

For  
Architect &  
Designer

**LOTTE  
ADVANCED  
MATERIALS**

**Staron &  
Radianz**

**LOTTE**  
ADVANCED MATERIALS

## LOTTE ADVANCED MATERIALS, a creator of high-quality materials and refined sensibilities.

LOTTE ADVANCED MATERIALS, formerly Cheil Industries which was established in 1954 as the founding parent company of the Samsung Group, kicked off its chemical business as part of its portfolio expansion strategy.

In 1992, the company started its solid surface business. In 2009, it made a foray into engineered stone business in a move to strengthen its business portfolio further.

In May 2016, the company was renamed as LOTTE ADVANCED MATERIALS, a move forward toward achieving a greater vision of becoming a global powerhouse of high-quality materials.

Widely used for interiors of kitchen, bathroom, office spaces, and homes. The combination of high technology and high design in these materials can turn any remodeling project & new construction project into a fully-functional work of art. LOTTE ADVANCED MATERIALS products are a top-of-the-line product which has been certified with ISO 9002 (International Quality Certification) and ISO 14000 (International Environmental Management certification). Furthermore, it has been certified with NSF51 (Food Zone), meeting the stringent standards for health and environmental science industries. Our high-quality solid surface & quartz surface are an integration of expertise and technology.

# staron®

Solid Surfaces

Your Story Teller

## Staron® Premium Solid Surface

The internal composition of Staron® is uniform and non-porous with luxurious soft textures. It is available in attractive natural textures of a wide range of colors and is a practical choice for kitchens, living rooms, bathrooms, and an artful addition to your living spaces.

The infinite design possibilities with Staron® can produce a variety of creative living spaces and cultures.



DEPENDABLE PERFORMANCE



KEEPING THE SURFACE HYGIENIC



DIMENSIONAL FLEXIBILITY



INFINITE RANGE OF COLORS



SEAMLESS



ILLUMINATING THE ENVIRONMENT



GLOBAL NETWORK



EXCELLENT QUALITY

### DEPENDABLE PERFORMANCE

Innovation meets superior standard  
Offering higher performance to suit commercial environments  
Homogenous material which allows the surface to be easily restored

### KEEPING THE SURFACE HYGIENIC

Designed with end-users in mind, your environment can be protected from the growth of bacteria or fungi  
Resistant to harsh chemicals  
Easy to maintain

## DEPENDABLE PERFORMANCE & KEEPING THE SURFACE HYGIENIC



\* HD Expo 2013, Las Vegas, USA

# DIMENSIONAL FLEXIBILITY & INFINITE RANGE OF COLORS



## DIMENSIONAL FLEXIBILITY

Bringing another layer of depth & sophistication  
Free forming of 3 dimensional representation is possible  
Excellent workability & precise expression of various design

## INFINITE RANGE OF COLORS

From natural to vivid palette tones, Staron® offers over 140 range of colors  
World's first "Jewel-like", Tempest®  
Collaboration with color trend experts to develop trendy color choices

\* HD Expo 2013, Las Vegas, USA

### SEAMLESS

Easily create variety of smooth forms that is like an artwork  
These subtle features increase the value of the completed design

### ILLUMINATING THE ENVIRONMENT

Excellent processability and backlighting to create various image and text related effects  
Brightness & Transparency can be adjusted by the modifying the thickness

# SEAMLESS & ILLUMINATING THE ENVIRONMENT

\* Milan Design Weeks 2013, Italy

**GLOBAL NETWORK**

Operating regional branch offices around the world in addition to global distribution networks

**EXCELLENT QUALITY**

High quality control policy & 10 years warranty  
Certified eco-friendly, Staron® creates for you a comfortable and safe environment

GLOBAL NETWORK  
& EXCELLENT QUALITY



# STARON® BENEFITS



## DEPENDABLE PERFORMANCE

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- Offering higher performance to suit commercial environments
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# CASE STUDY



Healthcare



Hospitality



Retail



Restaurants



Workspace &  
Education



Wall-cladding



Kitchen & Bath



Creative Work



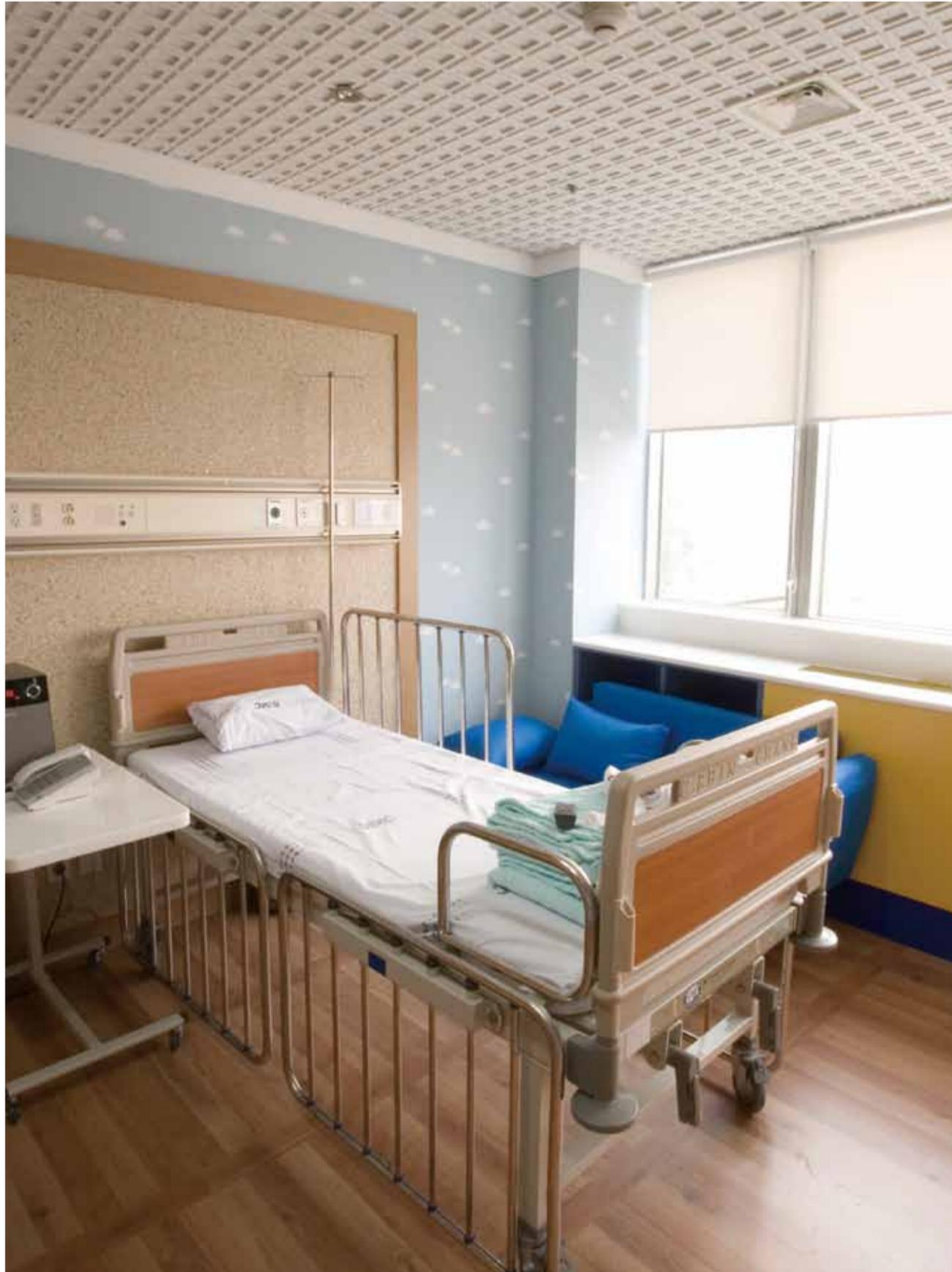
# HEALTHCARE



Non-porous surfacing material

Provide the highest material standard by eliminating the growth of germs, fungi or mold

Maintain a hygienic setting with a touch of modern sophistication



**Hygienic**

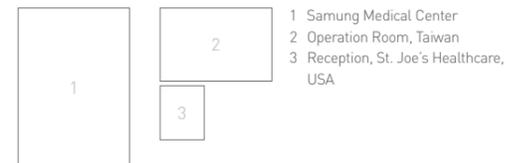
- Non-porous surfacing material eliminates the growth of germs, fungi, or mold
- Seamless countertop installation provides another layer of assurance to prevent the growth of bacteria or fungi

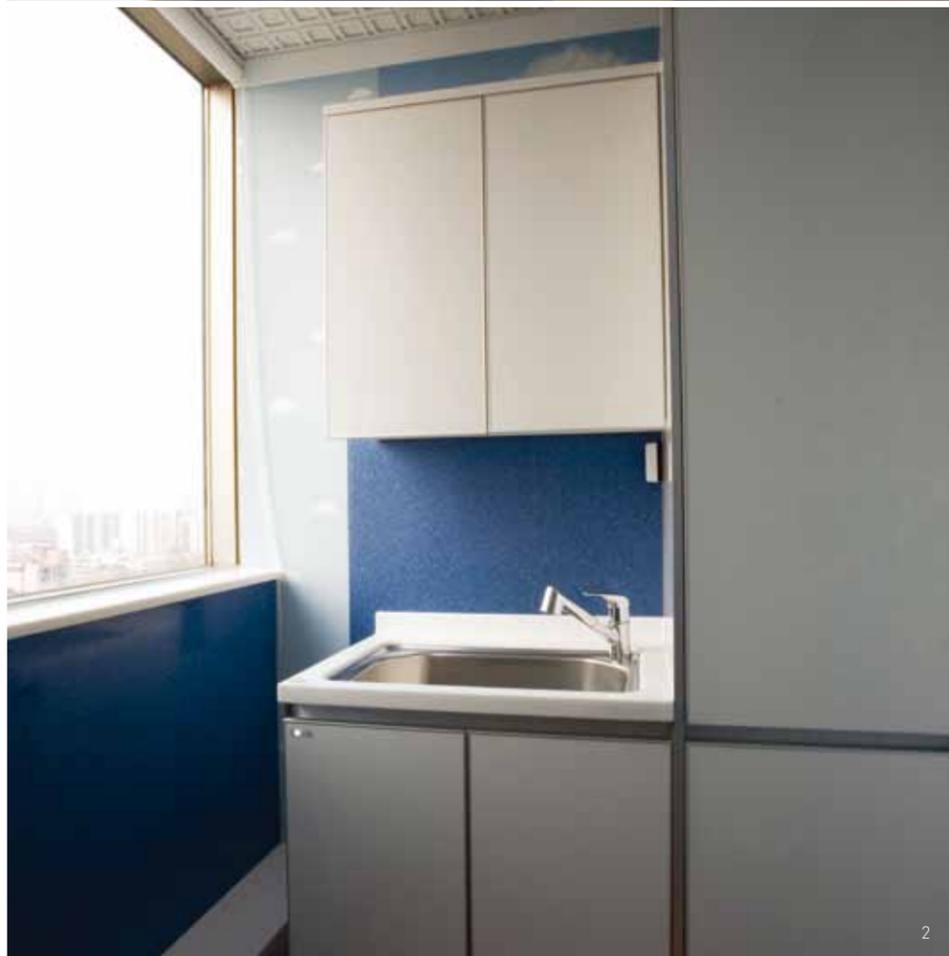
**Dependable Standard**

- Class a fire rating standard
- Green-guard certified

**Enhancements**

- Incorporate unique colors and designs to bring elevate the environment
- Thermoforming allows 2D/3D designs





1, 2 Samsung Medical Center  
3, 4 Wall, Wash Bowl, Woori Hospital, Seoul, Korea  
5 Riverside Dental, Queensland, Australia (Designed by Anthony Connor, Ego Squared Design)

6, 7 Nurse's Room Geneva University Hospital, Geneva, Switzerland  
8 Wall, Wash Bowl, Geneva University Hospital, Geneva, Switzerland  
9, 10 Wash bowl, Creche Les Tilleuls Prilly, Switzerland



# HOSPITALITY



Bring unparalleled design & style options to accentuate the decor space

Exceed beyond the original standard

Deliver warm ambience



**Innovative Designs**

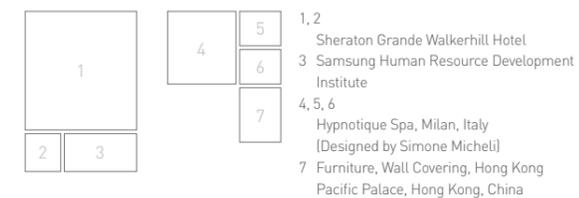
- Endless styling options
- Seamless surface material integration
- With over 140 color offerings, transform the area with a touch of vibrancy and sophistication

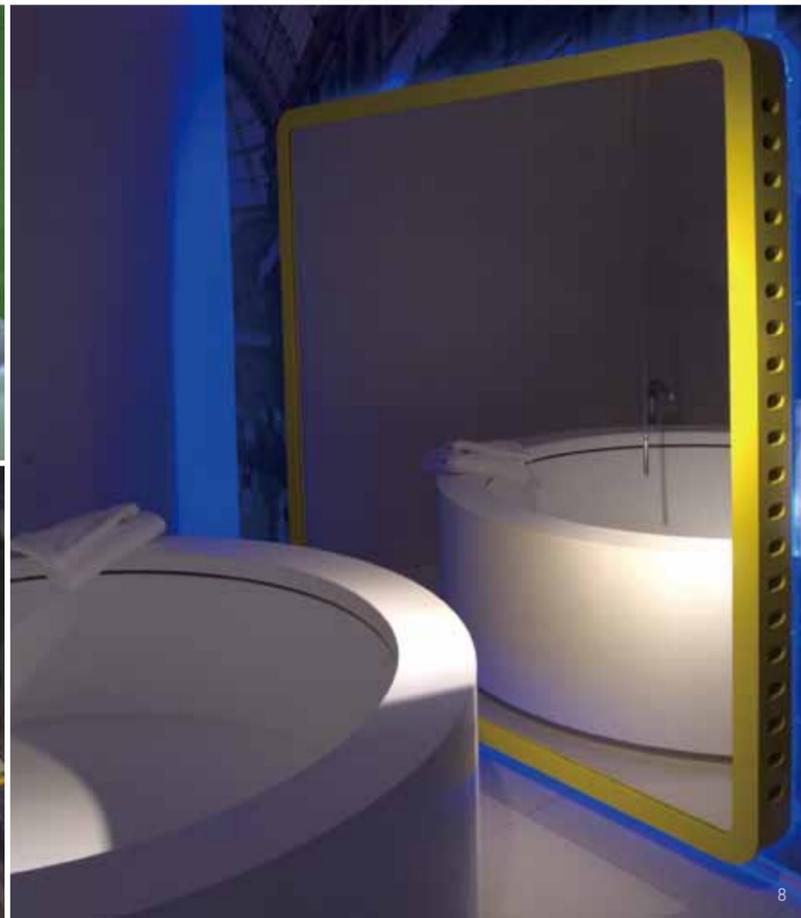
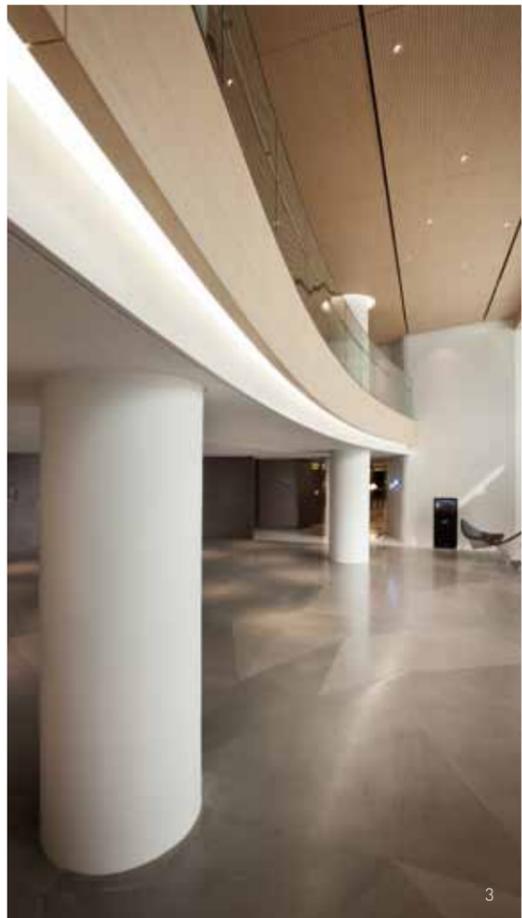
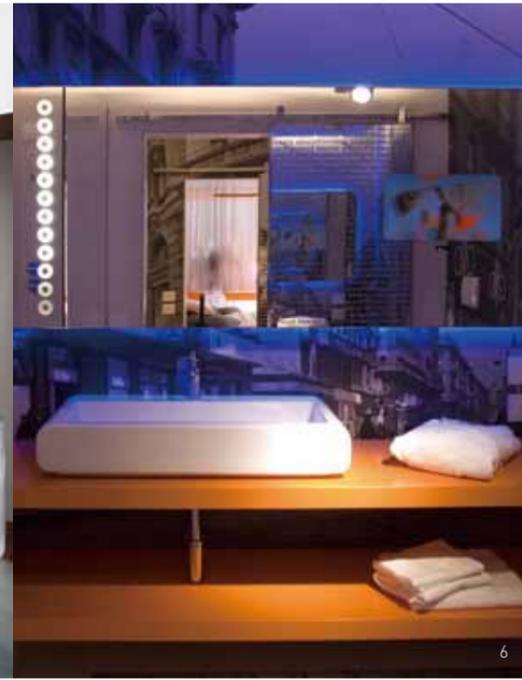
**Exceed Beyond the Original Standard**

- Easy to restore--keeping the surface completely new
- Resistant to hard impacts and scratches
- Staron® can be thermoformed to accomodate unique space offerings
- Resistant to high temperatures

**Warm Ambience**

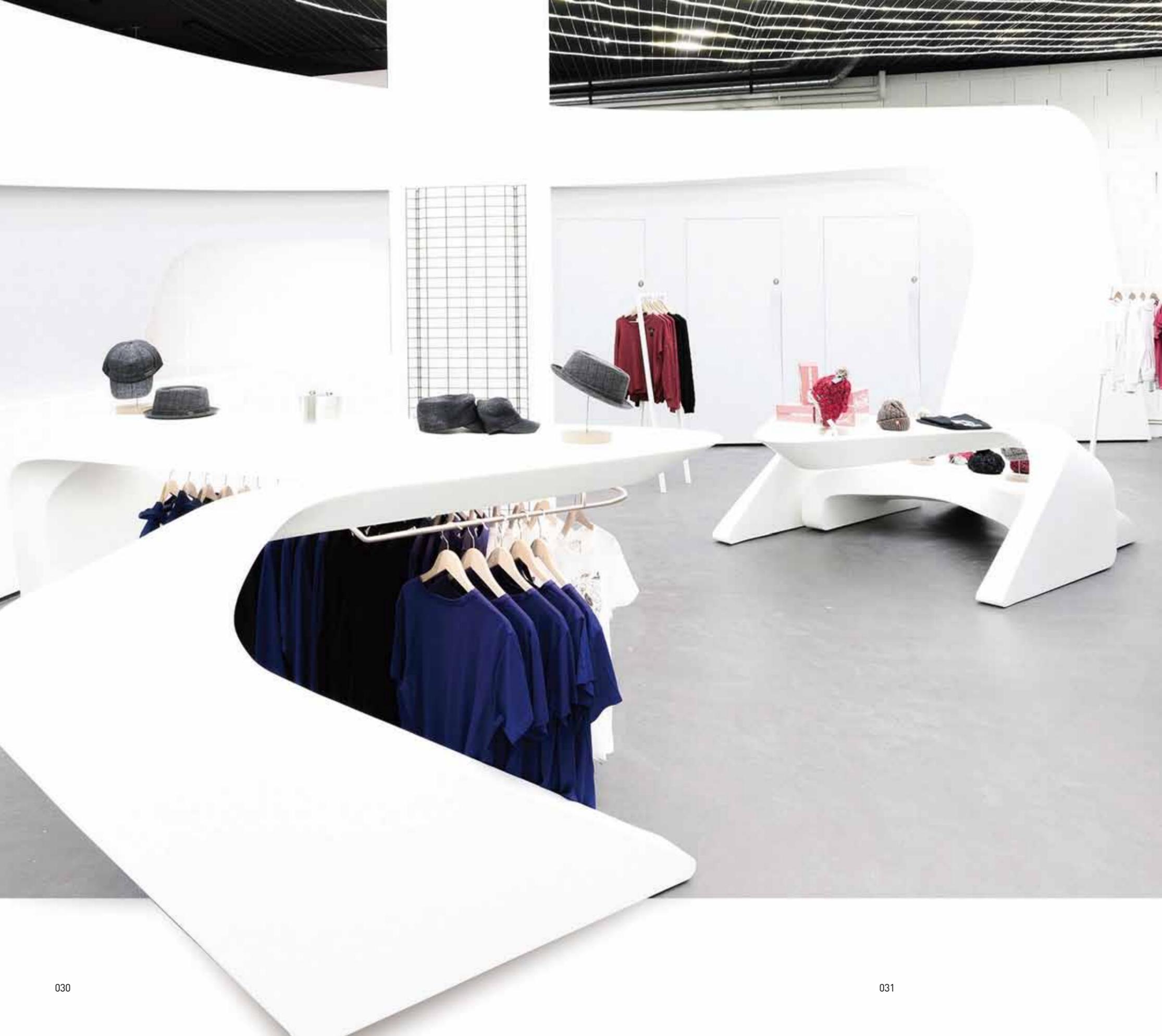
- Make an unforgettable impression to prospective clients
- Accentuates the existing space





1, 2, 3 Samsung Human Resource Development Institute  
4, 5, 6, 7, 8 Town House, Milan, Italy (Designed by Simone Micheli)

9 Hotel Bar, Switzerland



# RETAIL



- Establish unique identity
- Durable solution
- Thermoformable



**Distinction**

- Showcase the items in a chic fashion to appeal to greater number of clients
- Depending on the use of color, it allows products to stand out. Or if only displaying one product, it creates a sleek space to highlight the product.
- Inspiring designs can further enhance corporate identity

**Durable Solution**

- Due to homogeneous color offerings, merchandising area can be easily restored
- Withstands against scratches

**Thermoformable**

- Apply conceptual designs into real-applications
- Incorporate unique shapes and design





1, 2 Kuho Fashion Showroom, Jeju, Korea  
3 Samsung D'light Showroom  
4 Heidi.com Showroom, London 100% Design 2013, UK (Designed by Zaha Hadid)

5 Beauty Salon, Luzern, Switzerland  
6, 7, 8 Mocchi Kiosk, Sydney, Australia (Designed by Mima Design Pty Ltd.)  
9 Heidi.com Showroom, London 100% Design 2013, UK (Designed by Zaha Hadid)



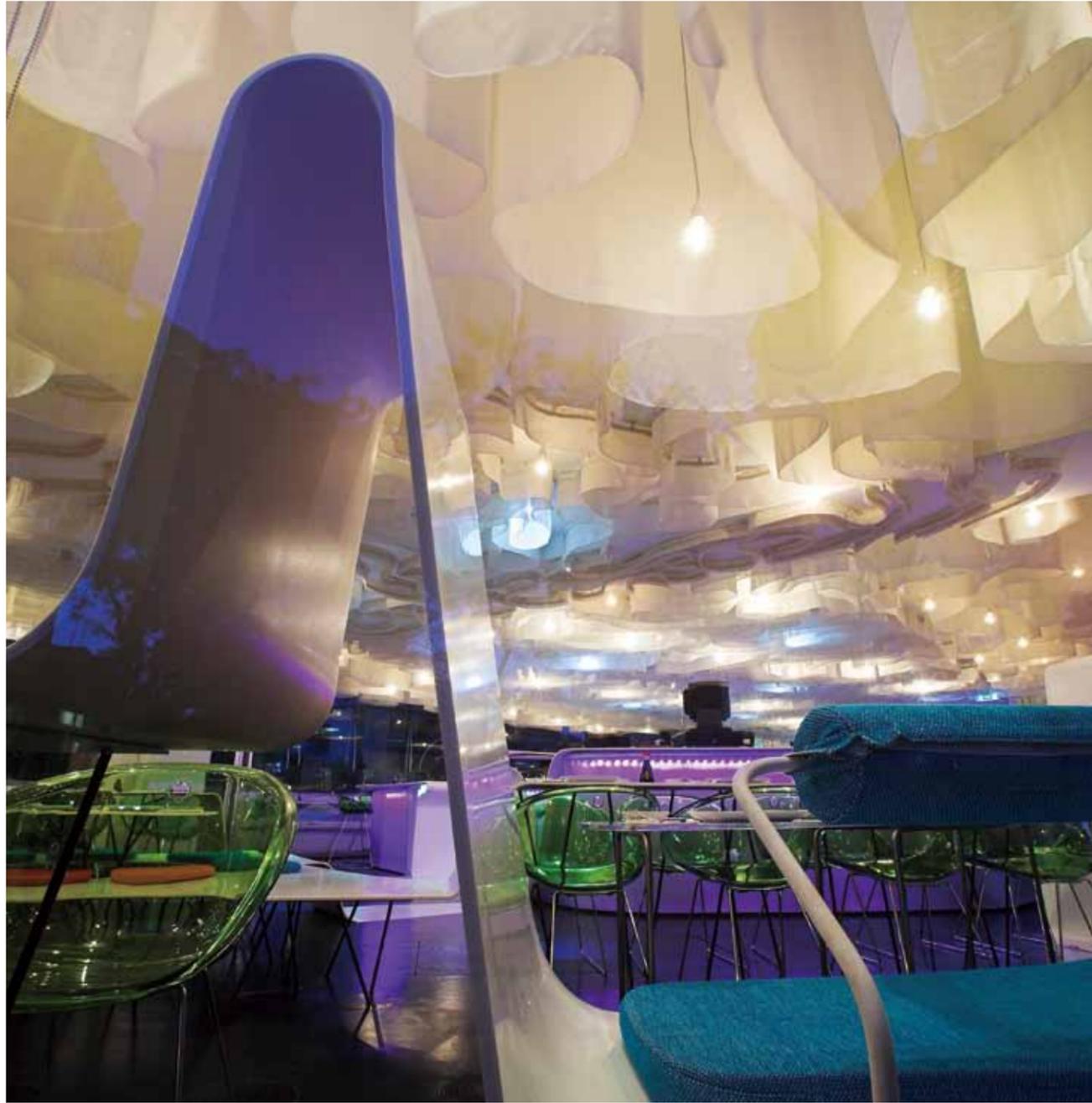
# RESTAURANTS



Spice up the dining room area with assortment of 140 color offerings

Designed with end-users in mind, Staron® is NSF 51 certified

Dependable solution



**Plateful of Colors**

- From light to dark tone hues, Staron® can match with existing decor space and theme
- Deliver a modern approach to enhance the social and dining environment

**Meeting the Highest Standard**

- NSF 51 certified
- Class a fire rating certified
- SCS certified

**Dependable Solution**

- Non-porous surfacing material eliminates the growth of bacteria, fungi or mold
- Resistant to harsh chemicals
- Non-toxic material





1, 2 Cafeteria, Raemian Gallery, Samsung C&T  
3 Food Court, The University of Edinburgh, UK  
4 Beluga Bar

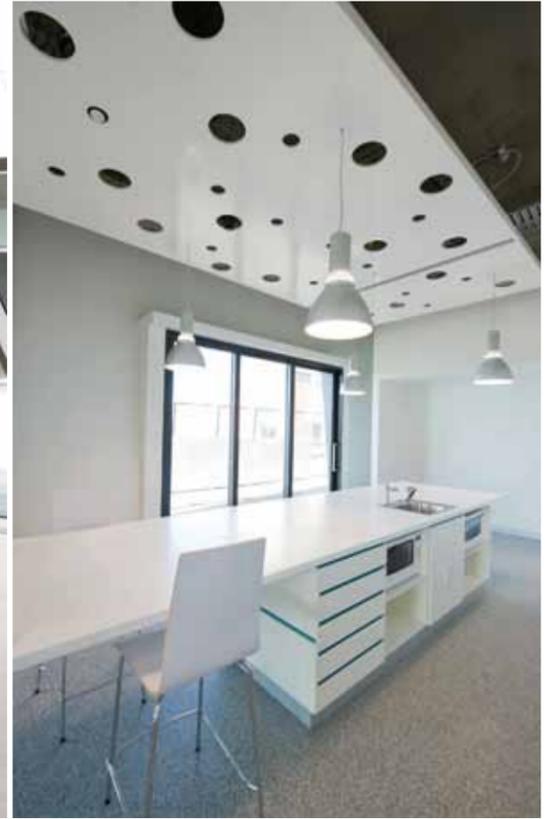
5 Cafeteria, Samsung Electronics R5  
6, 7 Sushi Bar, EURŌSTA & Yo Sushi, London, UK  
8 Bar, Au Petit Grillon Corpataux



# WORKSPACE & EDUCATION



- Innovative design meets inspiring ideas
- Dependable solution
- Seamless integration



**Innovative Design Meets Inspiring Ideas**

- Provide a pleasant working environment

**Dependable Solution**

- Resistant to scratches

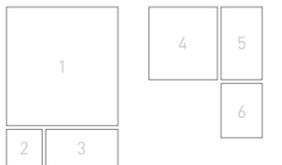
- Each work station or desk area will have exact matching color, providing uniform design and color tone

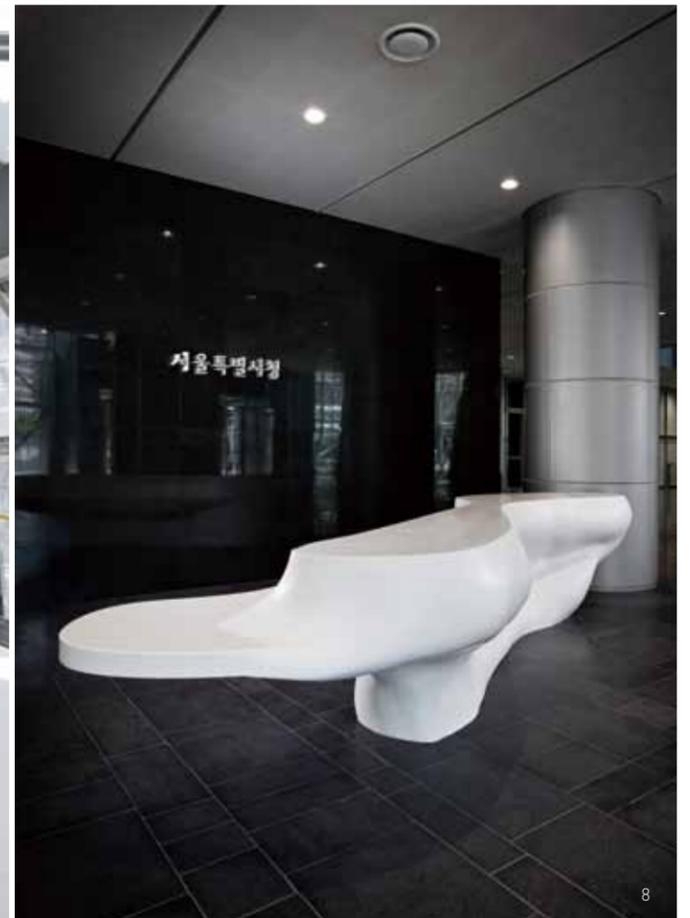
**Seamless Integration**

- Conference room tables can be easily seamed together without inconspicuous joints



- 1 Dongdaemun Design Plaza & Park (Designed by Zaha Hadid)
- 2,3 Schaffhauser Kantonalbank, Thayngen, Switzerland (Designed by Gehri Architects)
- 4 Sky Lounge, Dongdaemun Design Plaza & Park (Designed by Zaha Hadid)
- 5 Sunshine Hospital, Australia
- 6 DP9 Office, London, UK (Designed by dMFK Architects)





1, 2 Meeting Area, Australia (Designed by Craig Yelland, Plus Architecture)  
3 Information counter, Library & Learning Centre, New Vienna University of Economics, Austria (Designed by Zaha Hadid Architects)  
4 Lobby, Meeting Area, Samsung Electronics R5

5 Lamkli Architecture Office, Switzerland  
6 Money Exchange, Eurostar, London, UK  
7, 8 Hall, Seoul City Hall



# WALL-CLADDING



-  
Versatile solution

-  
Make an impression with stylish interior design

-  
Push beyond the boundaries



**Versatile Solution**

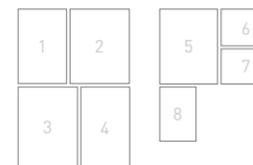
- Staron® is also available in (1/4") thickness for interior wall-cladding applications
- Resistant to scratches and harsh chemicals

**Make an Impression with Stylish Interior Design**

- Incorporate 2D/3D designs
- Panels may be thermoformed to accommodate curved walls or to wrap interior columns

**Push Beyond the Boundaries**

- Staron® solid-surface material can create unlimited design possibilities



- 1 Library & Learning Centre, New Vienna University of Economics, Austria [Designed by Zaha Hadid Architects]
- 2 Seats Cubes, Milestone Student Hall, Vienna, Austria
- 3 Dongdaemun Design Plaza & Park [Designed by Zaha Hadid]
- 4 Seoul City Hall
- 5 Samsung Human Resource Development Institute
- 6 L'Archivolto Staron Gallery, Milan, Italy [Designed by Simone Micheli]
- 7 KUHO Fashion Shop
- 8 Deco Frame, Noon Square Myungdong



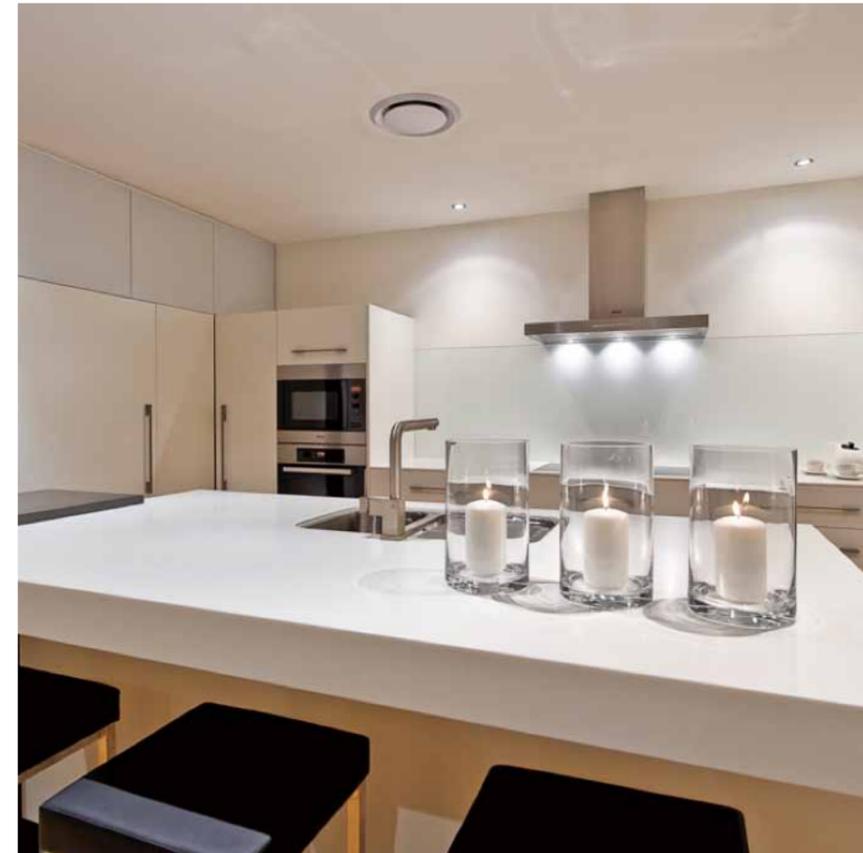
## KITCHEN & BATH



Enhance the focal point of the social gathering area

Non-porous material

Timeless design



**Safe**

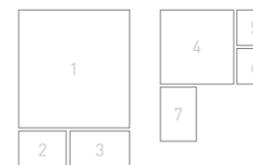
- Non-porous material that deters bacteria growth
- Easy to maintain a clean space

**Solid**

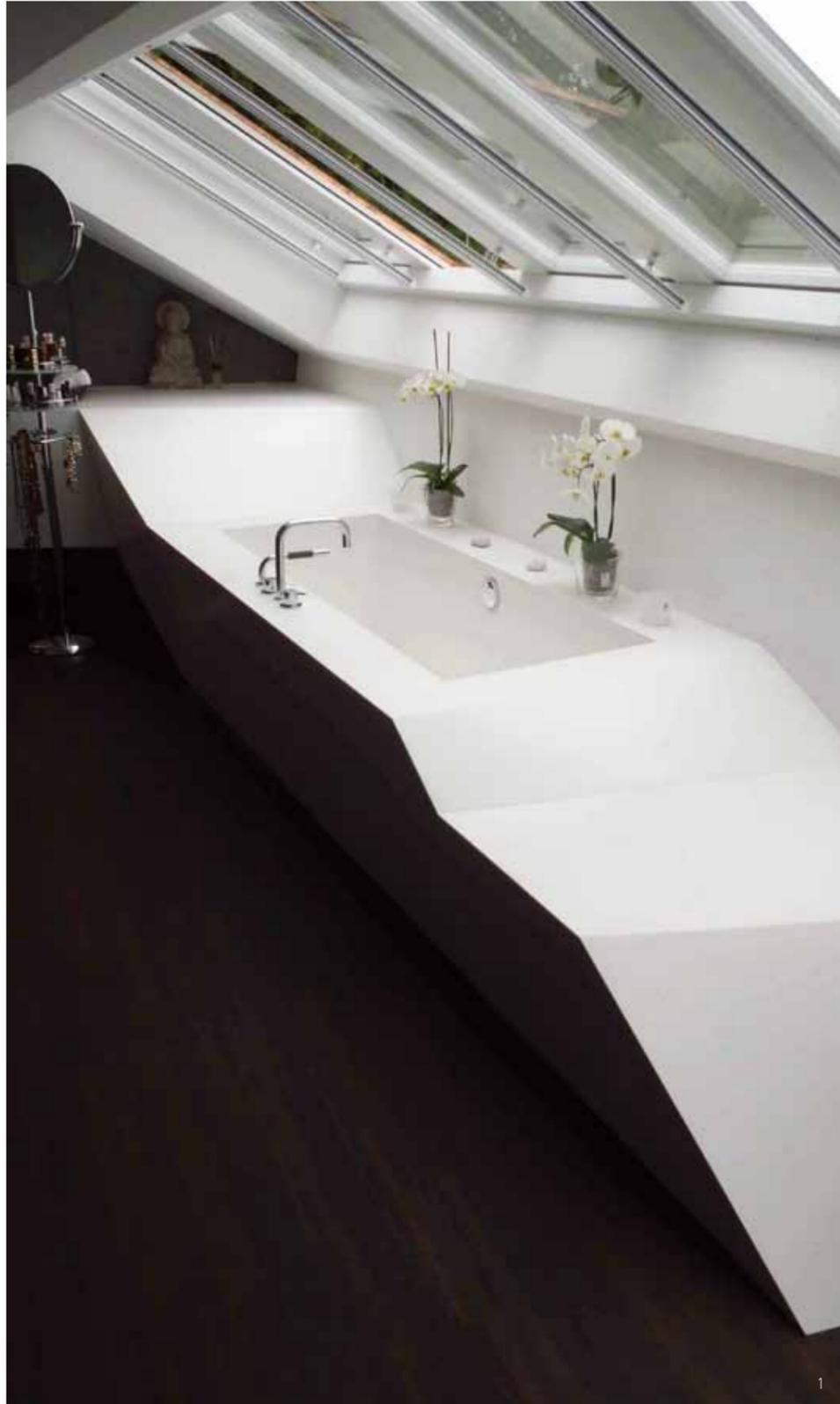
- Strong material that is not affected by temperature changes
- Easy surface restoration option that keeps the surface feeling "new"

**Diverse**

- Endless variety of styling forms
- Smooth seamless surface detailing of styled forms
- Beautiful color and patterns for assortment of design choices



1, 2  
Kitchen Countertop, Australia  
[Designed by Lenka Jankovocova,  
Find & Design]  
3 Town House, Milan, Italy  
[Designed by Simone Micheli]  
4 Kitchen Countertop, Australia  
[Designed by Lenka Jankovocova,  
Find & Design]  
5, 6, 7  
Kitchen Countertop, Sink, Salone  
Internazionale del Mobile 2010, Milan, Italy



1 Wash Bowl, Countertop, Oesch Bad, Interlaken, Switzerland  
 2, 3 Wash Bow, Bathtub Dealim Bath  
 4 Bathtub, Wash Bowl, Sheraton Grande Walkerhill Hotel

5 HD Expo 2013, Las Vegas, USA  
 6 Wash Bowl, Switzerland (Designed by Stuber Team)  
 7 Shower Booth, Town House, Milan, Italy (Designed by Simone Micheli)



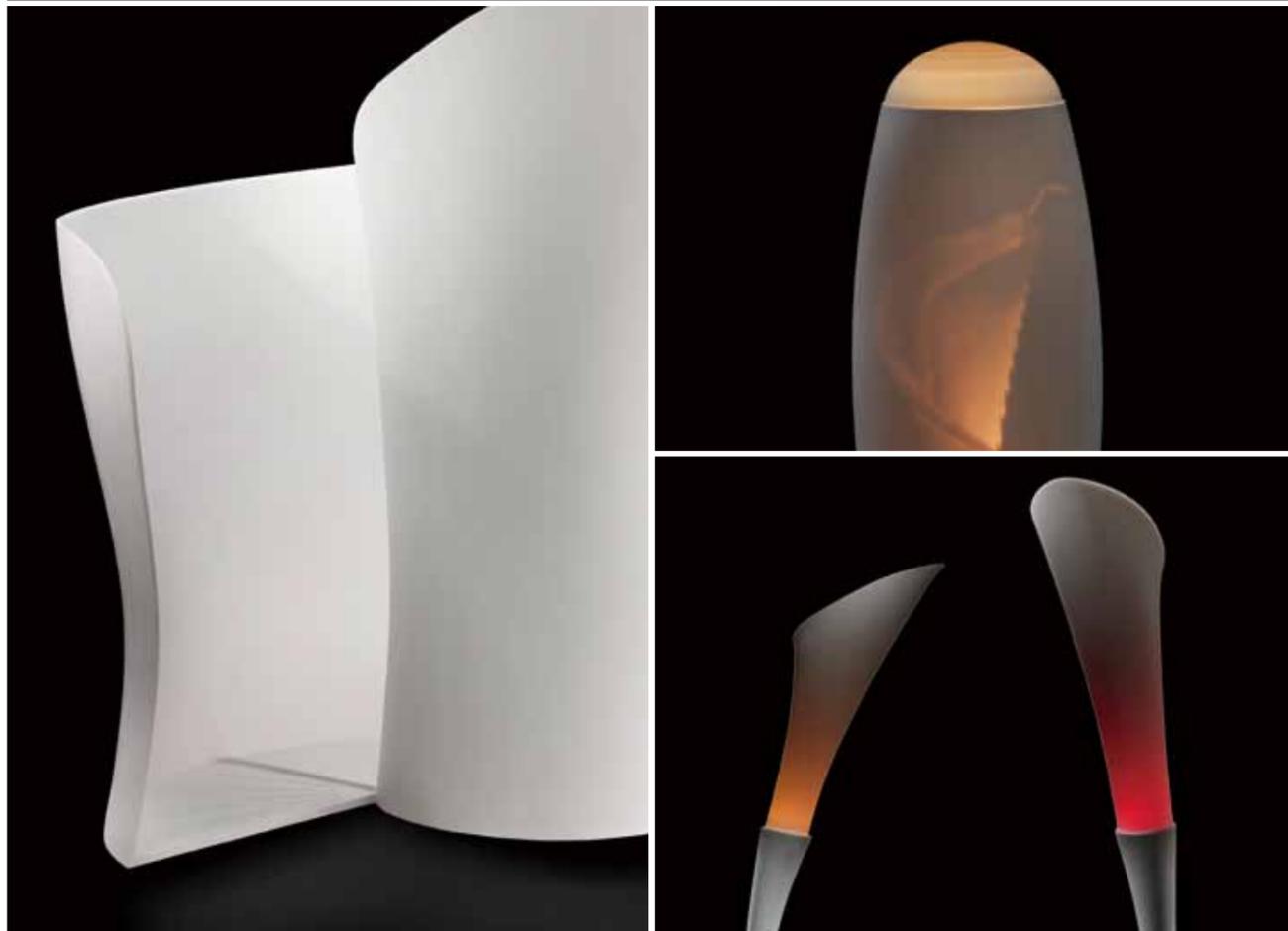
## CREATIVE WORK



—  
Color range that is not limited by the times

—  
Design that is not limited in its form

—  
Distinctive designs utilizing light



**Color**

- Infinite color range

**Design**

- CNC, thermoforming, seamless

**Light**

- Using light transmissions and its excellent processability, it is possible to express with a variety of texts and images



- 1, 2, 3, 4  
HD Expo 2013, Las Vegas, USA
- 5 Milan Design Week 2013, Milan, Italy  
[Designed by Mac Stopal]
- 6 Milan Design Week 2012, Milan, Italy  
[Designed by Przemyslaw Mac Stopal]
- 7 Lounge Furniture, Milan Design Week 2013,  
Milan, Italy  
[Designed by GLAD Ltd.]



1



3



4



2



5


 2014 London Design Award  
 Silver Winner


 2014 London Design Award  
 Silver Winner

1 Zebra Sofa, HD Expo 2014, Las Vegas, USA  
 2 Armadillo Bathtub, 2014, London 100% Design  
 3 Hedgehog Sofa, 2014, London 100% Design

4 Humpback Whale Island Kitchen, 2014, London 100% Design  
 5 Owl Speaker, 2014, London 100% Design

# TECHNICAL DATA

## 제품규격

Pattern	Thickness		Width		Length	
	mm	in	mm	in	mm	in
Solid, Sanded, Aspen	6	1/4	760	30	2,500	98
	12	1/2	760		3,680	145
Pebble, Metallic, Quarry, Mosaic, Cristal, Supreme, Tempest	12	1/2	760	30	3,680	145

## 인증현황

- NSF 51 for Food Zone Sanitation Certification
- GREENGUARD Eco-certification
- HB Eco-certification
- ASTM E84 Certification
- ISO 9001 System Certification
- ISO 14001 System Certification
- NAHB for Sinks and Lavatories Certification
- IAPMO for Sinks and Lavatories Certification
- CSA for Sinks and Lavatories Certification



## 타소재와 비교

스타론은 내구성이 좋고 가공이 용이 합니다. 또한 믿을 수 있는 품질로 타소재와의 차별화됩니다.

Attributes	Staron® Solid Surface	Polyester Solid Surface	Engineered Stone	Granite	Stainless Steel
유지관리 및 리페어	3	3	2	1	2
곰팡이, 박테리아 저항	3	3	3	1	3
무공질	3	3	3	1	3
난연성능	3	2	3	3	3
내구성	3	3	3	3	3
낮은 VOC 방출	3	3	3	3	3
화재시 연기독성	3	1	3	3	3
비용 효율성	3	3	3	1	2
미끄럼 저항	3	3	3	3	2
설치 및 교체 용이성	3	3	1	1	2
보이지 않는 이음선 가공	3	3	1	1	3
광택 조정	3	3	2	2	2
다양한 컬러	3	3	3	2	2
무독성, 무 알레르기성	3	3	3	3	3

## 내화학성/내오염성 테스트 결과

스타론 표면에 묻을 수 있는 다양한 오염원을 대상으로 테스트를 진행했습니다.

테스트는 오염원을 스타론 표면에 몇 방울 떨어뜨리고 유리 커버로 덮어 16시간 방치한 뒤 주방세제와 수세미로 지우는 방법으로 진행되었습니다.

### 오염원

- |                                |  |                                   |
|--------------------------------|--|-----------------------------------|
| - Acetic acid (10%)            | - Soapless detergents                        | - Hydrochloric acid (20, 30, 37%) |
| - Ammonia                      | - Sodium hydroxide solution (5, 10, 25, 40%) | - Iodine (1%)                     |
| - Amyl acetate                 | - Sodium sulfate                             | - Lemon juice                     |
| - Ball point pen               | - Sugar (sucrose)                            | - Mercurochrome (2%)              |
| - Bleach (household type)      | - Sulfuric acid (25, 33, 60%)                | - Methyl ethyl ketone             |
| - B-4 body conditioner         | - Tetrahydrofuran                            | - Methyl red (1%)                 |
| - Carbon disulfide             | - Tomato juice                               | - Mustard                         |
| - Citric acid (10%)            | - Uric acid                                  | - Naphthalene                     |
| - Cigarette (nicotine and tar) | - Washable inks                              | - Olive oil                       |
| - Cooking oils                 | - Xylene                                     | - Perchloric acid                 |
| - Cupra ammonia                | - Acetone                                    | - Shoe polish                     |
| - Ethanol                      | - Ammonium hydroxide (5, 28%)                | - Sodium bisulfate                |
| - Ethyl ether                  | - Amyl alcohol                               | - Soy sauce                       |
| - Gasoline                     | - Benzene                                    | - Sulfuric acid (25, 33, 60%)     |
| - Grape juice                  | - Blood                                      | - Tea                             |
| - Household soaps              | - Butyl alcohol                              | - Toluene                         |
| - Hydrogen peroxide            | - Carbon tetrachloride                       | - Urea (6%)                       |
| - Ketchup                      | - Calcium thiocyanate (78%)                  | - Vinegar                         |
| - Lipstick                     | - Coffee                                     | - Wine                            |
| - Methanol                     | - Cottonseed oil                             | - Zinc chloride                   |
| - Methyl orange (1%)           | - Dishwashing liquid/powders                 |                                   |
| - Mineral oil                  | - Ethyl acetate                              |                                   |
| - Nail polish                  | - Formaldehyde                               |                                   |
| - N-hexane                     | - Gentian violet                             |                                   |
| - Pencil lead                  | - Hair dyes                                  |                                   |
| - Permanent marker pen         |  |                                   |



### 결과

대부분의 오염원은 제거 되었습니다.

## 난연시험

ASTM E84 시험방법에 따라 스타론 난연평가를 한 결과, 제품의 난연특성은 화염전파 10, 연기밀도 10 으로 확인되었습니다. 석고보드, 라미네이트 상판, 하드보드 등과 비교해 우수한 난연성을 지닌 스타론은 우수한 디자인뿐 아니라 안전성까지 우수한 소재입니다.

### • 테스트 기준

- ASTM E84 (Surface burning characteristics of building materials)

### • 테스트 결과

- Class A (화염전파 10, 연기밀도 10)

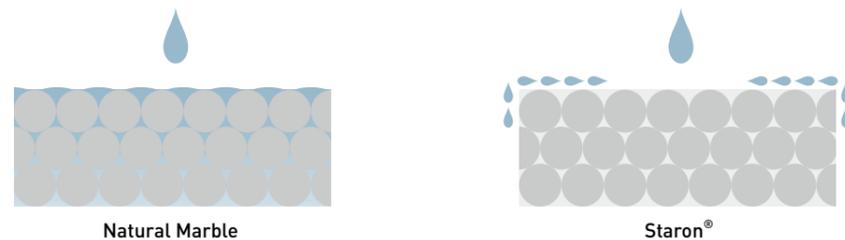
### • 타소재 난연성능 비교표

Item	Flame Spread	Smoke Density
석고보드	15	0
파티클보드	155	200
스타론	10	10
석면보드	70	500+
라미네이트, 플라스틱	70	35
하드보드	150	400

## 주요 특성

### 위생적인 소재

스타론은 수분 흡수율이 낮은 무공질의 제품입니다. 공극이 많은 천연석과는 다르게 음식물이 제품에 침투할 수 없어 곰팡이나 박테리아가 서식하기 어려운 조건을 유지합니다.



## 박테리아 저항성

흔한 박테리아 종류인 Pseudomonas Aeruginosa를 스타론 표면에 4주간 배양시킨 결과, 박테리아가 더이상 성장하지 않음을 확인했습니다.

### • 시험방법

- ASTM G 22 (Determining resistance of plastics to bacteria)
- Strains: Pseudomonas Aeruginosa (ATCC 13388)
- Culture condition: 96.8 +/- 1.8°F (36 +/- 1°C), 90%RH, 21 days

### • 시험결과

- 성장하지 않음

Culture Time	0 Week	1 Week	2 Week	3Week
Result	0	0	0	0

## 곰팡이 저항성

곰팡이 5종을 스타론 표면에 4주간 배양시킨 결과, 곰팡이가 더이상 성장하지 않음을 확인했습니다.

### • 시험방법

- ASTM G 21 (Determining resistance of synthetic polymeric materials of fungi)
- Strains: Aspergillus Niger (ATCC 9642)  
Penicillium Pinophilum (ATCC 11797)  
Chaetomium Globosum (ATCC 6205)  
Gliocladium Virens (ATCC 9645)  
Aureobasidium Pullulans (ATCC 15233)
- Culture condition: 84.2 +/- 1.8°F (29 +/- 1°C), 90%RH, 21 days

### • 시험결과

- 성장하지 않음

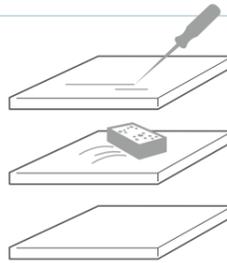
Culture Time	0 Week	1 Week	2 Week	3Week
Result	0	0	0	0

## Technical Solution

### Smart easy restoration material

#### 손쉬운 복원

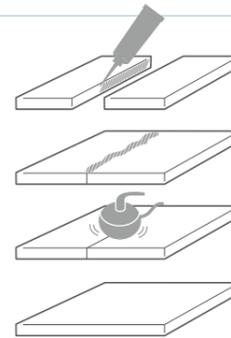
스크래치나 오염이 발생했을 때, 표면연마를 통해 원래 상태로 복원할 수 있습니다. 부분적인 오염은 수세미로 연마해도 제거가 가능합니다.



### Invisible joints

#### 이음선 접착

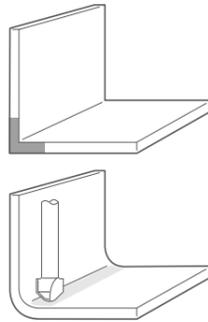
스타론을 접착할 때 컬러 매칭된 인조대리석 전용접착제를 사용하고 부위를 연마하면 판재를 접착한 부분의 이음선이 은폐됩니다.



### Easy cutting edges

#### 모서리 곡선가공

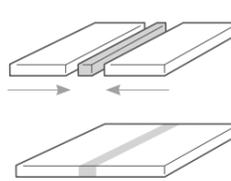
좁은 모서리 부분은 부위에 적합한 루터를 사용해 곡선형태로 가공이 가능합니다.



### Various processing methods 1

#### 새로운 패턴제작

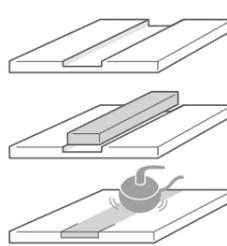
다른 컬러의 스타론 판재를 접착하면 새로운 디자인 패턴을 만들 수 있습니다.



### Various processing methods 2

#### In lay 방법

글자나 원하는 패턴을 만드는 방법 중 판재를 CNC로 파낸 부분에 새로운 컬러를 심는 방법이 있습니다.

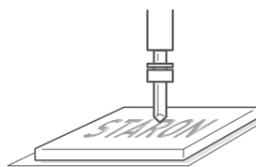


### Various processing methods 3

#### 글자 새기기

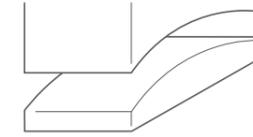
스타론은 천연석 대비 경도가 무릅니다. 목공용 CNC를 사용해 원하는 글자나 무늬를 새길 수 있습니다.

CNC: Computer processed cost calculations of alterations

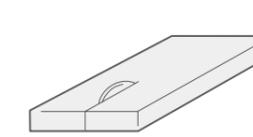


### 열성형 Thermoforming process

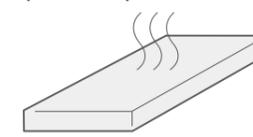
#### 1. 몰드 제작



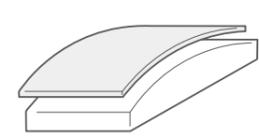
#### 2. 원하는 사이즈로 재단



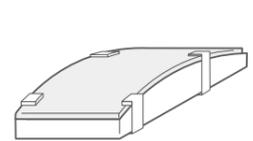
#### 3. 오븐 가열 (145-165°C)



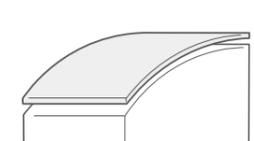
#### 4. 성형



#### 5. 몰드 고정



#### 6. 시공 1



#### 7. 시공 2

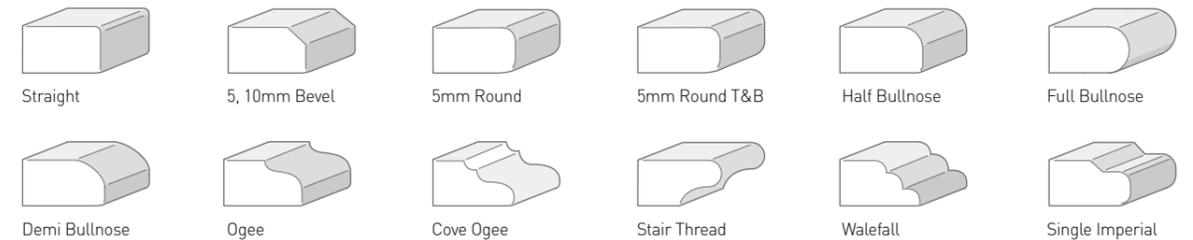


추천되는 열성형 반지름은 컬러와 두께에 따라 다릅니다.

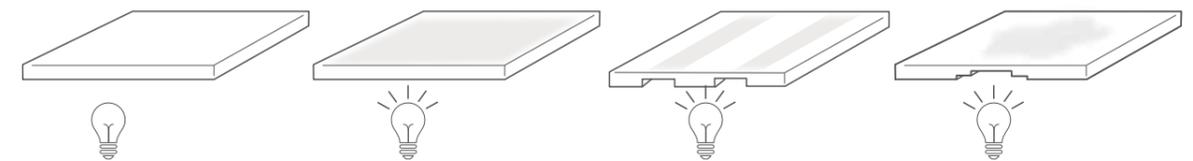
제품 두께	최소 R값	컬러 그룹
1/4" (6mm)	1" (25mm)	Solid, Sanded Aspen, Pebble
	4" (102mm)	
1/2" (12mm)	3" (76mm)	Solid, Sanded Aspen, Pebble
	5" (127mm)	
	8" (203mm)	

\* 펄 입자가 들어간 제품과 퀴리, 템피스트 그레이드는 열성형을 추천하지 않습니다

### 다양한 모서리 디자인 Various edge designs



### 빛 투과성 Transparent



## 물성 평가 Performance Properties

### Staron®

Properties	Typical Results	Test Procedure
Tensile strength (인장강도)	6,000 psi	ASTM D 638
Tensile modulus (인장탄성율)	600,000 psi	ASTM D 638
Flexural strength (굴곡강도)	10,000 psi	ASTM D 790
Flexural modulus (굴곡탄성율)	1,000,000 psi	ASTM D 790
Elongation (신장율)	0.50%	ASTM D 638
Hardness (경도)	92 Rockwell "M" Scale 65 Barcol Impressor	ASTM D 785 ASTM D 2583
Thermal expansion (열팽창율)	$2.0 \times 10^{-5}$ in/in F°	ASTM D 696
Gloss (60 Gardner) (광택도)	Between 5-20	NEMA LD-3
Color stability (컬러안정성)	No change-200hrs	NEMA LD-3
Stain resistance (내오염성)	Pass Rating 41	ANSI Z 124
Abrasion resistance (연마저항)	Pass	ANSI Z 124
Boiling water surface resistance (내열수성)	No effect	NEMA LD-3
High temperature resistance (내열성)	No effect	NEMA LD-3
IZOD impact resistance (notched) (IZOD 충격강도)	0.28 ft.lbf/in	ASTM D 256
Ball drop 1/2" (12.3 mm) sheet (낙구충격)	144" w/ 1/2 lb ball, No failure	NEMA LD-3
Fungi and bacterial resistance (곰팡이 박테리아 저항성)	No growth	ASTM G 21, G22
Specific gravity (비중) Solid colors (단색) Patterened colors (칩제품)	1.72 1.69	ASTM D 792
Water absorption (수분흡수율)	0.04%, (1/2", 24hrs) 0.11%, (1/8", 24hrs)	ASTM D 570
Flammability (난연성) Flame spread (화염전파) Smoke density (연기밀도)	Class A / Class 1 10 10	UBC 8-1 ASTM E 84 ASTM E 84
Radiant heat resistance (복사열 저항성)	No visual effect	NEMA LD-3
Toxicity (독성평가)	84.4g (Solid Color) 81.8g (Patterned Color)	Pittsburgh Test Protocol (LC50 Test)

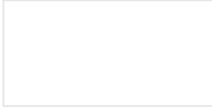
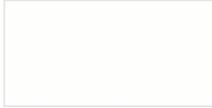
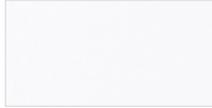
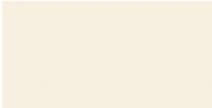
### Tempest®

Properties	Typical Results	Test Procedure
Tensile strength (인장강도)	3,500 psi	ASTM D 638
Tensile modulus (인장탄성율)	786,000 psi	ASTM D 638
Flexural strength (굴곡강도)	6,500 psi	ASTM D 790
Flexural modulus (굴곡탄성율)	950,000 psi	ASTM D 790
Elongation (신장율)	0.5%	ASTM D 638
Hardness (경도)	88 Rockwell "M" Scale 54 Barcol Impressor	ASTM D 785 ASTM D 2583
Thermal expansion (열팽창율)	$2.3 \times 10^{-5}$ in/in F° $3.6 \times 10^{-5}$ m/m °C	ASTM D 696
Gloss (60 Gardner) (광택도)	Between 10-75	NEMA LD-3
Color stability (컬러안정성)	Pass	NEMA LD-3
Stain resistance (내오염성)	Pass	ANSI Z 124
Cleanability & Wear (연마저항)	Pass	ANSI Z 124
Boiling water surface resistance (내열수성)	No effect	NEMA LD-3
High temperature resistance (내열성)	No effect	NEMA LD-3
IZOD impact resistance (notched) (IZOD 충격강도)	0.28 ft.lbf/in	ASTM D 256
Ball drop 1/2" (12.3 mm) sheet (낙구충격)	1/2 lb ball No failure, 93+	NEMA LD-3
Fungi and bacterial resistance (곰팡이 박테리아 저항성)	No growth	ASTM G 21, G22
Specific gravity (비중)	1.6	ASTM D 792
Water absorption (수분흡수율)	0.04%, (1/2", 24hrs)	ASTM D 570
Flammability (난연성)	Class A / Class 1	ASTM E 84 / UBC 8-1
Food equipment materials (NSF 인증)	Approved	NSF/ANSI 51 [Food Zone]

\* The information contained herein is provided by LOTTE ADVANCED MATERIALS Co.Ltd. and its subsidiaries and affiliates (collectively referred to as "LOTTE ADVANCED MATERIALS Co.Ltd.") for information purposes only and should be used by individuals with technical experience and knowledge in the area. LOTTE ADVANCED MATERIALS Co.Ltd. does not make any representation or warranties of the usefulness or expected result of the information, and does not assume any responsibility whatsoever related to the use of the information. Exclusion of the implied warranties may not apply in certain jurisdictions.

# Staron® Colors Chart

## Solid

			
퀘이사화이트 SQ019	퓨어화이트 SP016	다즐링화이트 SD001	펄 SP011
			
내추럴 SV041	아이보리 SI040	쿨민트 SC063	파우더블루 SP063
			
플래시드 SP062	블리스 SB022	서린 SS023	썬플라워(N) SS042
			
캘리포니아포피(N) SC052	유니버스(N) SU053	아이리스 SI056	스틸 ST023
			
오닉스 ON095			

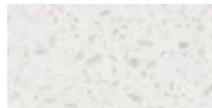
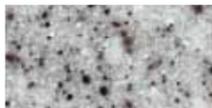
## Sanded

			
샌디드도버 SD413	샌디드화이트페퍼 WP410	샌디드크림 SM421	샌디드사하라 SS440
			
샌디드골드더스트 SG441	샌디드파피루스 SP474	샌디드버밀리언 SV430	샌디드클레이 SC475
			
샌디드해런 SH428	샌디드오닉스 SO423		

## Metallic

			
메탈릭유콘 EY510	메탈릭슬러실버 ES581	메탈릭새틴골드 ES558	메탈릭갤럭시 EG595
			
메탈릭코스모스 EC596			

## Aspen

			
아스펜글로우 AG636	아스펜스노우 AS610	아스펜릴리 AL645	아스펜스터코우 AS644
			
아스펜그레이 AG620	아스펜페퍼 AP640	아스펜브라운 AB632	아스펜마인 AM633

### Staron® recycled content series

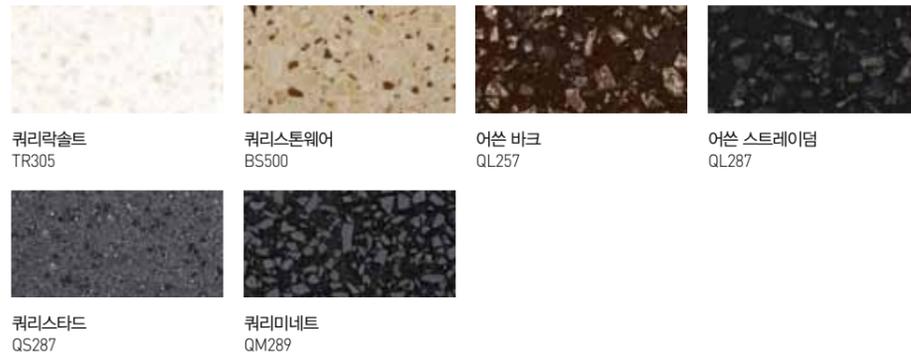
Printed representation of colors may vary from actual samples:  
Please view actual sample prior to selection.

# Tempest® Colors Chart

## Pebble



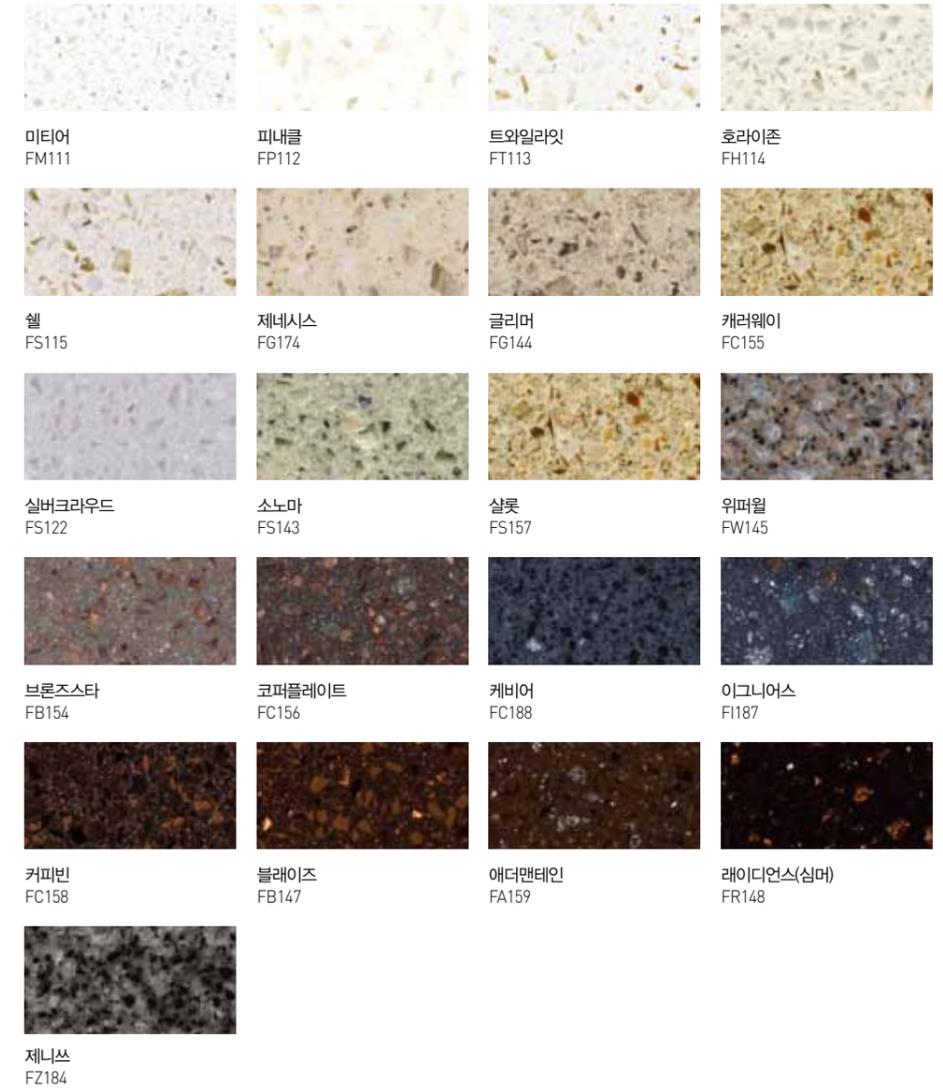
## Quarry



## Crystal



## Mosaic



# Radianz®

## Quartz Surfaces

Keep Strong, Just Believe

## Radianz® High-quality Engineered Stone

Radianz® is made with natural quartz, unsaturated polyester resins and mineral pigments. It is fused together by a compression molding process to create a high-quality building material. Radianz® has natural quartz purity of 99.9% as the main ingredient which makes the product non-porous, scratch resistant, durable, and eco-friendly as an interior material. It is excellent for counters, sinks, kitchen systems (kitchen furniture), and interior finishes such as countertops. The luxurious natural transparent textures add sophistication and considered the ideal premium material for high-quality interior spaces.

-  MAINTAINING A HEALTHY ENVIRONMENT
-  ECO-FRIENDLY SOLUTION
-  COLOR UNIFORMITY
-  HIGHLY DURABLE
-  GLOBAL NETWORK

**Maintaining a Healthy Environment**

Non-porous material  
NSF certified  
Easy to clean

**Eco-Friendly Solution**

SCS, green-guard, LEED certified  
Utilizes recycled contents  
Efficient wide slabs

MAINTAINING A HEALTHY  
ENVIRONMENT &  
ECO-FRIENDLY SOLUTION



COLOR UNIFORMITY &  
HIGHLY DURABLE

**Color Uniformity**

Timeless color uniformity  
Solid & Vivid color  
Gem look 'Noble collection'

**Highly Durable**

Class a fire rating certified  
Scratch resistant  
Withstands hard physical impacts  
15 years warranty



# RADIANZ<sup>®</sup> BENEFITS



## MAINTAINING A HEALTHY ENVIRONMENT

- Non-porous material
- NSF certified
- Easy to clean



## ECO-FRIENDLY SOLUTION

- SCS, green-guard, LEED certified
- Utilizes recycled contents
- Efficient wide slabs



## COLOR UNIFORMITY

- Timeless color uniformity
- Solid & Vivid color
- Gem look 'Noble collection'



## HIGHLY DURABLE

- Class a fire rating certified
- Scratch resistant
- Withstands hard physical impacts
- 15 years warranty



## GLOBAL NETWORK

- Operating regional branch offices around the world in addition to global distribution networks

# CASE STUDY



Restaurants



Hospitality



Work Space



Kitchen & Bath



# RESTAURANTS

### Meeting the Highest Standard

- NSF 51 certified
- Class a fire rating certified
- SCS certified

### Dependable Solution

- Non-porous surfacing material eliminates the growth of bacteria, fungi or mold
- Resistant to harsh chemicals
- Non-toxic material

### Diverse Execution of Interior Concept Styling

- Beautiful color and patterns for assortment of design choices
- Timeless color uniformity



1, 2, 3, 4  
Countertop, Parkview Restaurant,  
Shilla Hotel



1, 2, 3, 4, 5 Countertop, Floor, Samsung Life HQ Office

6, 7, 8 Table top, McDonalds, China  
9, 10, 11, 12 Wine Bar, USA

# HOSPITALITY



### Various Concept Styling Choices for Hotel Interiors

- Diverse choices in beautiful color and pattern design
- Timeless color uniformity

### Exceed Beyond the Original Standard

- Resistant to hard impacts and scratches
- Resistant to high temperatures

### Warm Ambience

- Make an unforgettable impression to prospective clients
- Accentuates the existing space



1, 2  
Sheraton Grand Walkerhill  
Hotel



1, 2, 3 Furniture, Parkview Restaurant, Shilla Hotel  
4, 5 Floor, Daerim Apartment

6 Giraffe Bar Table, HD Expo 2014, Las Vegas, USA  
7 Cafeteria, Floor, Samsung Life HQ  
8 Acroriver Park, Daerim Apartment



# WORKSPACE

### Innovative Design Meets Inspiring Ideas

- Provide a pleasant working environment

### Dependable Solution

- Resistant to scratches
- Each work station or desk area will have exact matching color, providing uniform design and color tone

### Safe Material

- Eco-friendly material with excellent chemical resistance \_ SCS, green-guard, LEED certified
- Safe material that is heat resistant in case of fires



1, 2, 3, 4, 5  
Floor, Stairs, Seoul City Hall



1, 2, 3, 4 Floor, National Eco Plex  
 5, 6 Floor, 2012 Yeosu Expo

7, 8, 9, 10 Floor, Samsung Life HQ  
 11, 12, 13 Floor, Samsung Electronics R5



# KITCHEN & BATH



### Food Contact Compliant and Safe Surface Material

- Non-porous material that deters bacteria growth
- Easy to maintain a clean space
- NSF certified

### Solid Material That is Easy to Maintain

- Strong material that is not affected by temperature changes
- Easy maintenance and management

### Safe Material

- Eco-friendly material with excellent chemical resistance



- 1, 2 Kitchen Countertop, Samsung Electronics & Bulthaup Showroom
- 3 Chefs Collection, Samsung Primium House





1, 2 Kitchen Countertops, Kuschand Showroom  
3, 4 Chefs Collection, Samsung Premium House

5, 6, 7 Kitchen Countertops, Acroriver Park, Daerim Apartment  
8, 9, 10 Kitchen Countertops, Hillstate Apartment, Hyundai E&C  
11 Kitchen Countertops, Ruvo K-binnet Showroom, USA



1 Bathtub, Countertop, Wall, Lotte Apartment  
2 Bathroom, 2012 Yeosu Expo  
3 Wall Covering, Samsung SDI HQ

4, 5 Bathroom, Raemian Gallery, Samsung C&T  
6, 7, 8, 9 Bathroom, Dealim Apartment

# TECHNICAL DATA

## 제품 용도 및 규격

- 주거용: 주방가구, 카운터, 욕실세면대, 바닥, 등 실내 마감재
- 상업용: 카운터, 테이블, 바, 바닥, 계단, 벽체, 등 실내 마감재

Length (mm)	Width (mm)	Thickness (mm)	Weight (kg)
3,100	1,520	12	148
3,100	1,520	20	235
3,100	1,520	30	353

## 인증현황

- GREENGUARD Eco-Certification
- HB Environmental Certification
- OHSAS 18001 Occupational Health and Safety Management System Certification
- American Sanitary NSF 51 Certification
- ISO 9001 Quality Management System Certification
- ISO 14001 Environmental Management System Certification
- KS Mark Product Certification



## 천연석과 래디언스 비교

래디언스는 천연 퀴츠의 질감과 컬러를 유지하면서도 기술노하우를 바탕으로 물성을 향상시킨 제품입니다.

Distinction	Radianz®	Granite	Marble
내오염성	★ ★ ★	★ ★	★
연마저항	★ ★ ★	★ ★ ★	★
내화학성	★ ★ ★	★ ★	★
무공질	★ ★ ★	★	★
굴곡강도	★ ★ ★	★ ★	★
컬러균일성	★ ★ ★	★ ★	★
크랙예방	★ ★ ★	★ ★ ★	★
유지관리	★ ★ ★	★ ★	★

★★★ Excellent   ★★ Good   ★ Fair

## 래디언스 유지보수 방법

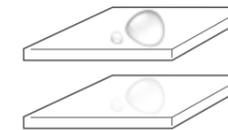


### • 오염 제거방법

- 가정용 세제로 일반적인 오염제거가 가능합니다.
- 단, 연마제가 함유된 제품은 사용하지 마시기 바랍니다. (표면 광택이 감소할 우려가 있습니다.)

### 사용금지 약품:

바닥 코팅제, 신나, 알칼리성 용액, 연마제가 함유된 세제나 왁스 화학제품(수산화나트륨, 염산, 인산 등), 해당약품 노출시 즉시 물로 닦아 내시기 바랍니다.



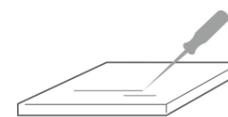
### • 물자국 제거방법

- 일반적인 물자국은 주방세제로 제거, 잘 지워지지 않는 물자국은 라임 리무버를 사용하시기 바랍니다. 심하게 문지르면 광택이 감소될 수 있으니 주의하시기 바랍니다.



### • 열충격 방지

- 래디언스는 높은 열저항성을 갖고 있어 어느정도의 고온도 버틸수 있습니다. 하지만 높은 온도의 물체가 직접 접촉되는 경우, 파손될 수도 있습니다. 따라서 뜨거운 냄비등은 항상 받침대를 사용하시기 바랍니다.



### • 스크래치 방지

- 래디언스는 경도가 높아서 스크래치가 쉽게 발생하지 않습니다. 하지만, 칼, 철수세미, 딱딱한 물체는 래디언스에 스크래치를 유발할 수도 있으니 주의하시기 바라며 칼 사용시 도마를 반드시 사용하시기 바랍니다.

## 박테리아 저항성

흔한 박테리아 종류인 Pseudomonas Aeruginosa를 래디언스 표면에 4주간 배양시킨 결과, 박테리아가 더이상 성장하지 않음을 확인했습니다.

### • 시험방법

- 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

### • 시험결과

- 성장하지 않음

Culture Time	0 Week	1 Week	2 Week	3Week
Result	0	0	0	0

## 압축강도와 내구성

천연석인 대리석이나 화강암보다 래디언스의 압축강도와 내구성은 우수합니다.

외부의 하중이나 충격에도 보다 잘 견딜 수 있도록 해주며 스크래치에도 강한 래디언스는 최고의 제품입니다.

### • 굴곡강도

Radianz®		500
Granite		150
Marble		140

### • 압축강도

Radianz®		1,800
Granite		1,500
Marble		1,250

### • 표면 확대사진

화강암과 비교했을때 래디언스는 공극없이 균일한 밀도를 갖고 있어 오염이나 스크래치에 보다 잘 견딜 수 있습니다.



### • 수분흡수율

Radianz®		0.05
Granite		0.3
Marble		0.3

## 물성 평가 Performance Properties

### Radianz®

Properties	Typical Results	Test Procedure	Remarks
Specific gravity (비중)	2.41	ASTM D792-08	
Water absorption (수분흡수율)	0.03%	ASTM C373-06	
Coefficient of linear thermal expansion (열팽창율)	1.35 x 10 <sup>-5</sup> /°C	ASTM D696-03	
Flexural strength (굴곡강도)	53.6 Mpa	ASTM D790-07	
Flexural modulus (굴곡탄성율)	11.9 Gpa	ASTM D790-07	
Boiling water resistance (내열수성)	No effect	NEMA LD3 2000 3.5	
High temperature resistance (내열성)	No effect	NEMA LD3 2000 3.6	
Moh's hardness (모스경도)	7	MOHS Hardness Scale	
Slip resistance - coefficient of friction (Received: Dry/Wet) (마찰계수)	0.91 / 0.49	ASTM C1028-07	Neolite Leather Rubber
	0.45 / 0.57		
	1.03 / 0.49		
Slip resistance - coefficient of friction (Renovated: Dry/Wet) (마찰계수)	0.89 / 0.48	ASTM C1028-07	Neolite Leather Rubber
	0.40 / 0.58		
	0.92 / 0.50		
Compressive strength (압축강도)	DRY: 213.74 Mpa WET: 251.16 Mpa	ASTM C170-09	
Stain resistance (내오염성)	Passes	ANSI Z124.6-07	
Cigarette test (담배 테스트)	Passes	ANSI Z124.6-07	
Chemical resistance (내화학성)	Passes	ANSI Z124.6-07	
Impact tests (충격테스트)	Passes	ANSI Z124.6-07	
Fungal resistance (곰팡이 저항성)	No effect	ASTM G21-96	
Bacteria resistance (박테리아 저항성)	No effect	ASTM G22-96	
Rockwell hardness (로크웰경도)	114	ASTM D785-03	
Abrasion resistance (연마 저항성)	606mg	ASTM D4060-07	Taber abrasion
Flammability (난연성능)	Class A	ASTM E84-09	

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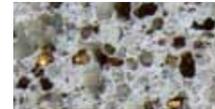
# Radianz® Colors Chart

			
다이아몬드 화이트 DW105	에베레스트 화이트 EW120	얼루션 화이트 AW130	몽블랑 스노우 MS141
			
젠틀 그레이 GG900	카우아이 크림 KC213	티탄 베이지 TE215	루나 베르데 LV225
			
마탈라 탄 MT220	안티구아 비치 AN230	브리스톨 베이지 BB227	톨루카 샌드 TS495
			
캠벌랜드 블랙스 CF350	사스타 브라운 SA497	세추라 모카 SM499	엘파인 엄버 AE498
			
컬럼비아 그레이 CG910	우랄 그레이 UG950	팔라우 자바 PJ475	마우나 로아 블랙 MB990
			
쿤인크 KI992	랑군 블랙 RG994	사이프러스 오렌지 CO420	케나이 페어 KP720

## Coastal Collection

			
에디론덱 베헤 AB144	미스틱 플래티넘 MP730		
			
세인트헬렌스 화이트 SH145	보라보라 베이지 BO214	미코노스 베이지 CK230	아카디아 브라운 AC495

## Noble Collection

			
임페리얼 그레이 IG910	살토로 클리프 SC235	휘슬러모카그레이 WM610	베네치안브론즈 VB450
			
마리포사 베헤 MU410	골드 캐년 그레이 GG950	미드나잇 사파이어 MS980	미라마 브론즈 MI780
			
페리오 블랙 FB991			

### Radianz® recycled content series

Printed representation of colors may vary from actual samples.  
Please view actual sample prior to selection.

### TEXTURED PRODUCTS

-  Suede Finish
-  Ruffle Finish

## Global Network

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