

# **RADIANZ™ QUARTZ SURFACE FOR FLOOR & WALL**

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## 1. INTRODUCTION

Radianz™ by Samsung is a remarkable blend of nature and technology combining natural quartz with advanced polymers. The result is an extremely hard and durable surface with performance and aesthetic characteristics that is superior to that of quarried stone products. Radianz™ quartz surface is commonly used in any interior surfacing applications such as floors, walls and premium countertops for homes and businesses.

Radianz™ is comprised of more than 93 percent mined quartz crystals, one of the hardest minerals found in nature. Color controlled quartz crystals are blended together with technologically advanced polymers, resulting in a luxurious and smooth high-gloss material that does not require routine sealing.

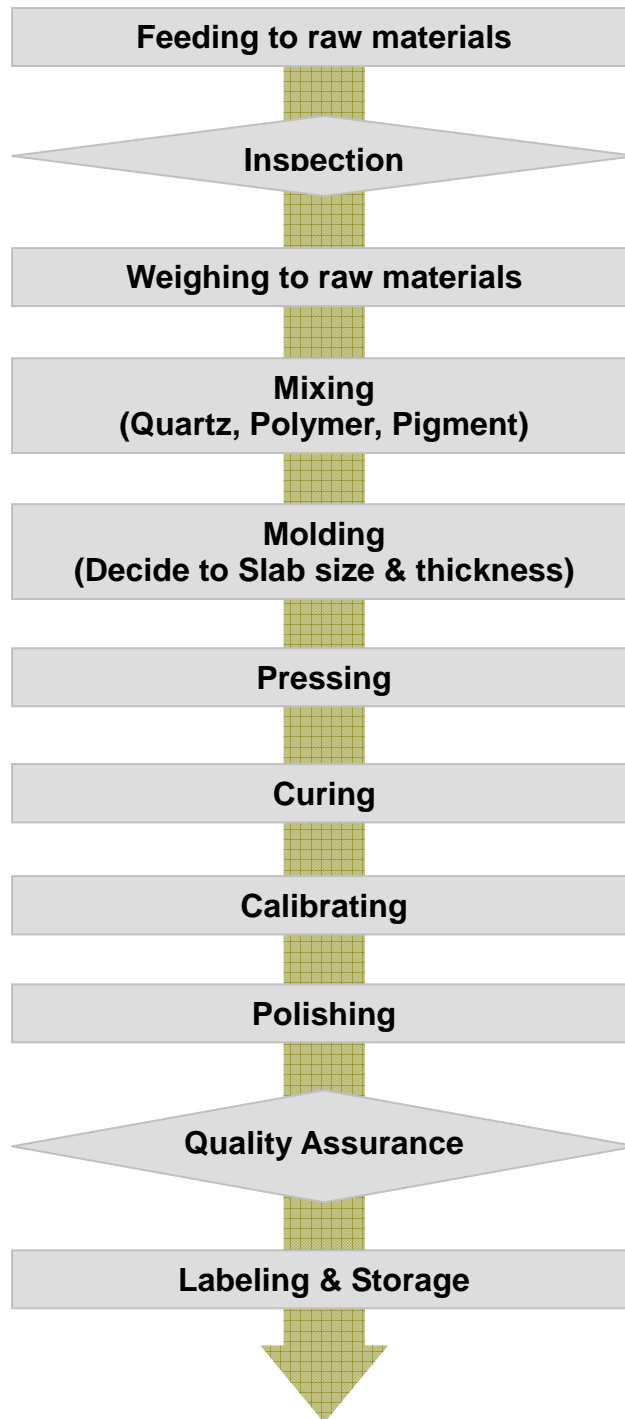
### Product Features & Benefits

- Stain Resistant
- Chemical and Bacteria Resistant
- Non-porous, Hygienic and Safe
- Easy Clean and Low Maintenance
- Scratch Resistant
- Chip and Crack resistant
- Durable
- Abrasion Resistant

### Main application

- Countertops
- Interior wall cladding
- Shower and tub surrounds
- Table and desk tops
- Toilet compartment partition
- Elevator cab walls
- Stairs
- Door sill (Threshold)
- Vanities and sinks
- Other interior finish

## 2. MANUFACTURING PROCESS





## 3. HANDLING OF THE PRODUCTS

### 3.1 Dimensions & Weights

#### 1) Slabs

Thickness		Width		Length		Weight	
mm	inch	mm	Inch	mm	inch	kg	lbs
12	1/2	1,520	60	3,100	122	141	311
20	3/4	1,520	60	3,100	122	235	518
30	1 1/4	1,520	60	3,100	122	353	778

#### 2) Tiles

Thickness		Width		Length		Weight	
mm	inch	mm	Inch	mm	inch	kg	lbs
12	1/2	600	24	600	24	10.8	23.8
20	3/4	600	24	600	24	18.0	39.7
30	1 1/4	600	24	600	24	27.0	59.5

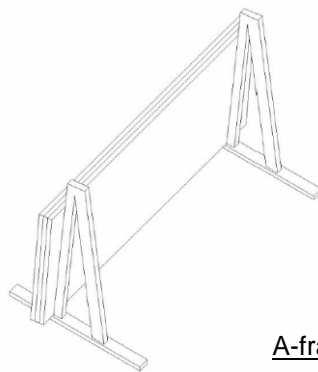
### 3.2 Shipping procedure

#### 1) Slab

- (1) Slabs are transported on wooden or metallic frame.
- (2) All surfaces (usable surfaces) are covered by protected film and the finished slabs are placed on face to face.
- (3) Each slab, after quality inspection, is marked with a label containing the following information:
  - Color name / Color code
  - Lot Number with base color indication code (U, H, D)
  - Material code
  - Slab size & Thickness

(4) Loading capacity of 20ft container

	Thickness		slabs/container
	mm	inch	
A-Frame	12	1/2	126
	20	3/4	76
	30	1 1/4	50



A-frame

2) Tile

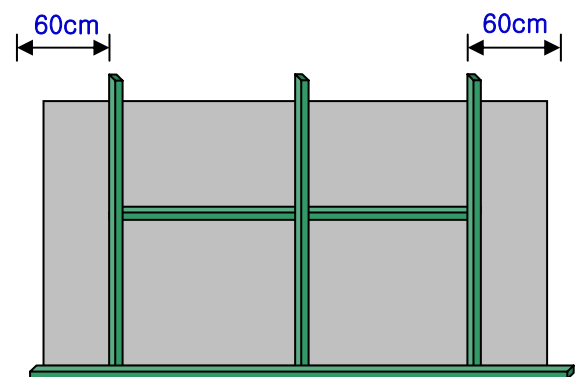
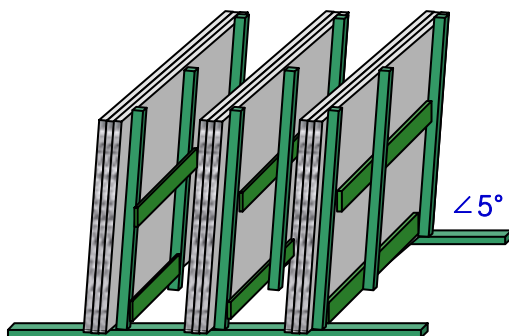
- (1) Tiles are packed into cardboard boxes, loaded into the wooden pallets or crates.
- (2) All tiles are placed on face to face in order to protect the usable surface from scratches.
- (3) Each box and pallet is marked with a label containing the following information:
  - Color name / Color code
  - Lot Number with base color indication code (U, H, D)
  - Material code
  - Tile & Thickness

(4) Loading capacity of 20ft container

Size (mm)	Thickness		pcs/box	box/pallet	pallet/container	pcs/container
	mm	inch				
600 X 600	12	1/2	3	30	18	1,620
	20	3/4	2	27	18	972
	30	1 1/4	1	37	18	648

### 3.3 Product storage

1. Indoor storage is recommended for the Product. If the Product is stored outside, they must be kept covered and be stored with the polished faces unexposed. UV light from the sun can react with the plastic resins in the slabs and permanently damage the appearances and change colors.
2. While storing or transporting the product, it is necessary to make arrangements so as to protect against damages caused by crushing, improper handling or staining with lubricants, petrol, painting materials, building materials, rust, etc.
3. The first slab or tile against the frame should be the back side and the next sequential slab or tile should be polished face to polished face. Then the following should be back side to back side.
4. Slabs must be stored in the vertical position on the compact stand so that back side of the slab lies with its full area upon backing and so that no part of the slab overlaps to the free area. Lower part of warehouse frames must be provided with rubber, plastic or wooden pads to prevent the chipping of slabs lower edge during manipulation. Slabs are put in stands in bundles that are separated with vertically laid wooden lathes – min. 4 pieces for 20mm and 30mm slabs and min. 6 pieces for 12mm slabs – in even distance all over the length of the slab bundles. If some slabs lean on another slab with gap at the bottom, prolonged storage may cause warping due to pressure.

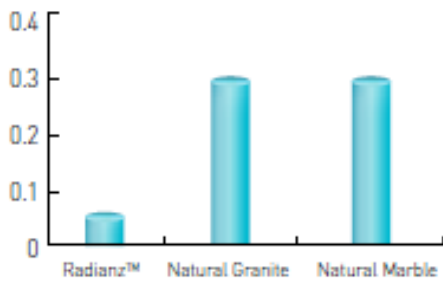




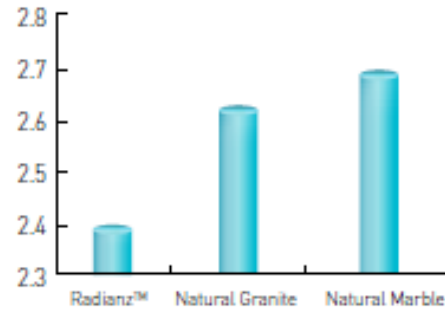
## 4. PERFORMANCE PROPERTIES

### 4.1 Physical properties comparison

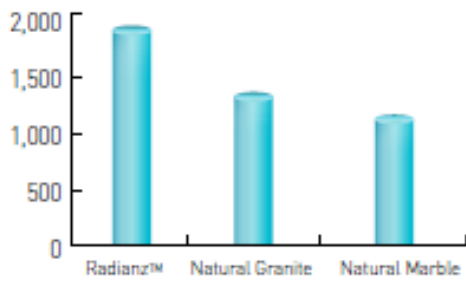
#### Water Absorption



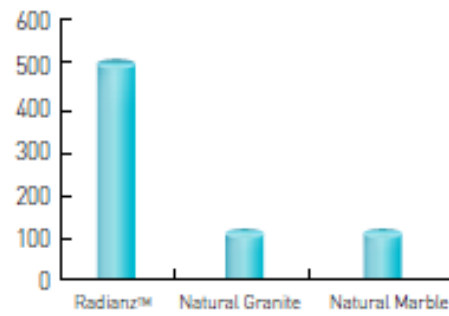
#### Specific Gravity



#### Compressive Strength



#### Flexural Strength



Items	Radianz™	Natural Granite	Natural Marble
Stain Resistance	***	**	*
Abrasion Resistance	***	***	*
Chemical Resistance	***	**	*
Non-Porous	***	*	*
Flexural Strength	***	**	*
Color Consistency	***	**	*
Chip And Crack Resistance	***	***	*
Low Maintenance	***	**	*

\*\*\*: Excellent, \*\*: Good, \*: Fair





#### 4-2. Mechanical & Chemical properties

PROPERTIES	TYPICAL RESULTS	TEST PROCEDURE	REMARKS
Specific Gravity	2.41	ASTM D792-08	
Water Absorption	0.03%	ASTM C373-06	
Coefficient of Linear Thermal Expansion	1.35 x 10 <sup>-5</sup> /°C	ASTM D696-03	
Flexural Strength	53.6 Mpa	ASTM D790-07	
Flexural Modulus	11.9 Gpa	ASTM D790-07	
Boiling Water Resistance	No effect	NEMA LD3 2000 3.5	
High Temperature	No effect	NEMA LD3 2000 3.6	
Moh' s Hardness	7	MOHS Hardness Scale	
Slip Resistance -	0.91 / 0.49		Neolite
Coefficient of Friction (Received: Dry/Wet)	0.45 / 0.57	ASTM C1028-07	Leather
	1.03 / 0.49		Rubber
Slip Resistance -	0.89 / 0.48		Neolite
Coefficient of Friction (Renovated: Dry/Wet)	0.40/ 0.58	ASTM C1028-07	Leather
	0.92/ 0.50		Rubber
Compressive Strength	DRY: 213.74 Mpa WET: 251.16 Mpa	ASTM C170-09	
Stain Resistance	Passes	ANSI Z124.6-07	
Cigarette Test	Passes	ANSI Z124.6-07	
Chemical Resistance	Passes	ANSI Z124.6-07	
Impact Tests	Passes	ANSI Z124.6-07	
Fungal Resistance	No effect	ASTM G21-96	
Bacteria Resistance	No effect	ASTM G22-96	
Rockwell Hardness	114	ASTM D785-03	
Abrasion Resistance	606mg	ASTM D4060-07	Taber abrasion
Flammability	Class A	ASTM E84-09	

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## 1) Fungal resistance

### (1) TEST METHOD

- ASTM G 21 : Determining Resistance of Synthetic Polymeric Materials of Fungi
- STRAINS
  - Aspergillus Niger (ATCC 9642)
  - Penicillium Pinophilum (ATCC 11797)
  - Chaetomium Globosum(ATCC 6205)
  - Aureobasidium Pullulans(ATCC 15233)
- CULTURE CONDITION
  - 30 +/- 1°C, 85%RH, 28days
- LIMITATION

OBSERVED GROWTH ON SPECIMEN	RATING
None	0
Traces of growth (Less than 10%)	1
Light Growth	2
Medium Growth	3
Heavy Growth (60% to complete coverage)	4

### (2) TEST RESULT

#### ZERO TRACES OF GROWTH

CULTURE TIME	Day 0	Day 7	Day 14	Day 21	Day 28
Result	0	0	0	0	0



## 2) Bacteria resistance

### (1) TEST METHOD

- ASTM G 22 : Standard Practice For Determining Resistance of Plastics to Bacteria
- STRAINS  
Pseudomonas Aeruginosa (ATCC 13388)
- CULTURE CONDITION  
36 +/- 1°C, 85%RH, 21days
- LIMITATION

OBSERVED GROWTH ON SPECIMEN	RATING
None	0
Traces of growth (Less than 10%)	1
Light Growth	2
Medium Growth	3
Heavy Growth (60% to complete coverage)	4

### (2) TEST RESULT

#### ZERO TRACES OF GROWTH

CULTURE TIME	Day 0	Day 7	Day 14	Day 21
Result	0	0	0	0



### 3) Flammability

#### (1) TEST METHOD

- ASTM E 84 : Surface Building Characteristics of Building Materials
- SAMPLE PREPERATION AND CONDITIONING

Three pieces of sample were placed into the fire chamber end to end supported on screen and rods, to form a 21 inches wide X 24 feet long for testing, than was covered with Inorganic cement boards to protect the chamber lid.

#### (2) TEST PROCEDURE

The tunnel was thoroughly pre-heated by burning natural gas. When the brick temperature, sensed by a floor thermocouple, had reached the prescribed 105° Fahrenheit +/-5° Fahrenheit level, the sample was inserted in the tunnel and test conducted in accordance with the standard ASTM E84-09 procedure. The operation of the tunnel was checked by performing a 10-minute rest with inorganic board on the day of the test.

#### (3) RATING

The National Fire Protection Association Life Safety Code 101, Section 6-5.3, “ Interior Wall and Ceiling Finish Classification” , has a means of classifying materials with respect to Flame Spread and Smoke Developed when tested in accordance with NFPA 255, “ Method of Test of Surface Burning Characteristics of Building Materials” (ASTM E84).

FLAME SPREAD	SMOKE DEVELOPED	RATING
0 - 25	0 - 450	Class A
26 - 75	0 - 450	Class B
76 - 200	0 - 450	Class C

#### (4) TEST RESULT

- FLAME SPREAD : 10
- SMOKE DEVELOPED : 180
- RATING : Class A



#### 4) Stain resistance

##### (1) TEST METHOD

- ANSI Z124.6 – Section 5.2 : Stain Resistance

##### (2) TEST PROCEDURE

Two (2) drops of each of the following liquid reagents shall be applied to the surface of Radianz™. Expose the sample for 16 hours; Covered with glass plate and uncovered. The stained specimens shall be subjected to cleanability tests immediately and rated at that time. Each stain, both covered and uncovered, shall be given a number in accordance with the rating procedure given in Table 4.1.

##### (3) PERFORMANCE REQUIREMENT

The maximum stain resistance rating shall be the sum of all the individual stain ratings for each of the covered and uncovered stain areas. The maximum allowable total rating shall be 64. The maximum allowable thickness of material removed to eliminate the stain shall be 0.012mm.

Table 4.1 – Stain Ratings Procedure

CLEANABILITY TEST	RATING
The specimen shall be washed with tap water and cheesecloth or soft bristle brush using 20 scrub cycles with normal hand pressure and dried by blotting.	1
Stains present after initial wash with water shall be washed with alcohol (commercial rubbing alcohol) or naphtha (lighting fluid) using cheesecloth or soft bristle brush for 20 cycles using normal hand pressure.	2
Stains present after the aforementioned cleanings shall be scrubbed 20 scrub cycles with standard scouring powder and wet cheesecloth or soft bristle brush using normal hand pressure.	3
Stains present after the aforementioned cleanings shall be scrubbed an additional 40 scrub cycles with standard scouring powder and wet cheesecloth or soft bristle brush using normal hand pressure.	4
The affected area shall be lightly sanded with 600grit abrasive cloth until the stain is removed. The depth shall be measured to the nearest 0.025mm.	5



*Radianz™*

(4) TEST RESULT

- STAIN RESISTANCE : Pass
- REAGENT
- Black Crayon
  
- Black Liquid Shoe Polish
- Blue Washable Ink
- Gentian Violet Solution
- Beet Juice
- Grape Juice
- Lipstick
- Hair Dye
- Iodine Solution
- Wet Tea Bag



## 5) Chemical resistance

### (1) TEST METHOD

- \* ANSI Z124.6 – Section 5.5 : Chemical Resistance

### (2) TEST PROCEDURE

Two (2) drops of each of the following liquid reagents shall be applied to the surface of Radianz™

Expose the sample for 16 hours; Covered with glass plate and uncovered

#### \* REAGENT

Naphtha	Toluene
Ethyl Alcohol	Ethyl Acetate
Amyl Acetate	Lye, 1%~2% *Drano)
Ammonia, 10%	Acetone
Citric Acid, 10%	Trisodium Phosphate, 5%
Urea, 6% (Urine)	Vinegar
Hydrogen Peroxide, 3%	Pine Oil
Sodium Hypochlorite	Phenol, 5% (Lysol)

### (3) PERFORMANCE REQUIREMENT

The surface finish shall be unaffected by the reagents except for superficial surface change which are removable by sanding with 600 grit wet or dry sandpaper and water. Any resulting damage shall not impair the serviceability of the unit, and shall be easily repairable by using abrasive and polishing compounds to approximate the original finish.

### (4) TEST RESULT

- \* CHEMICAL RESISTANCE : Pass



## 5. INSTALLATION

### 5.1 Thickness, sizes and colors

#### 1) Appropriate thickness for each size

Dimension of the tiles	Thickness
300 X 300(mm)	12mm,20mm
400 X 400(mm)	12mm,20mm
600 X 600(mm)	20mm, 30mm

#### 2) Recommended colors depending on the application area

Application	Color name
Interior wall	All colors
Interior floor	Albion Amber, Atlas Brown, Andean Sepia, Appalachian Umber, Mauna Loa Black, Matala Tan, Rocky Mountain Brown, Soback Beige, Luna Verde, Sechura Mocha, Cumberland Flax, Palau Java, Columbia Gray, Ural Gray, Allegheny Amber, Toluca Sand, Bristol Beige, Shasta Brown, Alpine Umber, Teton Beige, Cascade Pebble, Mont Blanc Snow, Saltoro Cliff, Mariposa Buff, Mirama Bronze, Ferio Black, Kauai Cream, Antigua Beach

- \* **All products are recommended for interior use only.**
- \* Being made from natural materials, the color variations of the product could appear. The Product is sorted by producer according to the basic color standards. Slight optical color differences are proper and should be respected. There is mostly one color shade packed on one pallet and always one color shade in the same cardboard box and the respective lot No. and color shade is given on the box label. In spite of the fact, before starting the installation it' s necessary to open several boxes with the tiles, lay the tiles on the floor under natural light and check the color consistency. To avoid any problems with color consistency on the floor is recommended to lay down the tiles consecutively one by one from several checked open cardboard boxes, simultaneously, not only from one card board box.





## 5.2 Thermal expansion

The polyester resin used as a binder causes not only the increase in the high bonding strength properties, but also in the thermal expansion of the product. Therefore, it is necessary to take these facts into consideration during designing the floors and wall claddings.

Linear thermal expansion to differential Radianz™ tile sizes		
Tile sizes	Calculation	Length difference
12" x 12" (300 x 300mm)	$1.35 \times 10^{-5}/^{\circ}\text{C} \times 60^{\circ}\text{C} \times 300\text{mm}$	0.243 (300.243)mm
16" x 16" (400 x 400mm)	$1.35 \times 10^{-5}/^{\circ}\text{C} \times 60^{\circ}\text{C} \times 400\text{mm}$	0.324 (400.324)mm
24" x 24" (600 x 600mm)	$1.35 \times 10^{-5} /^{\circ}\text{C} \times 60^{\circ}\text{C} \times 600\text{mm}$	0.486 (600.486)mm

\* Length difference (L) =  $\alpha \times (T2 - T1) \times L0$  (Maximum temperature range : 60°C)

T1 : Initial temperature(°C)

T2 : Final temperature(°C)

L0 : Initial length(mm)

$\alpha$  : Thermal expansion coefficient ( Radianz™ :  $1.35 \times 10^{-5} /^{\circ}\text{C}$  )

Radianz™ should be installed by keeping the joint from 3 up to 7 mm according to the characteristics of the base, the sizes, dimensional stability, and thermal expansion coefficient of the product and according to the environment where the installation takes place.

The expansion joints need to be brought through to the tile surface and treated with a flexible sealant. An architect and engineer should be consulted when specifying expansion joint placement, construction and materials.

## 5.2 Installation of floor and wall tiles

### 1) Floor

#### (1) Environment condition

The installation can be started only after making sure that the temperature and moisture conditions meet the conditions prescribed by the technical document of the used adhesives. For a longer period than 24 hours the temperature cannot decrease beneath 41°F (5 °C) and exceed 86°F (30 °C).



## (2) Substrate preparation

Substrate on which the product is installed must be sound, level, free from structural movement and clean of debris such as oil, paint sealers and curing compounds which may prevent the tile from proper bonding. Substrate concrete base must be adequately cured before installation. It is recommended to install tile only over concrete slabs that are free of hydrostatic pressure. Sufficient curing must be reached – at least 4 weeks! After the concreting is finished the concrete must be moistened properly and protected against too quick evaporation or against frost for at least 15 days. The humidity of the concrete must be max. 2 – 3% before the installation. The humidity is measured by a carbide moisture meter. The standard level of acceptable moisture for epoxy mortars is a reading that does not exceed 5%.

## (3) Installation indication

There are many methods of installation for floor, but generally they can be classified three basic types of setting material considered for RADIANTZ™. But, we do not recommend installation method using cement.

### ① Rapid Set Liquid Latex / Acrylic Modified Thin sets [Recommend by Cheil' s]

There are two type of organic-based adhesives that consist of liquid and powder. Latex thin-set mortar additive is specially designed latex additive for use with special filler powder to make high strength latex thin-set bed up to 3mm thick and medium bed to 15mm thick mortars.

\* Recommended adhesive supplier: Laticrete, Mapei etc.

\* Please contact manufacturers as following;

– LATICRETE International : <http://www.laticrete.com>

– MAPEI International : <http://www.mapei.com>

### ② Traditional installation method using cement

This method uses a mixture that is cement and sand which is well blended together and has water added (Ratio: 3 part sand to 1 part cement). The quantity of water to be added depends on environmental factors.

### ③ Latex Modified Mortar

These methods are primarily composed of ready mixed mortar and are packaged in powder type. Water is added at time of use and the moisture content of the mortar about 5% is appropriate. They are composed of cement, sand, resin and other additives; their



primary function is to increase adhesive qualities. Latex modified mortar tends generally to have higher rigidity and mechanical fragility than traditional installation method using cement.

#### **Caution!**

The product should avoid exposure to cement paste or mortar. Prolonged exposure to cement with high alkali can cause discoloration of the product. Cement paste or mortar have strong alkaline chemical (pH 12~13).

## 2) Wall

### (1) Environment condition

Product should always be installed according to local codes, ordinances, trade practices and climatic conditions. There are almost no restrictions on interior installations of RADIENZ. However, until further testing is completed, it is NOT recommended that RADIENZ be installed on exterior surfaces.

### (2) Substrate preparation

The surface must be free of coatings, oil, wax or anything that would prevent proper bonding.

### (3) Installation indication

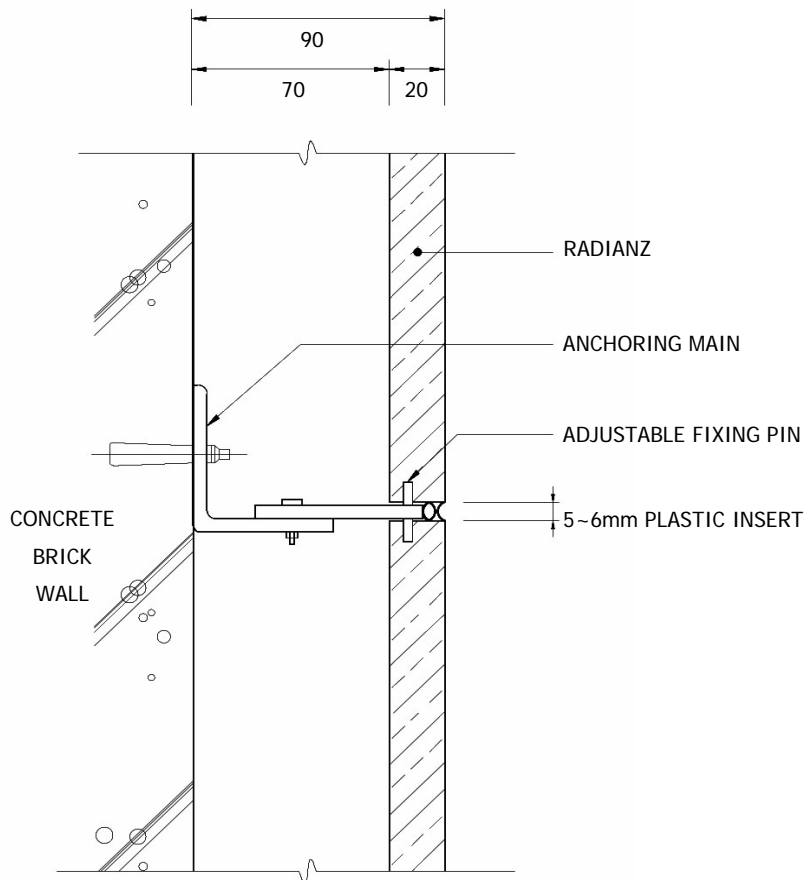
Generally, that can be classified 2- types of setting material considered for RADIENZ™.

#### ① Organic glued set

- Recommended height up to max. 2.5 m
- Recommended dimensions of the product (cm) Recommended thickness of the product : 300mm x 300 x 12mm

#### ② Anchors System

In the case of larger size, 3/4"(20mm) thickness material will be the selection of choice for a wall installation. Large format panels can be "anchored" to the wall using any of the approved anchor systems available.



(4) Protection

- ① Protect finished work against weather, freezing and immersion in water for at least 21 days after completion of the work.
- ② Protect walls from impact, vibration and hammering on adjacent walls for at least 14 days after installation.

(5) Grouting and Jointing

On walls, install RADIENZ tiles leaving a regular even spacing between tiles of at least 1/8"(3.0mm). In the case of large areas, for larger tiles or higher mechanical or thermal load, the width of the joint has to be 5 – 7 mm and the joint after each 5th – 6th tile should be jointed by a silicone jointing material.



## 6. MSDS (MATERIALS SAFETY DATA SHEET)

### 1) Product and Company Identification

- **PRODUCT NAME** : RADIANTZ™ Quartz Surfaces
- **COMPANY** : Cheil Industries Inc.
- **ADDRESS** : 32-2, Gocheon-Dong, Uiwang-Si, Gyeonggi-Do, Korea 437-711
- **EMERGENCY TELEPHONE** : + 82-61-689-1163 (R&D)

### 2) Composition/Information on Ingredients

- **CHEMICAL FORMULA** : Not applicable
- **MOLECULAR WEIGHT** : Not applicable
- **DANGER RISK** : Not applicable
- **CAS NUMBER** : 1317 - 65 - 3  
14808 - 60 - 7
- **CE NUMBER** : Not applicable
- **EINECS NUMBER** : Not applicable

Product in composite stone obtained by mixing of quartz granules and/or silica sands bound with polyester resin.

### 3) Identification of Dangers

Avoid inhaling dust generated during fabrication. Inhalation of dust composed of Radianz™ may cause irritation to the mucosa.

Continued exposure to crystalline silica may cause silicosis, a chronic and progressively debilitating lung disease.

### 4) First Aid Measures

- **SKIN CONTACT** : Normally no effect. May cause dryness of the skin with prolonged contact.
- **EYE CONTACT** : Normally no effect. In case of contact, flush with water. In case of continued pain, consult your medical care provider.
- **INGESTION** : In case of ingestion (see 3, above), immediately rinse the mouth with water and consult your medical care provider.
- **INHALATION** : In case of inhalation (see 3, above), move to an open and well-ventilated area. Consult your medical care provider.

### 5) Fire Safety Measures

- **APROPRIATE FIRE EXTINGUISHERS**: All fireproof means and materials are suitable.
- **NON-APPROPRIATE EXTINGUISHER, MEANS AND MATERIALS**: None



- **RISK OF COMBUSTION:** Radianz™ is a non combustion product.
- **MEANS OF PROTECTION:** None

#### 6) Measures in Case of Accidental Spillage

- **INDIVIDUAL PRECAUTIONS:** Use personal protective equipment.
- **ENVIRONMENTAL PRECAUTIONS:** None
- **CLEANING METHOD:** Use manual or mechanical equipment.

#### 7) Manipulation and Storage

- **PRECAUTIONS FOR MANIPULATION :** None
- **PRECAUTIONS FOR STORAGE:** Store in ventilated areas, covered and protected from heat.

#### 8) Exposure Controls/Individual Protection

- **TECHNICAL MEASURES :** See 7, above
- **INDIVIDUAL PROTECTION DEVICES (IPD):** Individual protection is required if dust is generated.

PROTECTION OF RESPIRATORY SYSTEM: Wear a dust mask.

PROTECTION OF HANDS: Wear protective gloves.

PROTECTION OF EYES: Wear protective glasses.

PROTECTION OF THE SKIN: None

Operating in a wet environment, combined with the use of ventilation and filtration systems are effective exposure controls.

#### 9) Physical and Chemical Properties

- **PHYSICAL STATUS:** Solid
- **FORM:** Not applicable
- **COLOR:** Various
- **ODOR:** None
- **pH:** Not applicable
- **BOILING TEMPERATURE :** Not applicable
- **FUSION TEMPERATURE :** Not applicable
- **FLASH POINT :** Not applicable
- **AUTO-INFLAMMABILITY :** Not applicable
- **COMBURENT PROPERTIES :** Not applicable
- **STEAM PRESSURE :** Not applicable
- **DENSITY AT 20°C :** 2.48 – 2.50 kg/dm<sup>3</sup>
- **SOLUBILITY :** Insoluble in water and in inorganic acid



- **COEFFICIENT N-OCTANE/WATER** : Not applicable

#### 10) Stability and Reactivity

- **CONDITIONS TO AVOID** : None
- **MATERIALS TO AVOID** : None
- **DANGEROUS PRODUCTS OF DECOMPOSITION** : None

#### 11) Toxicological Information

- **MEANS OF PENETRATION** :  
INGESTION: No  
INHALATION : Yes  
CONTACT : No
- **ACUTE TOXICITY** : No
- **CHRONIC TOXICITY** : Yes
- **CORROSIVITY / IRRITATION PROPERTIES** :  
SKIN: None  
EYES: None  
RESPIRATORY: Possible chronic effects of long-term exposure – silicosis, pulmonary emphysema.
- **SENSITIVITY PROPERTIES** : Unknown

#### 12) Ecological Information

- **MOBILITY** : None
- **PERSISTENCE/DEGRADABILITY** : Not persistent/degradable
- **BIOACCUMULATION** : None
- **ECO-TOXICITY** : None

This product is considered a stable material, non reactive and insoluble. Based on current knowledge, non-ecological problems are hypothesized. Use according to good working procedures, and avoid the dispersal of particulate material into the environment.

#### 13) Consideration of Refuse

- **CONTAINMENT TECHNIQUES** : No requirements
- **CLEANING TECHNIQUES** : Manual removal (shovel, broom, vacuum cleaner)
- **BIOACCUMULATION** : None
- **SCRAP MATERIAL DISPOSAL**: Disposal of fabrication and installation waste materials must be handled in accordance with existing regulations regarding waste materials.
- **Packaging Material Disposal**: Recycle or reuse packing materials (carton and wooden pallets).  
Dispose of external wrapping according to existing regulations.



#### 14) Transport Information

- GROUND : No specific precautions
- WATERWAYS : No specific precautions
- SEA : No specific precautions
- AIR : No specific precautions

#### 15) Regulatory Information

Radianz™ is not dangerous as per Italian Decree Law, 3 February 1997 n.52 and relative rules regarding the classification, packaging and labeling of dangerous substances.

#### 16) Other information

We hereby certify that the above statements are true and correct in every respect. If the statements are not true, all responsibility will belong to CHEIL.

Signature/Issued Date:

Radianz™ Quartz Surfaces  
CHEIL INDUSTRIES INC.





## 7. Care and Maintenance

Radianz™ quartz surface is made from good quality raw materials that present exceptional physical and mechanical features with unique beauty ideal for interior decoration. It requires very little maintenance as its unique production process creates a surface with low porosity, which prevents fluid absorption. The hardness of the surface (6 – 7 grade according to Mohs) and a very low water absorption make the product highly resistant to common influences. However, the protection of the product surface under a long-term exposure to abrasive impurities is the reason for recommending the regular maintenance and cleaning of the product surface

### 7.1. Preparation for the floor cleaning

Before using chosen cleaning or protecting agent it is necessary to test it on a small area and only after the evaluation of the results on a dried-up product to carry out the overall application. Most of the agents are to be diluted according to the instructions of their producers. After using cleaning agents, it is always necessary to remove the cleaning agent and release impurities from the product surface quickly and carefully and to wash the surface thoroughly with pure water.

The product surface does not resist in the long term exposure to strong alkaline (NaOH, KOH, ...) and does not resist even in the short term to the hydrofluoric acid (HF). These chemicals are contained in some cleaning agents, which are available on the market. Therefore, for cleaning the surfaces it is important to use only products, which are suited for the cleaning of engineered stone; They may not be identical to the cleaning agents for natural granites or ceramics. For cleaning, especially after the installation and jointing of floor tiles or for the cleaning of the tiles, which are highly dirty in the long term, use recommended products and not the mixtures of chemicals (lye, hydrochloric acid, hypochlorite...). The cleaning and maintenance, especially of larger surfaces, are recommended to be realized by specialized company experienced in maintenance of the engineered stone. It is necessary to use protecting instruments according to the instructions from their producers.

### 7.2. Cleaning for the floor

An appropriate cleaner is applied to the surface of the product (best done by machine, always



with PAD disks). Any residual cleaner should be cleaned when the released impurities are

carefully removed. When polishing-over is done by a machine it is always necessary to use only the disks with artificial fibers (e.g. PAD LUX) to assure proper cleaning process. (Avoid usage of any type of steel wires disks since it may cause scratches)

Radianz™ is substantially harder than natural stone and highly resistant to scratch. However, avoid abusing the surface by refraining from using sharp objects such as sharp knives or screw drivers directly onto the surface.

■ Recommended equipment for floors cleaning

- One-disk floor washer with 150 – 200 rpm (for all operations)
- Water vacuum cleaner or water extractor
- Nylon pads with boar' s hair (for washing), White PAD LUX (for polishing)

**[Products that should be avoid ]**

- Cleaners that contain Pine Oil. Without very thorough rinsing, these products can leave behind a residue of pine oil. The pine oil then attracts and holds dirt on the surface, eventually reducing the cleanliness of the surface and its appearance.
- Highly aggressive cleaning agents such as oven/grill cleaners and dishwasher polishing agents that have high alkaline/pH levels (pH 8.5 or higher)
- Abrasive scrubs/cleaners containing either soft or hard abrasive particles. The abrasives will harm Radianz™ and if the surface is not completely rinsed, a powder residue will remain reducing the appearance of the surface, especially on dark colors.
- Cleaners that contain xylene, toluene, potassium hydroxide or caustic soda.
- Paint removers, Furniture strippers containing trichlorethane or methylene chloride.



### 7.3. Recommended cleaning procedures

Items		Procedures
1. Milk 2. Soy sauce 3. Grape juice 4. Orange juice 5. Tea 6. Whiskey 7. Coke 8. Olive oil 9. Lemon juice 10. Vinegar	11. Beer 12. Coffee 13. Mustard 14. Tomato ketchup 15. Hot sauce 16. Peroxide 17. Nail polish remover 18. Red wine 19. Isopropyl alcohol	1. Wipe the surface using a clean, soft cloth or sponge and a mild dish-soap diluted in warm water. 2. For best results, wipe away liquid spills and thoroughly dry as soon as possible
1. Gum 2. Paint 3. Grease	4. Blood 5. Food	1. Dried liquids, foods and any hardened residue can be removed by gently scraping the surface with a plastic putty knife or a non-abrasive Scotch-Brite® pad, followed with a damp cloth or sponge and mild liquid dish soap. 2. Never use Methylene Chloride or cleaners containing any alkaline materials.
1. Black tea 2. Ink pen 3. Crayon 4. Shoe polish 5. Hair dye 6. Nail polish	7. All stains that persist from lists above 8. Adhesive residue from Stickers or tape 9. Permanent Magic marker 10. Stain by protect film	1. Wearing gloves, moisten affected area with acetone or nail polish remover applied with a paper towel or clean cloth. Read product labels and follow all precautions. 2. Wipe away the stains 3. Rinse thoroughly to remove any cleaning residue
1. All stains that persist from lists above		1. Wearing gloves, moisten affected area with acetone or nail polish remover applied with a paper towel or clean cloth. Read product labels and follow all precautions. 2. Apply a small amount of abrasive cleanser(*) 3. Very Carefully work abrasive cleanser to the stained area. 4. Rinse thoroughly to remove any residue. (*) Abrasive cleanser - CIF cream lemon(Unilever) - Comet® - Soft Scrub ®
1. Rust stains 2. Water spot (calcium deposits)		1. Apply calcium/rust remover to a cotton cloth or a new sponge and rub the stained area. Read product labels and follow all precautions. 2. Rinse thoroughly to remove any cleaning

residue.

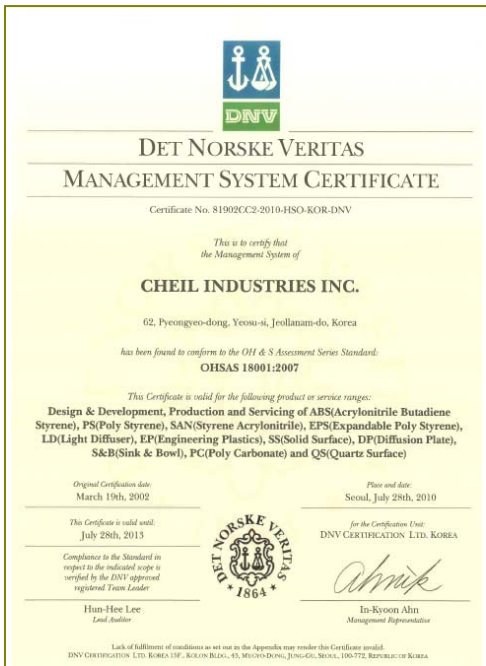
## 8. Certifications



**ISO 9001**  
[Quality Management Standard]



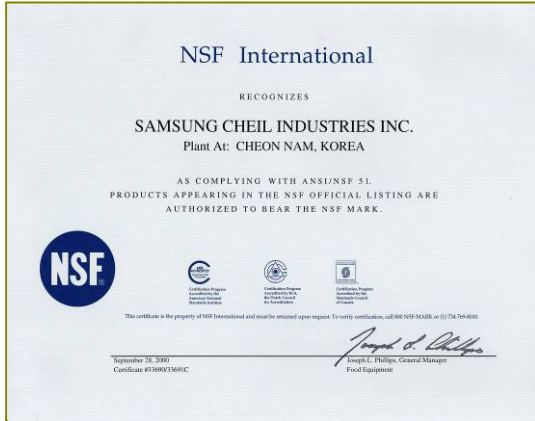
**ISO 14001**  
[Environment Management Standard]



**OHSAS 18001**  
[Occupation Health and Safety]



**ISO 14001**  
[Korean Standard]



**NSF International**



**GREENGUARD**



**SCS Recycled Content**



**SCS Recycled Content**