ROCKTON LARGE FORMAT PORCELAIN SLABS

Rockton large format porcelain slabs are highly durable stain, heat and UV resistant surfaces. They are produced from natural clays, silica and other minerals. The slabs are pressed under enormous pressure and sintered to achieve a remarkably beautiful and resilient surface that can be used for countertops, walls, floors and other applications, include exterior cladding.

TECHNICAL SPECIFICATIONS

Test Item	Test Standard (UNI EN 14411)	Test Standard (GBT_ 23266-2009)	Results
Water absorption(%)	Average ≤ 0.5% Most ≤ 0.6%	Average ≤ 0.5% Most ≤ 0.6%	Average：0.1% Most：0.15%
Break strength(N)	thickness ≥ 7.5mm No less than 600N	Average ≥ 4mm No less than ≥ 800N	6mm：1000N 12mm：4000N
Modulus of rupture (Mpa)	Average ≥ 28 Single ≥ 21	Average ≥ 45 Single ≥ 40	6mm： Average：55 single：50 12mm：Average：40 single：38
Wear resistance	No less than class 3	No less than class 3	Class 4
Thermal shock	Test way available	No scrap or spall on glaze surface after crazing resistance test	Complied
Frost resistance	No scrap or spall on glaze surface after crazing resistance test	No scrap or spall on glaze surface after crazing resistance test	Complied
Chemical agent and swimming pool salt resistance	Test way available	No less than GB	GA
Hygroscopicity and expansion	Test way available	Test way available	0.05
Stain resistance	Higher than 3	Higher than 3	5
Slip resistance		A ≥ 12° B ≥ 18° C ≥ 24°	A ≥ 12°
Fire retardant			A
MOHs			5-6

ROCKTON CARE AND MAINTENANCE

On floors, use a soft-bristle broom or use a vacuum with a soft brush attachment to pick up dust and debris. Follow with gentle cleansing techniques mentioned below.

On countertops, wipe up spills as they occur with a damp, soft sponge.

For routine cleaning, use a soft sponge and a gentle, nonabrasive cleanser mixed with water. Work in a grid pattern to wipe up any spills or dirt.

For stubborn cleanups, use gentle liquid cleansers like Mr. Clean, 409, or Simple Green, as directed on the bottle. If extra stubborn spots remain, use a toothbrush dipped in the solution to loosen heavier soil. Rinse a sponge well; wipe the cleaning solution off the tile.

Never use a sponge that contains aluminum oxide. This includes red or green Scotch Brite sponges. The aluminum oxide can dull the finish of premium surfaces including porcelain, granite, quartz, and marble.

Never use steel wool, scrub brushes, or hard bristle brushes. Never use abrasive cleaning agents including Comet, Ajax, or Soft Scrub to clean natural stone or porcelain surfaces.

Never use harsh chemical cleaners including drain cleaner, paint strippers, or products containing Hydrofluoric Acid, Methylene Chloride, or Trichloroethylene. These harsh chemicals could etch or discolor the surface.

Sealing is not necessary. However, for floors and walls, the sealing of the grout is recommended, depending on the type of grout used. Cement grout is porous, and in some cases can be penetrated with dirt and grime. Epoxy grouts are water-resistant and often do not require a sealer.

While Rockton is scorch and heat resistant, it is recommended to use hot pads under heat generating appliances including slow cookers, deep fryers, and electric skillets. This helps to protect against thermal expansion that occurs with a rapid change of temperature, or sustained heating.

ROCKTON FABRICATION AND INSTALLATION GUIDELINES FOR 12MM SLABS

- Rockton 12mm porcelain slabs come rectified from factory ready to install on floor or walls or fabricated for countertop applications.

- Fabricated countertops can be installed without a backer board or sub top directly over open cabinet tops. The use of a backer board is recommended however especially if a mitered edge will be used to build up the edge to clear drawer and door fronts.

- Fabricated countertops should be installed with an LFT (Large Format Tile) thin set such as Customs Building products Pro Lite. The tops must have 100% coverage of thin set material and CANNOT be installed using the spot technique.

- Seams and joints at countertop and backsplash (if same material is used for backsplash) can be filled with either an epoxy or grout. We currently do not have premixed epoxies for our 12mm colors.

- Seams are recommended at all 90 degree returns inside and out with a minimum 3/16" (5mm) radius on inside corners.

- Chip and seam repairs can be performed similar to natural stone and quartz materials. The same color epoxy mixed for seams can be used for these applications as well as any and all the trade tricks are utilized for other countertop product repairs.

- Cutting speed and efficiency will be maximized when using blades specific to porcelain and ultra-compact materials. There are several good blades available from different manufacturers and here a few that we have had good success with:
    - ItalDiamant
    - Terminator DK3
    - Cyclone by Diamax
    - Diatex Gres Cut

- Some fabricators have found that using a cement board or old quartz slab on top of the saw table can minimize vibration and chipping while cutting and help the panel from moving during cutting procedures.

- Cutting speeds and blade rpm will vary by machine being used but for starting points, the following can used as your guidelines:
    - 1900 – 2200 rpm (depending on equipment and blade diameter)
    - Always reduce feed rate by 50% for at least first 6" and last 9" of every cut. The plunge rate for straight cuts should be about 7" per minute.

- For longer straight cuts, speeds up to and exceeding 90 - 100 inches per minute can be achieved.
- For shorter cuts or when cutting smaller pieces, these speeds may need to be reduced by up to 40%.
- For miter cuts, fabricators have found that the above mentioned rpms may be maintained while feed rates will drop to between 25 – 40 inches per minute again depending on size of material and length of miters as well as machinery being used. The plunge rate when cutting miters is about 6” per minute.

- Water jet cutting can yield very high quality cuts and sustain very high cut rates. Cutting parameters depends on the desired finish. As far as feedrate, 24IPM should be fine at 60,000 psi. Pierce pressure should be lowered to 20,000 psi with an increase of pierce time to allow the lower pressure to create that initial hole. When jetting it is always best to start inside of an already made hole like a blade cut. If that is not possible, then we say to start the initial hole at least 1 inch away from the finished piece being cut.

- Under mount sinks should always be braced or supported to the cabinet sides whenever possible.

- Edges and cutouts can and should be finished with a polished edge similar to natural stone countertops. The white marble colors should be polished using white polishing pads to avoid color transfer during the process.

- While shades should be very close, it is always recommended to never mix shades without inspecting material before fabricating to ensure that they will be a cohesive blend.

ROCKTON FABRICATION AND INSTALLATION GUIDELINES FOR 2CM SLABS

- Rockton 2cm porcelain slabs come rectified from factory ready to be fabricated for countertop applications. Most Rockton 2cm slabs are now througbody, which means the pattern and color on the top of the slab carries through the enter slab, much like natural stone and quartz.

- Fabricated counter tops can be installed without a backer board or sub top directly over open cabinet tops.

- Fabricated counter tops can be installed with a suitable adhesive such as 100% silicone adhesive

- Seams and joints at countertop and backsplash (if same material is used for backsplash) can be filled with either an epoxy or grout. We currently do not have premixed epoxies for our 2cm colors.

- Seams are recommended at all 90 degree returns inside and out with a minimum 3/16" (5mm) radius on inside corners.

- Chip and seam repairs can be performed similar to natural stone and quartz materials. The same color epoxy mixed for seams can be used for these applications as well as any and all the trade tricks are utilized for other countertop product repairs.

- Cutting speed and efficiency will be maximized when using blades specific to porcelain and ultra-compact materials. There are several good blades available from different manufacturers and here a few that we have had good success with:
    - ItalDiamant
    - Terminator DK3
    - Cyclone by Diamax
    - Diatex Gres Cut

- Cutting speeds and blade rpm will vary by machine being used but for starting points, the following can used as your guidelines:
    - 1900 – 2200 rpm (depending on equipment and blade diameter)
    - Always reduce feed rate by 50% for at least first 6" and last 9" of every cut. The plunge rate for straight cuts should be about 7" per minute.
    - For longer straight cuts, speeds up to and exceeding 60 – 70 inches per minute can be achieved.
    - For shorter cuts or when cutting smaller pieces, these speeds may need to be reduced by up to 40%.
    - For miter cuts, fabricators have found that the above mentioned rpms may be maintained while feed rates will drop to between 25 – 40 inches per minute again

depending on size of material and length of miters as well as machinery being used. The plunge rate when cutting miters is about 6” per minute.

- Water jet cutting can yield very high quality cuts and sustain very high cut rates. Cutting parameters depends on the desired finish. As far as feedrate, 24IPM should be fine at 60,000 psi. Pierce pressure should be lowered to 20,000 psi with an increase of pierce time to allow the lower pressure to create that initial hole. When jetting it is always best to start inside of an already made hole like a blade cut. If that is not possible, then we say to start the initial hole at least 1 inch away from the finished piece being cut.

- Under mount sinks should always be braced or supported to the cabinet sides whenever possible.

- Most of our Rockton 2cm slabs are now throughbody, which means that edges and cutouts can and should be finished with a polished edge similar to natural stone countertops. There is no need to miter these edges if not deaired. The white marble colors should be polished using white polishing pads to avoid color transfer during the process.

- While shades should be very close, it is always recommended to never mix shades without inspecting material before fabricating to ensure that they will be a cohesive blend.

ROCKTON MSDS SHEET

1. PRODUCT IDENTIFICATION

Common Name: Rockton Large Format Porcelain Slabs

2. HAZARDS IDENTIFICATION

Tile products are mixtures of predominantly clays, silica sand, and other natural occurring minerals that have been mixed with water and fired in a high temperature kiln. The finished, fired tiles are odorless, stable, non-flammable, and pose no immediate hazard to health. Respiratory, hand and eye protection may be needed to prevent excess exposure to airborne particulates if dust is produced by cutting tiles during installation or if dust is produced by any other operations, including demolition/removal projects.

Emergency Overview: Danger! Lung injury and Cancer Hazard

GHS Classification (Global Harmonized Standard Classification):

Carcinogenicity Category 1A (H350)

Specific target organ toxicity, single exposure; Respiratory tract irritation - Category 3 (H335)

Specific target organ toxicity, repeated exposure - Category 1A (H372)

GHS Label, Hazards and Precautionary Statements

GHS Pictogram:

Crystalline Silica: Category 3 (Respiratory tract irritation) (H335)

Categories 1A(Carcinogenicity)(H372)

Label Signal Word: Danger

Hazard Statements:

(H350) May cause CANCER (inhalation)

(H335) May cause respiratory irritation

(H372) Causes damage to organs (lung/respiratory) through prolonged or repeated exposure (inhalation)

Precautionary Statements:

Do not handle until all safety precautions have been read and understood. (P202)

Do not breathe dust/spray. (P260 + P261)

Wash skin thoroughly after handling. (P264)

Do not eat, drink or smoke when using this product. (P270)

Wear protective gloves, protective clothing, eye protection, face protection. (P280)

Potential Health Effects:

Inhalation: Do not breathe dust. See “Health Hazards” in Section 11 for more details.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Tile products are mixtures of predominately Clays, Silica Sand and other naturally-occurring minerals, that have been mixed with water and fired in a high temperature kiln.

Tiles are manufactured in various shapes, sizes, and colors.

These products do not contain asbestos.

Under normal conditions these products do not release hazardous materials after installation and are not considered hazardous waste should disposal be necessary.

Composition	CAS# / EINECS#	Estimated % by Wt.	EU Class
Crystalline silica as quartz	CAS: 14808-60-7	0-30	(67/548/EEC)
EINECS: 238-878-4		Xn R48/20	
Clays	CAS: 1332-58-7	20-55	(67/548/EEC)
EINECS: 265-064-6		Xi R36/37/38	
Nepheline syenite	CAS: 37244-96-5	0-50	(67/548/EEC)
EINECS: N/A		Xi R36/37/38	
Talc	CAS: 14807-96-6	0-40	(67/548/EEC)
EINECS: 238-877-9		Xi R36/37/38	
Feldspar	CAS: 68476-25-5	0-15	(67/548/EEC)
EINECS: 270-666-7		Xi R36/37/38	
Biotite	CAS: 12001-26-2	0-5	(67/548/EEC)
EINECS: 215-479-3		Xi R36/37/38	

4. FIRST AID MEASURES

Eyes: Immediately flush eyes with large amounts of water for at least 15 minutes if dust gets in eyes. Get medical attention if irritation persists.

Skin: Wash thoroughly after working with tiles.

Inhalation: Remove to fresh air if exposed to large amounts of tile dust. Administer artificial respiration if breathing has stopped. Keep victim at rest. Call for prompt medical attention.

Ingestion: Not applicable for intact tiles.

Have emergency eyewash station available in area where tiles are cut.

5. FIRE-FIGHTING MEASURES AND INFORMATION

Flash Point (Method Used): Not applicable

Autoignition Temperature: Not applicable

Flammable Limits (% by Volume in Air): LEL - not applicable

UEL - not applicable

Fire Extinguishing Media: None required Non-flammable

Special Fire Fighting Procedures: None required

Fire and Explosion Hazards: None

ACCIDENTAL RELEASE MEASURES

Avoid creating excessive dust. Clean up dust with a vacuum system with a High-efficiency particulate (HEPA) air filter vacuum or damp sweeping. See Section 8 of this SDS concerning PPE information for clean-up.

7. HANDLING AND STORAGE

When cutting, grinding or removing, use equipment with integral dust collection and/or use local exhaust ventilation. Use wet cutting methods to reduce generation of dust. Use respiratory protection in the absence of effective engineering controls.
Do not store near acids. If tiles contact some acids, damage/discoloration to the surface may occur.
Shelf life is unlimited.

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

8.1 Exposure Table

Composition	OSHA PEL	NIOSH IDLH	ACGIH TLV*	Units
Crystalline silica as quartz	10	0.05	0.025	mg/m3
-respirable fraction			%SiO2+2	
-total dust	30	N.E.	N.E.	mg/m3
%SiO2+2				
Clays				
-respirable fraction	5	N.E.	2	mg/m3
-total dust**	15	N.E.	10	mg/m3
Nepheline syenite				
-respirable fraction**	5	N.E.	N.E.	mg/m3
-total dust**	15	N.E.	N.E.	mg/m3
Talc				
-respirable fraction	2	2	2	mg/m3
-total dust**	15	10	10	mg/m3
Feldspar				
-respirable fraction	N.E	N.E.	N.E.	mg/m3
-total dust**	15	N.E.	N.E.	mg/m3
Biotite				
-respirable fraction**	5	15	3	mg/m3
-total dust**	15	N.E.	N.E.	mg/m3

* 2006 Edition, respirable fraction to be determined as per Appendix D of ACGIH TLV.
** Covered as particles not otherwise regulated per OSHA and particles not otherwise classified per ACGIH.
N.D. - Not determined
N.E. - Not established

8.2 EXPOSURE CONTROLS/PERSONAL PROTECTION

Ventilation: Use adequate ventilation to keep exposure to dust below recommended exposure levels. Avoid inhalation of dust. The highest probability of silica exposure occurs during installation using dry cutting methods or during removal of installed tile. Wet cutting methods are recommended.
Respiratory Protection: Use of a properly fitted NIOSH/MSHA approved particulate respirator is recommended when cutting tiles for installation or during the removal of installed tile.
Eye Protection: Use dust-proof goggles or safety glasses with side shields. Contact lenses may absorb irritants. Do not wear contact lenses in work areas.
Skin Protection: Cotton or leather work gloves should be worn when cutting this product to minimize skin exposure to dust and/or cuts. Wash hands prior to eating, drinking, or smoking, and at the end of the work shift, after cutting operations are conducted.
NOTE: Personal protection information in Section 8 is based on general information for normal uses and conditions. Where special or unusual uses or conditions exist, it is suggested that the assistance of an industrial hygienist or other qualified professional be obtained.

9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance: Brittle solid; color may vary
Odor: Odorless
Melting Point: Not Available (>2200 ^{o}F)
Boiling Point: Not applicable
Vapor Pressure: Not applicable
Vapor Density (Air = 1): Not applicable
Solubility in Water: Insoluble
Specific Gravity (H2) = 1): 1.6 to 2.1
Percent Volatile by Volume: Not applicable Evaporation Rate (Ethyl Ether = 1): Not applicable Viscosity: Not applicable
Volatility: 0 g/L Volatile Organic Compounds (VOCs)

10. STABILITY AND REACTIVITY

Stability: Stable in current form.
Conditions to Avoid: Avoid contact with acids (e.g., acetic, hydrofluoric, etc.) Incompatibility (Materials to Avoid): Avoid contact with acids (e.g., acetic, hydrofluoric, etc.) Hazardous Polymerization: Will not occur.
Hazardous Decomposition Products: None.

11. TOXICOLOGICAL INFORMATION Potential Health Effects

Primary Routes of Exposure

None for intact tile. Inhalation and potential exposure to eyes, hands, or other body parts if contact is made with broken tile, and/or during procedures involving the cutting of tiles, and/or for operations involving the removal of installed tiles.

Acute Effects

No acute effects from exposure to intact tile are known. Working with broken or cut tile produces a potential for cuts to the hands and exposed body parts. Acute effects such as eye irritation may occur if associated with high dust operations such as dry cutting tile or during the removal of installed tile. In very rare cases, symptoms of acute silicosis, a form of silicosis (a nodular pulmonary fibrosis) associated with exposure to respirable crystalline silica, may develop following acute exposure to extremely dusty environments caused by generation of tile dust. Signs such as labored breathing and early fatigue may indicate silicosis; however, these same symptoms can arise from many other causes.

Chronic Effects

No chronic effects are known for exposure to intact tile. Long-term, continual exposure to respirable crystalline silica at or above established permissible occupational exposure limits may lead to the development of silicosis, a nodular pulmonary fibrosis (NPF). NPFs are also associated with pulmonary tuberculosis, bronchitis, emphysema, and other airway diseases. This type of chronic exposure to silica dust may also result in the development of autoimmune disorders, chronic renal disease, and other adverse health effects.

Recent epidemiologic studies demonstrate that workers exposed to elevated silica concentrations have a significant risk of developing chronic silicosis. Signs such as labored breathing and early fatigue may indicate silicosis; however, these same symptoms can also arise from many other causes.

Potential Adverse Interactions

Silicosis may be complicated by severe mycobacterial or fungal infections and result in tuberculosis (TB). Epidemiologic studies have established that silicosis is a risk factor for developing TB. Any existing respiratory or pulmonary diseases may be complicated by exposure to respirable crystalline silica. Smoking may increase the risk of adverse effects if done in conjunction with occupational exposure to silica dust at or above permissible exposure limits.

Carcinogen Status

Respirable crystalline silica is classified by the International Agency for Research on Cancer (IRAC) as a Group I Carcinogen (carcinogenic to humans). The National Toxicology Program (9th Report) lists respirable crystalline silica as "Known to be a Human Carcinogen". USDOL/OSHA and NIOSH have recommended that crystalline silica be considered a potential occupational carcinogen.

Overview of Animal Testing

Short term experimental studies of rats have found that intratracheal instillation of quartz particles leads to the formation of discrete silicotic nodules in rats, mice and hamsters.

Oral (silica) Lethality

LD50 Rat oral >22,500 mg/kg LD50 Mouse oral >15,000 mg/kg

LC50 Carp >10,000 mg/l (per 72 hr.)

12. ECOLOGICAL INFORMATION

No information available at this time.

13. DISPOSAL CONSIDERATIONS

Waste should be disposed of in a landfill certified to accept such materials in accordance with federal, state, and local regulations.

14. TRANSPORTATION INFORMATION

D.O.T Shipping Name:	Not applicable
Hazard Class:	Non-regulated (for disposal purposes material is non-hazardous Class III regulated material)
ID Number:	Not applicable
Marking:	Not applicable
Label	None
Placard:	None
Hazardous Substance/RQ:	Not applicable
Shipping Description:	Porcelain/Ceramic Tiles
Packaging References:	None

15. REGULATORY INFORMATION

This product and/or its components have been previously introduced into U.S. commerce and is listed in the Toxic Substances Control Act (TSCA) Inventory of Chemicals in Commerce. Hence, it is subject to all applicable provisions and restrictions under TSCA 40 CFR Section 721 and 723.250.

This tile contains <1 percent by weight each of the following elements, which are SARA 313 Recordable: Antimony, Arsenic, Barium, Beryllium, Cadmium, Cobalt, Chromium, Copper, Manganese, Mercury, Nickel, Lead, Silver, Thallium, Tin, Titanium, Vanadium, and Zinc.

Title 22 Division 2, California Code of Regulation Chapter 3 (Proposition 65): This product contains a chemical or chemicals known to the State of California to cause cancer and/or birth defects or other reproductive harm.

This product or its components meets the following hazard definition(s) as defined by the Occupational Safety and Health Hazard Communication Standard (29 CFR Section 1910.1200):

Combustible Liquid		Flammable Aerosol		Oxidizer	
Compressed Gas		Explosive		Pyrophoric	
Flammable Gas	X		Health Hazard (Sections 3 & 11)	Unstable	
Flammable Liquid		Organic Peroxide		Water Reactive	
Flammable Solid					

Based on information presently available, this product does not meet any of the hazard definitions of 29 CFR Section 1910.1200.

Note: The information in this data sheet provides information related to the potential hazards associated with dusts which may be produced during cutting or otherwise changing the shape of the tile during installation and/or removal.

16. ADDITIONAL INFORMATION

Global Harmonization Identification System			
GHIS:	Health: 3	Fire: 4	Reactivity: 4
Hazardous Material Identification System			
HMIS:	Health: 1	Fire: 0	Reactivity: 0
National Fire Protection Association			

NFPA:	Health: 1	Fire: 0	Reactivity: 0