

Product Knowledge Guide

Overview on contents:

- What are the differences in products
 - Granite
 - Marble
 - Travertine
 - Slate
 - Onyx
 - Limestone
 - Ceramic Tile
 - Porcelain Tile
- Uses and applications
- Selling points – how to show value
- Technical page – PEI, V ratings, COF, MOHS
- Maintenance
- Glossary of terms
- Cd-rom – training segments

GRANITE

Granite is an igneous rock, which was formed by slowly cooling pockets of magma (hot liquid) that was trapped beneath the earth's surface. It is the result of about 570 million years in the making. Granite is an intrusive rock – it forms deep underground and consists of mainly feldspar and quartz. Granite is the hardest known material used in commercial and residential applications.

To identify granite:

- Salt & pepper grain that can easily be distinguished
- Course and relatively consistent appearance
- Dense with minimal pores
- Generally minimal variation between tiles or slabs

Common finishes:

- Polished, honed, flamed

Facts:

- 6.6 – 8.5 on MOHS hardness scale – very durable
- Weather resistant
- Crystals can be viewed with the naked eye

Applications and uses:

- Granite can be used anywhere – interior/exterior, counters, walls, fireplaces, shower/tub/vanities, flooring, fountains.
- Commercial applications – exterior cladding, steps, heavy traffic areas, sidewalks.

MARBLE

Marble is formed from limestone by heat and pressure in the earth's crust. These forces cause the limestone to change in texture and makeup. Marble is a metamorphic rock, which means, "changed form". This process took well over 540 million years. Marble is mostly made up of calcite – a mineral form of calcium carbonate. The purest calcite marble is white. The minerals that result from impurities give marble wide variety of colors.

To identify marble:

- Distinguished veining and crystallization
- Large tile to tile variation
- Extensive color palette – from white to black

Common finishes:

- Polished, honed, tumbled

Facts:

- 2.2 – 5.5 on MOHS hardness scale – very soft
- Green and black marbles should not be installed in water areas
- Not recommended for food service applications
- Polish will not sustain if installed in an exterior application

Applications and uses:

- Marble should be used on the interior - walls, fireplaces, shower/tub/vanities, flooring.
- Commercial applications – interior walls, statues, heavy traffic flooring (with regular maintenance to maintain polish).

SLATE

Slate is a metamorphic rock. Most slate is formed below the earth's surface by changes in the makeup and appearance of shale, a sedimentary rock. Shale consists of clay and fine particles of quartz. Heat from deep in the earth changes some of the clay in shale into mica and chlorite. Slate results when pressure created chiefly by mountain-forming movements in the earth's crust squeezes the mica and other minerals into parallel layers.

To identify slate:

- Common colors – grays and blacks to rusts and greens (many slates are multi-colored)
- Large tile to tile variation
- Slate has a layered appearance

Common finishes:

- Natural cleft, gauged, ungauged, tumbled, honed, polished

Facts:

- 6.0 on MOHS hardness scale – very durable
- Shaling (pieces falling off face) is common in first 6 months of installation
- Made up of mostly clay and shale (silt and clay) – very dense

Applications and uses:

- Slate can be used interior/exterior - walls, fireplaces, shower/tub/vanities, flooring, fountains, backsplashes.
- Commercial applications – roofing, exterior/interior cladding, trim accents on flooring.

LIMESTONE

Limestone is made chiefly of calcite, a mineral form of calcium carbonate. It is also thought of as a 'young' marble. Limestone was formed over many years (320 million) at the bottom of oceans and lakes – a sedimentary stone. Limestones have an accumulation of shells, bones, and other calcium rich goods.

To identify limestone:

- Common colors – beige, gray, white – fairly neutral in color
- Fairly consistent tile to tile variation
- Tight-grained appearance

Common finishes:

- Honed, polished, sandblasted

Facts:

- 3.0 – 4.0 on MOHS hardness scale – very soft
- Limestone makes an excellent building stone – it can be carved easily
- If shells are still visible (although polished) it is considered a limestone not a marble

Applications and uses:

- Limestone can be used interior/some exterior - walls, fireplaces, shower/tub/vanities, flooring.
- Commercial applications – interior and some exterior cladding, flooring

TRAVERTINE

Travertine is limestone that has been formed over a long period of time. The product is porous with many visible holes. It is available in colors ranging from ivory to golden brown. The holes and cavities may be filled with matching Portland cement, colored epoxy, or polyester resins. Travertine is a sedimentary calciferous stone formed in hot springs. Typically, hot water passes through limestone beds and takes the calcium, from the limestone into suspension and takes that solution to the surface where the water evaporates and leaves the calcium crystals in layers on the surface.

To identify travertine:

- Holes or cavities visible in stone – filled or unfilled
- Produced with either a “vein” cut (horizontal veins) or a “cross cut” (flowery pattern)
- Quarried near hot springs

Common finishes:

- Honed, polished, tumbled, filled, unfilled

Facts:

- 3.0 – 5.5 on MOHS hardness scale – moderate strength
- The Coliseum in Rome is made of travertine
- Unfilled gives a rustic appearance while, filled gives a more formal look

Applications and uses:

- Travertine can be used interior/ exterior - walls, fireplaces, shower/tub/vanities, flooring, backsplashes.
- Commercial applications – interior and some exterior cladding, flooring

ONYX

Onyx is a translucent stone with a layered appearance. It is similar to travertines – it is formed as a result of cold solutions of carbonated water dissolving existing stone and re-depositing into a new stone. The term “onyx” to designate onyx marble is a misnomer. True onyx (silicon dioxide) is a semi-precious stone.

To identify onyx:

- Translucent in appearance
- Common colors – jade green, warm honey tones, and reds
- Very large tile to tile variation

Common finishes:

- Polished, tumbled

Facts:

- Very soft and brittle
- Scratches easily
- Beautiful when lighting is installed behind the stone

Applications and uses:

- Onyx can be installed in bathrooms, low traffic areas
- Commercial applications – bar tops, vertical cladding

CERAMIC TILE/PORCELAIN TILE

What is ceramic tile?

A ceramic tile is a mixture of clays, which is shaped and fired at high temperatures and then glazed. Tiles are also rigid and feature a relatively high resistance to shock. The use of ceramic tile goes back 18,000 years ago – with fragments found on the banks of the Tigres River in the Middle East.

Methods of producing ceramic tile

The following are the most common ways to form the body (bisque) of a tile:

Dust press

This method is used for ceramic tile only. An almost dry mixture of clays, talc, and other ingredients are pressed into a mold at extremely high pressures.

Extrusion

This method takes the ingredients that are slightly wetter and force them through a nozzle to form the desired tile shape.

Slush mold or wet pour

This method takes a much wetter mixture of ingredients and is poured into a mold to form the desired shape.

Ram press

Very similar to dust press method, except that the size of the tile shapes are generally much larger.

Ceramic tiles, once formed, are then fired in a kiln under very high (up to 2000 degrees Fahrenheit) heat to harden the tile body and to create the surface glaze, if any. In the automated world of tile manufacturing, a new process was developed by which the tile body and glaze could be fired simultaneously. This process is termed monocuttura. The glaze, which is called frit, is essentially a glasslike substance and is applied by either spray or waterfall methods to the surface of the tile.

What is the difference between ceramic and porcelain tiles?

According to the American National Standards Institute (ANSI), porcelain tile is defined as a tile made by the dust press method that has a dense body such that water absorption is less than 0.5 percent.

Applications and uses:

- Ceramic tiles - Interior/exterior, walls, floors, showers, tub surrounds, backsplashes, fireplaces, bbq's, kitchen countertops, vanities, walkways.
- Porcelain tiles – interior/exterior, all areas including commercial/heavy traffic areas.

What is trim use for? Tile trim is used for finishing off countertop edges, wall edges, and backsplash edges.

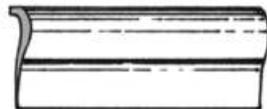
The following are the most common trim shapes:



Quarter Round



Beak

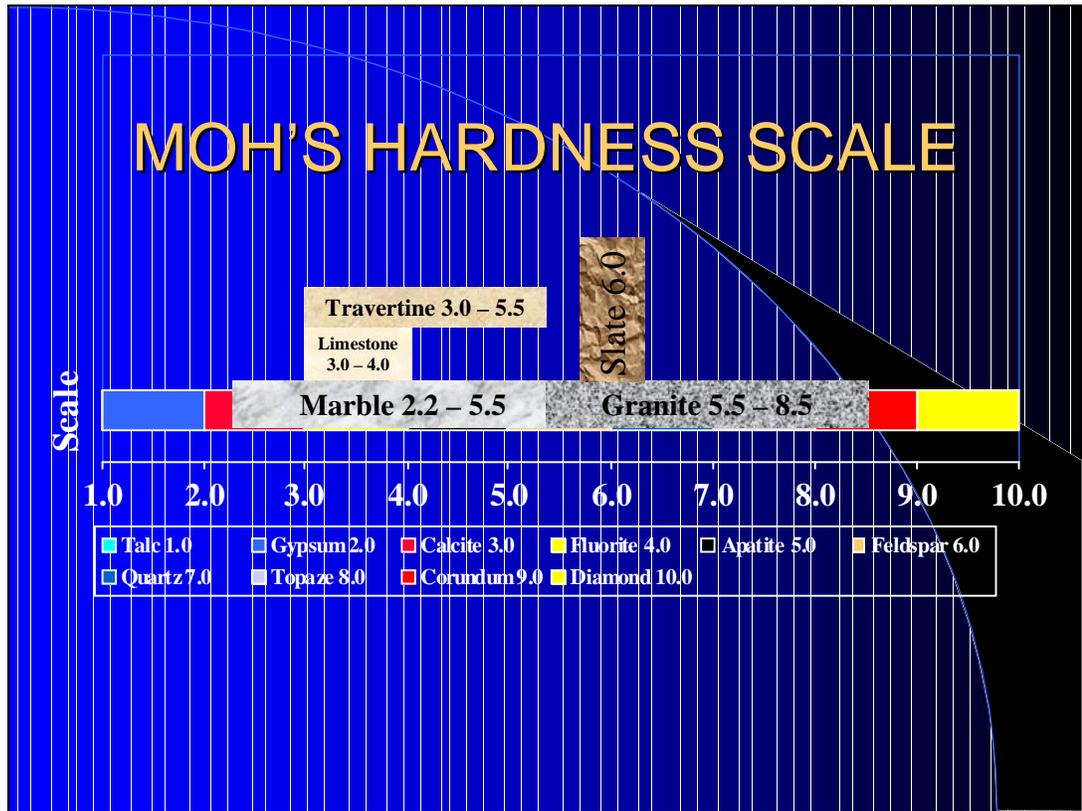


V Cap



V Cap Corner

TECHNICAL INFORMATION



The Moh's hardness scale was created to measure the hardness of minerals. The scale starts with the softest mineral being talc and goes to the strongest a diamond. The only thing that can scratch a diamond is itself.

What does PEI mean?

PEI is an acronym for Porcelain Enamel Institute, which started establishing wear resistance ratings for tile. Although there are no real industry standards for tile, this abrasion test is recommended by the American Society Testing Materials (ASTM) and has become a common way to classify wear. Below are the Classifications for PEI.

Class 1 – No Foot Traffic – Ceramic tile suggested for interior residential and commercial wall applications only.

Class 2 –Light Traffic – Ceramic tile suggested for interior residential and commercial wall applications for residential bathroom floor applications only.

Class 3 –Light to Moderate Traffic – ceramic tiles suggested for residential floor, countertop & wall applications.

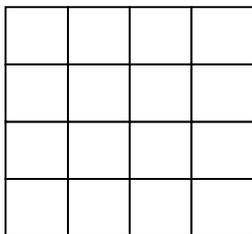
Class 4 –Moderate to Heavy Traffic – ceramic tiles suggested for residential, medium commercial and light institutional floor and wall applications.

Class 5 –Heavy to Extra Heavy Traffic – ceramic tiles suggested for residential, commercial and institutional floor and wall.

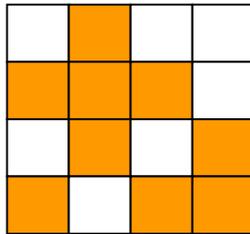
What is a V rating?

A V rating is an indicator of how much variation in shade and color a ceramic or porcelain tile will have. The lower the V rating the less shade and color variation the tile will have.

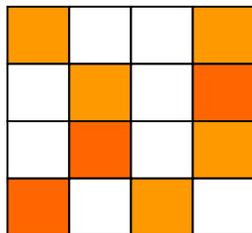
V1



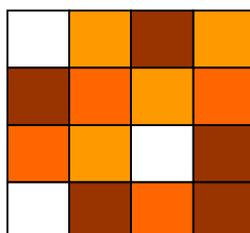
V2



V3



V4



- V1 = Uniform Appearance
- V2 = Slight Variation
- V3 = Moderate Variation
- V4 = Random Variation

What is Coefficient of Friction?

Coefficient of Friction is a test to measure the friction (or slippage) of tile. The test is done on tiles wet and dry and two separate results are defined. The ADA (American Disabilities Act) has determined that testing results of .60 and better meet their requirements. Many contractors require these documents to cover their liability for certain job installations. This test, though, by no means, guarantees an anti slip surface. It all depends on a person's shoes, etc. It is somewhat of a myth that a rough surface tile rates as skid. When you look at the Coefficient of Friction Table, you will see that many of our 'shinier' tiles have met or exceeded the recommended test, in some cases, better than rougher surfaced tiles.

MAINTENANCE AND CARE

All natural stone should be maintained properly. All finishes of stone – honed, polished or tumbled look beautiful and are very durable when protected and maintained. **Sealing all natural stone is highly recommended.** It is suggested that a breathable penetrating sealer is applied. Aqua Mix as well Miracle Sealants provide different types of penetrating sealers.

Tips:

- Sweep or vacuum your floors regularly
- Wash with clear water occasionally – if you use a soap make sure it is PH balanced
- Never use vinegar on natural stone
- Never use any cleaners that contain ACID – when in doubt don't
- Protect stone from sand and grit – use door mats
- Use a rag (string) mop verses a sponge mop – dirt gets pushed into the grout joints with a sponge mop
- Tend to spills quickly – sealer gives you a couple of seconds to clean it up. **Sealers do not prevent 100% of damage due to spills**
- Never apply wax or acrylics – this will damage the stone
- Use coasters, tablecloths or placemats
- Be careful with acidic drinks (lemonade, orange juice, etc...) they will etch natural stone

GLOSSARY OF TERMS

Bisque	The body of a tile. Glaze is then applied if desired.
Breathing	The ability of a stone to expand and contract as well as to allow evaporation of moisture
Chip	A small piece of a stone that can be replaced (or repaired) with epoxy resin or filled with crushed chips and epoxy
Density	The closeness of the particles in the material. Granite, for instance, is more dense than marble; therefore it is harder, heavier, less porous and obstructs easy penetration of foreign substances
Etch	Also know as acid burn. The condition whereby acid or strong alkaline has dissolved a portion of the stone
Epoxy	A two-part resin glue used for joining and filling stone.
Fissures	Are natural hairline fractures. When the stone was going through the metamorphic changes with heat and pressure there were veins of silt and dirt collected that have since disappeared.
Flamed finish	The flamed finish is used on granite. The surface is flamed with an acetylene torch until the weak part of the stone pops off in an irregular pattern. The result is a non-reflective, textured, durable and slip resistant surface.
Fleuri cut	Also known as crosscut. Typically used with travertines. It reveals a flower-like pattern. A block of stone is cut on the bias to create a new surface look.
Honed finish	This finish creates a smooth, but not polished, surface. The same polishing stones that can create a high gloss are used but the process is stopped prior to a shine.
Grout	Grout consists of cement, hardeners, and colors or epoxy and colors. It is used in a fluid state to fill the space between tiles or joints and allowed to harden. Grout acts like a shock absorber between tiles or stones.

Grout cont'd	In a cement grout it comes in two versions – sanded for grouts joints over 1/8” and unsanded for anything less.
Grit	Refers to particles of sand or dirt tracked in that can scratch or dull stone floors.
Igneous	Granite is an igneous rock, which means it was once molten and formed as it cooled deep within the earth.
Intrusive	Granite is an intrusive rock – found deep within the mantle of a volcano. Whereas lava is an extrusive rock – spewed forth from the volcano
Monocuttura	An Italian word that means ‘single-fired’. The factory takes the bisque of the tile and the glaze and fires it one time. This creates a much stronger bond than a double-fired tile.
Polish	The shiny surface of a stone. The polishing process and special buffing compounds achieve this.
Porosity	Porosity refers to the amount and size of the pores in a stone. Travertine is extremely porous granite is not very porous.
Slab	A natural stone slab is primarily used for kitchen counters, vanities and cladding. The common size is 6’x 8’ with rough edges. It is then fabricated to a desired size.
Stone tile	Natural stone that has been cut down to typical 12”x12”x3/8” or larger 16x16, 18x18, 24x24 or a modular size.
Spalling	Small chunks that break away from the face of a stone.

SELLING TIPS

- Natural stone is not uniform, consistent or flawless
- Natural stone is unique, beautiful, and adds personality to the environment
- The price of a stone is not directly related to the quality
 - Stones with limited availability are often reasons for higher costs
 - Exchange rates with the exporting country effects costs as well
- Don't confuse quality with the stone's inherent characteristics
 - Voids, fissures and fill are common in all natural stone products
- Sampling – one piece of stone or V4 tile is not enough! Variations will occur from tile to tile. Sample at least 3 – 4 pieces.
- A polished stone is not a sealed stone – the polished finish is more aesthetic than functional. Seal all stones!
- Green marbles – are not recommended for wet areas because, like wood, they absorb water and will curl and warp. For other areas we recommend a water-free epoxy to set the product in.
- Black marbles – they also respond to water by spalling at the vein and therefore should not be installed in wet areas. For other areas we recommend a water-free epoxy to set the product in.

