Marble
Onyx
Travertine
Granite
Sandstone
Quartzite
Limestone
Slate

January 2019

UNION TILES
EST.1922

Nature's Inspiration Delicately Balanced

Natural Stone

collection

THE "NATURAL" CHOICE IN GREEN ARCHITECTURE

Congratulations on your decision to select natural stone! The stone industry takes being "Green" extremely seriously. Natural stone is Mother Nature's original green building material. It is neither bonded together by petroleum based resins, nor created in a factory firing up kilns.
Natural stone flooring, walling and countertops will not need to be replaced for a very long time, they are 100% recyclable①, do not emit VOC"s into your home/building②, and can be cleaned with PH-Neutral detergents that are bio-degradable.
After all what can be greener than a product that comes directly from the earth in its natural state, ready for use.
Stone's position as a green building material and in the green building community is backed by comprehensive research. Competing materials often claim to be green, but, stone's enduring life cycle③, ease of care and maintenance, local availability④ and durability⑤ make it an excellent choice for any project.

What is Green Building?

A sustainable or green building is the outcome of a design process which focuses on increasing the efficiency of a resource use – energy, water⑥, and materials – while reducing a building's impact on human health and the environment during its life cycle; through better site selection, design, construction, operation, lowering a building "heat island⑦", maintenance and eventual disposal or removal.

With the growing popularity of the U.S. Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED) program and the National Association of Home Builders' (NAHB) National Green building standard for residential building, green building has become an integral part of the design and construction industry.

Stone was one of the first building materials available to man. It has been used to construct everything from humble abodes to the most iconic structures. As a building material, stone requires virtually no manufacturing and is so durable that stone structures built thousands of years ago are still used today – characteristics from contemporary "green" products can equal. Yet stone has been largely overlooked by the green building movement, white ephemeral products made of recycled plastic often carry green labels.
Granted, stone has some significant environmental impacts⑧, but they may not be as big as your think, and the stone industry has undertaken noteworthy sustainability effects. This ancient building material may be more relevant than ever in today's green building industry.

1. **Recyclable** - No other building material is as recyclable as natural stone. Nearly 100% of stone from deconstructed projects is recyclable and able to be used on other projects, or crushed for use as roadbeds, concrete aggregate or hard core filling.

2. **Zero VOC Emission**- Research conducted by the University of Tennessee's Centre for Clean Products found that natural stone does not directly emit any VOC's (Volatile Organic Compounds)

3. **Enduring Life Cycle**- Natural stone stands up to weathering and time better than any other building material, natural or man-made. This has been proven through the ages. The Egyptian pyramids, the Parthenon in Athens or any ancient city offer lessons that demonstrate natural stone is the most sustainable building material available.

4. **Regional Building Materials**- A major tenet within the green building ratings systems is that of supporting "local" products and businesses. Regionally extracted and processed natural materials reduce environmental impacts by reducing emissions of greenhouse gasses during transportation, while supporting local economies.

5. **Durable**- When choosing to install a stone countertop, wall cladding, etc… you are making a decision to use a product that will last for at least 100 years in many cases and certainly for the life of the building.

6. **Water Recycling**- Domestic and international stone fabricators utilize a water filtration system for their effluent. Many companies are however also on the cutting edge of an exciting new "closed loop water recycling system" that recycles 100% of water used in the fabrication of natural stone – dramatically lowering water consumption.

7. **Heat Island Effect**- Many light coloured varieties of natural stone have been shown to lower a building's "heat island" through their ability to reflect heat. Heat Island refers to the concept of a building raising the average temperature of the area surrounding a building.

8. **Quarrying**- In the past 15-20 years, the business of quarrying natural stone has improved enormously from an environmental perspective. Domestic quarries today are required to comply with strict regulations and are monitored by the Department of Mineral & Energy Resources and Mining Industry with reference to safety standards and rehabilitation.

Stone is the natural construction material par excellence: man has dealt with it from his origins, producing weapons, tools, trinkets, but also building shelters and fences for his protection.

The millenary ties between stone and the history of mankind originated with an epoch-marking passage, when stones lost their "natural shapelessness" and were "configured", to follow the aspirations of a construction that was destined to become Architecture, Art, Symbolism and a Wonder for man.

Throughout history, in fact, marble has been used in many applications, but one of its highest and most sublime contributions has been within the ambit of architecture, increasing numbers of architects and designers have a predilection for stone because of to the many aesthetic renderings it can take on: modern finishing, which is possible with the use of machinery that employs advanced technologies, allows man to satisfy even the most creative requirements.

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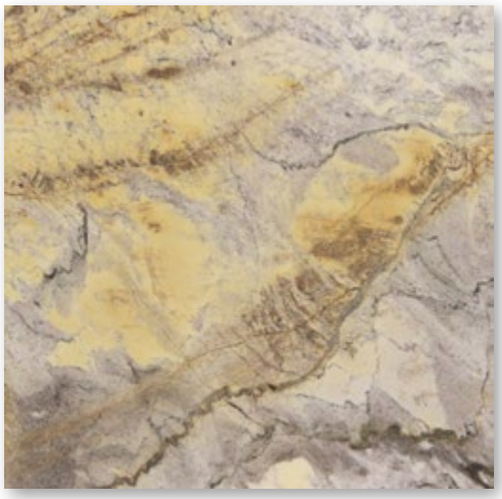
Over and above its indisputable, historical and ethical value, natural stone, by definition, conserves a characteristic that other synthetic or partially artificial products do not possess, the green ingredient. Increasing numbers of products are being erroneously labelled as "natural" misinterpreting the deeper meaning of the term, which has a completely ecological connotation. Contrary to buildings constructed with synthetic materials, architecture realised with natural stone the point of arrival of an entirely ecological path of development, which starts with the phase of extraction of the raw material, continuing with processing and winding up with its installation.

MARBLE
COLLECTION

MARBLE: Metamorphic rock containing over 50% of carbonate calcites and/or dolomites and/or aragonites. It is indicated as pure if the carbonates exceed 95% and impure in all other cases. Any compact rock which is strong and can be polished, whose hardness exceeds the values of 4 / 4.5 on the Mohs scale. Commercially, the term includes, in addition to marbles in the strictest sense, calcareous stone, alabasters, cipolin marble, dolostones, onyx, serpentinites, etc... Also Commercial marble.

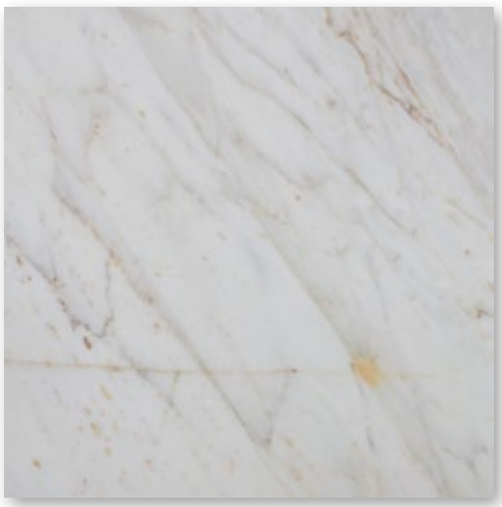
Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.



AMARILLO AUSTRAL

AMERICAN SILVER

BARDIGLIO IMPERIALE POLISHED & LEATHER



BIANCO ARABESCATO

BIANCO CARRARA

BIANCO ROSATO

BIANCO ROYAL

BLUE FUME

BOTTICINO CLASSICO

BOTTICINO CONGLOMERATE

BOTTICINO FIORITO

BRECCIA ONICIATA ROSATA

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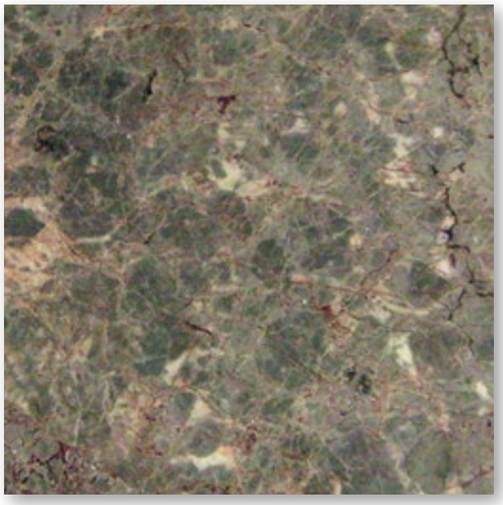
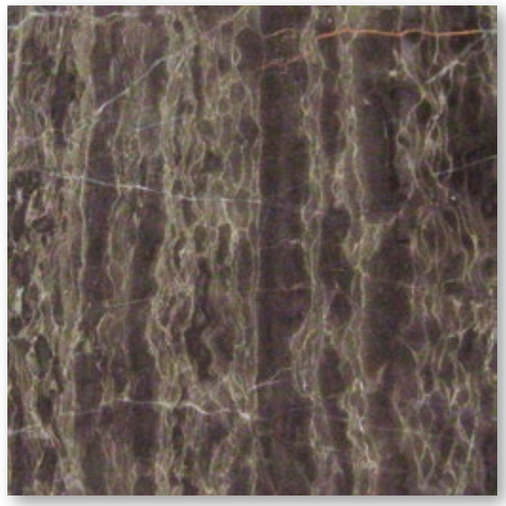


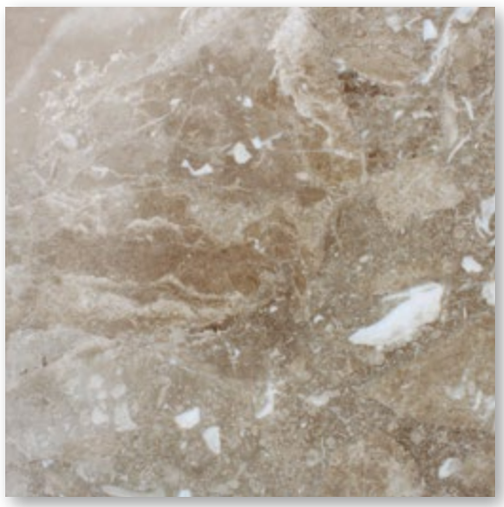
BRECCIA ROSSO

BRONZO



BRUNO SCURO

CALACATTA

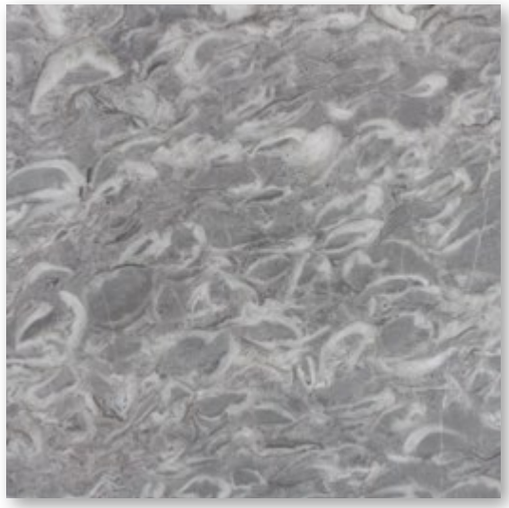


CAPPUCCINO

CHESTNUT BROWN

CREME BEIDA

CREME BRULON



CONCHIGLIA DI FUME

CREMO DESERTINO

CREMA CLASSICO/RIKHO

CREMA EUROPA

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CREMA JENBI POLISHED AND PATINATO

CREMA MARFIL POLISHED & HONED

CREMA ROMANA

CREMA SPIAGGIA

CREMA VALENCIA

EMPERADOR LIGHT

MARBLE
COLLECTION

Stone is the natural construction material par excellence: man has dealt with it from his origins, producing weapons, tools, trinkets, but also building shelters and fences for his protection.

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EMPERADOR DARK

FILETTO ROSSO

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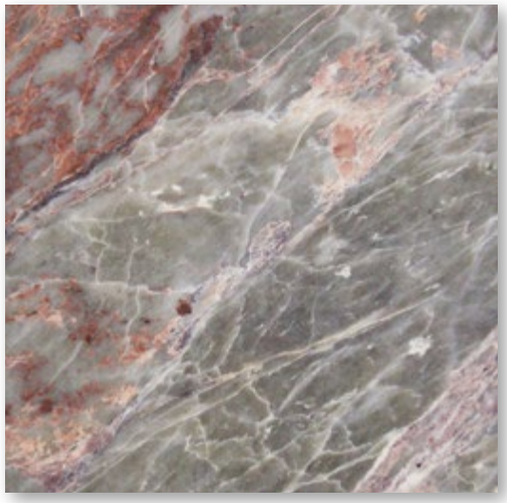
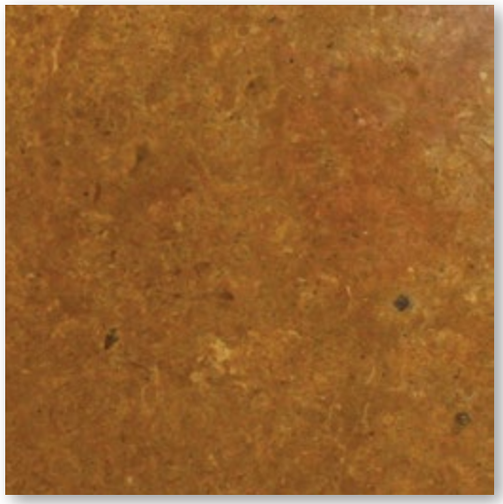


FIOR DI PESCO

GALALA POLISHED & PATINATO

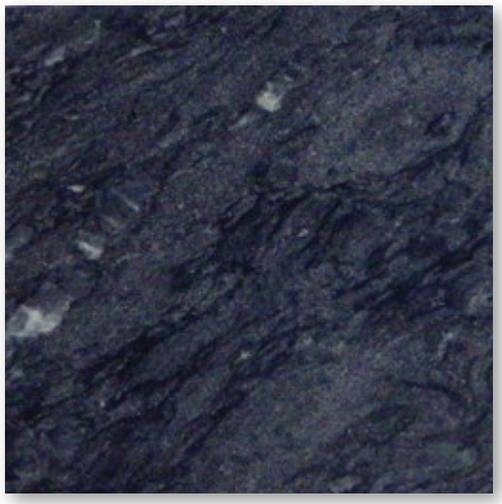
GALLO

GIALLO BOUJAAD



GIALLO REGALE

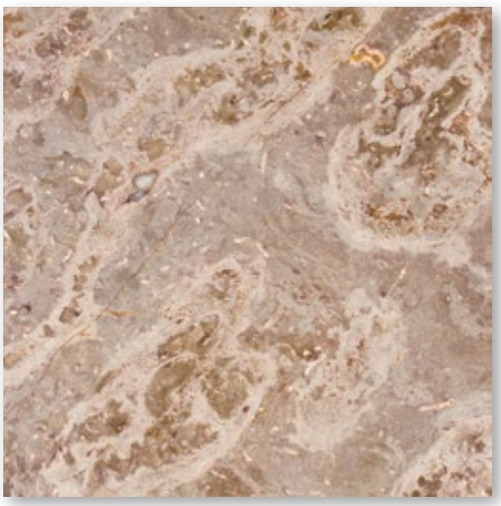
GOSSAMER



GRIGIO CARNICO

GRIGIO OROBICO

GRIGIO PERLA



HAZEL NUT BROWN

IVORY CREAM

JERUSALEM - GOLD

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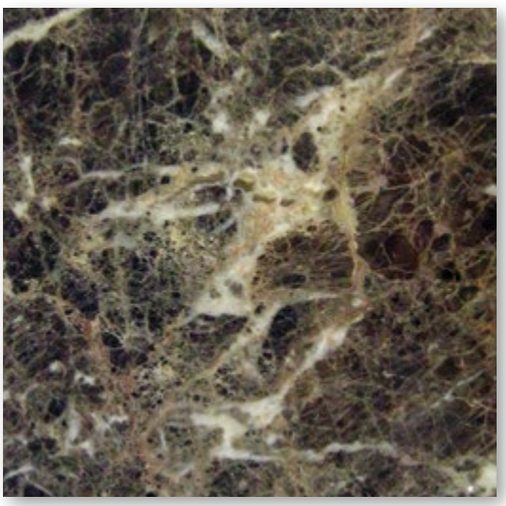
JURA BLAU POLISHED & HONED

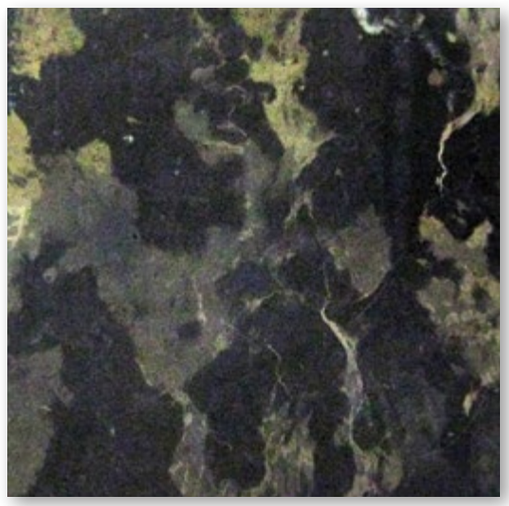
JURA GELB

LAVANDA OROBICO



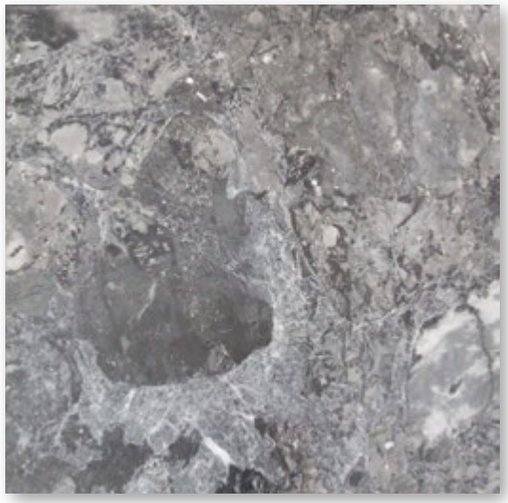
MARRON EMPERADOR

NAPOLEON TIGRE

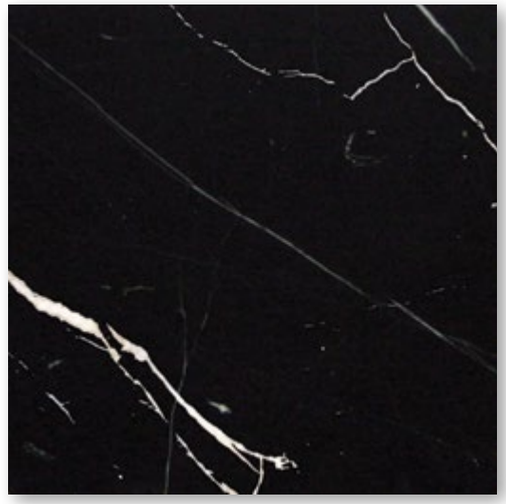


NERO DORATO

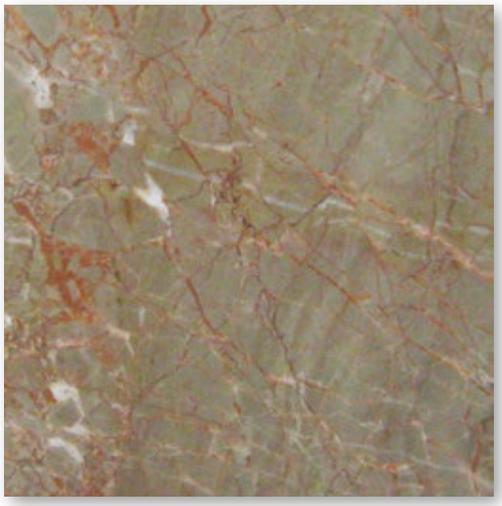
NERO FOSSILI



NERO LEVADIA



NERO MARQUINA



ONICIATA

PERLA AURORA

PERLATINO

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PERLATO CLASSICO

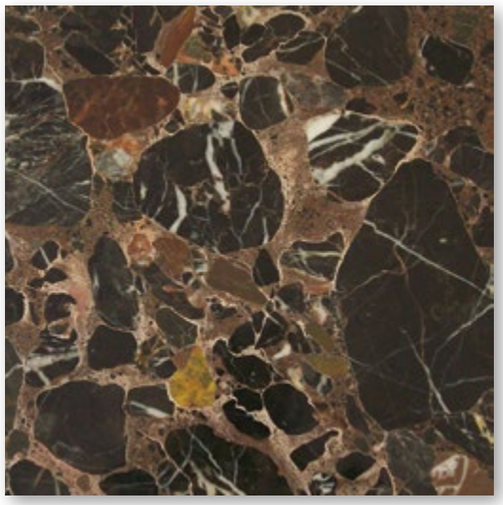
PERLATO DALIA

PERLATO OLYMPIO

PERLINO BIANCONE

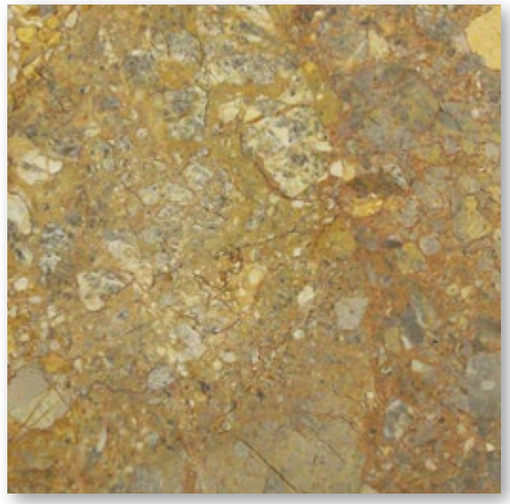
PERLINO ROSATO

PERLATO SVEVO

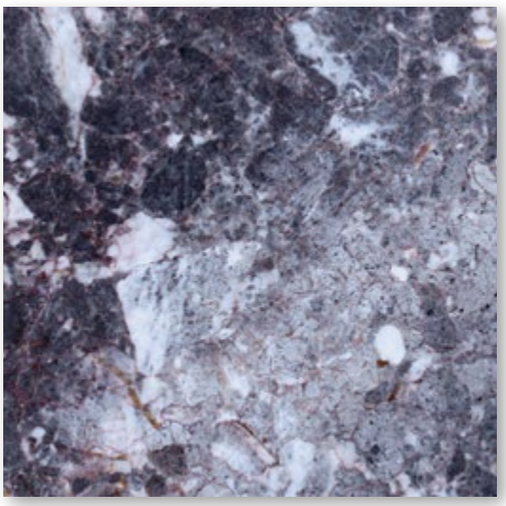


PORTORO BRECCIA

PRINCIPESSA BRECCIA ARGENTO



PRINCIPESSA BRECCIA ORO



PRINCIPESSA BRECCIA GRIGIO

RAMON

ROSA NUVOLATO

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ROSA TEA

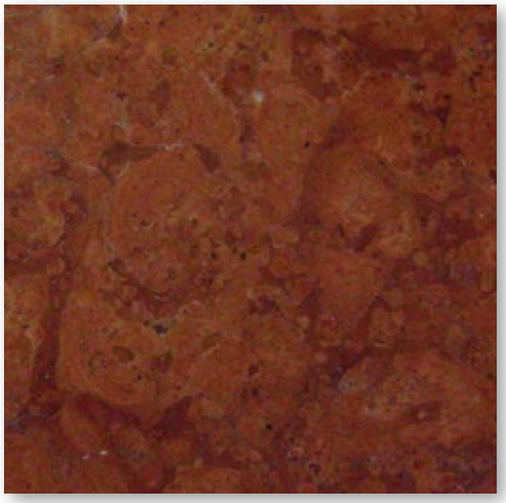
ROSA ZARCI

ROJO ALICANTE

ROSA AURORA

ROSA MARFILLA

ROSSO COLLEMANDINA



ROSSO VERONA

SHELLSTONE LAGO GIALLO

SIERRA MADRE

SINFONIO CALEO

SILVER GALAXY

SNOW WHITE CRYSTAL

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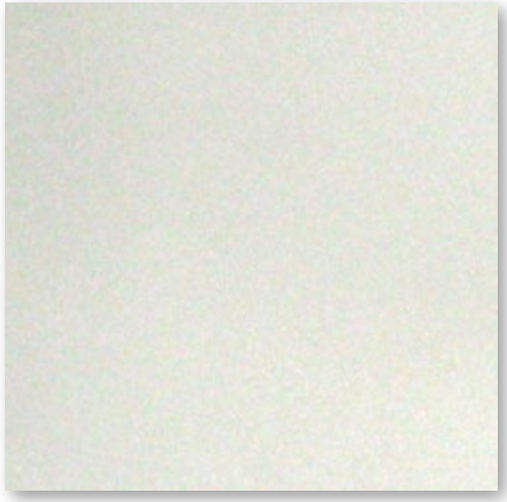
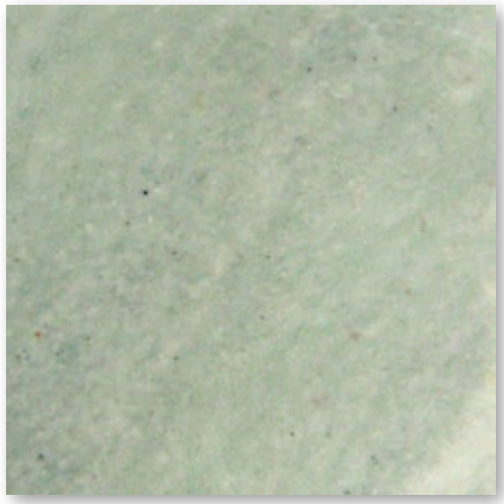
THASSOS CRYSTAL WHITE



THASSOS SNOW WHITE

THASSOS ZUCCHERO

VERDE ALPI



VERDE AQUAMARINO

VERDE ESMERALDO

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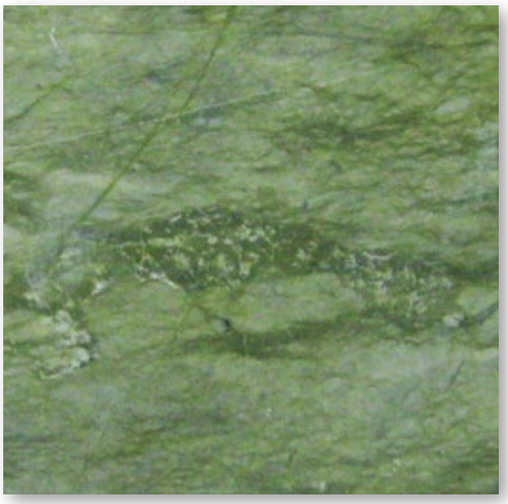
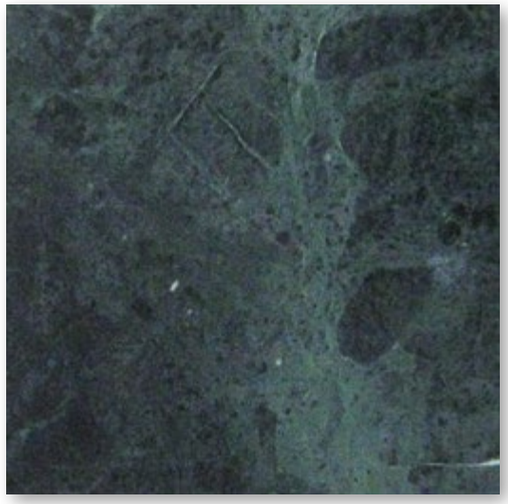
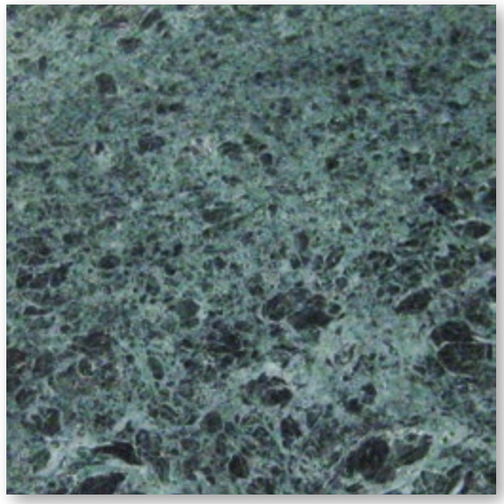


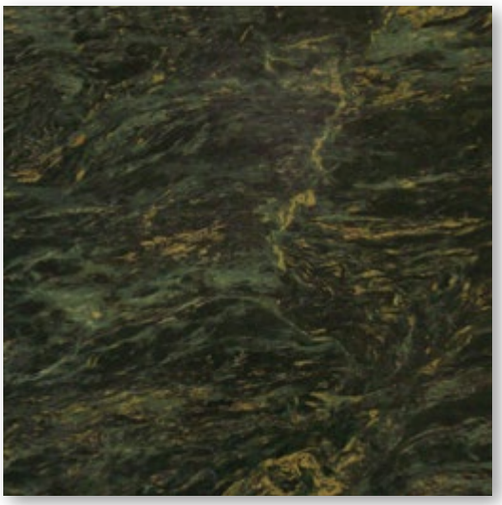
VERDE IMPERIALE



VERDE GUATEMALA



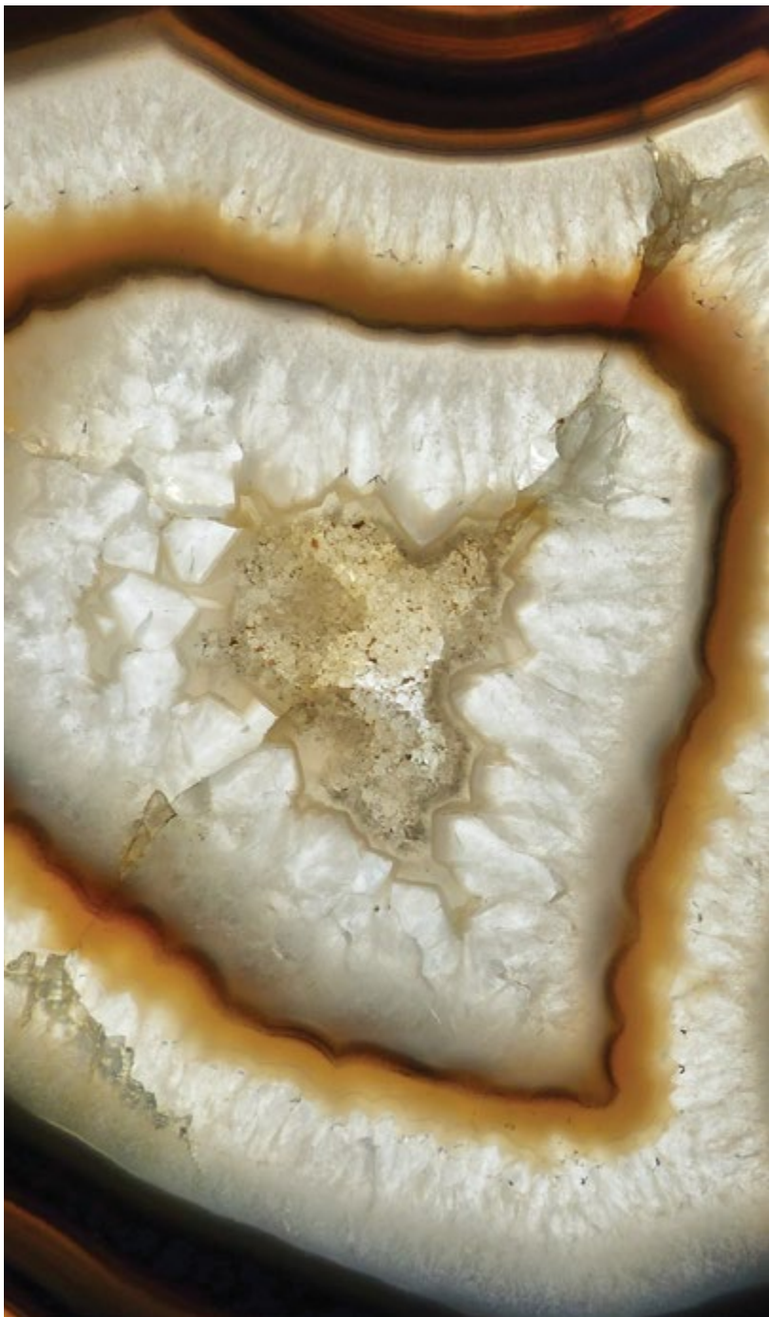
VERDE ST NICHOLAS



VERDE REGALLO

VOLAKAS

ONYX
COLLECTION



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ONYX ORO

ONYX ROSINA

ONYX ROYAL

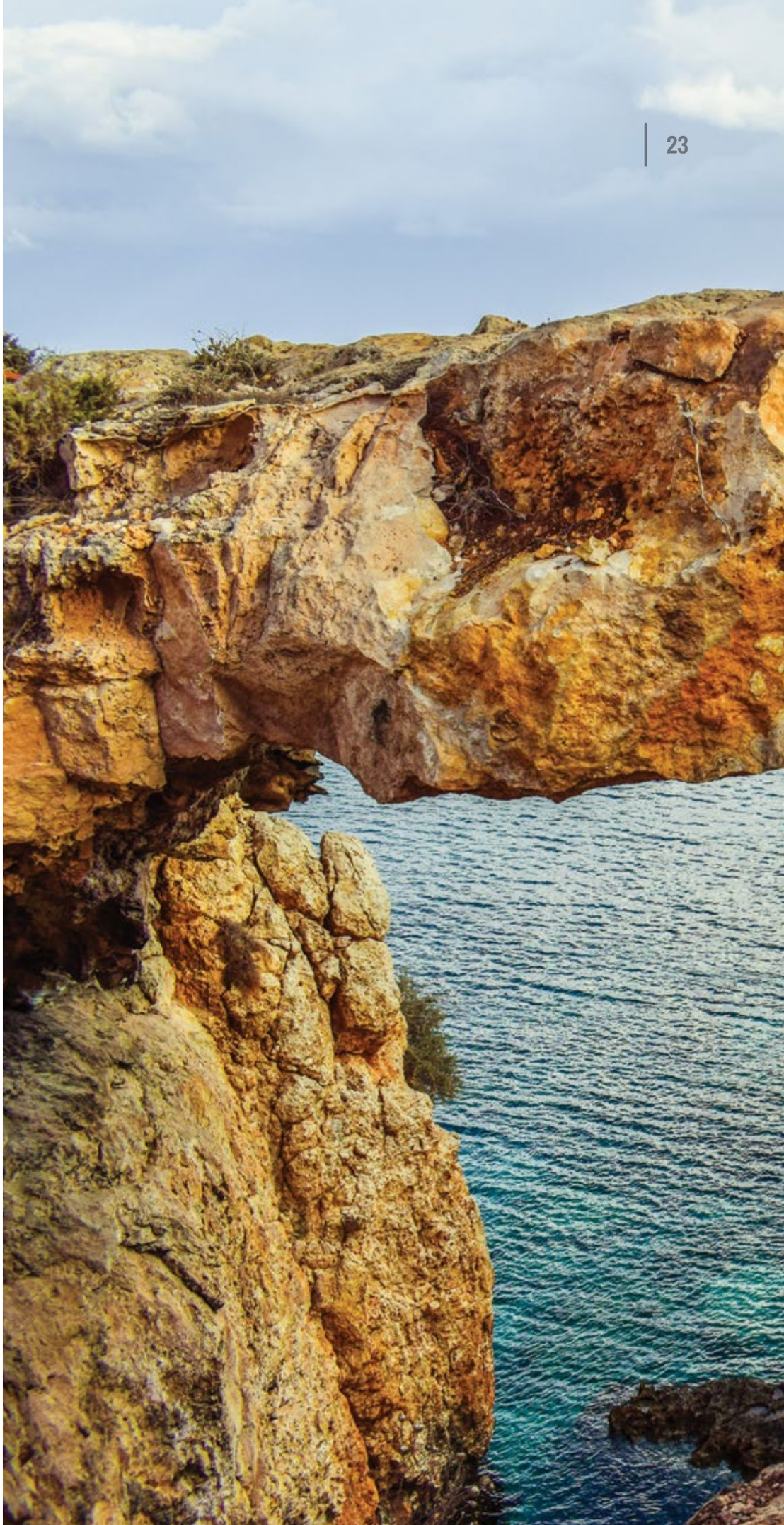
ONYX TRAMONTO

ONYX BIANCO

ONYX MIELE

TRAVERTINE COLLECTION

Travertine: Carbonatic sedimentary rock of chemical origin, with a characteristic cemented of vauolar structure. Travertine originates due to precipitation of calcium carbonate from saturated water which leaves voids in the stone which is a characteristic of all travertine. These voids are usually filled.



TRAVERTINO CLASSICO VEIN CUT FILLED ROMANO (POLISHED)

TRAVERTINE FIORITO CROSS CUT FILLED & HONED

TRAVERTINO GOLDEN SIENNA FILLED & POLISHED

TRAVERTINO NAVONA FILLED & POLISHED

TRAVERTINO NOCE FILLED & POLISHED

TRAVERTINO NUT FILLED & POLISHED

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TRAVERTINO OCRA POLISHED

TRAVERTINO ROSSO

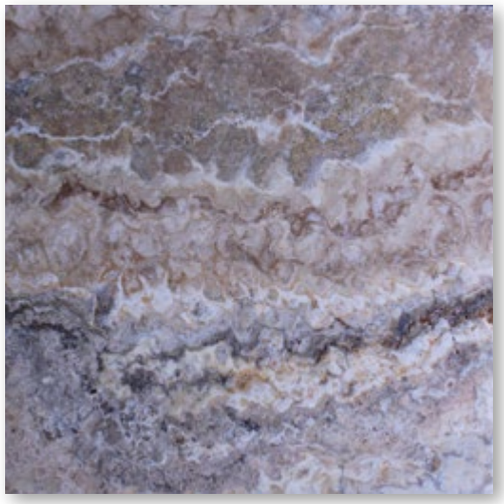
TRAVERTINO ROJO ARIZONA

TRAVERTINO SILVER FILLED & POLISHED

TRAVERTINE WALLNUT CROSS CUT FILLED & HONED

UNFILLED BRUSHED TRAVERTINE CLASSICO

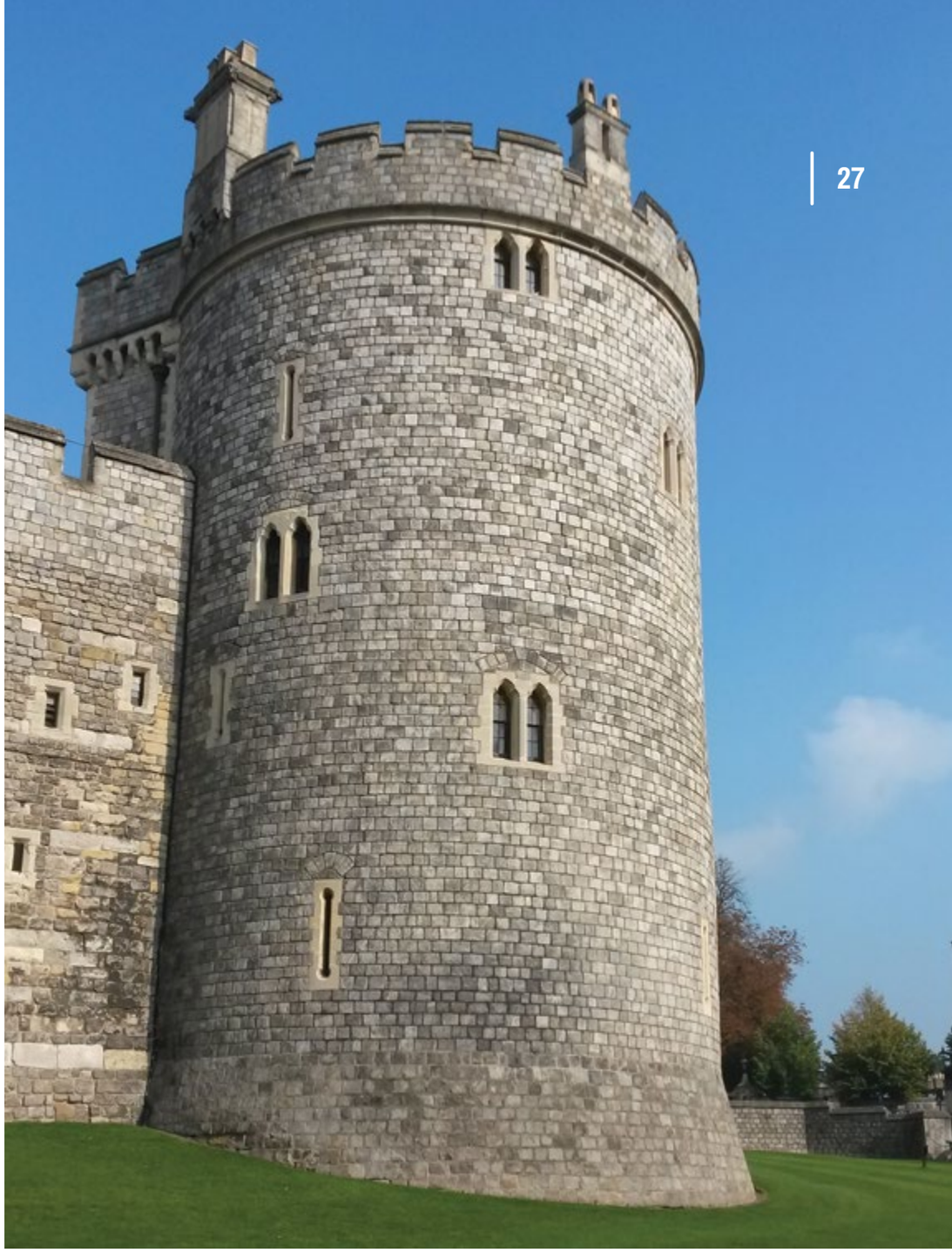
TRAVERTINE CHIPON (FRENCH PATTERN)



TRAVERTINE SCABOS (FRENCH PATTERN)

GRANITE
COLLECTION

Granite: Magmatic intrusive rock, with potassic an acid chemism, made up of quartz potassic feldspar, mica and accessory minerals, plagioclase, Any compact rock which is strong and can be polished, whose hardness exceeds the values of 4/4.5 on the Mohs scale. Commercially, the term 4.5 on includes almost all magmatic rock

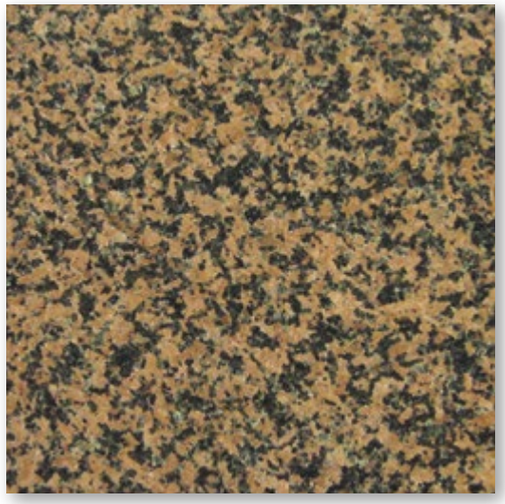


AFRICAN RED

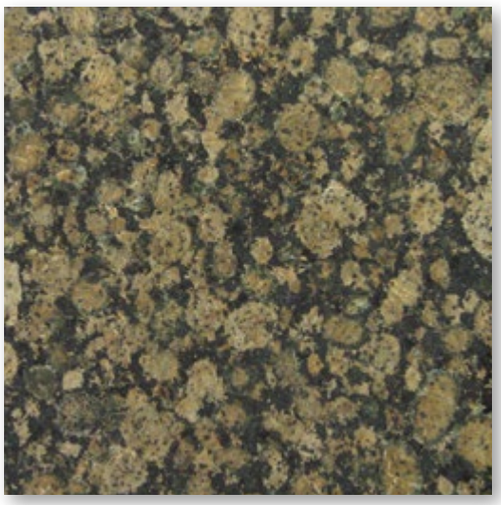
AGENTO MYSTICO POLISHED AND FLAMED

ALMOND MAUVE

AUTUMN BROWN



BALMORAL ROSSO



BALTIC BROWN

BELFAST

BELFAST LEATHER

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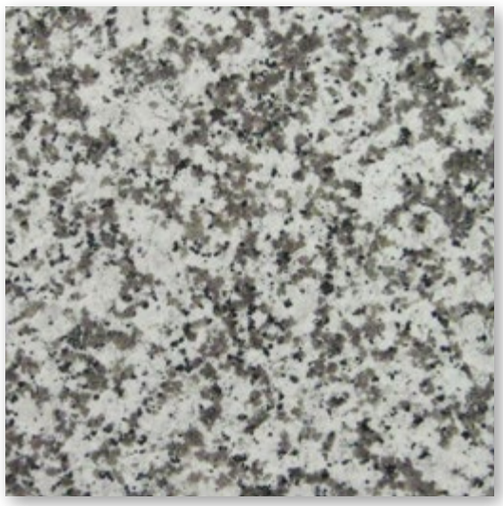
BIANCO GIACOMO POLISHED & FLAMED

BIANCO OSTRIKA



BIANCO SARDO

BLACK PEARL

BLACK FOREST POLISHED & LEATHER

BLUE NOCTURNE

BLUE PEARL

BRIDAL VEIL

DESERT MINK

DESERT ROSE

DESERT STORM POLISHED & FLAMED

DUNA ROSA

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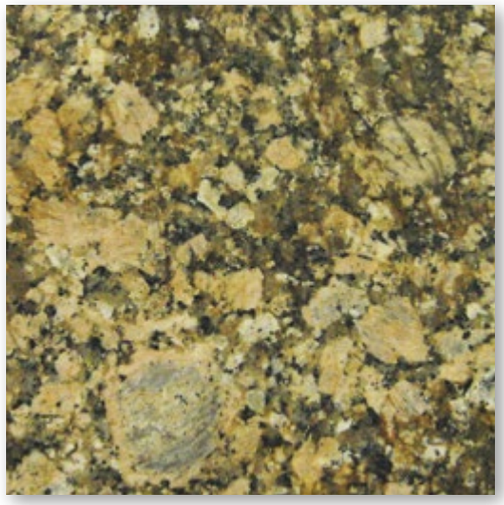
EMERALD PEARL

GIALLO DUNA

GIALLO ORNAMENTALE

GIALLO ORO

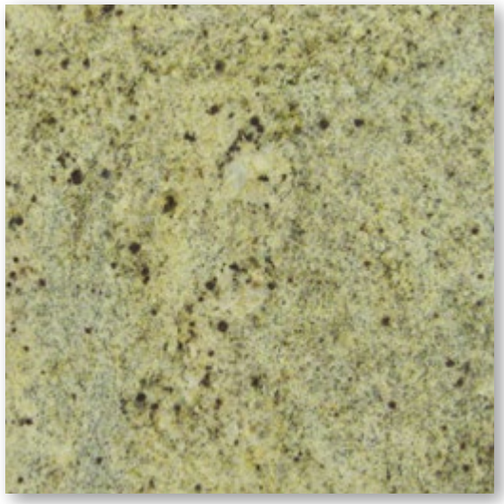


GIALLO VENEZIANO

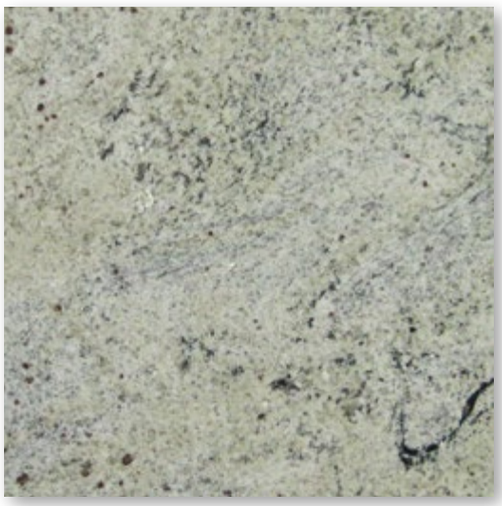
GOLDEN DESERT POLISHED & FLAMED

GRISSAL

JUPARANA CUMULUS



KASHMIR GOLD



KASHMIR WHITE

MIDNIGHT MIST

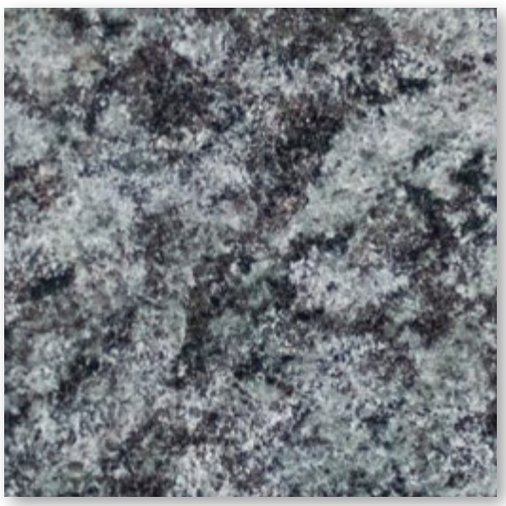
MONDARTIZ

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

MULTICOLOUR RED POLISHED & FLAMED

NERO COSTELLAZIONE

NERO GRANITO POLISHED & FLAMED



OLIVE GREEN

PARADISO

PLATINUM PEARL

ROCKVILLE GOLD

ROSSO MORRO

ROSA PORRINO

ROSA TROPICALE

RUSTENBURG POLISHED & FLAMED

RUSTENBURG NEW POLISHED & FLAMED

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

SILVER PEARL

SIVA GOLD

STAR GALAXY

VERDE ASSOLUTO

ZIMBABWE POLISHED & FLAMED

SANDSTONE COLLECTION

Sandstone: Calcitic sedimentary stone, made up primarily from fragments of detritus and mineral granules, having dimensions between 1/6mm and 2mm. There are a great number of types of Sandstone depending on the genesis, structure and composition: eolianite, arkose (feldspathic -quartz sandstones) and lithic arenites (which may also be calcareous containing calcite or aragonite), etc.

AVORIO SABBIA NATURAL & HONED

COUNTRY CAMEO NATURAL & HONED

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

CORINTHIAN GOLD HONED

CLEOPATRA'S GOLD HONED

COUNTRY CAMEO MINT SELECT NATURAL & HONED

CHAMELEON POLISHED

DESERT SAND NATURAL

DESERT SAND HONED

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

DUSTY WAY NATURAL

DUSTY WAY HONED

EGYPTIAN RAINBOW HONED

MORNING GLOW HONED

ROSA SABBIA NATURAL & HONED

TERRA SABBA NATURAL & HONED

QUARTZITE COLLECTION

Quartzite: A metamorphic stone, 80% of which is made up of quartz which is often easy to split into slabs or sheets.

COPPER NATURAL

COPPER POLISHED

GLACIER WHITE

GLITTER STONE

GREY NATURAL

GREY POLISHED

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

KALAHARI GOLD

SILVER RIVER NATURAL

SILVER RIVER POLISHED

LIMESTONE COLLECTION

LIMESTONE: Calcareous rock in the widest sense. In Anglo-Saxon nomenclature this term is often used to distinguish a non-crystalline marble, (namely a calcareous stone = limestone) from a crystalline metamorphic stone = marble).

ANTIQUE PINK NATURAL

BLANCO CAPRI

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

CAFE AU LAIT POLISHED & HONED

CASCOGNE BLUE BEIGE HONED

CREMO CALCARE HONED

CREMO SALTINO

CHARCOAL (CLEFT)

CHARCOAL (HONED)

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

MOCCA CREME

MOUNTAIN SAVANA NATURAL

MOUNTAIN SAVANA POLISHED

MINT GREEN

SERPENTINE GREEN

SILVER CLEFT FACE

SLATE
COLLECTION

SLATE: A fine : grained, foliated, metamorphic rock which splits along its parallel cleavage plains. The vast range of colours is derived from the minerals contained in the shale from which it was formed

AFRICAN BLUE

ALASKIN CLIFFS

ASIAN AUTUMN

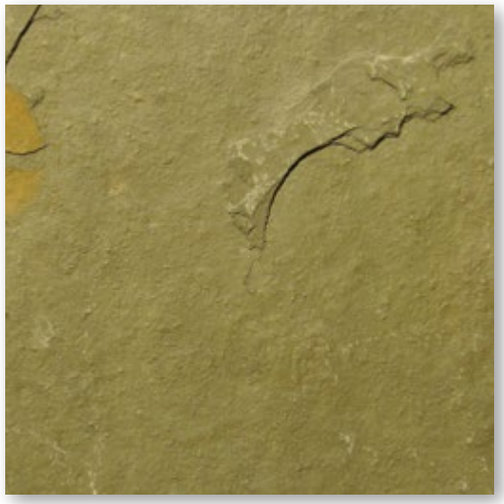
AUTUMN SAVANNA

BEACH SAND

BURGUNDY

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

BRONZE



HIGHVELD GOLD

FIRED EARTH

LILLET BLUSH

JADE GREEN

JADE GREEN HONED

MONTAUK BLACK HONED

MONTAUK BLACK NATURAL CLEFT

MULTICOLOUR

OYSTER

RICH AUTUMN

ROSA STONE

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

SPICED GOLD

SAHARA SUNSET

SILVER BLUE

VINTAGE GOLD

RIVENS &
WALL CLADDING
COLLECTION

Rivens are pre-assembled for fast easy installation using proprietary brand tile adhesive. No grouting required ideal for both external and internal applications.

Recommended surface treatment for colour enhancement and ease of maintenance: S.Q.T. Sealer and S.Q.T. Dresser.

ITALA SANDSTONE

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

ITALA SANDSTONE 3D

ITALA SANDSTONE CHUNKS

ITALA SANDSTONE MULTIPLE DRY PACK

ITALA SANDSTONE HAND CHIPPED MOSAIC ON SHEETS

ITALA SANDSTONE WAVES

ITALA SANDSTONE SMOOTH MOSAIC

ITALA SANDSTONE STRIP WALLING

INTERLOCKING RIVENS

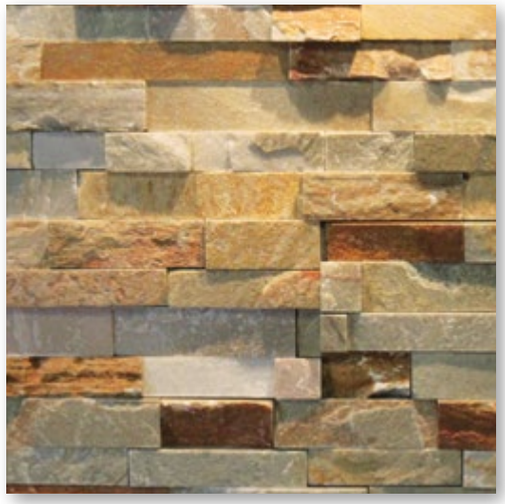
MARBLE RIVENS HAZELNUT _ 150X600 MM

MARBLE RIVENS ROSSO ANTICO_150X600 MM

MARBLE RIVENS THASSOS WHITE _ 150X600 MM

MARBLE RIVENS TRAVERTINO CLASSICO
150X600MM

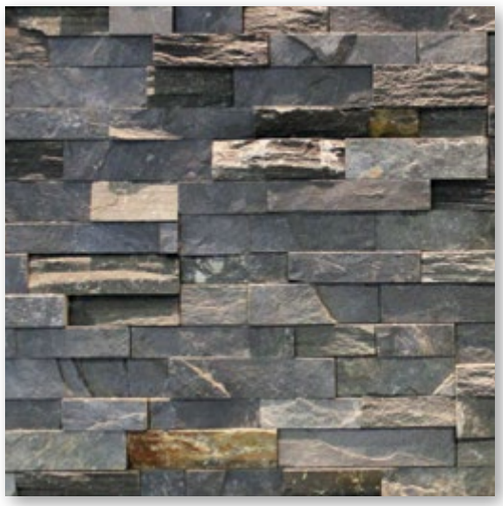
QUARTZITE RIVENS LAVA BLACK
150X600 MM



QUARTZITE RIVENS MOUNTAIN MIST
150X600 MM

INTERLOCKING RIVENS

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.



LIMESTONE RIVENS CHARCOAL 150X600 MM

QUARTZITE RIVENS ICE WHITE 150X600 MM

STACK STONE CORAL BEACH

STACK STONE BLUE VALLEY

STACK STONE NAMIB GOLD

STACK STONE MOUNTAIN MIST

INTERLOCKING RIVENS

SLATE RIVENS ASIAN AUTUMN 150X600 MM

SLATE RIVENS JADE GREEN 150X600 MM

SANDSTONE RIVENS ROSA SABBIA 150X600MM

SLATE RIVENS TERRA SABBIA 150X600 MM

SANDSTONE RIVENS OCHRE 150X600 MM

RIVENS AMERICAN SILVER

INTERLOCKING RIVENS

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

RIVENS GLITTERSTONE

RIVENS NERO LEGNO

STONELO SANDSTONE INTERLOCKING UNIFORMED RIVENS 160X300MM

MODULAR RIVENS

LOOSE STONELO CHISEL RIVENS
300X40 MM

LOOSE STONELO FLAT & RAISED RIVENS
RANDOM SIZES

MARBLE MODULAR RIVENS BARDIGLIO
150X600 MM

MODULAR RIVENS

MARBLE MODULAR RIVENS CREMA MARFIL 150X600 MM

ONYX MODULAR RIVENS ROSINA 150X600 MM

ONYX MODULAR RIVENS MIELE 150X600 MM

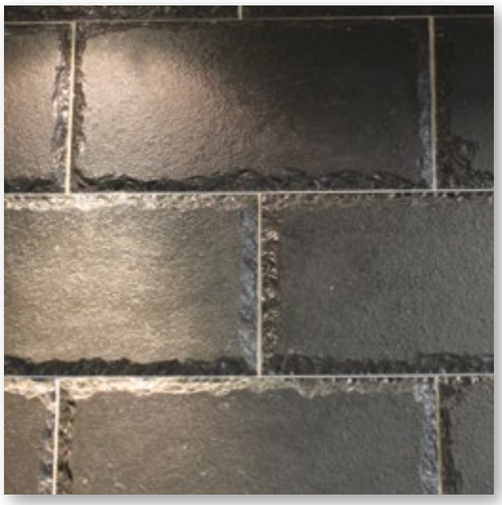
TRAVERTINE MODULAR RIVENS FIORITO 150X600 MM

MARBLE MODULAR RIVENS VERDE ESMERALDO 150X600 MM

STONELO ROCKFACE 300X600 MM

ROCK FACE CLADDING

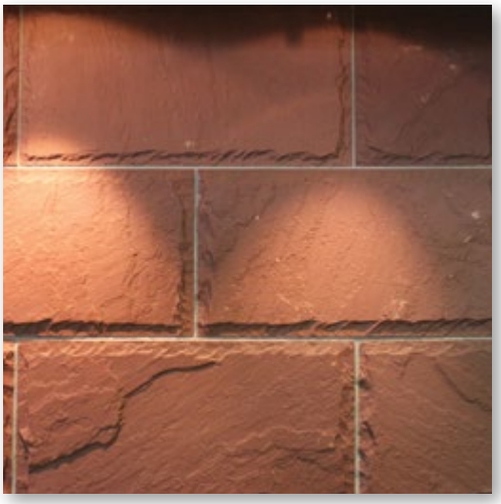
Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.



CHARCOAL ROCKFACE (LIMESTONE)
300X600X30MM

COUNTRY CAMEO ROCKFACE (SANDSTONE)
200X400X30 MM & 200X200X30MM

GOLDEN ROCKFACE (SANDSTONE) 200X400 MM



TERRA SABBIA ROCKFACE (SANDSTONE)
300X600X30MM

WHISPER GREY ROCK FACE OR SAWN FINISH
(SANDSTONE) 200X400X20-50MM

CORINTHIAN GOLD ROCKFACE

ROCKFACE CLADDING

GOLDEN GATE ROCKFACE

FUTURIS CLADDING

CORINTHIAN GOLD SANDSTONE
200X200X18 MM

EGYPTIAN RAINBOW SANDSTONE
200X100X18 MM

FUTURIS CLADDING

SPLIT FACE CLADDING

BOTTICINO RUSTIC WALL CLADDING
300X100MM

TRAVERTINO CLASSICO RUSTIC WALL
CLADDING 320X100 MM

TRAVERTINO NOCE RUSTIC WALL CLADDING
320X100 MM

SPLIT FACE CLADDING

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

TRAVERTINO OCRA RUSTIC WALL CLADDING
320X100 MM

MIST GREY INTERLOCKING CLADDING
200X500 MM

LAVA BLACK INTERLOCKING CLADDING
200X500 MM

CHISEL EDGE & SANDSTONE CLADDING

TEAK BROWN SANDSTONE INTERLOCKING
CLADDING 200X500 MM

NAMIB GOLD CHISEL EDGE 600X150MN

ICE WHITE CHISEL EDGE 600X150MN

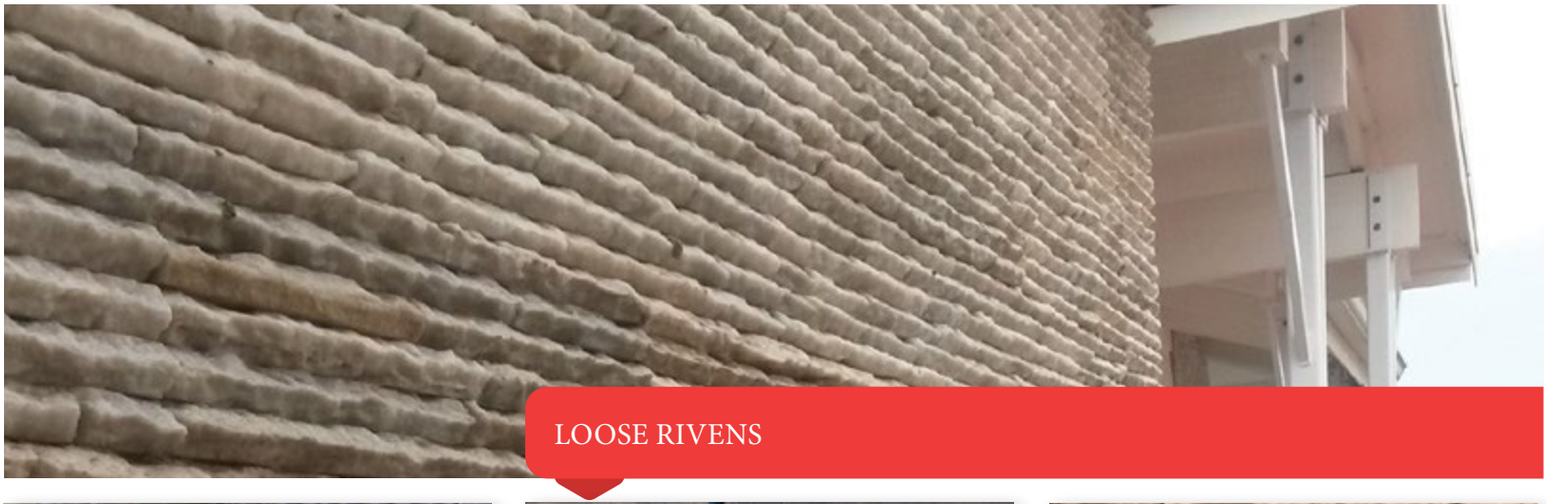
CHISEL EDGE & SANDSTONE CLADDING

LAVA BLACK CHISEL EDGE 600X150MN

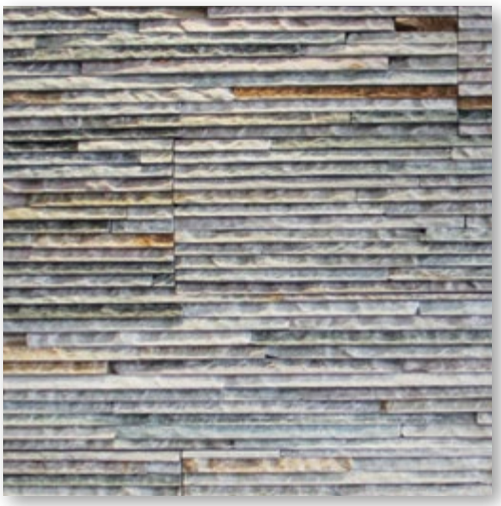
LEDGRE STONE | STONELO SANDSTONE

LEDGE STONE LIMESTONE CHARCOAL
150X600MM

LEDGE STONE MARBLE THASSOS WHITE
150X600MM



LOOSE RIVENS



LEDGE STONE QUARTZITE MOUNTAIN MIST
150X600MM

AFRICAN BLUE

CORAL RIVENS
400X40X12-15 MM

LOOSE RIVENS

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

CORAL TAPERED WEDGE
300X50X15-40 MM

COPPER QUARTZITE
400X40X12-18 MM

DESERT SAND

EGYPTIAN RAINBOW

GLACIER WHITE QUARTZITE

GREY QUARTZITE

LOOSE RIVENS

MIST GREY 300X50X20-60 MM

PELAROS 300X50X20-60 MM MM

SANDSTONE GOLDEN 400X40X12-40 MM

SILVER RIVER QUARTZITE
400X40X12-18 MM

SPICED GOLD SLATE
400X40X12-18 MM

THASSOS WHITE
300X60X20 MM

LOOSE RIVENS

LAVA STONE
400X40X15 MM

ANDESITE
400X40X12-40 MM

HONED CLADDING

GOLDEN HONED SANDSTONE
200X400X15 MM

HONED CLADDING

WHISPER GREY HONED
200X400 MM

BRUSHED CORAL QUAYSTONE
300X300 & 300X600

SPLIT CORAL QUAYSTONE
300X100 / 200X100 X 25 MM

QUARTZITE RANDOM CLADDING

QUARTZITE MONARCH GREY

64

QUARTZITE MONARCH IVORY

QUARTZITE MONARCH COPPER

QUARTZITE GLORIA STRIP WALLING

SLATE BLACK STRIP WALLING

SLATE RICH AUTUMN STRIP WALLING

QUARTZITE RANDOM CLADDING

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

AUTUMN SUNRISE

BLUE VALLEY

BUSHVELD

EARTH

LAVA BLACK

NAMIB GOLD

QUARTZITE RANDOM CLADDING

PICTURE STONE

WOOD RIVEN & CLADDING

RECYCLED TEAK 200X500 MM

PETRIFIED WOOD 160X310 MM

Rivens are pre-assembled for fast easy installation using proprietary brand tile adhesive. No grouting required ideal for both external and internal applications.

Recommended surface treatment for colour enhancement and ease of maintenance: S.Q.T. Sealer and S.Q.T. Dresser.

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

AVORIO SABBIA SANDSTONE

EGYPTIAN RAINBOW SANDSTONE

CORINTHIAN GOLD SANDSTONE

CREMA MARFIL 1510X1100X400MM
HZB0006

BIANCO CARRARA 1510X1100X400MM
HZB0001

CREMA JENBI 1500X1100X350MM
HZB0003

VERDE REGALLO MARBLE (ENRICA)

NERO MARQUINA MARBLE (ANGELO)

CREMA CALCARE MARBLE
1300X1120X300
HZB0007

MARBLE INLAY (WP-185)
1500X1500MM

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

MARBLE INLAY (WP-018)
1000X1000MM

MARBLE INLAY (WP-055)
1000X1000MM

MARBLE INLAY (WP-144)
1000X1000MM

MARBLE INLAY (WP-038)
1200X1200MM

MARBLE INLAY (WP-054)
1200X1200MM

MARBLE INLAY (WP-089)
1200X1200MM

MARBLE INLAY (WP-102)
1200X1200MM

MARBLE INLAY (WP-138)
1200X1200MM

MARBLE INLAY (WP-164)
1200X1200MM

MARBLE INLAY (WP-180)
1200X1200MM

MARBLE INLAY (WP-091)
1500X1500MM

MARBLE INLAY (WP-163)
1500X1500MM

MARBLE BORDERS, LISTELLO'S & DADO'S COLLECTION

CAPONE NERO MARQUINA
300X45MM

CESAR MARRON EMPERADOR
300X75MM

DELTA ROSSO VERONA
250X40MM

YOTA BARDIGLIO
300X50MM

ALPHA ROSSO NORVEGIA
300X40MM

KAPPA VERDA GUATAMALA
300X40MM

GRECO
300X70MM

DIANA CREMA EMPERADOR
300X100X10MM

ANTICATO
BOTTICINO
100X100MM

ANTICATO ROJO
ALICANTE
300X100X10MM

DIANA BIANCO NERO (ASSEMBLED)
300X90X10MM

DIANA BIANCO VERDE (ASSEMBLED)
300X90X10MM

FASCIA
300X130MM

ANTICATO
SORGENTE BLUE
300X100X10MM

TRECCIA BIANCO NERO (ASSEMBLED ON NETTING)
205X80MM

DELO ROSSO GIALLO (ASSEMBLED ON NETTING)
300X100X10MM

NASTRO FIOR DI PESCO (ASSEMBLED ON NETTING)
240X65MM

CUBO ROJO CREMA (ASSEMBLED)
300X100X10MM

SANTORO MARRON CREMA (ASSEMBLED)
300X100X10MM

ROPE VERDE MARRON (ASSEMBLED)
300X100X10MM

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

VINE MOSAIC (ASSEMBLED ON NETTING)
300X100 MM

ROJO ALICANTE MOSAIC BORDER
300X100X10MM

SORGENTE BLUE MOSAIC BORDER
300X100X10MM

SIERRE MADRE MOSAIC BORDER
300X100X10MM

BOTTICINO MOSAIC BORDER
300X100X10MM

TOZZETTI (MARBLE MOSAICS)

BANANAS
100X100MM

BERRY
100X100MM

APPLE
100X100MM

BUD
100X100MM

AVOCADO
100X100MM

CARROT
100X100MM

FIG
100X100MM

CHERRY
100X100MM

PEAR
100X100MM

FIG
100X100MM

ROSE
100X100MM

STRAWBERRY
100X100MM

ORANGE
100X100MM

GOOSEBERRIES
100X100MM

LEMON
100X100MM

MELON
100X100MM

GUAVA
100X100MM

FIORE ROSSO
(MARRON & VERDE)
100X100MM

SANDSTONE DESERT SAND (BULLNOSED) HONED
300X300X30MM | 400X400X30MM
300X600X30MM

SANDSTONE DESERT SAND (BULLNOSED) NATURAL
300X300X30MM | 400X400X30MM
300X600X30MM

SANDSTONE DUSTY WAY (BULLNOSED) HONED
300X300X30MM | 400X400X30MM
300X600X30MM

SANDSTONE DUSTY WAY (BULLNOSED)
300X300X30MM | 400X400X30MM
300X600X30MM

SANDSTONE AVORIO SABBIA (NATURAL & HONED)
300X600X30MM

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

MARBLE BATH CREAM 180

MARBLE BATH GREY 1800

MARBLE BATH BLACK 1800

MARBLE BATH BLACK 1800

MARBLE BATH WAVE BEIGE 1840

STONE BATH DELFI OVAL 1900

MARBLE BATH CREAM ROUND 1500

MARBLE BATH LAVA STONE 1800

MARBLE BATH NATURAL CREAM BT-NM

1ORNPERBATWHI

1ORNLUSBATWOO

1ORNPERBATBLA

MARBLE | ONYX | LAVA STONE BASINS

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

MARBLE BASIN BUSH-HAMMERED CREAM DN-D

ONYX BASIN CHISELED RED S110

MARBLE BASIN FOSSIL (PETRIFIED WOOD)

MARBLE BASIN FOSSIL (PETRIFIED WOOD)

MARBLE BASIN NATURAL CREAM (L)

MARBLE BASIN LAVA STONE - 002

MARBLE BASIN TRAVER TINO CLASSICO CHISELLED

MARBLE BASIN NATURAL CREAM

MARBLE BASIN NAPOLEON TIGRE CHISELLED

MARBLE BASIN EROSI ONYX

MARBLE BASIN NATURAL YELLOW

MARBLE BASIN VERDE ALPI CHISELLED

MARBLE | ONYX | LAVA STONE BASINS

SANDSTONE BASIN ITAH GOLD - 108

MARBLE BASIN ONYX TRAMONTO CHISELLED

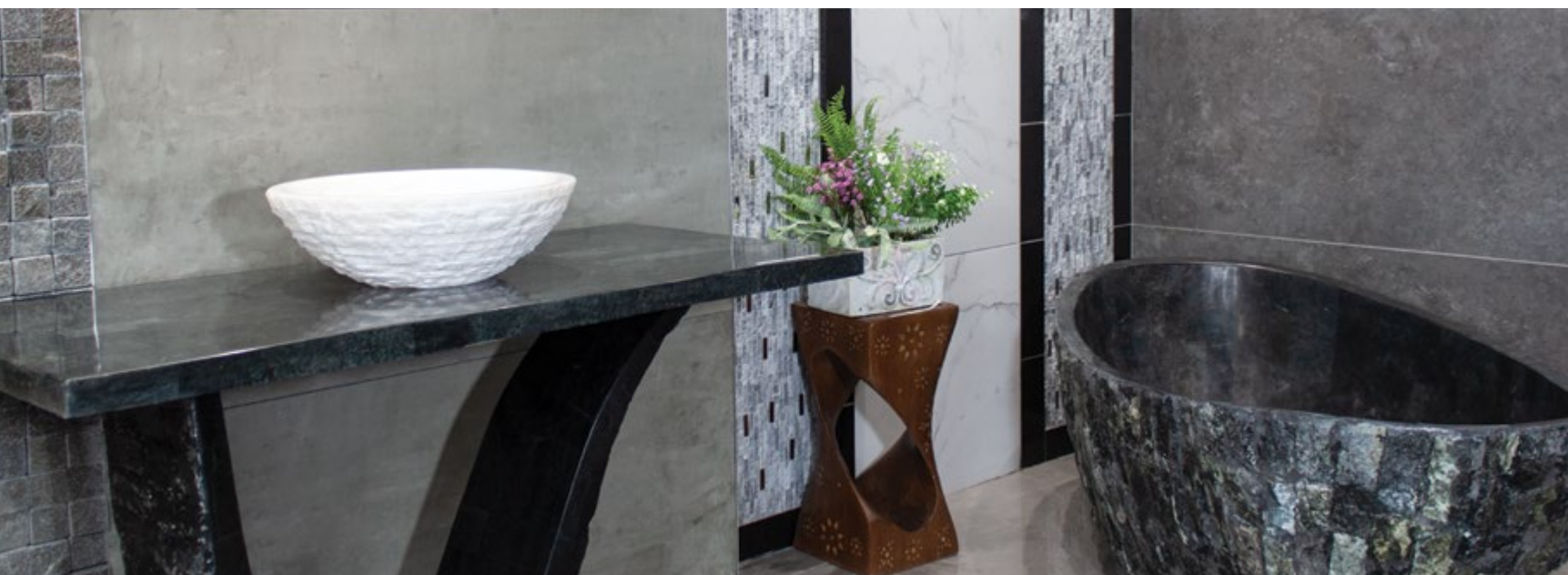
MARBLE BASIN NATURAL CREAM

MARBLE BASIN FOSSIL (PETRIFIED WOOD)

MARBLE BASIN MIRLIN GREEN 509

MARBLE BASIN MIRLIN GREY 509

MARBLE BASIN MIRLIN CREAM 509



MARBLE | ONYX | LAVA STONE BASINS

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

MARBLE BASIN ANULETUN BLACK

ONYX BASIN CHISELED RED S110

MARBLE BASIN ANTONIA BLACK

MARBLE BASIN ANTONIA CREAM

SANDSTONE BASIN GEMMA GREEN 501

SANDSTONE BASIN GEMMA GREEN 516

MARBLE BASIN TURIS BLACK

MARBLE BASIN TURIS CREAM

MARBLE BASIN ELABI CREAM BUSH + BLACK PO

MARBLE BASIN TINIDUS BLACK + CREAM

MARBLE BASIN ELABI BLACK BUSH + CREAM PO

MARBLE BASIN TINIDUS CREAM + BLACK

MARBLE | ONYX | LAVA STONE BASINS

MARBLE BASIN ZEN CREAM

MARBLE BASIN ZEN GREY

SANDSTONE BASIN ZEN GREEN

MARBLE BASIN ZEN BLACK

MARBLE BASIN SHELL ONYX

MARBLE BASIN SHELL BLACK

MARBLE BASIN EXTEMPLO BLACK
600X1600X120

MARBLE BASIN EXTEMPLO CREAM
600X1600X120

MARBLE | ONYX | LAVA STONE BASINS

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

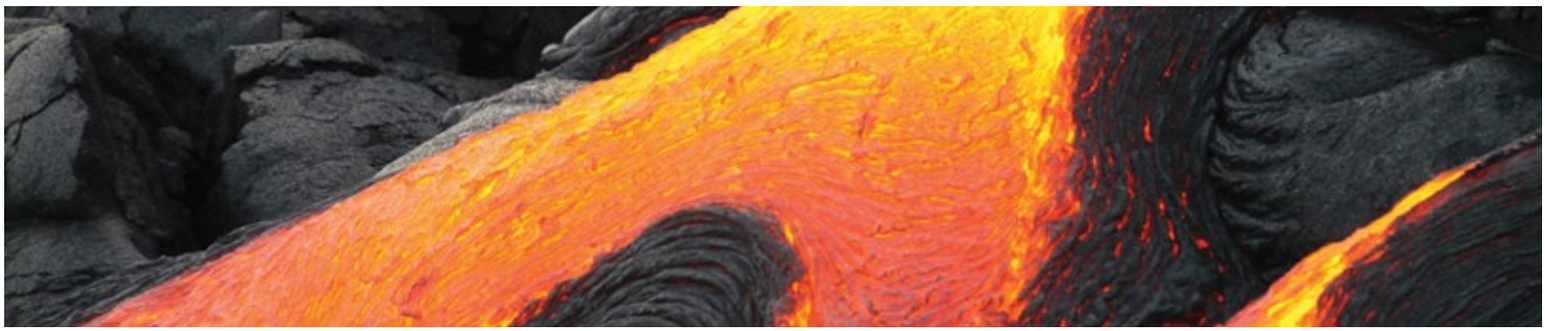
Top view

PETRIFIED WOOD PEDESTAL BASIN

MARBLE BASIN
PEDESTAL NATURAL CREAM (PN-M)

Top view

MARBLE BASIN
PEDESTAL LAVA STONE PN-S



MARBLE BASIN
PEDESTAL LAVA STONE 24

MARBLE BASIN
PEDESTAL ZEN BLACK

MARBLE PEDESTAL BASIN IPSE BLACK AND CREAM

NATURAL STONE FREE STANDING BASIN

Top view

MARBLE BASIN
PEDESTAL TWIST GREY | BEIGE | CREAM | BLACK

Side view

MARBLE BASIN
PEDESTAL SEVEN WHITE | BROWN | BLACK |ONYX

Top view

MARBLE PEDESTAL BASIN PUELLA
CREAM + BLACK | BLACK + CREAM

Top view

MARBLE BASIN DEVIA
CREAM | BLACK

MARBLE BASINS | BATH MATS

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

MARBLE BASIN
PEDESTAL CYLINDER RED & CREAM (K)

MARBLE BASIN PEDESTAL CYLINDER GREY, CREAM & BROWN (Y))

MARBLE BASIN
BUSH HAMMERED | GROOVED | CHISEL

CHAMPAGNE

BATH MATHS

PEBBLE WHITE BLACK FOOT
BATH MAT

PEBBLE WHITE BATH MAT

PEBBLE WHITE SLICED BATH MAT

PEBBLE BLACK BATH MAT

PEBBLE OCEAN BATH MAT

PEBBLE WHITE BATH MAT

VANITY TOPS | COFFEE TABLES

VANITY TOP + URANIE TABLE
BASE WOODSTONE

VANITY TOP SNOW WHITE + URANIE
TABLE BASE SMOKEY AGATE

VANITY TOP BLACK MARBLE +
NIKKI VANITY BASE BLACK

AUDRIS COFFEE TABLE BLACK

VANITY TOP SMOKEY AGATE + VANITY SHELL
TABLE BASE SNOW WHITE/SMOKEY AGATE

VANITY TOP SNOW WHITE + NIKKI VANITY
BASE SMOKEY AGATE

AUDRIS COFFEE TABLE WOODSTONE

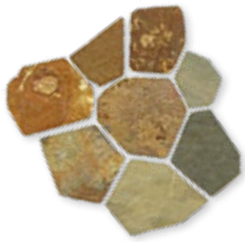
AUDRIS COFFEE TABLE SMOKEY AGATE

Due to the characteristics of Natural Stone, colour variation, veining and tonality variations, the images depicted herein are an indication guideline only. Please request samples before ordering.

Pre-assembled on interlocking mesh backing sheets, for ease of installation. Suitable for use on floors and walls, in internal and external applications. Applied to plastered walls and screeded floors using proprietary brand tile adhesive and coloured grouts.

Recommended surface treatment for colour enhancement and ease of maintenance: S.Q.T. Sealer and S.Q.T. Dresser

CHARCOAL (SANDSTONE)
500X500 MM



SAHARA SUNSET (SLATE)
500X500 MM

GRANITE BENCH MIDNIGHT MIST
AVAILABLE IN SIZES: 1300 X 300 X 500 MM

GRANITE BENCH BIANCO OSTRIKA
AVAILABLE IN SIZES: 1300 X 300 X 500 MM

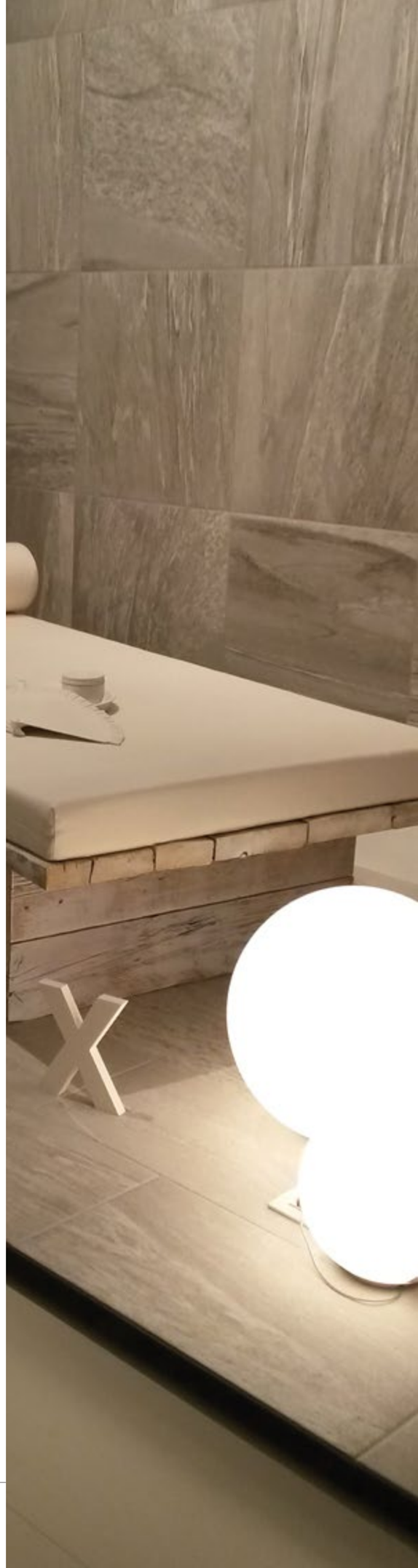
SANDSTONE BALLS
AVAILABLE IN SIZES:
200 / 300 / 400 AND 600 MM DIAMETER

SANDSTONE BENCH
AVAILABLE IN SIZES:1200 X 500 X 400 MM

SANDSTONE BENCH
AVAILABLE IN SIZES: 1200 X 500 X 400 MM

SANDSTONE BENCH
AVAILABLE IN SIZES: 1200 X 500 X 400 MM

NOTES



GUIDELINES FOR THE LAYING AND MAINTENANCE OF NATURAL MARBLE, GRANITE, SLATE, QUARTZITE, LIMESTONE AND SANDSTONE TILES

Congratulations on your decision to purchase natural stone floor and wall tiles. Once correctly laid and properly maintained, your natural stone tiles will last a lifetime, and still be a source of pride and joy, long after most synthetic manufactured tiles would require replacement having reached the end of their life span. Besides being more durable than most synthetic tiles, natural stone tiles are not subject to the fickle dictates of fashion as their beauty is timeless.

1) Storage prior to use

All Natural stone tiles should be stored undercover, to prevent soiling. It is also recommended that sufficient tiles are purchased to not only cover the area to be tiled, but also to retain a small quantity of extra reserves for the possible future repairs, as similar matching tiles may not be available in the future due to the depletion of natural reserves of a specific shade/colour.

2) Selection prior to laying

Please check the tonality variation inherent in the natural tiles you have purchased before Actual laying commences by removing a few tiles from several boxes to determine whether a random mix of the natural variations would be preferable to a complete selection where all the tiles are laid out loose prior to fixing to facilitate re-arrangement, to obtain the desired "flow" in terms of veining and/or texture and shade variation.

3) Laying

3.1 Granite tiles : Smaller size "modular" granite tiles are usually calibrated to an even thickness and bevelled on the edges to facilitate installation. Larger sized granite tiles are subject to some thickness variation, since they are not calibrated. Good quality proprietary brand cementitious tile adhesives and grouts should be used, following manufacturers instructions. The methodology would be similar to that used for ceramic tiles, including expansion joints and other technical details. Work cleanly ensuring excess adhesive and grout is cleared off tile surfaces immediately before they dry. Do not use felt tip pens or other water soluble ink pens to mark the backs of tiles. The moisture hydration process of the adhesives cause these inks to be drawn to the surface of the tiles, manifesting in "stains" on the tile surface. (see maintenance of marble tiles further on). While granite tiles are usually manufactured to accurate tolerances with regard to size, which would allow for butt jointing, this method of laying is not recommended and a joint width of 1 mm to 2 mm is advisable to prevent "creeping" (due to minor variations in tile size) and lifting of tiles at later stages due to differences in coefficients of expansion and contraction between the tile and the substrate.

3.2 Marble tiles: All that has been stated above with regard to granite tiles applies to marble tiles as well. However - only two additional points need be noted: Sometimes moisture sensitive in that they could buckle or warp marginally when in contact with the water in cementitious tile adhesives. We suggest you test the sensitivity to water of your batch of Green Marble Tiles by immersing a tile partially in water for an hour. If it is not stable, either use an epoxy adhesive system or test the use of a bonding liquid applied to the back of the tiles, and allowed to dry before laying into a normal cementitious adhesive.

3.3 Slate, Quartzite, Limestone and Sandstone tiles : These natural material tiles are produced by extracting the tile material from the quarry along the natural cleft plain. This results in the thickness of the tiles varying as the natural cleft plains are not consistent. While the tiles are cut to size accurately with a tolerance of +- 1.5 mm, the thickness can vary from +- 6 mm to 18 mm. The tiles are selected into batches of similar thicknesses with variations of +- 4 mm to facilitate laying. These tiles should be laid into a thick bed cementitious powder adhesive to accommodate the variation in thicknesses. Once laid, the top surfaces of the tiles will be perfectly level, with the adhesive accommodating the thickness variations. Prior to grouting, we suggestion the tiles be sealed with S.Q.T. Sealer, to prevent the tile absorbing grout which could be difficult to remove. After grouting, the tiles should be cleaned and then re-sealed or alternatively "dressed" with S.Q.T. Dresser. S.Q.T. Terrazzo Sealer is also recommended when a greater degree of colour enhancement is desired. Joint widths should be 4 mm to 8 mm to accommodate the miner variation in tile sizes. Use proprietary brand floor tile grout following the manufacturers instructions. Certain slates and quartzites (e.g. Glitter Quartzite) do sometimes have a small percentage of tiles in a batch that appear to have a "loose" layer or "loose" particles on the surface. This is quiet normal and this "loose" material should be removed the day after laying, before cleaning and sealing of the tiles, by brushing with a stiff bristle brush or scraping with a paint scraper. No damage will be caused by this. Once the "loose" material is removed, a firmly bonded layer of material will be exposed.

4) Maintenance

Natural Stone tiles are usually a sizeable investment in any building and it therefore makes good service to maintain them correctly to prevent sometimes irreparable harm, or damage that is costly to repair, when incorrect maintenance techniques are attempted.

Please read this section carefully before you attempt any cleaning or maintenance. The correct maintenance procedures are very simple and not expensive.

Installation of a "walk off matt" at building entrances is recommended to arrest the ingress of abrasive dirt underfoot which could cause harm to your natural stone floor and would undoubtedly decrease maintenance requirements.

4.1 Granite tiles : Natural granite tiles are very hard wearing and require minimal maintenance. We suggest the use of S.Q.T. Tile Cleaner on both polished and flamed tiles for routine cleaning. (S.Q.T. Tile Cleaner is available from your natural stone tile distributor, and is specially formulated as an effective neutral (PH7 balanced) detergent that will not harm natural materials). As a general rule, do not use acids or acid based cleaners to maintain any natural material. It is advisable to consider applying S.Q.T. Stain Ban to all natural stone surfaces. S.Q.T. Stain Ban is designed to penetrate below the surface of the natural stone, bonding to the stone and coating the individual minerals below the surface of the stone. Water, oil and dirt are restricted from entering the natural stone, yet it allows the stone to "breath" . If certain natural stones are completely "sealed" to the extent that they cannot "breathe", especially externally, this can cause surface spalling or the formation of surface stains as vapours are prevented from escaping through the stone surface. Flamed granite tiles can be sealed for in ternal areas with S.Q.T. Tile Sealer, or if it is desired to bring out the natural colours of the material, with S.Q.T. Terrazzo Sealer. However polished granite tiles require no sealing, and only regular routine maintenance is needed in the form of sweeping to remove dust particles and washing with S.Q.T. Tile Cleaner. Impregnation with S.Q.T. Stain Ban is recommended.

GUIDELINES FOR THE LAYING AND MAINTENANCE OF NATURAL MARBLE, GRANITE, SLATE, QUARTZITE, LIMESTONE AND SANDSTONE TILES

4.2 Marble tiles : If properly cared for, marble tiles will offer generations of use and look elegant throughout this period. Only S.Q.T. Tile Cleaner should be used for routine maintance after regular sweeping to remove loose dust and abrasive dirt. (S.Q.T. Tile Cleaner is available from your natural stone tile distributor). Do not use scouring cleaners, acid based detergents or ammonia based cleaners, or any other type of detergent that could harm natural marble. Mop up any spillages of red wine, vinegar, lemon/orange juice, coke, tomato sauce or any other similar substances as soon as possible.

It is possible to use S.Q.T. Poultice to remove most stains. (Please request separate detailed instructions from your marble distributor). Etched or corroded surface areas can be re-polished to restore its original shine using S.Q.T. Polishing Powders. However this usually requires specialized knowledge and equipment, please consult Union Tiles for further details. S.Q.T. Stain Ban can also be used to render the surface oil and water resistant, and so less likely to absorb any type of stain. This impregnator will slow down the absorption rate of oils and staining by water based products allowing time to mop up the spillage before it is absorbed by the stone surface.

It will not render the stone surface totally oil and water repellent. (see comments on “Stain Ban” under the heading of Granite Maintenance).

We do not advise the use of the re-crystallization (also known as vitrification) process to restore or maintain marble floors. This is undertaken using steel wool in combination with a pink or cream coloured fluid. It is an acid based system that causes permanent damage to marble by causing long term corrosion of the material surface, as the molecular structure of the surface of the marble is altered.

4.3 Slate, Quartzite, Limestone and Sandstone Tiles : These materials, while exceptionally beautiful, are relatively porous, and must therefore be protected from staining and permanent soiling. As a general rule, do not use acids or acid based detergents to clean these natural products. It is recommended that these materials be sealed (with one or two coats of S.Q.T. Sealer - available from your natural stone tile distributor) and thereafter top dressed (with S.Q.T. Tile Dresser - available from your natural stone tile distributor), the dresser protects the sealer and enhances the natural tones and colours in the natural material. One coat of S.Q.T. Dresser produces a faint lustre while additional coats progress this through a greater sheen to a high gloss. S.Q.T. Terrazzo Sealer is also recommended when a greater degree of colour enhancement is desired. (it goes without saying that these natural stone tiles should be thoroughly cleaned before sealing and dressing, otherwise dirt will simply be sealed into surface). After initial sealing and dressing, maintain the tiles as described above for marble tiles, with S.Q.T. Tile Cleaner. Occasional re-dressing with S.Q.T. Tile Dresser may be necessary in high traffic areas.

Please contact the technical department at Union Tiles for any further advice or specific problem solving.

STONE CARE

S.Q.T. STONE CARE RANGE

A range of S.Q.T. Stone Care products are available to clean, maintain, strip, dress or seal your natural stone. Cleaners for the cleaning of grouts, ceramic, cement, terrazzo, natural stone and quarry tiles. Sealers for a variety of surfaces from wood to quarry, cement and natural products. Sealers are necessary to decrease porosity, prevent stains and make for easier cleaning. Dressers for these tiles are also available to give the tiles a highly polished look. We also offer a stripper for our terrazzo sealer.

S.Q.T. STAIN BAN - an anti-stain impregnator for natural stone surfaces:

STAIN BAN penetrates below the surface of the stone and acts as a repellent to restrict oil, water and stains from entering the stone and facilitates cleaning and maintenance programmes, yet it allows the natural stone to “breath”, and does not alter the natural look of the stone. It is ideal for the protection of hard stones such as marble, granite, limestone and other similar natural stones, be they polished ; honed ; flamed ; or otherwise dressed.

S.Q.T. POULTICE POWDER

A stain removal medium for natural stone floors, it is an absorbent material applied to a surface to draw out a stain from natural stone.

S.Q.T. NATURAL STONE DETERGENT

For light; general type stains; or as a first option in removing unidentifiable stains. It is an effective, safe, bio-degradable specially formulated neutral detergent for cleaning all natural stone surfaces without harming the stone.

S.Q.T. POULTICE SOLVENT

Is a clear solvent for removing a wide variety of stains from natural Stone surfaces in conjunction with S.Q.T. POULTICE POWDER. A stain removal medium for protection against sweets; glue; paint; rubber; ice cream; medicine; leather dye; lipstick; skin lotion; nail polish; oil paint; paper and wood stains; perfume; perspiration; ink-crayon-pencil; make-up; smoke; soot; soap; soya or worcester sauce; tar; oil; grease; etc...

S.Q.T. STAIN REMOVER

Is an effective remover of a wide variety of stains, except for the removal of rust stains - for which S.Q.T. RUST REMOVER must be used. A stain removal medium for protection against egg; tea; coffee; copper; chocolate; carpet backing; blood burns; beer; fruit juice; grass-vegetation; chocolate ice-cream; food colouring; make-up; mildew - plants; milk; clay; mustard; pet stains; shoe polish; coke; food; sugar; wine; tomato; urine; etc...

S.Q.T. STONE CLEAN

Is a non acidic cleaner for removing obstinate soiling; mortar and grout and acid stains from natural stone surfaces. Do not use for the removal of mustard stains - it will make the stain worse. Use for grout; mortar and acidic stains.

S.Q.T. RUST REMOVER FOR MARBLE

Is a specially formulated acid based chemical for removing rust stains from Marble and other similar types of stone surfaces. Do not use S.Q.T. STAIN REMOVER for the removal of rust - it will make the stain worse.

S.Q.T. RUST REMOVER FOR GRANITE

Is a specially formulated acid based chemical for removing rust stains from Granite and other similar types of stone surfaces. Do not use S.Q.T. STAIN REMOVER for the removal of rust - it will make the stain worse.

S.Q.T. POLISHING POWDER FOR MARBLE

Is a powder compound for touching up and re-polishing etched areas of polished or honed marble and other similar types of stone surfaces.

S.Q.T. STONE CARE RANGE

S.Q.T. POLISHING POWDER FOR GRANITE

Is a powder compound for touching up and re-polishing etched areas of polished or honed granite and other similar types of stone surfaces.

S.Q.T. TILE SEALER

A colourless surface-impregnating tile sealant for interior use. To be used in conjunction with S.Q.T. TILE DRESSER to provide an anti-slip, self-shining, wear-resistant finish that enhances the natural beauty of various types of tiles, while protecting against staining and soiling, and facilitating maintenance.

S.Q.T. TILE DRESSER

A colourless surface dresser for top coating of surfaces that have been sealed with S.Q.T. TILE SEALER. Provides an anti-slip, self-shining, wear-resistant finish that enhances the natural beauty of various types of tiles; protects against staining, soiling, black scuff marks and facilitates maintenance.

TERRAZZO & CEMENT CLEANER

A concentrated, safe to use cleaner for removing concrete stains, oils, excess cement and mortar, and persistent general soiling that cannot be removed with S.Q.T. TILE CLEANER.

S.Q.T. UNION SEALER

Is a clear, fast drying, non-discolouring, long-lasting sealer, specifically manufactured for outdoor use, enhances colours and provides protection against staining, corrosion, soiling and mild acid and chemical attacks on both indoor and outdoor surfaces. It may also be used as a waterproofer or sealer on a variety of products, including concrete, plaster, masonry work, brickwork, paving, metal and wood.

SOLVENT STRIPPER:

To dilute the sealer for spraying, for cleaning tools or removing sealer, the solvent is TOLUOL.

STONE STICK PASTE

STONE STICK is a two part system: Paste and Catalyst. A high performance, specially formulated, advanced adhesive for bonding stone in the masonry trade.

STONE STICK CATALYST

(for use with STONE STICK paste) To initiate the curing process of STONE STICK bonding paste.

Example of a Sealed vs. Non-Sealed tile
Sandstone Dusty Way

Sealed Not Sealed

S.Q.T. Stone Care Range

EUROPEAN STANDARD **EN 12057**

October 2004 ICS 91.100.15 .
English version

Natural stone products - Modular tiles - Requirements

This European Standard was approved by CEN on 9 July 2004.

EUROPEAN COMMITTEE FOR STANDARDIZATION COMITE EUROPEEN DE NORMALISATION EUROPAISCHES KOMITEE FOR NORMUNG

Management Centre: rue de Stassart, 36 B-1050 Brussels

CONTENTS

FOREWORD

This document (EN 12057:2004) has been prepared by Technical Committee GEN/TC 246 "Natural stones", the secretariat of which is held by UNI.

This European Standard shall be given the status of a national standard, either by publication of, an identical text or by endorsement, at the latest by April 2005, and conflicting national standards shall be withdrawn at the latest by July 2006.

This document has been prepared under a mandate given to GEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For relationship with EU Directive(s), see informative Annexes ZA and ZB, which are an integral part of this document

This document is one of a series of standards for specifications of natural stone products which includes the following:

EN 1467	Natural stone - Rough blocks - Requirements
EN 1468	Natural stone - Rough slabs - Requirements
prEN 1469	Natural stone products - Slabs for cladding - Requirements
EN 12057	Natural stone products - Modular tiles - Requirements
EN 12058	Natural stone products - Slabs for floors and stairs - Requirements
prEN 12059	Natural stone products - Dimensional stone work - Requirements

Other standards on natural stones are produced by:

GEN/TC 178	Paving units and kerbs
EN 1341	Slabs of natural stone for external paving - Requirements and test methods
EN 1342	Setts of natural stone for external paving - Requirements and test methods
EN 1343	Kerbs of natural stone for external paving - Requirements and test methods
GEN/TC 128	Roof covering products for discontinuous laying and products for wall cladding
EN 12326-1	Slate and stone products for discontinuous roofing and cladding - Part 1: Product specification
EN 12326-2	Slate and stone products for discontinuous roofing and cladding - Part 2: Methods of test
GEN/TC 125	Masonry
EN 771-6	Specification for masonry units - Part 6: Natural stone masonry units

Other standards are relevant to aggregates for concrete, roads, railways and armourstone (under study within GEN/TC 154).

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

1 SCOPE

This document specifies requirements for flat modular tiles of natural stone which are made for use as flooring, stairs, cladding and ceiling finishes. It does not cover mineral aggregates and artificial agglomerated stone material and does not cover installation.

2 NORMATIVE REFERENCES

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 1925	Natural stone test methods - Determination of water absorption coefficient by capillarity
EN 1936	Natural stone test method - Determination of real density and apparent density, and of total and open porosity
EN 12371	Natural stone test methods - Determination of frost resistance
EN 12372	Natural stone test methods - Determination of flexural strength under concentrated load
EN 12407	Natural stone test methods - Petrographic examination
EN 12440	Natural stone - Denomination criteria
EN 12524	Building materials and products - Hygrothermal properties Tabulated design values
EN 12670:2001	Natural stone - Terminology
EN 13161	Natural stone test methods - Determination of flexural strength under constant moment
EN 13373	Natural stone test methods - Determination of geometric characteristics on units
EN 13501-1	Fire classification of construction products and building elements - Part 1: Classification using test data from reaction to fire tests
EN 13755	Natural stone test methods - Determination of water absorption at atmospheric pressure
EN 14066	Natural stone test methods - Determination of resistance to ageing by thermal shock
EN 14157	Natural stone test methods - Determination of the abrasion resistance
EN 14231	Natural stone test methods - Determination of the slip resistance by means of the pendulum tester
EN ISO 12572	Hygrothermal performance of building materials and products - Determination of water vapour transmission properties (ISO 12572:2001)

Note: Besides the documents for test methods mentioned in Clause 2 there exist further standards which can be used for scientific examinations, but which are not relevant for the application in practice according to this standard.

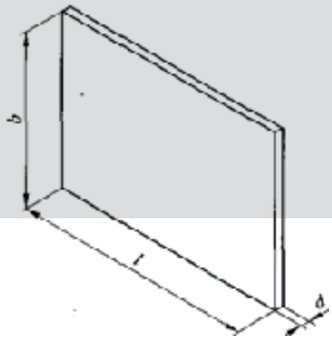
3 TERMS AND DEFINITIONS

For the purpose of this document, the terms and definitions in given in EN 12670:2001 and the following apply.

3.1 **modular tile**: Flat piece of natural stone square or rectangular in standard sizes, normally ,::610 mm obtained by cutting or splitting at a nominal thickness ,::12 mm.

3.2 **dimensions of modular tiles**: Length /, width b and thickness d are the dimensions of a modular tile. The dimensions are given in the stated sequence in millimetres (see Figure 1).

figure Dimensions of a modular tile



4 REQUIREMENTS

4.1 Requirements for geometric characteristics

4.1.1 General

All measurements shall be carried out in accordance with EN 13373 and all measured values of individual units shall fall within the required tolerances.

4.1.2 Requirements for dimensions, flatness and squareness

The tolerances for sizes, flatness and squareness shall be as given in Table 1. Table 1 is not valid for modular tiles having natural cleft/riven faces, for which tolerances on dimensions, flatness or squareness shall be declared by the manufacturer.

table 2 — Tolerances on dimensions and shape

Property		Tolerances on dimensions and shape	
		Not calibrated tiles	Calibrated tiles[a]
Dimensions	L,b	± 1 mm	± 0,5 mm
	d	± 1,5 mm	± 0,5 mm
Flatness (for honed and polished surface only)		0,15%	0,10%
Squareness		0,15%	0,10%

[a] Calibrated tiles indicate a product submitted to specific mechanical finishing in order to obtain more precise dimensions; they are suitable to be fixed by thin mortar bed or adhesives.

4.1.3 Requirements for surface finish

4.1.3.1 General

Surface finishes shall extend uniformly to the edges of the modular tiles. The surface finishing of some types of stones may typically involve the use of patching, fillers or other similar products for natural holes, faults or cracks; this is to be considered as part of the normal processing. In such cases the type of treatment as well as the type and nature of additional materials shall be declared.

4.1.3.2 Requirements for surfaces after surface finishing

Surfaces shall be worked to achieve the specified finish and shall have a regular appearance as a result of the finishing process (e.g. making reference to samples, see 4.2.3).

Note 1 Surfaces obtained by grinding are, for example: rough ground surfaces obtained, e.g. by means of a grinding disk of grain size F 60; medium ground surfaces obtained, e.g. by means of a grinding disk of grain size F 120; fine ground surfaces obtained, e.g. by means of a grinding disk of grain size F 220; matt finished surfaces obtained, e.g. by means of a grinding disk with grain size F 400; highly polished surfaces obtained, e.g. by means of a polishing disk or felt.

Note 2 Surfaces obtained by means of percussion tools are, for example: bush hammered surfaces (see EN 12670:2001, 2.3.8)'; trimmed surfaces: finish obtained by using pointed chisel and mallet or a grooving machine; striated surfaces: finish obtained by using a claw chisel (percussion tool for roughening a surface, with the cutting edge consisting of several teeth of various size) or a ruling machine.

Note 3 Surfaces obtained by other finishing operations are, for example: flamed finish (see EN 12670:2001, 2.3.22)"; sand blasted finish (see EN 12670:2001, 2.3.46)'"; water jet streamed finish: a matt textured surface finish, accomplished by exposing the surface to a jet of water under pressure; machine tooled finish (see EN 12670:2001, 2.3.54)""; riven cut finish: rugged surface produced by splitting stone with a guillotine or chisel.
finish obtained by using a bush hammer (percussion tool for roughening a surface, with a square head and with few pyramidal percussion teeth or points) or a bush hammering machine (machine consisting of feed rolls and a overhanging beam, supporting a pneumatic bush hammer). surface texture obtained by thermal treatment of the stone using a high temperature flame. a matt finishing resulting from the impact of sand or other abrasive grains expelled by a sand jet.

"" this term has two different meanings:

1) finish resulting from a mechanical surface treatment with tools;
2) dressed finish clearly showing tool marks.

4.2 Requirements of natural stone for modular tiles

4.2.1 General

Due to natural variations of the stone materials, deviations from the declared values may occur.

Whenever stone processing is likely to change the characteristics of the raw material (e.g. as a consequence of the type of processing or because the use of patching, fillers or other similar products for natural holes, faults, cracks and similar), then this has to be considered when determining the characteristics requested by this document. The following characteristics shall be declared where requested by this document or with reference to the use conditions.

4.2.2 Denomination

The denomination shall always be declared in accordance with EN 12440 (meaning traditional name, petrological family, typical colour and place of origin). The petrographic name shall be declared in accordance with EN 12407.

4.2.3 Visual appearance

4.2.3.1 General

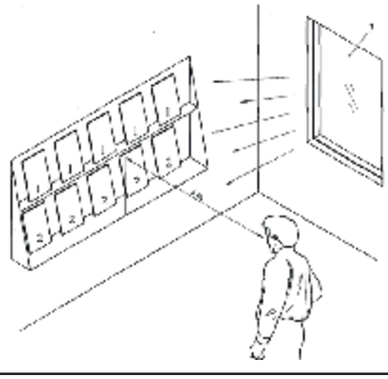
This characteristic shall always be declared.
The colour, veining, texture, etc. of the stone shall be identified visually, typically by a reference sample of the same stone suitable for providing a general description of visual appearance. The reference sample shall be provided by the supplier.

4.2.3.2 Reference sample, visual inspection and acceptance criteria

A reference sample shall be an adequate number of pieces of natural stone of sufficient size to indicate the general appearance of the finished work. The dimensions of individual pieces shall be at least 0,01 square metres (typical values are between 0,01 and 0,25 square metres in face area but may be more), and shall indicate the range of appearance regarding the colouring, the vein pattern, the physical structure and the surface finish. In particular the r eference sample shall show specific characteristics of the stone, such as holes for travertine, worm holes for marble, glass seams, spots, crystalline veins.
The reference sample does not imply strict uniformity between the sample itself and the actual supply; natural variations may always occur. If the processing of the stone involves the use of patching, fillers or other similar products for natural holes, faults or cracks, then the reference sample shall similarly display the impact of the same on the finished surface. All the characteristics as shown by the reference sample shall be considered typical of the stone and not as flaws, therefore they shall not become a reason for rejection, unless their concentration becomes excessive and the typical character of the stone is lost. The name and address of the producer or the supplier, as well as the denomination of the stone in accordance with 4.2.2 above, shall be indicated on the reference sample.
Any comparison between production sample and reference sample shall be carried out by placing the reference sample against the production sample and viewing them at a distance of about two metres under normal daylight conditions and recording any visible differences in the characteristics of the stones (see Figure 2).

figure 2 — **Comparison between production sample and reference sample**

Key
1 Reference sample
2 Production sample
3 Daylight



4.2.4 Flexural strength

This characteristic shall always be declared.

The flexural strength shall be determined using the test method in EN 12372 or EN 13161 and the mean value, lower expected value and standard deviation shall be declared.

Note: An identification test as defined in EN 12372 or EN 13161 is usually carried out for the purpose of CE marking. However, where the surface finish of the delivered product is known, the test may be carried out with this finish, in accordance with the technological tests defined in EN 12372 or EN 13161.

4.2.5 **Bond strength adhesion**

This characteristic is within the responsibility of the person in charge of the execution of the tiling. The value of the bond strength adhesion depends on the condition of the layer, the type of adhesive/mortar and the surface finish of the back face. The person responsible shall refer to existing national codes of practice.

4.2.6 **Water absorption at atmospheric pressure**

This characteristic shall always be declared.

The water absorption shall be determined using the test method in EN 13755 and the. Results expressed accordingly.

4.2.7 **Reaction to fire**

This characteristic shall always be declared.

Natural stones are considered reaction to fire Class A1 following Commission Decision 96/603/EC, as amended, with the following exceptions:

Natural stones containing asphalt at greater than 1% by mass or volume, whichever is the more onerous, and having a final use subject to fire regulation, shall be tested for reaction to fire and classified in accordance with EN 13501-1.

Whenever processing of natural stones involves the use of organic patching, fillers or other similar products for natural holes, faults, cracks or similar, at greater than 1% by mass or volume, whichever is the more onerous and the same stones have a final use subject to fire regulation, then they shall be tested for reaction to fire and classified in accordance with EN 13501-1.

4.2.8 **Water absorption by capillarity**

This characteristic shall be declared upon request, for example when the tile is to be used for elements in contact with a horizontal surface where water may be present.

The water absorption by capillarity shall be determined using the test method in EN 1925 and the results expressed accordingly. For stone having an open porosity less than 1,0% this test shall not be performed.

4.2.9 **Apparent density and open porosity**

This characteristic shall always be declared.

The apparent density and open porosity shall be determined using the test method in EN 1936 and the results expressed accordingly.

4.2.10 **Frost resistance**

This characteristic shall be declared where subject to regulatory requirements.

The frost resistance shall be determined using the test method in EN 12371 and the results expressed:

As the change in mean flexural strength after 48 cycles of freeze/thaw for flooring and after 12 cycles of freeze/thaw for wall finishes; or as the number of cycles necessary to initiate cracks, rupture, etc.

When the tiles are to be used in an area considered not subjected to freeze/thaw cycles, the resistance shall be recorded as "No performance determined" (NPD).

For some specific uses it may be appropriate to use different test cycles, for example freezing in water, freezing to a lower temperature, or testing specimens embedded in non-porous siliceous granules or a different number of cycles. In these cases national specification standards may be followed but these variations shall be clearly stated in the test report and in the product marking.

Note 1 The selection of the stone is subjected to climatic zone and/or to codes of practice.

Note 2 When the mean value of flexural strength decreases by less than 20%, this should not be considered as significant because of the variability of natural stone.

Note 3 The frost damage which a stone may suffer when installed in a building will depend on the climatic conditions of the place of use, the relative position in the building (which determines the degree of saturation) and the predicted service life of the building. Consequently, each country may feel it appropriate to introduce in the document a national informative Annex that may be used to determine the number of the freeze-thaw cycles to be carried out in the laboratory for a technological test. This number of cycles will be appropriate to a specific project and will help to provide guidance for the interpretation of the test results.

4.2.11 Thermal shock resistance

This characteristic shall be declared where subject to regulatory requirements. The resistance to thermal cycles shall be determined using the test method in EN 14066 and the changes both in mass and in dynamic modulus of elasticity expressed accordingly. When the tiles are to be used in areas not subjected to critical thermal cycles, the resistance shall be recorded as "No performance determined" (NPD).

4.2.12 Water vapour permeability

This characteristic shall be declared upon request, when the tile is to be used in a location subject to vapour control requirements and fixed by means of mortar or adhesives.

The permeability shall be given by making reference to tabulated values in EN 12524.

4.2.13 Abrasion resistance

This characteristic shall be declared, for tiles for flooring and stairs only, when subject to regulatory requirements or upon request. The abrasion resistance shall be determined using the test method in EN 14157 and the results expressed accordingly.

4.2.14 Slip resistance

This characteristic shall be declared, for tiles for flooring and stairs only, where subject to regulatory requirements or upon request and when the roughness of the surface is less than 1 mm measured following EN 13373.

The slip resistance shall be determined using test methods in EN 14231 and the results expressed accordingly.

Whenever results indicate an insufficient slip resistance of tiles for stairs, then adequate provisions shall be adopted in order to improve this parameter. This may be achieved by mechanical reworking of the surface, or by inserting anti-slip products e.g. rubber profiles, carborundum strips, metal bars or similar.

4.2.15 Tactility

This characteristic shall be declared, for tiles for flooring and stairs only, where subject to regulatory requirements or upon request. The tactility is expressed by a description of surface corrugation obtained by mechanical finishes.

Note: CEN/TC 178 is drafting a document on requirements for tactile paving surface indicators. The last version of this draft standard can be found in document "CEN/TC 178/WG 5 N29 - Specification for tactile paving surface indicators" dated 30th November 2003.

5 MARKING AND PACKAGING

As a minimum of identification, each consignment shall carry the following indications:

a) denomination of the natural stone, in accordance with EN 12440;

b) quantities and dimensions of the modular tiles.

Additional information is advisable:

c) mass of the modular tiles;

d) dimensions and mass of packaging.

These indications shall be given on labels, packaging or on accompanying documents. The modular tiles packaging shall allow adequate, solid and durable protection for packed tiles, both during transport and during handling and storage. Movement of tiles inside the packaging has to be prevented. The modular tiles shall be clean before packaging. Packaging and tapes which are likely to stain shall not be used.
Sensitive polished surfaces shall be protected by appropriate means (e.g. plastic foil). Products with caustic properties shall not be used.

6 EVALUATION OF CONFORMITY AND FACTORY PRODUCTION CONTROL

6.1 General rules

The compliance with the requirements of this document and with the stated values or classes of reaction to fire shall be demonstrated by carrying out initial type testing. Additionally the manufacturer shall exercise a permanent factory production control (FPC) and keep record of the results at least until the next control.
Declared values shall be representative of the current production.

6.2 Initial type testing

Initial type testing of a natural stone tile, as given in Table 2, shall be carried out on:

first application of this document or at the beginning of the production of a new type of stone;
when significant variations occur in the material, determined visually or by significant changes in FPC results.

Tests previously performed in accordance with the provisions of this document (same type of stone, same characteristic measured with the same test method, same sampling procedure and system of attestation of conformity) may be taken into account.
The declared values may be supported by a test report supplied with the block or raw slabs, provided that the tests have been performed according to the requirements and test methods of this document.
The results of the selected tests shall be expressed as referred to in 4.2.

table 2 **List of properties of modular tiles for initial type testing**

Reference to Clause for applicability[a]	Properties/characteristics	Test method in accordance with
4.2.2	Petrographic description .	EN 12407
4.2.3	Visual appearance	Visual
4.2.4	Flexural strength	EN 12372 or EN 13161
4.2.5	(void)	(void)
42.6	Water absorption at atmospheric pressure Reaction to fire (only where testing is required) Water absorption by capillarity	EN 13755
4.2.7		EN 13501-1
4.2.8		EN 1925
4.2.9	Apparent density and open porosity	EN 1936
4.2.10	Frost resistance	EN 12371
4.2.11	Thermal shock resistance	EN 14066
4.2.12	Water vapour permeability	EN 12524 and/or EN ISO 12572
4.2.13	Abrasion resistance	EN 14157
4.2.14	Slip resistance	EN 14231
4.2.15	Tactility	visual
a) Reference shall be made to these Clauses in order to decide which characteristics needed to be declared.		

6.3 Factory production Control

6.3.1 A factory production control system (FPC) shall be established and documented. The factory production control system shall consist of procedures for the internal control of production. The results of the tests carried out during FPC shall demonstrate that products placed on the market conform to this document and with the manufacturer's declared values or classes in accordance with 4.1 and 4.2.
In cases when the processing of the stone is likely to change the characteristics of the finished product relative to the initial material (e.g. as a consequence of the type of processing or because the use of patching, fillers or other similar products for natural holes, faults, cracks and similar), then this has to be considered within FPC as requested by this document.

6.3.2 The internal control shall consist of regular inspection checks and tests and the utilisation of the results to control incoming materials, equipment, the production process and the finished product.

6.3.3 The tests and inspection checks shall be in accordance with Table 3. The results of the tests carried out during FPC shall demonstrate the conformity to the requirements declared in accordance with 4.1 and 4.2.

table 3 **Control frequency for factory production control**

Reference to Clause for applicability[a]	Characteristics	Control frequency	Test method in accordance with
4.1	Geometrical characteristics	Every production	EN 13373
4.2.3	Visual appearance		Visual
4.2.4	Flexural Strength[d]	In accordance with the FPC system but at least every 2 years	EN 12372 o EN 13161
4.2.6	Water absorption at atmospheric pressure[d]		EN 13755
And/or	And/or		And/or
4.2.9	Apparent density and open porosity[d]		EN 1936
4.2.2	Petrographic examination[d]	In accordance with the FPC system but at least every 10 years	EN 12407
4.2.7	Reaction to fire[d]		EN 13501-1
4.2.8	Water absorption by capillarity[d]		EN1925
4.2.10	Frost resistance[d]		EN12371
4.2.11	Thermal shock resistance[d]		EN14066
4.2.12	Water vapour permeability[d]		EN 12524 and/or EN ISO 12572
4.2.13	Abrasion resistance[d]		EN 14157
4.2.14	Slip resistance		EN 14231
4.2.15	Tactility	On request	Visual
a) The dimension or amount of a production lot shall be determined by the manufacturer having as reference a daily production quantity, the number of deliveries and the final destination of the considered quantity of tiles.			
b) Only where testing is required			
c) Reference shall be made to these Clauses in order to decide which characteristics need to be declared			
d) When the tests carried out on initial material are relevant for the final product, the manufacturer may refer to them.			

6.3.4 Manufacturers' records shall include at least the following:
a) identification of the product tested;
b) information on sampling: place and date of sampling; identification of the production lot sampled; frequencies of sampling; size and number of samples;
c) test methods applied;
d) results of the tests carried out;
e) calibration records of apparatus.

ANNEX A (normative) SAMPLING

A.1 General

This Annex specifies methods for obtaining samples of natural stone from quarries, plants and buildings. Sampling from buildings may be necessary if the delivered natural stone product is already applied in a building.
The aim of sampling is to obtain a bulk sample that is representative of the average properties of the batch and of its variability. The methods described are based on manual procedures. The methods described are limited to building and civil engineering purposes. It is important that samplers are accordingly trained in the application of the methods set out in this document. In case of dispute or if tests are to be done by more than one organization, all interested parties shall have the opportunity to observe the sampling and shall agree upon the number of sampling increments to be taken.

A.2 Principles of sampling

Proper and careful sampling and sample transport is a prerequisite for an analysis that will give reliable results. An adequate number of samples have to be taken to obtain a good estimation of the natural heterogeneity of the batch. The sampler shall be informed of the aim of the sampling.

A.3 Taking bulk samples

The number and sizes of samples depend on the test methods for which they are taken. The number and shapes of specimens required are given in the relevant test methods.

A.4 Preparing a sampling plan

A sampling plan shall be prepared, prior to sampling, taking into account the following:

type of natural stone (following EN 12440 and EN 12670);
aim of the sampling, including a list of the properties to be tested;
identification of sampling points;
approximate size of samples;
number of samples;
sampling apparatus to be used;
methods of sampling;
marking, packaging and dispatch of the samples.

A.5 Sampling apparatus

Any suitable cutting equipment for natural stone may be used for sampling. In addition, drills, which are suitable for taking drill cores, may be used.

A.6 Sampling methods

A.6.1 General

The sampling methods will inevitably involve the samplers working at a quarry, plant or building. Regulations for safety and ergonomics shall be followed.

A.6.2 Sampling from quarries

A.6.2.1 General

The sample shall be taken by a qualified specialist, experienced in the examination of rock deposits. The main objective of sampling from such deposits is to establish, where possible, the average, the range of variations and the differences in the structure and properties of the rock, taking account of the fabric and geological structure and the anticipated quarrying conditions.

A.6.2.2 Sampling of solid rock

a) Identification of anisotropy and orientation of samples
If the exploratory work reveals a pronounced fabric or geological structure which is not necessarily visible at the sample scale (e.g. stratification, massive bedding, lamination, cleavage or rift), the sample shall be marked accordingly.

b) Sampling for petrographic analysis
For petrographic analysis, hand specimens shall be taken from all distinct types and varieties which characterize the rock in terms of mineral composition, fabric and geological structure. Samples from drilling (cores and pieces) may also be used. In addition to samples of fresh material, samples shall also be taken to illustrate the effects of weathering.

c) Sampling for physical testing
For physical testing, sample blocks and hand specimens shall be used as samples, their number and location depending on the results of the petrographic analysis and the test methods required. The sample blocks shall measure approximately 0,40 m x 0,25 m x 0,25 m, or more where a coarse-grained and/or a large-pored rock is to be sampled. It is recommended that they are taken from larger natural stones which have been least affected by blasting. Care has to be taken to ensure that neither the sample blocks nor the hand specimens show any hairline cracks resulting from the removal process.

Samples may also be cut from rough blocks, slabs or dimension stones, the number and size of samples depending on the particular test method.

A.6.3 Sampling from plants

A representative sample of adequate size and characteristic of the natural stone in terms of mineral composition, fabric and geological structure, shall be taken from the material to be tested (e.g. slabs, dimension stones), taking into account the intended use of the material.

A.6.4. Sampling from buildings

Sampling points shall be selected according to the rules for obtaining a representative sample taking into consideration any differences in properties visible to the naked eye. Where necessary, taking a single tile to assess the mechanical properties of tiles in situ will be sufficient.
The location of the sample in the building shall be reported.

A.7 Marking, packaging and dispatch of the samples

The samples or containers shall be clearly and durably marked. Marking shall include:

a) unique code; or
b) identification of the laboratory samples, place of sampling, date of sampling and denomination of the material.

The laboratory samples shall be packed and transported in such a way that they are protected from damage.

A.8 Sampling report

A.8.1 The sampler shall prepare a sampling report for each laboratory sample or for each group of laboratory samples from a single source. The sampling report shall refer to this document and state:

a) sampling report identification (serial number);
b) laboratory sample identification mark(s);
c) date and place of sampling;
d) sampling point or identification of the batch sampled;
e) reference to the sampling plan prepared according to A.4;
f) name of the sampler(s).

A.8.2 Depending on the circumstances, other information might be relevant. Table A.1 shows an example of a comprehensive sampling report.

table A.1 **Example of a sampling report**

Sampling report identification (serial no.):	
Laboratory sample identification mark:	No. of package:
Description of the natural stone and sampling places	
Name of the quarry or production plant or building:	
Name of producer:	
Origin of batch:	
Purpose of which the natural stone is to be used:	
Location of sampling point(s):	
Identification of the batch:	
Size of the batch:	
Other comments (e.g. warnings, if appropriate):	
Description of the sampling method	
Date and time of sampling:	
Reference to sampling plan used:	
Sampling procedure (drilling, cutting,etc.):	
Purpose of the sampling:	
Samples	
No. and dimensions of samples:	
Other comments:	
Dispatch of the samples:	
Sampler(s) (print name):	
Contact Details	
Contract identification:	
Name & Address of party requesting the sampling:	
Name of person(s) present at sampling:	
Signatures:	

ANNEX ZA (informative) Clauses of this European Standard addressing the provisions of the EU construction products directive

ZA.1 Scope and relevant characteristics

With reference to Clause 1, this Annex ZA applies to natural stone modular tiles for use in construction for finishing of flooring and stairs (internal and external), fixed with adhesives, mortar or other supporting element, or mechanically fixed. This European Standard has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association.

The Clauses of this European Standard, shown in this Annex, meet the requirements of the Mandate M/119 Floorings given under the EU Construction Products Directive (89/106/EC). Compliance with these Clauses confers a presumption of fitness of the construction products covered by this European Standard for their intended use(s}. WARNING: Other requirements and other EU Directives, not affecting the fitness of intended use(s), may be applicable to the construction products falling within the scope of this European Standard. Note In addition to any specific Clauses relating to dangerous substances contained in this standard, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply. An informative database of European and national provisions on dangerous substances is available at the Construction web site on EUROPA (accessed through http:/europa.eu.int/comm/enterprise/construction/).

Construction products: Natural stone modular tiles.

Intended use(s): Internal and external floorings and stairs.

table ZA.1.1 **Relevant Clauses for natural stone modular tiles for <u>internal</u> floorings and stairs**

Essential Characteristics	Requirement Clause in this European Standard	Mandated levels and/or classes	Notes and test methods
Reaction to fire (intended for uses subject to reaction to fire regulations)	4.2.7	Class $A1_F$ All classes	No test required (1) EN 13501-1 (2)
Flexural strength	4.2.4		EN12372 or EN 13161
Slip resistance (for pedestrian circulation areas only)	4.2.14		EN14231 (3)
Tactility/visibility (for tactile surfaces only)	4.2.15		(4)
Thermal conductivity (apparent density)	4.2.5		EN 1936 or EN 12524 (5)
Durability			(6)

Notes
1) No test required, see Decision 96/603/E C, as amended
2) Only for the following two cases
Natural stones containing asphalt at greater than 1% by mass or volume, whichever is the more onerous.
Whenever processing of natural stones involves the use of organic patching, fillers or other similar products at greater than 1% by mass or volume, whichever is the more onerous.
3) Products with a texture greater than 1.0mm are considered "non-slippery"
4) The characteristic "tactility", when requested, is covered by a description of the surface corrugation
5) EN 1936 is used in order to give the apparent density as reference for calculation of thermal behavior. Alternatively the data may be taken from EN12524
6) The current state of the art suggests that the stone material and the surface will maintain their performance for a normal service life and so no durability test is required. The same applies to products used in external areas immediately around a building or structure as an extension of the internal surface. Products specifically intended for use in external surfaces in trafficked areas are dealt with as paving products (see the Foreword of this standard)

table ZA.1.2 **Relevant Clauses for natural stone modular tiles for <u>external</u> floorings and stairs**

Essential Characteristics	Requirement Clause in this European Standard	Mandated levels and/or classes	Notes and test methods
Flexural strength	4.2.4		EN12372 or EN 13161
Slip resistance (for pedestrian circulation areas only)	4.2.14		EN14231 (3)
Tactility/visibility (for tactile surfaces only)	4.2.15		(4)
Durability	4.2.10 4.2.11		EN12371 EN14066

Notes
3) Products with a texture greater than 1.0mm are considered "non-slippery"
4) The characteristic "tactility", when requested, is covered by a description of the surface corrugation

Some requirements, considered in the above-mentioned tables, are not applicable in those Member States (MSs) where there are no regulatory requirements on that characteristic for the intended use of the product. In this case, manufacturers placing their products on the market of these MSs are not obliged to determine nor declare the perfor mance of their products with regard to this characteristic and the option "No performance determined" (NPD) in the information accompanying the CE marking (see ZA.3) may be used. The NPD option may not be used, however, where the characteristic is subject to a threshold level.

ZA.2 Procedures for the attestation of conformity of products

Natural stone modular tiles for floors and stairs, for the intended uses listed below, shall follow the systems of attestation of conformity shown in Table ZA.2.

table ZA.2 **Attestation of conformity systems**

Products	Intended uses	Levels of classes	Attestation of conformity systems
Natural Stone modular tiles for floors and stairs	As internal floor finishes, including enclosed public transport premises	$A1_F$*, $A2_F$**, B_F**, C_F**, D_F and E_F	3
		$A1_F$*** and F	4
	As external floor finishes to cover pedestrian and vehicular circulation areas		4

* Products/materials for which there is no clearly identifiable stage in the production process which results in an improvement of the reaction to fire classification (e.g. no addition of fire retardants nor a limiting, during the production process, of organic material)
** Products/materials that do not require to be tested for reaction to fire (e.g products/materials of Class A1 according to Commission Decision 96/603/E C, as amended)
System 3: See Directive 89/106/EC (CPD) Annex III.2(ii), Second possibility
System 4: See Directive 89/106/EC (CPD) Annex III.2(ii), Third possibility

For products falling under attestation system 3, for initial type testing the tasks of the notified test laboratory are limited to reaction to fire and dangerous substances (where relevant). Natural stone modular tiles for floors and stairs are considered as reaction to fire Class A111, without testing, according to Decision 96/603/EC, as amended, therefore system 4 applies. Only for reaction to fire for natural stone containing asphalt or processed with addition of organic patching, fillers or other similar products will system 3 be adopted, the task for the notified body being limited to test reaction to fire.

The evaluation of conformity of the modular tiles for floors and stairs covered by this European Standard in respect of the relevant characteristics listed in Tables ZA.1.1 and ZA.1.2 shall be carried out in accordance with Clause 6.

ZA.3 CE marking and labelling

ZA.3.1 CE marking

The manufacturer or his authorised representative established within the EEA is responsible for the affixing of the CE marking. The CE conformity marking consists exclusively of the letters "CE" in the specified form of the Directive 93/68/EC. The CE marking shall appear on the packaging and/or the accompanying commercial documentation and shall be accompanied by the information shown below:
reference to this EN 12057;
name or identifying mark of the producer or responsible of placing on the market; last two digits of the year in which the marking was affixed;
product classification and end uses;
indications to identify the characteristics of the products on the basis of the Tables ZA.1.1 and/or ZA.1.2 as shown in ZA.3.2 (for frost resistance, see 4.2.10).

ZA.3.2 Reference model for marking and labelling

ZA3.2.1 Example according to Table ZA.1.1 - Modular tiles for flooring and stairs, <u>internal use</u>

Reference standard: EN12057
Product: Modular tiles of natural stone for floors and stairs
Declared performance: in accordance with EN 12057
Intended use: Internal floor finishing

Characteristics	Declared value	Test methods
Reaction to fire	Class $A1_F$	Without testing (see Decision 96/603/E C, as amended)
Flexural strength	[value] MPa	EN 12372 or EN 13161
Slip resistance	[value]	EN 14231
Tactility	[value]	Visual
Apparent density	[value] kg/m³	EN 1936

ZA.3.2.2 Example according to table ZA.1.1 - modular tiles for flooring and stairs, external use

CE Year [illegible]	Reference standard: [illegible]	
	Product: Modular tiles of natural stone for floors and stairs	
	Denomination: [illegible] EN 12440	
	Intended use: External floor finishing	
Name and address of the producer		
List of the characteristics	Declared values	Test method
Flexural strength	Lower expected value [illegible] MPa	EN 12372 [illegible] EN 13161
Slip resistance	SRV [illegible] SRV [illegible]	EN 14231
Tactility	See description	Visual
Frost resistance	Change in mean flexural strength after 48 cycles [illegible] % or Number of cycles before failure	EN 12371
Thermal shock resistance	After 20 cycles - [illegible] - [illegible]	EN 14066

In addition, the product shall also be accompanied, when and where required and in the appropriate form, by documentation listing legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation.

Note: European legislation without national derogations need not be mentioned.

ZA.4 EC Declaration of conformity

When compliance with this Annex ZA is achieved, the manufacturer or his agent established in the EEA shall prepare and retain a declaration of conformity (EC Declaration of conformity), which authorises the affixing of the CE marking. This declaration shall include:

- name and address of the manufacturer, or his authorised representative established in the EEA, and place of production;
- description of the product (type, identification, use ...), and a copy of the information accompanying the CE marking;
- provisions to which the product conforms (i.e. Annex ZA of this EN);
- particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions);
- name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or of his authorised representative;
- name and address of the notified laboratory(ies), where relevant.

The above mentioned declaration shall be presented in the official language or languages of the Member State in which the product is to be used.

ANNEX ZB (informative) Clauses of this European Standard addressing the provisions of the EU construction products directive

ZB.1 Scope and relevant characteristics

With reference to Clause 1, this Annex ZB applies to natural stone modular tiles for use in construction for finishing of walls and ceilings (internal and external), fixed with adhesives or mortar.

This European Standard has been prepared under a mandate given to GEN by the European Commission and the European Free Trade Association.

The Clauses of this European Standard, shown in this Annex, meet the requirements of the Mandate M/121 Internal and external wall and ceiling finishes given under the EU Construction Products Directive (89/106/EC).

Compliance with these Clauses confers a presumption of fitness of the construction products covered by this European standard for their intended use(s).

WARNING: Other requirements and other EU Directives, not affecting the fitness of intended use(s), may be applicable to the construction products falling within the scope of this European Standard.

Note: In addition to any specific Clauses relating to dangerous substances contained in this standard, there may be other requirements applicable to the products falling within its scope (e.g. transposed European legislation and national laws, regulations and administrative provisions). In order to meet the provisions of the EU Construction Products Directive, these requirements need also to be complied with, when and where they apply. An informative database of European and national provisions on dangerous substances is available at the Construction web site on EUROPA (accessed through http://europa.eu.int/comm/enterprise/construction/).

Construction products: Natural stone modular tiles.
Intended use(s): Internal and external wall cladding and ceiling finishing.

table ZB.1.1 **Relevant Clauses for natural stone modular tiles for internal wall and ceiling finishing**

Essential Characteristics	Requirement Clause in this European Standard	Mandated levels and/or classes	Notes and test methods
Reaction to fire (intended for uses subject to reaction to fire regulations)	4.2.7	Class A1 All classes	No test required (1) EN 13501-1 (2)
Release of dangerous substances* (as relevant) **Water vapour permeability** (only for products subject to water vapour control requirements)	See ZB.1, note 4.2.12		EN ISO 12572 or EN 12524
Flexural tensile strength (only for use in ceilings)	4.2.4		EN12372 or EN 13161
Direct airborne sound insulation (apparent density)(for products intended for uses subject to acoustic insulation requirements)	4.2.9		EN 1936 (3)
Thermal resistance (apparent density)(only for products intended for uses subject to thermal insulation requirements)	4.2.9		EN 1936 or EN 12524 (4)
Durability			(5)

Notes

* In particular those dangerous substances defined in Directive 76/65/EC as amended
1) No test required, see Decision 96/603/EC, as amended.
2) Only for the following two cases:
Natural stones containing asphalt at greater than 1% by mass or volume, whichever is the more onerous.
Whenever processing of natural stones involves the use of organic patching, fillers or other similar products at greater than 1% by mass or volume, whichever is the more onerous.
3) EN 1936 is used in order to give the apparent density as reference for calculation of acoustic behavior.
4) EN 1936 is used in order to give the apparent density as reference for calculation of thermal behavior. Alternatively the data may be taken from EN12524
5) The current state of the art suggests that, when used in internal wall and ceiling finishes, natural stones will maintain their level of performance for a normal service life. No durability test has therefore been considered.

table ZB.1.2 **Relevant Clauses for natural stone modular tiles for external wall and ceiling finishing**

Essential Characteristics	Requirement Clause in this European Standard	Mandated levels and/or classes	Notes and test methods
Reaction to fire (intended for uses subject to reaction to fire regulations)	4.2.7	Class A1 All classes	No test required (1) EN 13501-1 (2)
Release of dangerous substances* (as relevant) **Water vapour permeability** (only for products subject to water vapour control requirements)	See ZB.1, note 4.2.12		EN ISO 12572 or EN 12524
Mechanical resistance (e.g. flexural strength, as relevant) **Thermal shock resistance** (where relevant, according to material)	4.2.4 4.2.11		EN12372 or EN 13161 EN14066
Direct airborne sound insulation (apparent density)(for products intended for uses subject to acoustic insulation requirements)	4.2.9		EN 1936 (3)
Thermal resistance (apparent density)(only for products intended for uses subject to thermal insulation requirements)	4.2.9		EN 1936 or EN 12524 (4)
Durability			EN 12371

Notes

* In particular those dangerous substances defined in Directive 76/69/EC as amended
1) No test required, see Decision 96/603/EC, as amended
2) Only for the following two cases:
Natural stones containing asphalt at greater than 1% by mass or volume, whichever is the more onerous.
Whenever processing of natural stones involves the use of organic patching, fillers or other similar products at greater than 1% by mass or volume, whichever is the more onerous.
3) EN 1936 is used in order to give the apparent density as reference for calculation of acoustic behavior
4) EN 1936 is used in order to give the apparent density as reference for calculation of thermal behavior. Alternatively the data may be taken from EN12524

Some requirements, considered in the above tables, are not applicable in those Member States (MSs) where there are no regulatory requirements (on that characteristic) for the intended use of the product. In this case, manufacturers placing their products on the market of these MSs are not obliged to determine nor declare the performance of their products with regard to this characteristic and the option "No performance determined" (NPD) in the information accompa nying the CE marking (see Clause ZB.3) may be used. The NPD option may not be used, however, where the character istic is subject to a threshold level.

ZB.2 Procedures for the attestation of conformity of products

Natural stone modular tiles, for the intended uses listed below, shall follow the systems of systems of attestation of conformity shown in Table ZB.2.

table ZB.2 **Attestation of conformity systems**

Products	Intended uses	Levels of classes	Attestation of conformity systems
Natural Stone modular tiles for wall and ceiling cladding	As internal or external finishes in walls or ceilings subject to reaction to fire regulations	A1** A2** B** C** D and E A1*** and F	3 4
	As internal or external finishes in walls or ceilings subject to regulations on dangerous substances, an in internal or external suspended ceilings subject to safety in use (flexural tensile strength) requirements	-	3
	As internal or external finishes in walls or ceilings for other uses	-	4

** Products/materials for which there is no clearly identifiable stage in the production process results in an improvement of the reaction to fire classification (e.g. an addition of fire retardants nor a limiting, during the production process, of organic material).
*** Products/materials that do not require to be tested for reaction to fire (e.g. products/materials of Class A1 according to Commission Decision 96/603/E.C. as amended)
System 3: See Directive 89/106/EC (CPD) Annex III.2(ii), Second possibility
System 4: See Directive 89/106/EC (CPD) Annex III.2(ii), Third possibility

For products falling under attestation system 3, for initial type testing, the tasks of the notified test laboratory are limited to reaction to fire, flexural tensile strength and dangerous substances (where relevant).
Natural stone modular tiles for cladding are considered as reaction to fire Class A1, without testing, according to Decision 96/603/EC, as amended, therefore system 4 applies (provided that flexural tensile strength is not relevant and that there are no dangerous substances requirements).
Only tor reaction to fire for natural stone containing asphalt or processed with addition of organic patching, fillers or other similar products will system 3 be adopted, the task for the notified body being limited to test reaction to fire.
The evaluation of conformity of the modular tiles tor cladding covered by this European Standard in respect of the relevant characteristics listed in Tables ZB.1.1 and ZB. 1.2 shall be carried out in accordance with Clause 6.

ZB.3 CE marking and labelling

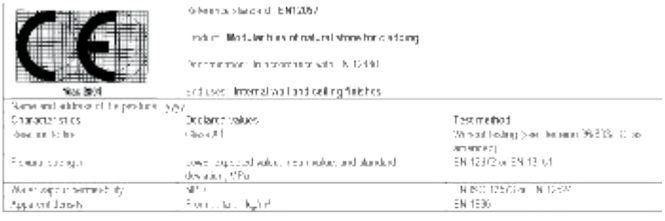
ZB.3.1 CE marking

The manufacturer or his authorised representative established within the EEA is responsible for the affixing of the CE marking. The CE conformity marking consists exclusively of the letters "CE" in the specified form of the Directive 93/68/EC. The CE marking shall appear on the packaging and/or the accompanying commercial documentation and shall be accompanied by the information shown below:

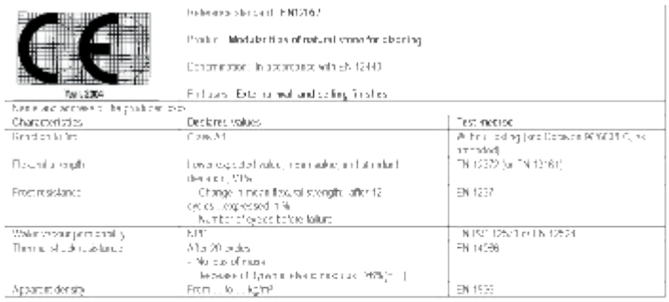
- reference to this EN 12057;
- the name or identifying mark of the producer or the importer, ii the latter is responsible tor ensuring the conformity of the product;
- the last two digits of the year in which the marking was affixed; the product classification and end uses;
- the indications to identify the characteristics of the products on the basis of the Tables ZA.1. 1 and/or ZA.1.2 as shown in ZA.3.2 (for frost resistance, see 4.2.10).

ZB.3.2 Reference model for marking and labelling

ZB.3.2.1 Example according to Table ZB.1.1 - Modular tiles for wall finishes, internal use



ZB.3.2.2 Example according to Table ZB.1.2 - Modular tiles for wall finishes, external use



In addition, the product shall also be accompanied, when and where required and in the appropriate form, by documentation listing legislation on dangerous substances for which compliance is claimed, together with any information required by that legislation.

Note: European legislation without national derogations need not be mentioned.

ZB.4 EC Declaration of conformity

When compliance with this Annex ZB is achieved, the manufacturer or his agent established in the EEA shall prepare and retain a declaration of conformity (EC Declaration of conformity), which authorises the affixing of the CE marking. This declaration shall include:

- name and address of the manufacturer, or his authorised representative established in the EEA, and place of production;
- description of the product (type, identification, use ...), and a copy of the information accompanying the CE marking;
- provisions to which the product conforms (i.e. annex ZB of this EN);
- particular conditions applicable to the use of the product (e.g. provisions for use under certain conditions, etc.);
- name of, and position held by, the person empowered to sign the declaration on behalf of the manufacturer or of his authorised representative;
- name and address of the notified laboratory(ies), where relevant.

The above mentioned declaration shall be presented in the official language or languages of the Member State in which the product is to be used.

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