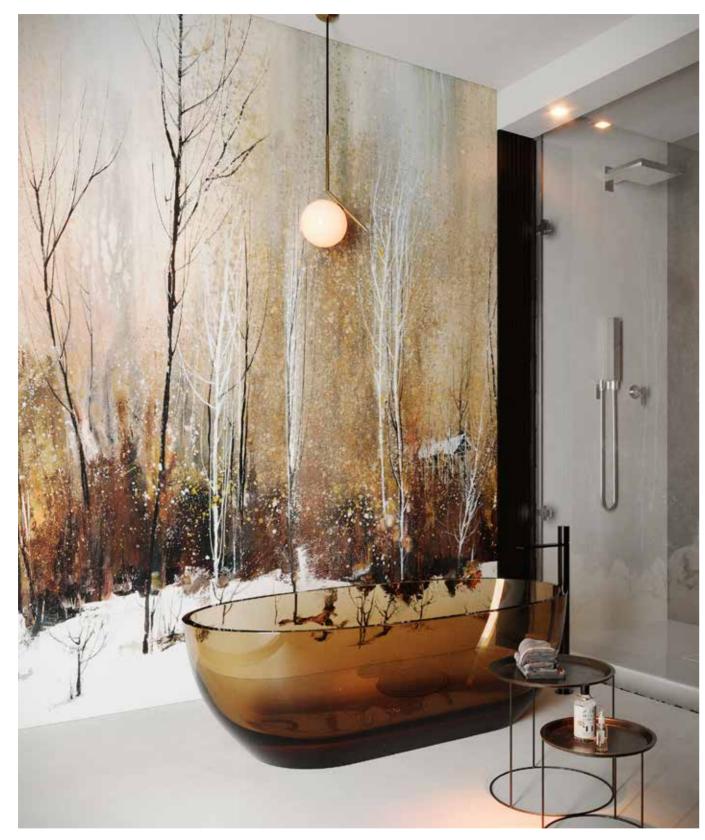
Wall: Viva Natural Evo-dry — 120x280 cm Floor: Mystic Black Natural — 120x280 cm



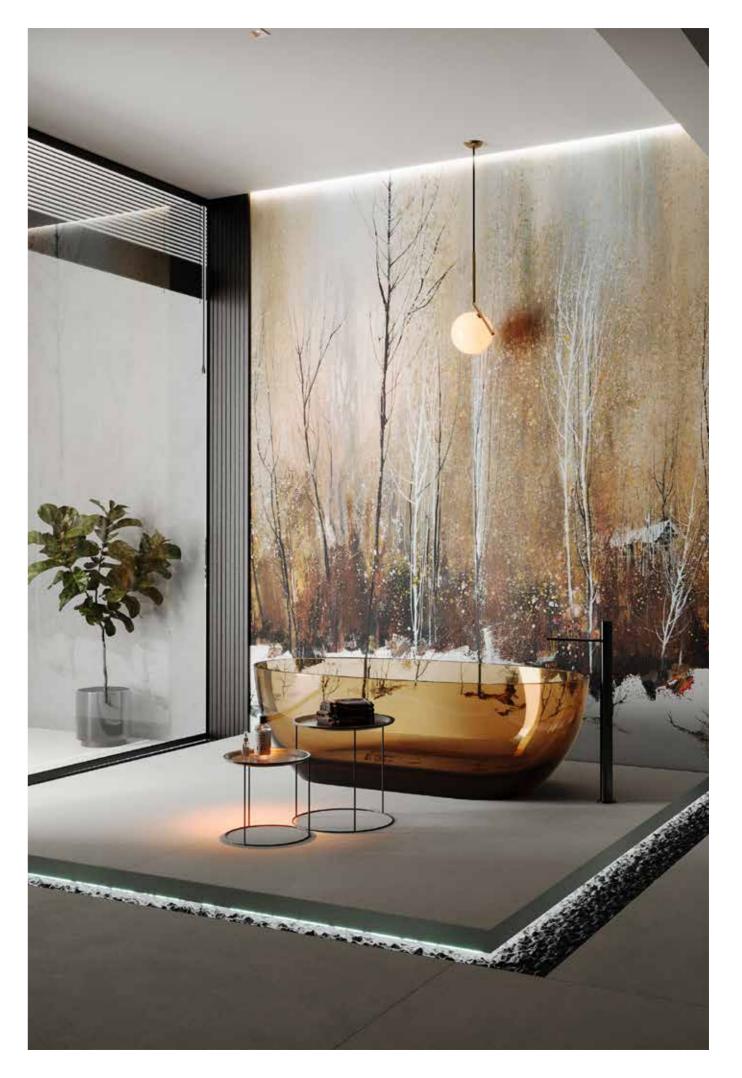
Wall: Viva Natural Evo-dry — 120x280 cm Floor: Polaris Polished — 120x280 cm 106



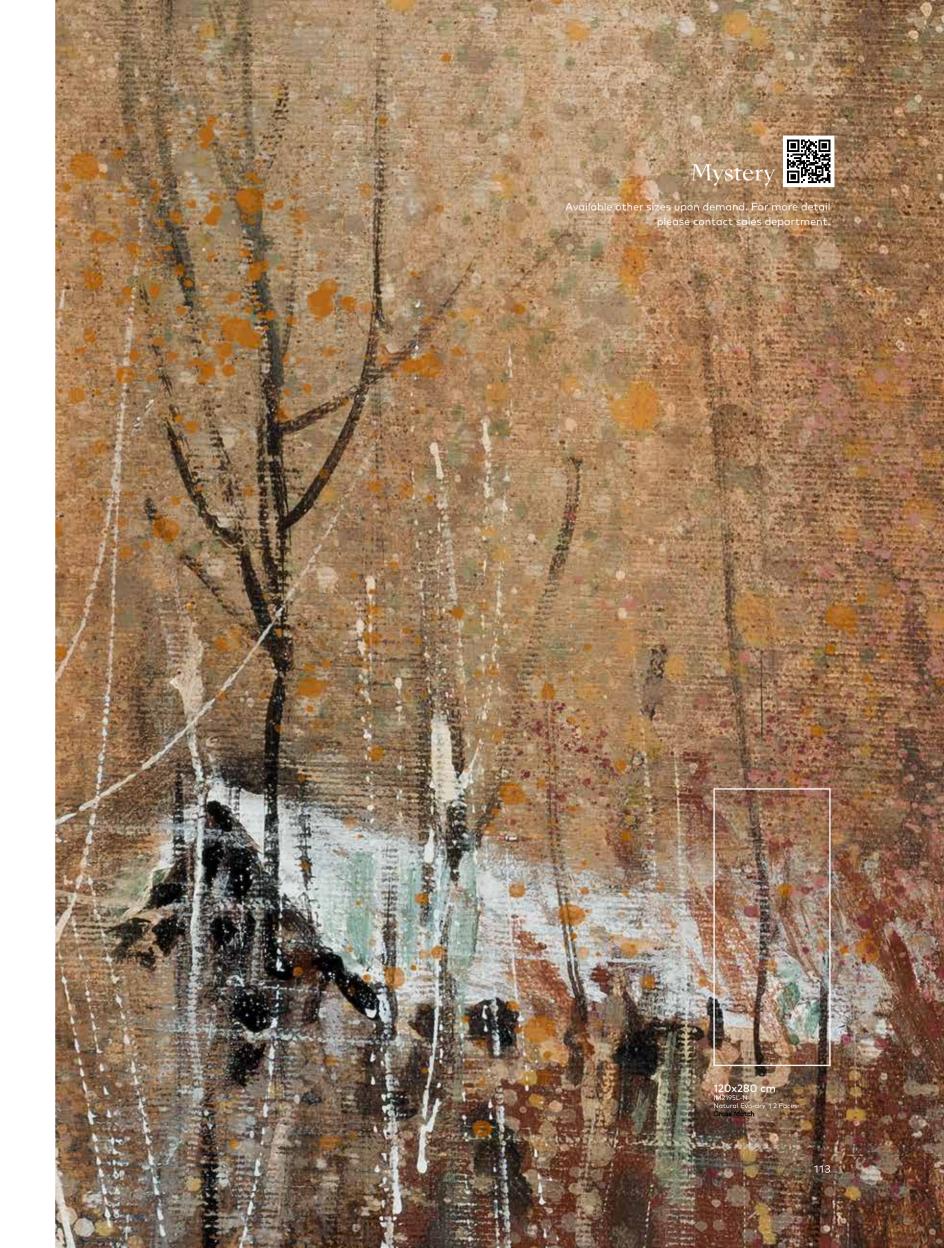


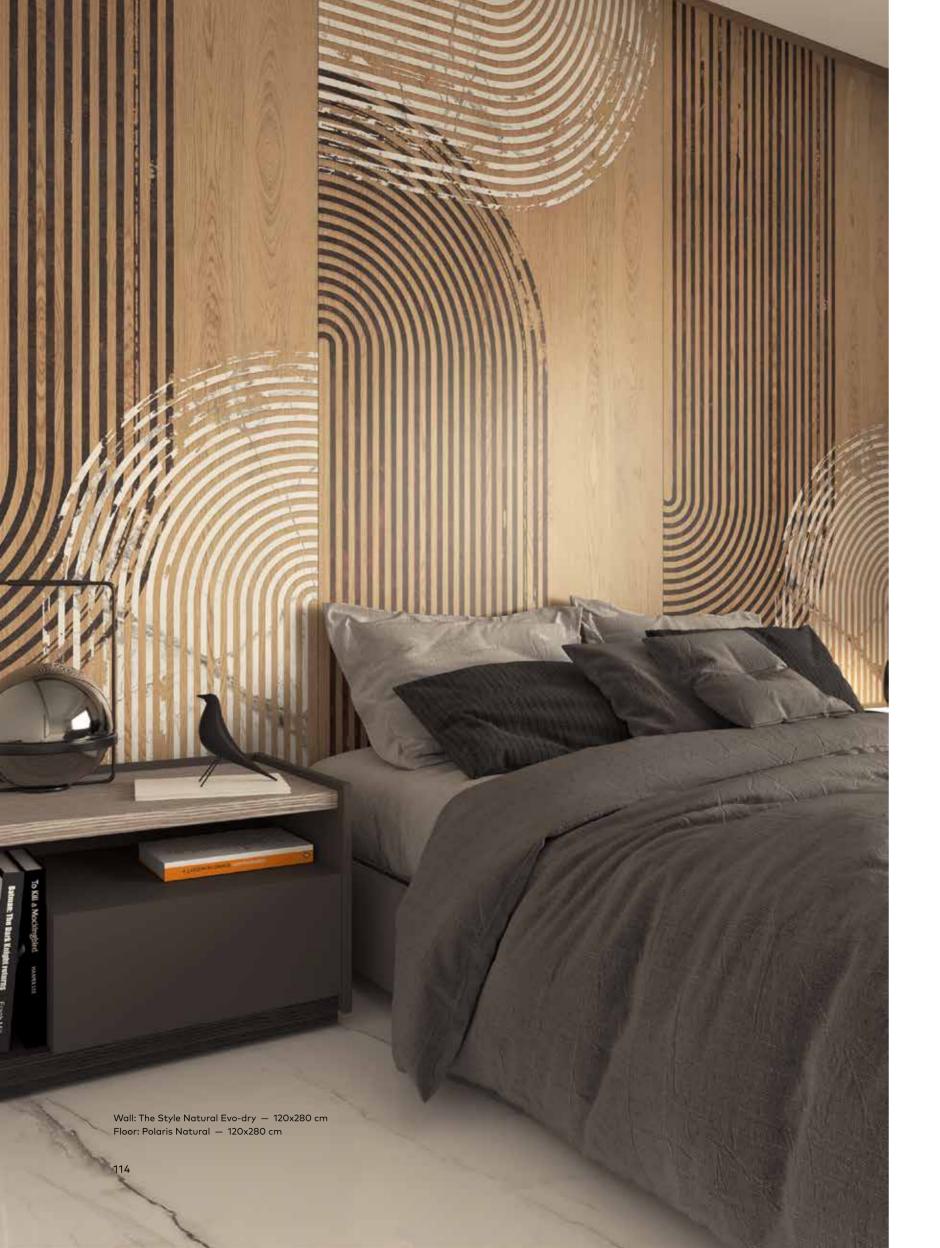


Wall: Mystery Natural Evo-dry — 120x280 cm







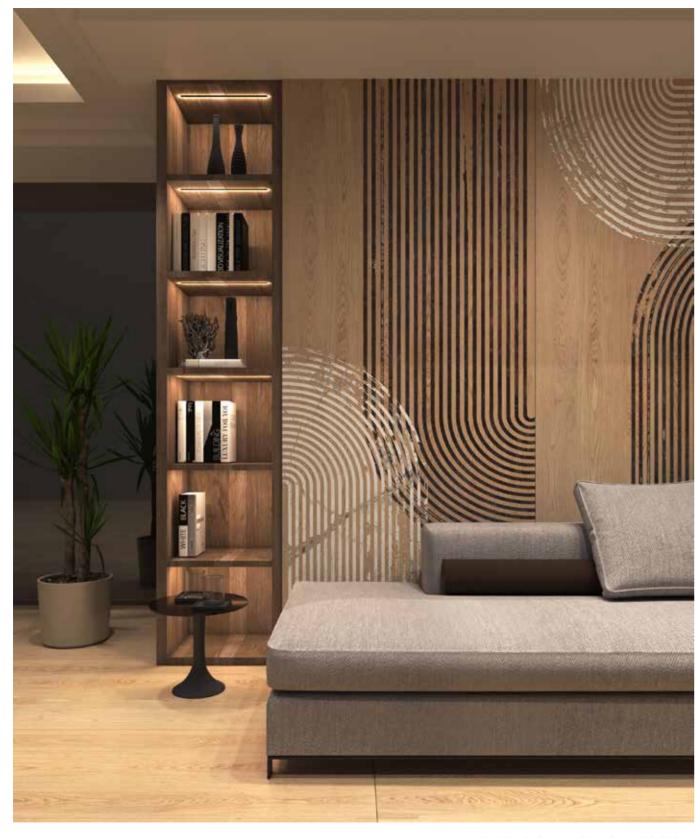




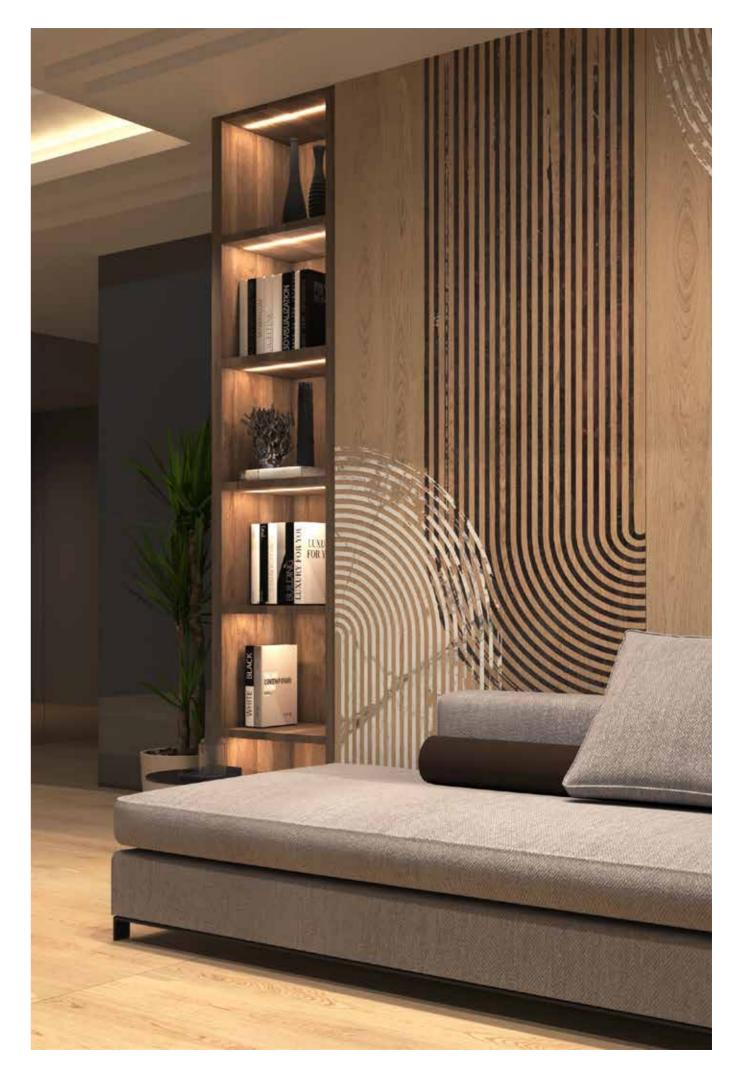
# The Style

The Style a captivating fusion of three mesmerizing patterns that brings together the enchanting blend of oxide, wood, and marble into a single artistic masterpiece. This sinuous geometric design exudes a minimalist charm, making it a perfect fit for modern and creative spaces. The combination of geometric elements with the natural wood texture in the background adds a touch of nature, creating a harmonious ambiance. With the innovative Natural Evo-dry technology, The Style not only adds warmth but also offers a sense of structure and authenticity. Immerse yourself in the captivating beauty of this design and elevate your space to new heights.





Wall: The Style Natural Evo-dry  $-\,$  120x280 cm Floor: The Style Base Natural Evo-dry  $-\,$  120x280 cm





TECHNICAL INFORMATION

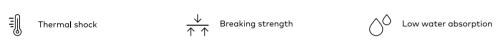
# SYMBOLOGY

Chemical resistance Frost resistance Stain resistance Deep abrasion resistance





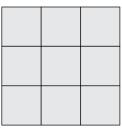




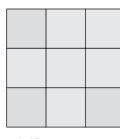




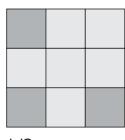
# SHADE VARIATION



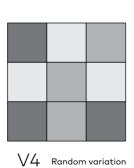




V2 Slight variation



V3 Moderate variation



	Annex G Group Bla		
CHARACTERISTICS	Requirments for normal size n>15cm	Test Method	Test Result
DIMENSIONS AND SURFACE QUALITY			
Length and width (cm)	±0.6% max ±2 mm	EN ISO 10545-2	Affirmative
Thickness	±5% max ±0.5 mm	EN ISO 10545-2	Affirmative
Rectangularity	±0.5% max ±2 mm	EN ISO 10545-2	Affirmative
Straightness of sides	±0.5% max ±1.5 mm	EN ISO 10545-2	Affirmative
Length and width (cm)	N>15 cm ±0.6% max ±2 mm	EN ISO 10545-2	Affirmative
Thickness	±5% max ±0.5 mm	EN ISO 10545-2	Affirmative
Rectangularity	±0.5% max ±2 mm	EN ISO 10545-2	Affirmative
Straightness of sides	±0.5% max ±1.5 mm	EN ISO 10545-2	Affirmative
Surface flatness	±0.5% max ±2 mm	EN ISO 10545-2	Affirmative
SURFACE FLATNESS			
a) Center curvature, related to diagonal calculated from the work sizes	±0.5% max ±2 mm	EN ISO 10545-2	Affirmative
b) Edge curvature, related to the corresponding work size	±0.5% max ±2 mm	EN ISO 10545-2	Affirmative
c) Warpage, related to diagonal calculated from the work size	±0.5% max ±2 mm	EN ISO 10545-2	Affirmative
PHYSICAL PROPERTIES			
Water absorption (in % by mass)	E <sub>b</sub> < 0.5% Individual Maximum 0.6%	EN ISO 10545-3	Affirmative
BREAKING STRENGTH (N) for Thickness ≥ 7.5mm	Not Less Than 1300 N		Affirmative
Flexural tensile strength or Modulus of rupture (N/mm²)	Minimum 35 N/mm² Individual Minimum 32 N/mm²	EN ISO 10545-4	Affirmative
Impact resistance, as: Coefficient of restitution (COR)	Declared Value	EN ISO 10545-5	Affirmative
Resistance to deep abrasion of unglazed tiles: Removed value (mm³)	Maximum 175 mm³	EN ISO 10545-6	Affirmative
Resistance to surface abrasion of glazed tiles intended for use on floors	Abrasion class and cycles passed	EN ISO 10545-7	Affirmative
Coefficient of linear thermal expansion	Declared Value	EN ISO 10545-8	Affirmative
Resistance to thermal shock	Pass according to EN ISO 10545-1	EN ISO 10545-9	Affirmative
Frost resistance	Pass according to EN ISO 10545-1	EN ISO 10545-12	Affirmative
Water absorption (in % by mass)	E <sub>b</sub> ≤0.5% Individual maximum 0.6%	EN ISO 10545-3	Affirmative
Breaking strength for thickness 7.5mm and more	Not less than 1300 N		Affirmative
Flexural tensile strength or Modulus of rupture (N/mm²)	Minimum 35 N/mm² Individual minimum 32 N/mm²	EN ISO 10545-4	Affirmative
Resistance to deep abrasion of unglazed tiles: Removed Volume	Maximum 175 mm³	EN ISO 10545-6	Affirmative
Coefficient of linear thermal expansion	Declared value	EN ISO 10545-8	Affirmative
Resistance to thermal shock	Pass according to EN ISO 10545-1	EN ISO 10545-9	Affirmative
Frost Resistance	Pass according to EN ISO 10545-1	EN ISO 10545-12	Affirmative
CHEMICAL PROPERTIES			
Resistance to the low concentration of acids & alkanes	Declared Value		Affirmative
Resistance to the high concentration of acids & alkanes	Declared Value	EN ISO 10545-13	Affirmative
Resistance to household chemicals & swimming	Minimum Class B	-	Affirmative
pool salts			Affirmative
Resistance to staining (unglazed tiles)	Declared Value	EN ISO 10545-14	Affirmative
Resistance to staining (Unglazed tiles)	Declared value	EN ISO 10545-14	Affirmative
Resistance to the low concentration of acids & alkalis	Declared value		Affirmative
Resistance to the high concentration of acids & alkalis	Declared value	EN ISO 10545-13	Affirmative
Resistance to household chemicals & swimming Pool Salts	Minimum class B		Affirmative
1 001 0010			Affirmative

# TECHNICAL CHARACTERISTICS

#### WATER ABSORPTION

#### ISO 10545-3

The water absorption of PMA slabs is minimized thanks to production and quality control standards of an extremely high level, which guarantees compactness and a reduced level of porosity. The value given in the tables of technical characteristics refers to the percentage of water absorbed with respect to the mass.

## BENDING RESISTANCE

#### ISO 10545-4

The value expressed allows an analysis of the ability of the slabs to withstand static and dynamic stress in the test conditions.

#### ABRASION RESISTANCE

## ISO 10545-6

The test is performed on unglazed (UGL) surfaces in order to determine the quantity of material that is removed following the action of an abrasive disc (150 revs). The PMA slabs prove to be more resistant the less material is removed by the disc.

## FROST RESISTANCE

#### ISO 10545-12

Outdoor applications are particularly prone to deterioration due to frost, because in the event that any water absorbed turns into ice, this can lead to the tile breaking. The PMA slabs are not damaged by frost in any way thanks to their compactness and low porosity.

## RESISTANCE TO CHEMICAL AGGRESSION

# ISO 10545-13

The laboratory analysis is able to determine the resistance of glazed (GL) and unglazed (UGL) surfaces to chemical aggression by using acids and bases with a high concentration in line with the following classification: LA, HA, A: no visible effect.

# SLIPPERINESS

# DIN 51130-1

In this test, a person is asked to stand on a flat surface covered with tiles and sprinkled with oil. This surface is then tilted until the person, wearing specific footwear, starts to slip. The following classification is established by the angle of inclination of the tiled surface at the moment the person starts to slip: up to <6° unclassified

# 6°≤ to ≤10° R9

# STAIN RESISTANCE

# ISO 10545-14

Three different elements (oil, iodine solution, and green chrome solution) are applied to and left on the tiles for 24 hours, after which they are then cleaned:

• Class E 5

The stain is removed with hot running water for 5 minutes.

# Class E

The stain is removed using a weak neutral detergent and a non-abrasive sponge  $\rightarrow$  Class E 3

The stain is removed using a basic detergent containing an abrasive agent and a rotating brush with hard bristles.

# Class E 2

The stain is removed using a suitable solvent, left on the stain for 24 hours.

# Class E 1

The stain cannot be removed.

## CHARACTERISTICS OF THE PMA SLABS

The PMA slabs are produced only with natural, mineral raw materials.

Research on the product has made it possible to obtain an effect that is extremely close to the natural material, with the advantage that the typical defects and blemishes in the original product found in nature can be removed using technology.

 Basic formats and special trims can be supplied in autonomous shades. Any minor variations in size fall within the standard tolerance values;

- Any minor dots add to the natural feel of the material;
- Any second choice or discontinued products are sold on an "as seen" basis and may not be returned:
- The use of PMA slabs with non-rectified edges is allowed only after the de-tensioning of the slab by removing any excess from the outer edges, as per the specifications in the technical manual.

#### DOCUMENTATION

The engineered surface reserves the right to make changes to the products illustrated in this catalog for production requirements or with the aim of improving the technical/aesthetic quality.

The samples are purely indicative.

The packaging and weight information is shown may vary for production requirements.

To avoid any problems, we recommend contacting the sales department at the time of placing an order.

# **USE AND MAINTENANCE**

### SUGGESTIONS FOR CORRECT FITTING AND CLEANING

Although the slabs are mainly intended for furnishing, PMA slabs may also be fitted in the traditional way as flooring and wall coverings to create spaces with a "total look". The following specifications refer to slabs fitted as flooring and wall coverings. With regard to the gluing of the slabs on furnishing elements, we recommend you consult the PMA technical manual.

#### FITTING

When you receive the material ordered and in any case before fitting, it is important to check carefully the characteristics of the material (compliance with size, shade, and quality). No complaints will be accepted for any materials that have already been fitted if the defects were visible prior to fitting. To obtain the best aesthetic results, we recommend mixing the graphics accurately to avoid repeating patterns and to obtain the best possible results in terms of layout and color.

The slabs can be fitted using specific high-performance adhesives for porcelain stoneware, adhesives in category C2 or above. We recommend applying the adhesive on both sides to prevent any breakages of the material once fitted.

Please remember that at the time of fitting, the substrate must be stable, dry, and properly prepared, not frosted, and not too hot and that it is necessary in any case to follow the instructions provided by the manufacturers of the materials for the specific substrates and adhesives used.

Cement-based adhesives must be applied at room temperature, in general between 5°c and 30/35°c.

It is hereby understood that we recommend observing the technical times indicated by the manufacturers of the adhesives used.

The most suitable adhesives for fitting the PMA slabs are listed in the European

Standard currently in force: EN12004.

When fitting the material, avoid using pencils (graphite) or permanent markers

to make marks on the surface, particularly on polished products.

The PMA slabs can be shaped and cut using purpose-built diamond discs and equipment for porcelain stoneware.

# JOINTS AND GROUTING

We strongly advise against fitting the slabs without joints. We also recommend a minimum joint of 3 mm (this type of fitting allows the grout to have a better grip on the sides of the slabs, greater absorption of any movements of the substrate, and consequently of the slabs themselves).

In large, open spaces it is absolutely essential to position the expansion joints at regular intervals; in smaller rooms, on the other hand, it is sufficient to leave a slight space between the tiled surface and the walls around the room, adding a final touch with a skirting board or with the wall covering.

Please refer in any case to the advice/suggestions of the planner, the works director, or the tile fitter to avoid problems of any sort.

For the best possible results, we suggest using tone-on-tone grouting. It is important to remove any excess grouting immediately and accurately after application while still fresh, using a sponge and plenty of water.

A few days after fitting, once the joints are completely dry, it is essential to thoroughly clean the tiled surface using buffered acids (see the after fitting instructions) in order to completely remove all cement-based residues.

# CLEANING "AFTER FITTING"

Properly cleaning the files after they have been fitted is crucial.

If residues of grouting are not properly removed, this may leave marks that are difficult to remove later, due to a film of cement that can absorb any kind of dirt. It is essential to loosen and eliminate these residues completely using buffered acids diluted in water (read the instructions for use on the packages of the products used), soon after fitting, and to thoroughly rinse any residues from the fitted surface in order to prevent any damage to the material.

It is preferable to try cleaning a small part of the surface first; if the results are good, the entire surface can then be cleaned.

After this, the floor must then be cleaned using a basic or alkaline detergent.

These must be degreasing because the surface treatment might help to trap dirt.

For Polished slabs with a marble effect, PMA recommends taking special care when cleaning the surface using buffered acids, as the surface may be damaged if the acid is not removed auickly.

For polished surfaces, the use of non-abrasive cleaning equipment is necessary to prevent the surface from losing its shine or becoming scratched.

## ROUTINE CLEANING

For routine cleaning of the PMA slabs, we strongly advise against the use of waxes, greasy soaps, fillers and various treatments (water repellent) treatments

In order to prevent any shiny patinas from forming on the slabs, PMA would like to point out that hydrofluoric acid (HF) and its derivatives cause irrevocable damage to its products.

For routine cleaning operations, PMA recommends the use of bleach and ammonia, appropriately diluted in water; for the Polished finish, it suggests drying the floor after cleaning to avoid any marks.

#### EXTRAORDINARY CLEANING

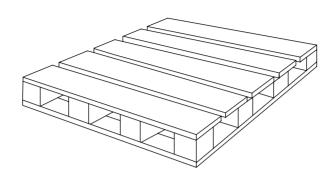
In the case of particularly stubborn stains, we recommend the use of specific detergents, which are indicated in greater detail in the table entitled "cleaning products". Furthermore, it should not be forgotten that it is easier to remove any stain when still fresh.

It is always important to test the detergents on a small area before applying them to the entire surface, particularly on Polished surfaces.

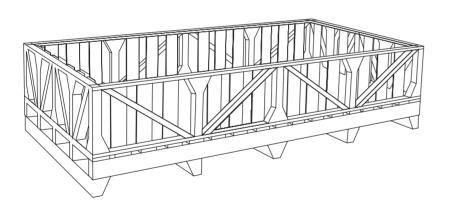
#### RAISED FLOORINGS

In the case of raised floorings, it is not possible to use a large quantity of water; we, therefore, recommend using a floor cloth that has been properly wrung. Routine cleaning must be carried out using purpose made floor cloths, lukewarm water, and detergent, reducing the amount of water used.

Stains can still be removed using concentrated products directly on the stains.



Size	Thickness	SQM/Box	Pieces/Box	KG/Box (Aprox)	Box/Pallet	KG/Pallet	SQM/Pallet
20x120 cm	11.5 mm	0.96	4	26	84	2021	80.64
60x120 cm Polished	11.5 mm	1.44	2	38.2	60	2292	86.4
60x120 cm Matte	11.5 mm	1.44	2	37.5	60	2250	86.4
100x100 cm	10 mm	2	2	46	42	1930	84



Size	Thickness	SQM/Box	Pieces/Box	KG/Box (Aprox)	Box/Pallet	KG/Pallet	SQM/Pallet
80x160 cm	9 mm	1.28	-	27.6	50	1380	64
120x240 cm	9.5 mm	2.88	-	61.33	36	2650	103.68
120x280 cm	9.5 mm	3.36	-	71.55	36	2910	120.96
160x320 cm	9.5 mm	5.12	-	109	24	3000	122.88



ISO 9001 is the international standard for quality management system



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Institute of Standards and Industrial Research of Iran



12/10271

CE marking is an administrative marking that indicates conformity with health, safety, and environmental protection standards for products sold within the European Economic Area.



European standard that defines terms and specifications of ceramic tiles



Seramik Araştırma Merkezi Turkish Ceramic Research Center Standard testing laboratory



Ministry of Road & Urban Development Road, Housing & Urban Development Research Center

Ceramic tiles shall be classified into groups according to two parameters: by their method of manufacture (also referred to 'shaping') that is, extrusion (method A) or dry-pressing (method B), and by their water absorption level (see 3.9 and Table 1). The groups do not presuppose the usage of the products. The requirements for each product group shall be as given in Annexes A to L.

Table 1 - Classification of ceramic tiles with respect to water absorption and shaping

	Water Absorption (E <sub>b</sub> )						
Shaping	Group I E <sub>b</sub> ≤ 3%	Group II <sub>a</sub> 3% < E <sub>b</sub> ≤ 6%	Group II <sub>b</sub> 6% < E <sub>b</sub> ≤ 10%	Group III E <sub>b</sub> > 10%			
Method A Extruded	Group Al E <sub>b</sub> ≤ 0.5% (see Annex L)	Group All <sub>o-1</sub> o) (see Annex B)	Group All <sub>b-1</sub> °) (see Annex D)	Group AIII (see Annex F)			
	Group AI <sub>b</sub> 0.5% $<$ E <sub>b</sub> $\le$ 3% (see Annex A)	Group All <sub>e-2</sub> o) (see Annex C)	Group All <sub>b-2</sub> °) (see Annex E)	Group BIII <sub>b</sub> (see Annex K)			
Method B Dry-pressed	Group BI E <sub>b</sub> ≤ 0.5% (see Annex G)	Group BII <sub>a</sub> (see Annex I)	Group BII <sub>b</sub> (see Annex J)				
	Group BI <sub>b</sub> $0.5\% < E_b \le 3\%$ (see Annex H)						

a) Groups All<sub>o</sub> and All<sub>o</sub> are divided into two parts (parts 1 and 2) with different product specifications. Part 1 covers most of the tiles in the group; part 2 covers certain specific products, which are manufactured under different names (e.g. terre cuite in France and Belgium, cotton in Italy, and baldosin Catalan in Spain).

Table 2 - Characteristic of Ceramic Tiles Required for Different Applications

	CHARACTERISTICS <sup>o)</sup>	FLOO	RINGS	WA	LLS	TEST METHOD
A)	DIMENSIONS AND SURFACE QUALITY	INTERIOR	EXTERIOR	INTERIOR	EXTERIOR	REFERENCE
A.1	Length and Width (cm)	×	×	×	×	EN ISO 10545-2
A.2	Thickness	Х	×	×	×	EN ISO 10545-2
A-3	Straightness of Sides (i.e. Facial Sides) <sup>b)</sup>	×	X	×	×	EN ISO 10545-2
A.4	Rectangularity <sup>b)</sup>	Х	×	×	×	EN ISO 10545-2
A.5	Surface Flatness	×	×	×	×	EN ISO 10545-2
A.6	Surface Quality	×	×	×	×	EN ISO 10545-2
B)	PHYSICAL PROPERTIES	INTERIOR	EXTERIOR	INTERIOR	EXTERIOR	REFERENCE
B.1	Water Absorption	×	×	×	×	EN ISO 10545-3
B.2	Breaking Strength <sup>c)</sup>	×	×	×	×	EN ISO 10545-4
B.3	Flexural Tensile Strenght <sup>d)</sup> or Modules of Rupture <sup>d)</sup>	×	×	×	×	EN ISO 10545-4
B.4 a	Resistance to Deep Abrasion - Unglazed Tiles <sup>4)</sup>	×	X			EN ISO 10545-6
B.4 b	Resistance to Surface Abrasion - Glazed Tiles <sup>c)</sup>	x	X			EN ISO 10545-7
B.5	Leaner Thermal Expansion <sup>9)</sup>	×	×	×	×	EN ISO 10545-8
B.6	Resistance to Thermal Shock <sup>(1)</sup>	×	×	×	×	EN ISO 10545-9
B.7	Resistance to Crazing <sup>g)</sup>	×	X	×	×	EN ISO 10545-11
B.8	Freeze-Thaw Resistance <sup>h)</sup>		X		×	EN ISO 1015-12
В9	Slipperiness <sup>3</sup>	X	X			FprCEN/TS 16165:2011)
B.10 a	Bond Strength / Adhesion <sup>k)</sup> - Cementitious Adhesives			Х	Х	EN 12004:2007, 4.1
B.10 b	Bond Strength / Adhesion <sup>k)</sup> - Dispersion Adhesives			x	x	EN 12004:2007, 4.2
B.10 c	Bond Strength / Adhesion <sup>k)</sup> - Reaction Resin Adhesives			×	×	EN 12004:2007, 4.3
B·10 d	Bond Strength / Adhesion <sup>(c)</sup> - Mortar			×	×	EN ISO 10545-12
B.11	Moisture Expansion <sup>()</sup>	×	×	×	X	EN ISO 10545-10
B.12	Small Color Differences <sup>m)</sup>	Х	х	х	Х	EN ISO 10545-16
B.13	Impact Resistance <sup>(1)</sup>	X	х			EN ISO 10545-5
B.14	Reaction to Fire®	×		×	X	WT
B.15	Tactility <sup>p)</sup>	×	×			CEN TS 15209i)
C)	CHEMICAL PROPERTIES	INTERIOR	EXTERIOR	INTERIOR	EXTERIOR	REFERENCE
C1a	Resistance to Staining - Glazed Tiles <sup>q)</sup>	х	х	×	х	EN ISO 10545-14
C.1 b	Resistance to Staining - Unglazed Tiles <sup>q)</sup>	x	X	×	x	EN ISO 10545-14
C.2 a	Resistance to Acids and Alkalis of Low Concentration <sup>()</sup>	Х	×	Х	×	EN ISO 10545-13
C.2 b	Resistance to Acids and Alkalis of High Concentration <sup>()</sup>	X	×	X	×	EN ISO 10545-13
C 2 c	Resistance to Household Cleaning Agents and Swimming Pool Chemicals <sup>(1)</sup>	X	Х	X	X	EN ISO 10545-13
C.3 a	Release of Cadmium - Glazed Tiles <sup>t)</sup>	Х	×	X	×	EN ISO 10545-15
C 3 b	Release of Lead - Glazed Tiles <sup>t)</sup>	X	×	X	×	EN ISO 10545-15
C.3 c	Release of Other Dangerous Substances <sup>5)</sup>	X	X	x	x	As Relevant

b) Group BIII covers glazed ceramic tiles only. There is no quantity of dry-pressed unglazed tiles produced with water absorption greater than 10% that is not covered by this product group.

- a Requirements for these characteristics are given in Annex A to L.
- b Not applicable for ceramic tiles having curved shapes.
- c For floorings only.
- d For walls only.
- e See N.2.2.
- f For ceramic tiles which intended use is subject to localized thermal shock
- g For glazed ceramic tiles only.
- h For ceramic tiles that are intended to be used where frost may apply.
- i For floorings on pedestrian circulation areas (where required are regulation).
- j Unless a different test method is required by national regulations in the market of the relevant Member State(s) for the intended use, in which case the test method and results shall be declared as given therein.
- k For walls when performing the test with actual ceramic tiles and suitable adhesive(s) or mortar only.
- I See N.2.3.
- m See N.2.6.
- n See N.2.1.
- o For ceramic tiles intended to be used for internal floorings and for internal and external walls only.
- p For tactile paving surface only i.e. when required for blind or vision impaired persons.
- q See N.2.5.
- r See N.2.4.
- t For glazed ceramic tiles only, when intended to be used on worktops and on wall surfaces where food preparation takes place and food may be in direct contact with the glazed tile surface. As indicative limits, reference could be made to Direct 31/2005/CE.

NOTE 1 Characteristics given in this table in "plain" text are relevant to all intended uses, while those in "italics" are additionally relevant for the specific intended use(s) only.

NOTE 2 Characteristics, given in this table in "bold" text, are the mandated essential characteristics or the corresponding proxy characteristics (for CE marketing, see Annex ZA) and those in "normal" text, the voluntary characteristics (not for CE marketing).

ANNEX G EN 14411

# Requirements for Dry-pressed Ceramic Tiles With Low Water Absorption of GROUP $Bl_a$ ( $E_b \le 0.5\%$ )

Requirements for Dimension and Surface Quality and for Physical and Chemical Properties of this Group of Ceramic Tiles Shall be in Accordance With Table G.1

Table G.1 - Requirements for Dry-pressed Ceramic Tiles with Low Water Absorption, GROUP BI $_a$  (E $_b$  $\leq$ 0.5%)

	Requireme			
CHARACTERISTICS	7 cm< N < 15 cm	N≥	15 cm	Test Method
	(mm)	%	(mm)	
A) DIMENSIONS AND SURFACE QUALITY				
A.1 LENGTH AND WIDTH				
The Work Size Sall be Chosen as Follows for:				
a) Modular Tiles:	In order to allow a r 5 mm	nominal joint widtl	h of between 2 and	-
b) Non-modular Tiles:	So that the differen size is not more than			-
The Permissible Deviation of the Average Size for the Each Tile (2 or 4 Sides) From the Work Size (W)	±0.9 mm	±0.6%	±2.0 mm	EN ISO 10545-2
A.2 THICKNESS				
a) The Thickness Shall be specified	Declared thickness			-
b) The Permissible Deviation, of the Average Thickness of Each Tile from the Work Size Thickness	±0.5 mm	±5%	±0.5 mm	EN ISO 10545-2
A.3 STRAIGHTNESS OF SIDES <sup>b</sup> (Facial Sides)			1	1
The Maximum Permissible Deviation from Straightness, Related to the Corresponding Wok Size	±0.75 mm	±0.5%	±1.5 mm	EN ISO 10545-2
A.4 RECTANGULARITY <sup>b</sup>				
The Maximum Permissible Deviation from Rectangularity, Related to the Corresponding Work Size	±0.75 mm	±0.5%	±2 mm	EN ISO 10545-2
A.5 SURFACE FLATNESS				
The Maximum Permissible Deviation from Flatness				
a) Center Curvature, Related to Diagonal Calculated from Work Size	±0.75 mm	±0.5%	±2 mm	EN ISO 10545-2
b) Edge Curvature, Related to the Corresponding Work Size	±0.75 mm	±0.5%	±2 mm	EN ISO 10545-2
c) Warpage, Related to Diagonal Calculated from the Work Size	±0.75 mm	±0.5%	±2 mm	EN ISO 10545-2
A.6 SURFACE QUALITY <sup>c</sup>	A minimum of 95% of defects that would it area of tiles	EN ISO 10545-2		
B) PHYSICAL PROPERTIES				
B.1 WATER ABSORPTION (IN % BY MASS)	Eb≤0.5 Individual maximum	n 0.6%		EN ISO 10545-3
B.2 BREAKING STRENGTH, FOR:	1			
a) Thickness ≥ 7.5 mm	Not less than 1300	N		EN ISO 10545-4
b) Thickness < 7.5 mm	Not less than 700 N	1		EN ISO 10545-4
B.3 FLEXURAL TENSILE STRENGTH OR MODULUS OF RUPTURE <sup>d</sup>	Minimum 35 N/mm² Individual minimum			EN ISO 10545-4

## Table G.1 - Continued

	Requiremen					
CHARACTERISTICS	7 cm< N < 15 cm	N >	15 cm	Test Method		
	(mm)	%	(mm)			
B) PHYSICAL PROPERTIES						
B.4 ABRASION RESISTANCE						
a) Resistance to Deep Abrasion of Unglazed Tiles: Removed Volume	Maximum 175 mm³	EN ISO 10545-6				
b) Resistance to Surface Abrasion of Glazed Tiles Intended for Use on Floors <sup>e</sup>	Abrasion class and cy	EN ISO 10545-7				
B.5 COEFFICIENT OF LINEAR THERMAL EXPANSION						
- From Ambient Temperature to 100 °C	Declared value <sup>f</sup>			EN ISO 10545-8		
B.6 THERMAL SHOCK RESISTANCE	Pass according to EN	ISO 10545-1 <sup>9</sup>		EN ISO 10545-9		
B.7 CRAZING RESISTANCE: Glazed Tiles <sup>h</sup>	Pass according to EN	ISO 10545-1 <sup>9</sup>		EN ISO 10545-11 <sup>h</sup>		
B.8 FROST RESISTANCE	Pass according to EN	ISO 10545-1 <sup>9</sup>		EN ISO 10545-12		
B.9 SLIPPERINESS	Declared value(s) <sup>9</sup>	PrCEN/TS 16165:2011 <sup>i</sup>				
B.10 BOND STRENGHT / ADHESION <sup>j</sup> , FOR:						
a) Cementitious Adhesives <sup>k</sup>	Declared value(s)			EN 12004:2007 , 4.1		
b) Dispersion Adhesives <sup>k</sup>	Declared value(s)	EN 12004:2007 , 4.2				
c) Reaction Resin Adhesives <sup>k</sup>	Declared value(s)			EN 12004:2007 , 4.3		
a) Mortar	Declared value(s)	EN 1015-12 <sup>1</sup>				
B.11 MOISTURE EXPANSION (IN mm/m)	Declared value <sup>f</sup>			EN ISO 10545-10		
B.12 SMALL COLOR DIFFERENCES <sup>f</sup> FOR:						
a) Glazed Tiles	ΔE<0.75			EN ISO 10545-16		
b) Unglazed Tiles	ΔE<1.0			EN ISO 10545-16		
B.13 IMPACT RESISTANCE, as:						
- Coefficient of Restitution (COR)	Declared value <sup>f</sup>			EN ISO 10545-5		
B.14 REACTION TO FIRE	(Class A1 or A1 <sub>FL</sub> ) <sup>m</sup>			-		
B.15 TACTILITY <sup>n</sup>	Declared surface des	cription <sup>g</sup>		CEN/TS 15209i		
C) CHEMICAL PROPERTIES						
C.1 RESISTANCE TO STAINING, FOR:						
a) Glazed Tiles	Minimum calss 3			EN ISO 10545-14		
b) Unglazed Tiles	Declared value <sup>f</sup>			EN ISO 10545-14		
C.2 RESISTANCE TO CHEMICAL						
a) Resistance to Low Concentration of Acids and Alkalis	Declared value <sup>f</sup>			EN ISO 10545-13		
b) Resistance to High Concentration of Acids and Alkalis	Declared value <sup>f</sup>			EN ISO 10545-13		
c) Resistance to Household Chemicals and Swimming Pool Salts	Minimum calss B			EN ISO 10545-13		
C.3 RELEASE OF DANGEROUS SUBSTANCES						
a) Cadmium (in mg/dm²)	Declared value <sup>g</sup>			EN ISO 10545-15		
b) Lead (in mg/dm²)	Declared value <sup>g</sup>			EN ISO 10545-15		
c) Other Dangerous Substances°	Declared value			As Relevant		

- a Similar joint widths may be used to apply to the traditional systems based on non-metric sizes.
- b Not applicable for tiles having curved shapes.
- c Because of firing, a slight variation from the standard color is unavoidable. This does not apply to intentional irregularities of color variation of the face of tiles(which can be unglazed, glazed, or partly glazed) or to the color variation over a tile area which is characteristic of the given tile and desirable. Spots or colored dots which are introduced for decorative purposes are not considered a defect.
- d  $\,$  Not applicable to ceramic tiles with breaking strength > 3000  $\,$ N
- e Where required, the abrasion class resistance according to Annex M may be declared.
- f See Annex N additional information on applicability.
- g See table 2 for uses where it is applicable.
- h Certain decorative effects may have a tendency to craze. They are to be identified by the manufacturer, in which case the crazing test given in EN ISO 11-10545 is not applicable.
- i Unless a different test method is required by national regulations in the market of the relevant member state(s) for the intended use, in which case the test method and result shall be declared as given therein (as long as consolidated European test method is not available).
- j For intended uses subject to requirements against accidental fall of the object on to transit areas only. Tests are to be performed using the actual tiles and suitable adhesive and/or mortar.
- k For the types of adhesives, defined in EN 12004:2007 only.
- I The proposed test methods are intended to determine the adhesion strength of the adhesive and have not been developed to determine ceramic the characteristics. Thus, there might be no correlation between the declared bond strength and the performance of the tile in use (other factors proper installation techniques and type of background support will influence the final performance).
- m Ceramics, as a homogeneously distributed material used for ceramic tiles, is considered as a material of known and stable performance with respect to the reaction to fire performance as it does not consist of any organic material. As such it does not contribute to the fire and it may be considered without the need for testing (CWT) as the class A1 material7. The reaction to the fire performance of ceramic tiles may also be classified also as class A1 according to EN ISO 1-13501.
- n For tactile paving surface i.e. when required for blind or vision impaired persons.
- o When relevant, see notes 1 and 2 in ZA.1 for the performance of the product concerning these characteristics, if any to be declared.

# CLEANING PRODUCTS

TYPES OF DETERGENT Where the sale is permitted	SOLVENTS (bleach, turper			ACIDS (muriatic acid,		acid,	ALKALINE-BASED DETERGEN <sup>-</sup> – ALKALI			
	trichloroethyle	ne, nitro thinn	er)	phosphoric acid) (profe			(professional c	ional alkaline detergents)		
SURFACE	Matte	Satin	Polished	Matte	Satin	Polished	Matte	Satin	Polishe	
TYPE OF STAINS										
Coffee										
Lime scail				•	•	•				
Tar	•	•								
Concrete					•					
Candle wax	•	•								
Coca Cola			•							
Glue	•	•								
Chewing gum	•	•	•				•	•		
Rubber marks from tyres or shoes	•	•	•							
Grease, Oil							•	-		
Ink	•	-	•							
Nicotine	•	-	•							
Felt-tip pen	•	-	•							
Tomato			•							
Resins	•	-	•							
Rust				•	-	-				
Nail varnish	•	-	•							
Cigarette burns				•	-	-				
Tea		-								
Wall paint	•	•	•		•	•				

For information and advice, please contact PMA directly.



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