

# ESR Graphene Business Proposal

The World's first leading company  
Graphene Materials Eco-Friendly Building Materials

Graphene

The Next Wonder Material



ESR Graphene Co., Ltd.

#1004, 55, Digital-ro 34-gil, Guro-gu,  
KolongScienceValley II, Seoul, Republic of Korea  
TEL : 1833-7960 FAX : 02)883-9948  
E-mail : grp4040@naver.com

# Stronger Happier Greener

ESR Graphene is Korean leading manufacturer  
of graphene construction materials

Semi-permanent, long-term investment  
and trial and error

Graphene is eco-friendly and uses graphene as a raw  
material for the future

Successful development of building materials.

Construction began in October 2019 and was  
completed in August 2021

Korean first graphene house using graphene  
materials is pure Graphene building materials made  
with our technology It's attracting a lot of people.

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ESR Graphene Proposal

I Company introduction

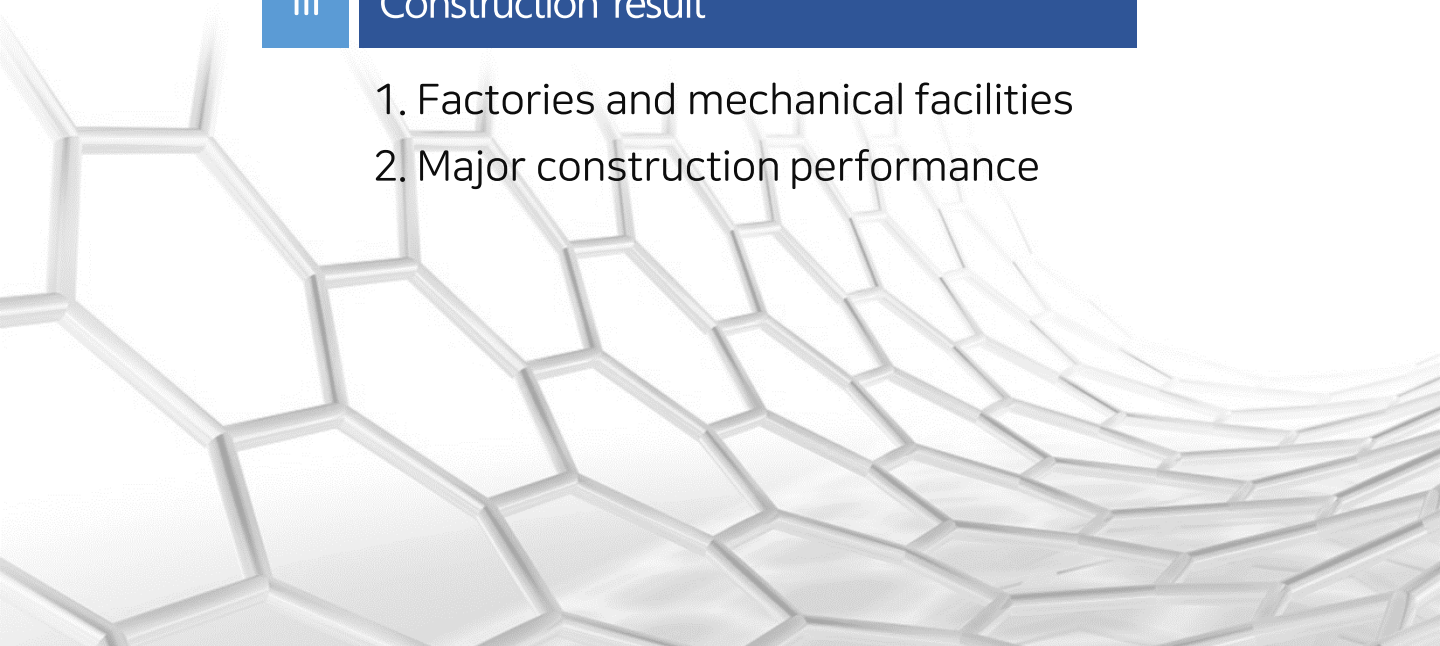
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## 1. CEO Greeting

Established in 2019, ESR Graphene Co., Ltd. is a state-of-the-art new material graphene that considers the environment and people first and produces and supplies responsible products along with eco-friendly green products for human health and happiness.

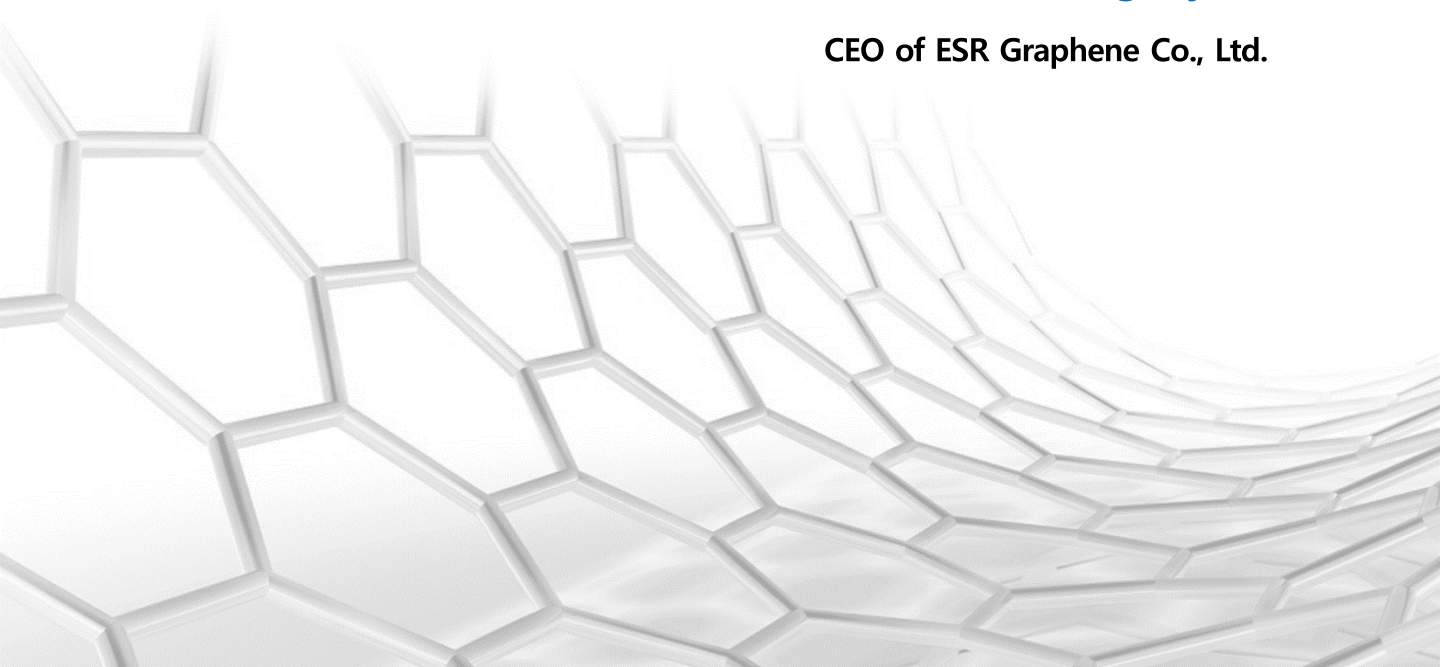
ESR Graphene Co., Ltd. is making efforts to build a better future for mankind through constant innovation and value creation.

ESR Graphene Co., Ltd. will do its best to take a step closer to customer satisfaction with sincerity and responsibility based on its faithful basics.

Thank you.

**Lee Hong-Gyun**

CEO of ESR Graphene Co., Ltd.



## 1. CEO Greeting

Graphene is the world's first and best natural material that saves humanity and the environment. Technology is another pride of our country. Antibacterial, constant temperature, humidity, Energy saving and carbon as an irreplaceable new material with anti-insect and non-combustible functions save people and the planet by reducing emissions.

Eco-friendly graphene paint, various building materials, and graphene ultra-power saving boilers that can reduce electricity consumption by more than 70% are expected to spread beyond Korea to the rest of the world.

Temples and cultural assets in each region of Korea are experiencing difficulties in preservation due to fire, corrosion, and attacks by insects such as termites. In addition to this, old wood loses all its oil over time and is exposed to the risk of insect attack and fire. Colorless and odorless graphene paint can protect precious cultural assets and temple buildings from all these risks without change even after 100 years.

**Choi Seo-yoon**

**Chairman of ESR Graphene Sales**



## 1.. Company Overview

<b>Company name</b>	ESR Graphene Co., Ltd.
<b>Address</b>	#1004, Kolon Science Valley 2nd, 34 55, Digital-ro, Guro-gu, Seoul TEL : 1833-7980 FAX : 02) 883-9948
<b>C E O</b>	Lee Hong-Gyun
<b>CEO of ESR Graphene Sales</b>	Choi Min-guk - CEO of New Morning Sun Co., Ltd.
<b>Date of Establishment</b>	January 2019
<b>Capital</b>	KRW 1,500,000,000 (USD 1.12 M)
<b>Employees</b>	20
<b>Field of business</b>	Development and production of various building materials such as graphene paint, graphene tech, exterior wall materials, and guard rails

ESR Graphene Co., Ltd., based on faithful basics,  
A step towards customer satisfaction through  
responsible construction  
We are doing our best to get closer.

## 2. Company Overview – Technology development and raw material supply contract



Russian IPCP RAS Institute of Chemistry and Physics Technology Academy Research and development of graphene new materials with GRAOHENE OX LLC Development of graphene building materials and signing of an exclusive supply contract.



Signed a contract for technology development and raw material supply with CSF Nanotech in China.

## 2. Company Overview – Technology development and raw material supply contract



**AGREEMENT**  
between  
**ESRGRAPHENE Co, LTD**  
Seoul, Republic of Korea  
and

**GRAPHENOX LLC,**  
Chernogolovka, Moscow region, RUSSIA

**СОГЛАШЕНИЕ**

между  
**ESRGRAPHENE Co, LTD**  
Сеул, Республика Корея  
и

**ОБЩЕСТВОМ С ОГРАНИЧЕННОЙ ОТВЕТСТВЕННОСТЬЮ «ГРАФЕНОКС»,**  
**ЧЕРНОГОЛОВКА, МОСКОВСКАЯ ОБЛАСТЬ, РОССИЯ**

1. **ESRgraphene Co, Ltd**, Seoul, Republic of Korea and, **GraphenOx LLC**, Chernogolovka, Moscow region, Russian Federation, represented hereby enter into the following agreement:

**(GraphenOx LLC and ESRgraphene Co, Ltd**  
are individually referred to as a "Party" and collectively referred to as the "Parties").

2. The parties establish this Memorandum to foster joint cooperation in scientific research.

3. The purpose of this Agreement is to establish a framework, within which cooperation may develop between the two parties. This will occur within the context of the regulations and policies of each party, and subject to the availability of resources.

1. ESRgraphene Co, Ltd и Общество с ограниченной ответственностью «Графенокс» (ООО «Графенокс»), Черногловка, Московская область, Россия заключили Меморандум о нижеследующем:

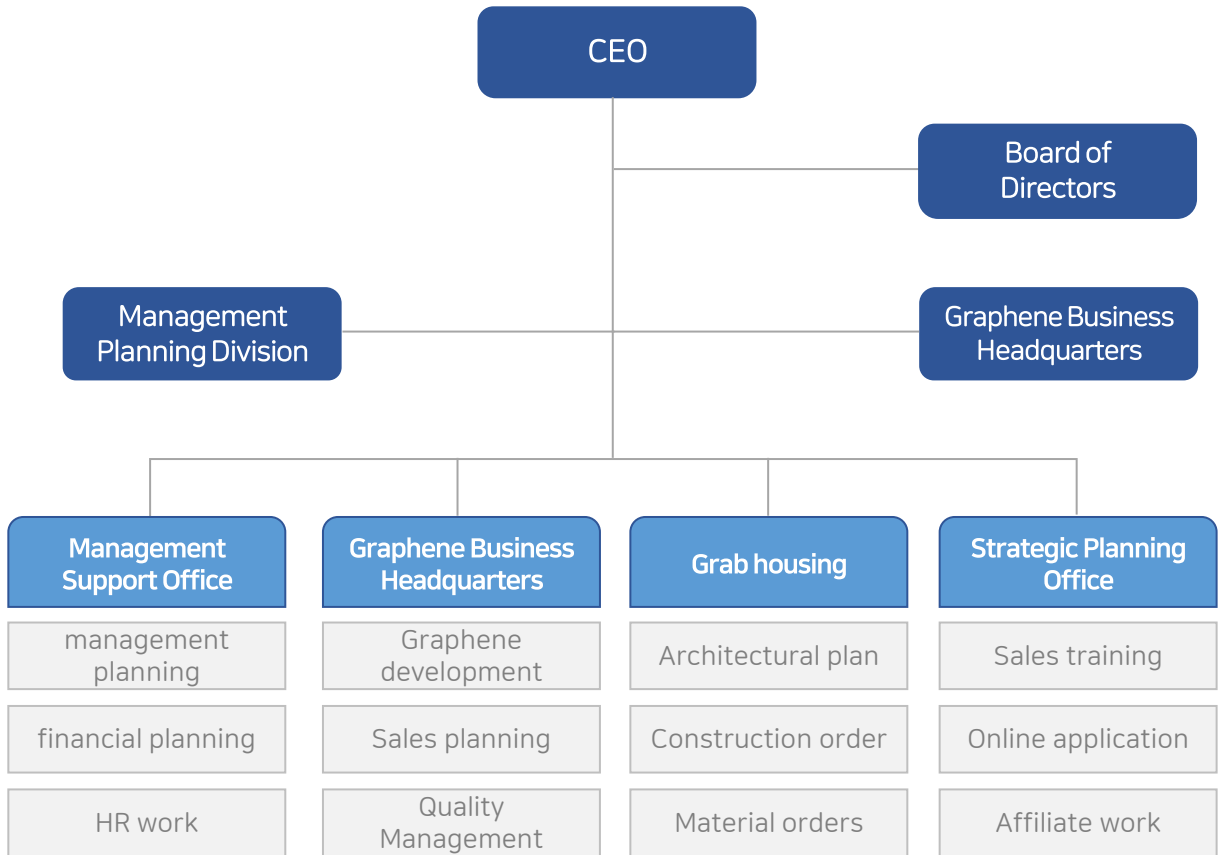
**(ООО «Графенокс» и ESRgraphene Co, Ltd** по отдельности именуется «Сторона», а вместе - «Стороны»),

2. Стороны заключили Меморандум о взаимопонимании в целях развития научной деятельности для дальнейшего укрепления международного сотрудничества между сторонами.

3. Целью настоящего Соглашения является создание базы, в рамках которой может развиваться сотрудничество между двумя сторонами. Это будет происходить в рамках правил и политики каждой стороны, и при условии наличия ресурсов.



## 2. Company Overview – organization chart



ESR Graphene Co., Ltd. is based on faithful basics.

One step towards customer satisfaction

through sincerity and responsible construction

We are doing our best to reach you.

## 2. Company Overview – corporate history

August 2019	Graphene R&D and company establishment
September 2019	Secured graphene construction site in Konjiam, Gyeonggi-do
January 2020	Russian Graphene OX LLC technology research contract Launched graphene construction film and engine fuel additive
February 2020	China Deoktong nanotech technology development and raw material supply contract
March 2020	Started construction of graphene house in Konjiam, Gyeonggi-do
August 2020	Graphene guardrail test (organized by Korea Expressway Corporation)
September 2020	Launched graphene fiber graphene marathon mask
May 2021	Establishment of Graphene Central Research Institute
July 2021	Launched graphene paints and coatings
August 2021	Launch of graphene tech building materials
September 2021	Launched graphene roofing material (tile)
December 2021	Launched graphene insulation film
October 2022	Launched graphene siding exterior wall material
December 2022	Launched graphene indoor flooring (hardwood floor)
June 2023	Success in developing graphene insulation paint (prevention of black ice)
August 2023	Successfully developed a graphene cooling and heating system (50% electricity saving)
August 2023	Successfully coated graphene on 99.9% pure aluminum using chemical vapor deposition



## 2. Company Overview – major business content

01

### Graphene research and development

ESR graphene research and development continues even now. We are constantly researching and developing new materials that are stronger, more eco-friendly, and more helpful to humans.

02

### Graphene paint production

Graphene paint is a non-toxic, eco-friendly and functional paint that boasts excellent quality such as antibacterial, air purifying, far-infrared ray emission, and humidity control.

03

### Graphene Tile Tech

Graphene roof tile is a graphene synthetic resin roof tile with a light, durable and antique Korean design. It can be produced in various colors and has excellent durability.

ESR Graphene, as the best graphene building material producer in Korea, has succeeded in developing graphene building materials based on graphene, a semi-permanent, eco-friendly, future new material, through a lot of investment and trial and error over a long period of time.

04

### Production of graphene exterior wall materials

Graphene synthetic resin ASA is superior in lightness, waterproofness, heat resistance, and soundproofing compared to existing products without dust or foreign matter sticking to the surface by adding graphene material.

05

### Graphene guardrail

The graphene guardrail helps the driver's vision and absorbs shock in case of a car crash, protecting the driver's safety and preventing the vehicle from leaving the road.

06

### Graphene Decor Tiles

Graphene Decor Tile Flooring is an excellentIt has durability, thermal conductivity, eco-friendliness, and fire resistance with durability and sensuous design.

07

### Graphene ultra-low power heating

The ESR graphene ultra-saving heating system drastically changes the existing heating system with graphene's technology, so it is good for the environment and health, and it is excellent in reducing heating costs by the ultra-power saving function.

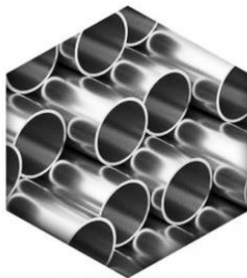
### 3. PRODUCT OVERVIEW - GRAPHENE CHARACTERISTICS

#### Characteristics of GRAPHENE

Graphene is a new future material that can make materials of all dimensions with a two-dimensional material that is one layer thick of carbon atoms. In 2004, Professors Andre Geim and Novoselov's team at the University of Manchester, England, were awarded the 2010 Nobel Prize in Physics for their achievement in isolating and discovering graphene for the first time in the world. Graphene, the strongest and most powerful material in the world, has been selected as a future new technology that will change the world.



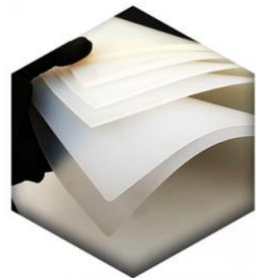
Twice the strength of diamond



200 times stronger than steel



100 times more conductive than copper



100 times the transmittance of silicone



Antibacterial and odorous



UV blocking function



Far-infrared radiation function



ultra lightweight high elasticity

### 3. PRODUCT OVERVIEW - GRAPHENE CHARACTERISTICS

#### Excellent water resistance

Graphene paint and graphene roof tiles, which are fused with graphene, are products with high weather resistance, high density, and high waterproofness, and there is no problem of water permeation. It is also excellent, but it is robust and has excellent performance in terms of insulation effect.

#### excellent fire resistance

It uses flame-retardant materials for firefighting and has been recognized as a fire-resistant product by the country's authoritative testing and certification agency.

#### excellent load carrying capacity

It has excellent bearing capacity even in areas with low temperatures, and the surface of the product is not cracked or damaged even in areas with continuous snow throughout the year, and the product does not crack or damage even under the conditions of a 600mm support space and a load of 150kg.

#### Impact resistance and resistance to low temperatures

Relatively high impact resistance, as a result of the test, it does not crack even when a 1kg iron ball is freely dropped from a height of 3m, and has excellent impact resistance even at low temperatures.

#### stable volume

The expansion<sup>4</sup> coefficient is  $4.93 \times 10^{-6} \text{ mm/mm/}^\circ\text{C}$  and the product is bidirectional in any shape. It maintains its original shape and size by self-contracting the shape change caused by the high temperature difference.

#### Excellent insulation properties

As a product with an insulation function, there is no damage to the product when there is an unexpected discharge.

#### environmental friendliness

ESR graphene products are eco-friendly, do not contain asbestos and radioactive elements, and meet the requirements for green environmental protection.

#### Optimal sound insulation

It exhibits excellent sound absorption function against noise such as heavy rain and strong wind coming from the natural environment.

#### Weather resistance and color durability

Made of synthetic resin with graphene, it is characterized by maintaining excellent weather resistance even in harsh natural environmental conditions such as UV rays, high and cold temperatures. It is ideal for various permanent building materials as it maintains a stable color continuously.

#### excellent corrosion resistance

It is manufactured to withstand the progress of corrosion due to various chemicals such as acid, alkali, or salt for a long period of time, and as a result of the experiment, it is resistant to salt, alkali, and various acids of less than 60%, and areas where acid rain is frequent or salty coastal areas is also particularly effective.

#### Excellent self-cleaning ability

The surface is dense and smooth, and dust is not easily adsorbed, so it is easily cleaned by rain. It does not leave stains after washing and does not accumulate snow, reducing the risk of collapse due to snow loads.

#### quick installation

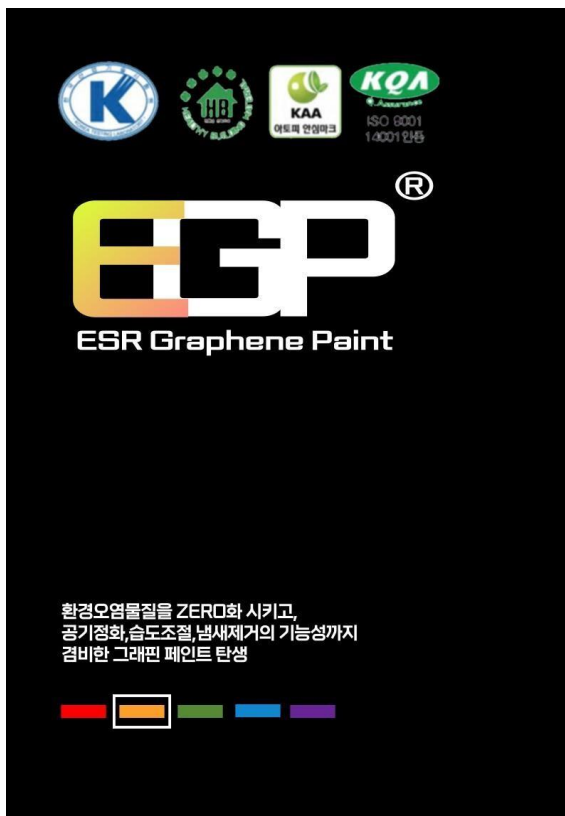
It is light in weight and complete with accessories, so it is easy to install in various places.

### 3. PRODUCT OVERVIEW - GRAPHENE CHARACTERISTICS

## ESR Graphene Paint

- graphene diatomaceous earth paint
- graphene waterproof paint
- graphene silicate paint
- graphene ceramic coating agent
- graphene paint
- graphene strength paint
- graphene exothermic paint

ESR graphene paint has no odor after painting and drying and provides a quick construction environment. Same-day construction and same-day sleeping is possible. (No sick house syndrome)What is even more surprising is that it does not contain major organic compounds harmful to the human body (lead, cadmium, mercury, hexavalent chromium, fluene, VOCs, and formaldehyde).



### 3. PRODUCT OVERVIEW - GRAPHENE CHARACTERISTICS

#### Graphene diatomaceous earth paint



#### Product properties

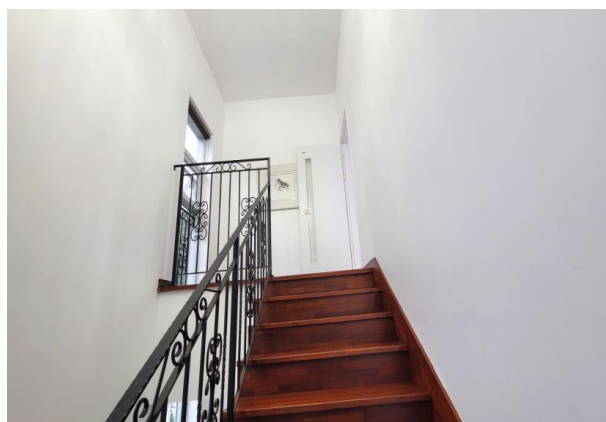
Closing status	Matte
Color	Designated colors (18 basic colors)
Drawing	Concrete, cement mortar, gypsum board
Furtherance	organic/inorganic hybrid
Volume solids	60%
Dry film thickness	250~300 μm
Number of coats	2~3 times
Drying time	2 hours continuous drying / 24 hours complete drying
Overcoating Interval	3 hours
Dilution rate	Within 5% (paint volume ratio)
Diluent	water (purified water)
Packing unit (actual packing amount)	4L/can, 18L/can
Storage duration	6 months
Construction method	It is recommended to use the undiluted solution as it is, and if necessary (5 to 10% water), dilute it before use.

#### Outline

Graphene diatomaceous earth paint, which is non-toxic, eco-friendly and functional, is 99.9% antibacterial paint and is made of natural diatomaceous earth. What is even more surprising is that it is a natural paint that prevents atopy and does not cause sick house syndrome.

#### Characteristic

- 1) Humidity control and air purification function
- 2) Sick house syndrome prevention function
- 3) Antibacterial and mold suppression function
- 4) Far-infrared rays are emitted and function to suppress mosquito pests
- 5) No paint smell, eco-friendly premium paint



## 3. PRODUCT OVERVIEW - GRAPHENE CHARACTERISTICS

### graphene waterproof paint



#### Product properties

Closing status	matte
Color	Designated colors (18 basic colors)
Furtherance	Acrylic + Urethane Hybrid
Volume solids	75%
Dry film thickness	300~500 μm
Number of coats	2~3 times
Drying time	2 hours continuous drying / 24 hours complete drying
Overcoating Interval	3 hours
Dilution rate	Within 5% (paint volume ratio)
Diluent	water (purified water)
Packing unit (actual packing amount)	4L/8~12m <sup>2</sup> 18L/35~50m <sup>2</sup>
Storage duration	6 months (Indoor storage at 5-35 degrees)
Applied area	roof waterproofing and outer wall waterproofing

### Outline

ESR graphene waterproof paint is a water-based waterproof paint made using graphene and a special binder developed by our company.

### Characteristic

- 1) Excellent elasticity and resilience
- 2) Waterproofing and painting at once
- 3) Available in various colors
- 4) Excellent durability and long-term primary color
- 5) Waterproofing of silk leg area





## 3. PRODUCT OVERVIEW - GRAPHENE CHARACTERISTICS

### graphene waterproof paint



#### Product properties

Closing status	matte
Color	Designated colors (18 basic colors)
Furtherance	Silicate + Silane + Silicon Hybrid
Volume solids	60%
Dry film thickness	250~300 $\mu\text{m}$
Number of coats	2~3 times
Drying time	1 hours continuous drying / 12 hours complete drying
Overcoating Interval	2 hours
Dilution rate	Within 5% (paint volume ratio)
Diluent	water (purified water)
Packing unit (actual packing amount)	4L/can, 18L/can 4L/8~12m <sup>2</sup> 18L/35~50m <sup>2</sup>
Storage duration	6 months (Indoor storage at 5- 35 degrees)
Applied area	Maintenance of long-term paint stability in interior and exterior painting finishes, especially in exterior finishes

### Outline

ESR graphene silicate paint is a water-soluble ceramic-based paint made by hydrolysis polymerization of graphene, silicate, and silane. It is an eco-friendly special paint that lasts for decades without discoloration or falling off, providing excellent beauty and protection for interior and exterior walls. no see.

### Characteristic

1) water soluble 2) non-combustible 3) non-toxic 4) Antibacterial, anti-mold 5) Very stable from external environment 6) High surface strength 5H



## 3. PRODUCT OVERVIEW - GRAPHENE CHARACTERISTICS

### graphene waterproof paint



#### Product properties

Closing status	opalescence
Color	Designated colors (18 basic colors)
Furtherance	Silane + silica sol
Volume solids	70%
Dry film thickness	60~100 $\mu\text{m}$
Number of coats	1~2 times
Drying time	1 hours continuous drying / 12 hours complete drying
Overcoating Interval	2 hours
Dilution rate	Within 5% (paint volume ratio)
Diluent	PMA, Ethanol
Packing unit (actual packing amount)	1L/can, 4L/can, 18L/can
Storage duration	6 months (Indoor storage at 5- 35 degrees)
theoretical application amount	1L/10~15m, 4L/40~60m <sup>2</sup> 18L/180~300m <sup>2</sup>
Applied area	Interior and exterior coatings and exterior coatings of old buildings

#### Outline

Ceramic coating is a product made by polymerizing special additives with silicon component  $\text{SiO}_2$  as the main component and reacting with ionic bonding and atmospheric humidity during construction. It is an eco-friendly ceramic paint with excellent durability and hardness as a new concept paint.

#### Characteristic

1) Prevention of adsorption of contaminants and prevention of mold formation  
2) Prevent corrosion from acid or salt damage  
3) Excellent hardness over 6H  
4) Protection of materials from UV rays  
5) No change in physical properties even at high or low temperatures  
6) Incombustibility and atmospheric humidity reaction curing  
7) Excellent wear resistance due to high hardness



## 3. PRODUCT OVERVIEW - GRAPHENE CHARACTERISTICS

### graphene heating paint



#### Outline

Graphene heating paint is a coating film formed from heating paint. It is a heating element made of expensive heating materials such as copper. It is an eco-friendly paint with superior heating properties. It is a groundbreaking invention that eliminates the phenomenon of black ice on asphalt roads in winter. It is also a new technology product that can be safely and efficiently applied to all types of heating products such as induction.

#### Characteristic

- 1) Asphalt road black ice removal
- 2) Applicable to all heating products
- 3) Eco-friendly, highly efficient, highly durable paint
- 4) High heating function and energy saving effect
- 5) Free heating temperature control possible
- 6) Next generation energy saving solution



## 3. PRODUCT OVERVIEW - GRAPHENE CHARACTERISTICS

### Graphene paint

#### Outline

Recently, in new buildings, there is a trend to strengthen the airtightness of the indoor air for the efficiency of cooling and heating. In high spaces, natural ventilation is not desired, so dust accumulates indoors and moisture is not discharged, so various germs, Mold and mites proliferate, causing atopic dermatitis, asthma, bronchitis, etc., and also general paint construction. A large amount of volatile organic compounds (VOCs) such as formaldehyde and toluene are emitted from is threatening ESR graphene paint dramatically improves these problems.

#### Characteristic

1) Prevention of adsorption of contaminants and prevention of mold formation 2) Prevent corrosion from acid or salt damage 3) Excellent hardness over 6H 4) Protection of materials from UV rays 5) No change in physical properties even at high or low temperatures 6) Incombustibility and atmospheric humidity reaction curing 7) Excellent wear resistance due to high hardness

#### 01 Nonflammable

It is an incombustible coating agent using eco-friendly incombustible materials made by hydrolysis of colloidal silica and silane.

#### 02 eco-friendly

An eco-friendly product made by synthesizing an eco-friendly binder and natural diatomaceous earth as a functional material and does not contain environmental pollutants.

#### 03 Functional

Humidity control, adsorption of harmful substances, deodorization, air purification, antibacterial, antifungal, anti-condensation, non-combustible, etc. Exhibits original functions other than product-specific functions, excellent durability.

#### 04 Constructability

It is shipped as a finished product and installed immediately without any additional process. Easy to install, so anyone can do it.

–From 2020, reduce the amount of VOCs generated in paint by 13.2~19.6% compared to 2015– National Institute of Environmental Research Introduced a pre-conformity confirmation system for TVOCs of architectural paints from 2017

### 3. Product Overview - Types of ESR graphene paint and their features

#### Emissions of organic compounds (7 days after painting for indoor use)

Achieve the effect of undetecting organic compounds harmful to the human body

test name	Test Methods	Quality standards	graphene paint
VOCs	EL241 :2017 (Environmental mark certification standard)	Less than 2.0 mg/ m <sup>2</sup> -h	non-detection
toluene	EL241 :2017 (Environmental mark certification standard)	Less than 0.08 mg/ m <sup>2</sup> -h	non-detection
formaldehyde	EL241 :2017 (Environmental mark certification standard)	Less than 0.02 mg/ m <sup>2</sup> -h	non-detection

#### Content of organic elements (heavy metals)

Eliminate human risk factors such as cardiovascular disease and stroke by achieving ZERO of the four major heavy metals

test name	Test Methods	Quality standards	graphene paint
Lead ( Pb )	EL241 :2017 (Environmental mark certification standard)	the sum of the weight Less than 1,000mg/kg ( However, Pb is 600mg/Kg or less)	non-detection
Cadmium (Cd)			
Mercury (Hg)			
Hexavalent chromium (Cr6+)			

#### Smell

There is no odor after painting and drying, providing a quick construction environment and enabling same-day construction and same-day sleeping

test name	Test Methods	Quality standards	comparison product	graphene paint
smell	KS M 5000	During painting, after drying no smell	painting Occurrence of fine odor	no smell

#### Mold removal and antibacterial function

test name	Test Methods	graphene paint
antifungal ( mixed strain )	ASTM G 21-13	Grade 0 (Mold not recognized, highest grade)
antibacterial (E. coli , Pseudomonas aeruginosa , Staphylococcus aureus )	KCL-FIR-1003	99.9%

### 3. Product Overview - Test report

#### Graphene paint test report



## 시험성적서

성적서번호 : CT21-099471K

#### 7. 시험결과

시험 항목	시험방법	시험 결과			시험환경
		초기농도 (CFU/mL)	24시간 후 농도 (CFU/mL)	감소율 (%)	
항균시험 : 대장균	BLANK	$1.6 \times 10^5$	$8.4 \times 10^6$	-	(37.0 ± 0.2) °C
	EGP(ESR Graphene Paint)	$1.6 \times 10^5$	< 10	99.9	
항균시험 : 녹농균	BLANK	$1.8 \times 10^5$	$8.7 \times 10^6$	-	
	EGP(ESR Graphene Paint)	$1.8 \times 10^5$	< 10	99.9	
항균시험 : 황색포도상구균	BLANK	$2.2 \times 10^5$	$4.0 \times 10^6$	-	
	EGP(ESR Graphene Paint)	$2.2 \times 10^5$	< 10	99.9	

\* CFU : Colony Forming Unit

\* 접종원 농도(CFU/mL) : 대장균 :  $1.6 \times 10^5$ , 녹농균 :  $1.8 \times 10^5$ , 황색포도상구균 :  $2.2 \times 10^5$

\* 사용균주 : *Escherichia coli* ATCC 8739  
*Pseudomonas aeruginosa* ATCC 15442  
*Staphylococcus aureus* ATCC 6538P

\* 시험편 : 5 cm × 5 cm , 대조편 : Stomacher film 5 cm × 5 cm

\* 시험장소 : 경기도 안성시 중앙로 327 한경대학교 산학협력관 108호

총 5페이지 중 2페이지

양식TQP-12-01-03(1)



## 3. Product Overview - Test report

## Graphene paint test report



BEYOND ASIAN HUB. TOWARD GLOBAL WORLD

## TEST REPORT

우 13810 경기도 과천시 교육원로 98(중앙동)

TEL (041)589-0010 FAX (041)589-0012

성적서번호 : TAK-2021-097680

접 수 일 자 : 2021년 07월 01일

대 표 자 : 이홍균

시험완료일자 : 2021년 07월 15일

업 체 명 : (주)이에스안그래핀

주 소 : 서울특별시 구로구 디지털로34길 55, 801호(구로동, 코오롱사이언스밸리2차)

시 료 명 : EGP(ESR Graphene Paint)

## 시험결과

시험항목	단위	시료구분	결과치	시험방법
Pb	%	-	검출안됨	KS M ISO 3856-1 : 1984
Cd	%	-	검출안됨	KS M ISO 3856-4 : 1984
Hg	%	-	검출안됨	KS M ISO 3856-7 : 1984
As	mg/kg	-	검출안됨	US EPA 3051A, 6010D(준용)
Cr <sup>6+</sup>	%	-	검출안됨	KS M ISO 3856-5 : 1984

- Method Detection Limit -

Pb : 0.001 0 %

Cd : 0.000 1 %

Hg : 0.000 1 %

Cr(VI) : 0.000 1 %

As : 10 mg/kg

- 용 도 : 품질관리용

- 비 고 : 1. 이 성적서는 의뢰자가 제시한 시료 및 시료명으로 시험한 결과로써 전체 제품에 대한 품질을 보증하지 않으며, 성적서의 진위확인인 홈페이지(www.ktr.or.kr) 또는 QR code로 확인 가능합니다.  
2. 이 성적서는 홍보, 선전, 광고 및 소송용 등으로 사용될 수 없으며, 용도 이외의 사용을 금합니다.  
3. 이 성적서는 원본(제발행 포함)만 유효하며, 사본 및 전자 인쇄본/파일본은 결과치 참고용입니다.

Shin Jiho

작성자 : 신지호

Tel : 02-2092-3802

Han Sang-won

기술책임자 : 한상원

Tel : 1577-0091(ARS ①-④)

2021년 07월 15일

KTR 한국화학융합시험연구원



위변조 확인용 QR code

Page : 1 of 1

### 3. Product Overview - Test report

## Graphene paint test report

BEYOND ASIAN HUB. TOWARD GLOBAL WORLD



# TEST REPORT

우 13810 경기도 과천시 교육원로 98(중앙동) TEL (041)589-0010 FAX (041)589-0012

성적서번호 : TAK-2021-117833 접수 일자 : 2021년 08월 10일  
 대 표 자 : 이흥균 시험완료일자 : 2021년 08월 23일  
 업 체 명 : (주)이에스일그래핀  
 주 소 : 서울특별시 구로구 디지털로34길 55, 801호(구로동, 코오롱씨어انس밸리2차)  
 시 료 명 : EGP(ESR Graphene Paint)

---

**시험 결과**

시험항목	단위	시료구분	결과치	시험방법
주도	K.U	-	104	KS M 6010 : 2014
비휘발분(도로 중의, (105 ± 2) °C, 60 min)	%	-	63	KS M 6010 : 2014
건조 시간(고화)	min	-	30	KS M 6010 : 2014
45° , 0° 확산반사율	%	-	93	KS M 6010 : 2014
은폐율	%	-	97	KS M 6010 : 2014
내세척성	-	-	500 회 이상	KS M 6010 : 2014
냉동 안정성	-	-	이상없음	KS M 6010 : 2014
용기 내에서의 상태	-	-	이상없음	KS M 6010 : 2014
냄새	-	-	이상없음	KS M 6010 : 2014

- 수성도료 2종 1급에 준하여 시험한 결과임  
 - 용 도 : 품질관리용

비 고 : 1. 이 성적서는 의뢰자가 제시한 시료 및 시료명으로 시험한 결과로써 전체 제품에 대한 품질을 보증하지 않으며, 성적서의 진위확인인 홈페이지(www.ktr.or.kr) 또는 QR code로 확인 가능합니다.  
 2. 이 성적서는 홍보, 선전, 광고 및 소송용 등으로 사용될 수 없으며, 용도 이외의 사용을 금합니다.  
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---

위 성적서는 KS Q ISO/IEC 17025 및 KOLAS 인정과 관련이 없음을 밝힙니다.

*Rang Myeongu*

작성자 : 강면구  
Tel : 02-2092-3711

*Jung Bong Kue*

기술책임자 : 정봉규  
Tel : 1577-0091(ARS ㉠-㉡)

2021년 08월 23일





위변조 확인용 QR code

Page : 1 of 1

**KTR** KOREA TESTING & RESEARCH INSTITUTE  
KTR OP P09 F01 02(00)

A4(210 X 297)



## 3. Product Overview - Test report

## Graphene paint test report

BEYOND ASIAN HUB. TOWARD GLOBAL WORLD



## TEST REPORT

### 시험성적서



우 22829 인천광역시 서구 가재울로 68(가좌동) TEL (032)5709-700      FAX (032)575-5613	성적서 번호: THF-2022-000767 쪽 1 / 총 5
---	--------------------------------------

1. 신청자
  - 회사명 : (주)이에스알그래핀
  - 주소 : 서울특별시 구로구 디지털로31길 38-9, 909호(구로동, 에이스테크노타워1차)
  - 접수일자 : 20220812
2. 시험대상품
  - 시료명 : 이에스알그래핀페인트(ESR Graphene Paint)(내부마감재)
  - 모델명 : 이에스알그래핀페인트(ESR Graphene Paint)
  - 제품번호 : -
3. 시험규격 : 국토교통부 고시 제2022-84호(2022) 제23조 제1호 및 제2호
4. 성적서 용도 : 품질관리용
5. 시험기간 : 2022년 08월 12일 ~ 2022년 10월 14일
6. 시험환경 : 온도 : (15~30) °C, 습도 : (20~80) % R.H.
7. 시험결과 : 적합

1. 이 성적서는 의뢰자가 제시한 시료 및 시료명으로 시험한 결과로서 전체 제품에 대한 품질을 보증하지 않으며 성적서의 진위 확인을 홈페이지(www.ktr.or.kr) 또는 QR code로 확인 가능합니다.

2. 이 성적서는 홍보, 선전, 광고 및 소송용 등으로 사용될 수 없으며, 용도 이외의 사용을 금합니다.

3. 이 성적서는 원본(재발행 포함)만 유효하며, 사본 및 전자 인쇄본은 결과치 참고용입니다.

확인	시험실무자 성명 : 심지훈 <i>Shim Jihun</i>	기술책임자 성명 : 김기웅 <i>Kim Kiwoong</i>
----	-------------------------------------	--------------------------------------

발급일자 : 20221014  



한국화학융합시험연구원

\* 본 시험성적서는 발급일로부터 3년간 유효함.      위변조 확인용 QR code




## 3. Product Overview - roofing

### Graphene Synthetic Resin Roof Tile SERA-A



The graphene synthetic resin tile is an antique and three-dimensional roof with a Korean design. It is widely used as a roofing material for beautiful roof designs.



Graphene synthetic resin roof is widely used as a permanent material applied to temporary buildings and as a roofing material for beautiful roof design.

#### Characteristic

Excellent color persistence, light weight, waterproof, heat resistance, heat insulation, sound insulation, corrosion resistance, weather resistance, dustproof and earthquake resistance, stain resistance, fire resistance, excellent insulation, and easy to install. It is a three-dimensional type with an antique Korean design and is widely used as a roofing material for beautiful roof designs.

#### Product standard

Thickness : 2.5~3.0mm  
 Length : Can be made to order  
 Width : 1050mm  
 Goal width : 150mm  
 Bone height : 30mm

#### Characteristic

Excellent color persistence, light weight, waterproof, heat resistance, heat insulation, sound insulation, corrosion resistance, weather resistance, dustproof and earthquake resistance, stain resistance, fire resistance, excellent insulation, and easy to install. The one-touch construction method enables reduction of construction work and cost, and chemical durability is provided to maintain a lifespan comparable to that of pre-painted steel and aluminum plates.

#### Product standard

Thickness : 2.5~3.0mm  
 Length : Can be made to order  
 Width : 1130mm  
 Goal width : 150mm  
 Bone height : 30mm

### 3. Product Overview ESR Graphene Deck / ASA Exterior Wall Material / Siding Exterior Wall Material

#### Graphene synthetic resin deck

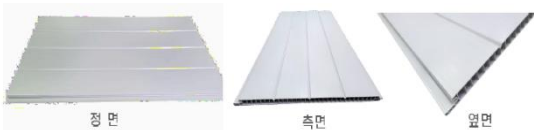


front

back

Adopting the most advanced extrusion technology for synthesis, The surface layer is graphene with strong scratch and abrasion resistance material, and the lower layer is corrosion-resistant polyethylene and other materials are used.

#### Graphene ASA exterior wall material



#### Graphene siding exterior wall material



#### Characteristic

Decking in a wood-patterned color that is comfortable and blends well with the surroundings. By processing the graphene material on the outside, it is stronger in strength and friction than conventional decks, and is also resistant to external shocks.

#### Product standard

Thickness : 20mm

Length : 2400mm

Width : 150mm

Color : wood pattern

#### Characteristic

Graphene synthetic resin ASA adapts well to its surroundings and provides a comfortable and familiar environment. Graphene ASA exterior wall material uses excellent graphene material and has strong and excellent weather resistance. Graphene synthetic resin ASA is a graphene material that is added to prevent dust or foreign substances from sticking to the surface. It is lightweight, easy to install, and looks great from the outside.

#### Product standard

Thickness : 200mm

Width : 530mm

Color : gray and custom made available

#### Characteristic

It is a new graphene premium exterior material that is extruded by coating ASA resin on PVC to form a three-dimensional effect and a steel texture. It is eco-friendly and has excellent strength, luxury and elegance.

### 3. Product Overview ESR Graphene Stone Exterior Wall Material / Deco Tile Flooring

#### Graphene Stone Exterior Wall



#### Characteristic

Graphene stone is a natural stone material for exterior walls of houses, which fits well with the surrounding environment, gives a luxurious feel, and creates a friendly environment. It uses durable and excellent graphene material and various raw materials obtained from nature. It is fused in the form of natural stone, durable with excellent compression technology, and gives an antique and natural feel. Compared to other products, it is light, easy to install, and has excellent aesthetics.

#### Product standard

Thickness : 20mm

Length : 290mm

Width : 63mm

Color : gray and custom made available

#### Graphene Decor Tile Flooring



#### Characteristic

Graphene decor tile flooring has excellent durability and sensuous design, living room, room, and anywhere else. Graphene Decor Tile Flooring uses excellent graphene material and multi-layered synthetic resin.

#### Product standard

Thickness : 5mm

Length : 122mm

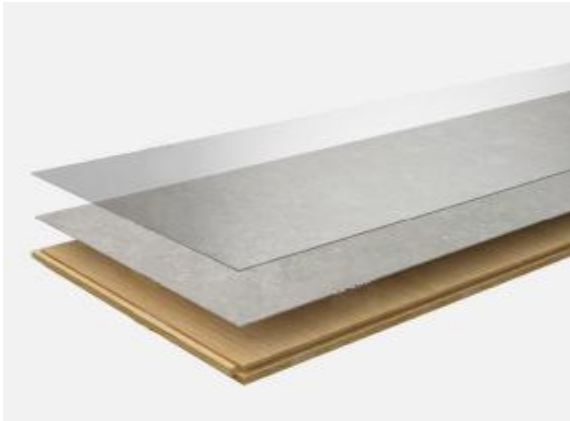
Width : 800mm

Color : gray and custom made available



### 3. Product Overview ESR Graphene Flooring

## Graphene floor



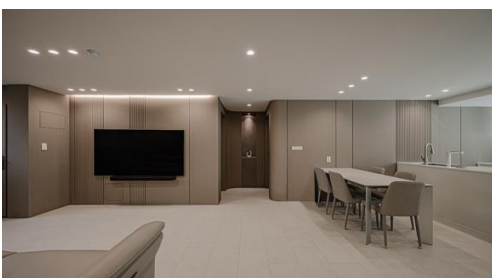
#### Characteristic

- High strength : HPL (High Pressure Laminate)
- Top-grade eco-friendly materials
- Flooring resistant to
- Micro- Beveling : Edges Safe and beautiful
- Clean floor without
- Sophisticated embossing technology
- Nash Garret : flame retardant , prevention of rapid fire spread
- Comfort & Safety: comfortable and stable gait

#### Product specifications

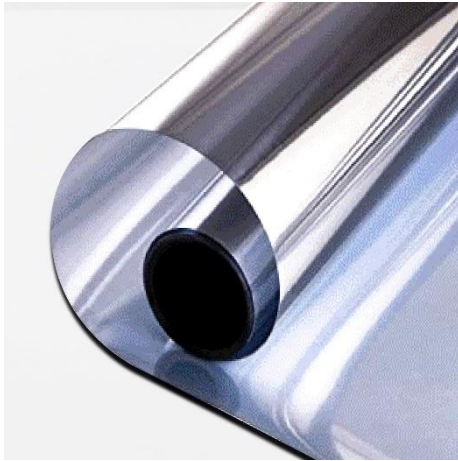
Size : 7.7TX 292 X 597 (mm)

5 colors (Moroccan Cream, Gentle Fantasy, Eternal Shine, Museum Gray, Celeb Beige)



### 3. Product Overview ESR Graphene Sun Grab tinting film

## Graphene Sun Grab tinting film



#### Characteristic

Sungrab using graphene material is a building All windows that let in light, such as It fits well.

99.9% UV protection

blue light Perfect blocking

inside , outside Excellent heat blocking function

Fundamentally protect against glass breakage

Excellent visibility and reduction of heating and cooling costs

Product standard

width 180mm

length custom order

color 5 species



### 3. Product Overview ESR Graphene Sun Grab Tinting film test report



## 시험성적서



1910-4075-4385-1353

1. 성적서 번호 : CT20-104354K
2. 의뢰자
  - 업체명 : 주식회사 이에스알그래핀
  - 주소 : 서울특별시 구로구 디지털로34길 55, 801호 (구로동, 코오롱사이언스밸리2차)
3. 시험기간 : 2020년 09월 07일 ~ 2020년 11월 10일
4. 시험성적서의 용도 : 품질관리
5. 시료명 : 그래핀 단열필름-그린 외 1건
6. 시험방법
  - (1) KS L 2016:2014
  - (2) KS L 2514:2011

확인	작성자명	박영현	박영현	기술책임자명	서준식	서준식
비교 : 1. 이 성적서는 KS Q ISO/IEC 17025 및 KOLAS 인정과 관련이 있으며, 의뢰자가 제시한 시료 및 시료명에 한정된 결과로서 전체제품에 대한 품질을 보증하지는 않습니다. 2. 이 성적서는 홍보, 선전, 광고 및 소송용으로 사용될 수 없으며, 용도 이외의 사용을 금합니다. 3. 이 성적서의 일부만을 발췌하여 사용한 결과는 보증할 수 없습니다. 4. 이 성적서의 진위여부는 홈페이지( <a href="http://www.kci.re.kr">www.kci.re.kr</a> )에서 확인 가능합니다.						

위 성적서는 국제시험기관인정협력체 (International Laboratory Accreditation Cooperation) 상호인정협정 (Mutual Recognition Arrangement) 에 서명한 한국인정기구 (KOLAS)로부터 공인받은 분야에 대한 시험결과입니다.

2020년 11월 10일

한국인정기구 인정 한국건설생활환경시험연구원



결과문의 : 28115 충청북도 청주시 청원구 오창읍 양청3길 73 ☎ (043)210-8338

전자문서본은 시험결과에 대한 참고용입니다.

총 2페이지 중 1페이지

전자문서본 (Electronic Copy)

양식TOP-12-01-01(1)

## 3. Product Overview ESR Graphene Sun Grab Tinting film test report

## 시험성적서



성적서번호 : CT20-104354K

## 7. 시험결과

## 1) 그래핀 단열필름-그린

시험항목	단위	시험방법	시험결과	비고	시험장소
가시광선 투과율	%	(1)	71.4	(23 ± 2) °C (65 ± 5) % R.H.	A
접착강도	N/10 mm	(1)	4.4		
인장강도	N/10 mm	(1)	81		
신장률	%	(1)	66		
내후성-색차(ΔE <sub>w</sub> )	-	(1)	10.0		
태양열 취득률	-	(2)	0.55		

## 2) 그래핀 단열필름-블랙

시험항목	단위	시험방법	시험결과	비고	시험장소
가시광선 투과율	%	(1)	12.0	(23 ± 2) °C (65 ± 5) % R.H.	A
접착강도	N/10 mm	(1)	3.5		
인장강도	N/10 mm	(1)	85		
신장률	%	(1)	82		
내후성-색차(ΔE <sub>w</sub> )	-	(1)	1.4		
태양열 취득률	-	(2)	0.37		

\* 두께 3 mm 투명 판유리에 필름을 부착하여 시험한 결과임.

\* 시험장소

A : 충청북도 청주시 청원구 오창읍 양충3길 73

— 끝 —



### 3. Product Overview ESR Graphene Guardrail

## Graphene guardrail



#### Characteristic

The graphene guardrail, which uses graphene raw materials with excellent strength, has a non-blunt design and color, so it fits well in the natural environment and has a rod shape, so it feels familiar .

It enables drivers to see through colors more than existing guardrails, absorbs shock in the event of a car collision , protects the driver's driving, prevents the vehicle from leaving the road, minimizes injury to passengers and damage to the vehicle , normal direction of the vehicle .There is also a function to restore .

#### Product specifications

width 600mm

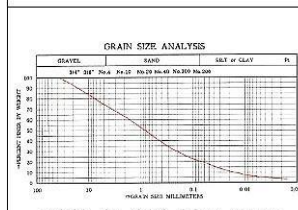
length 226

color 4 species

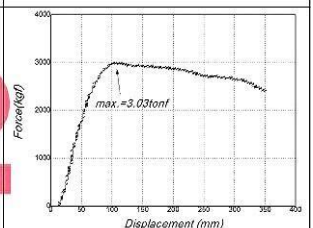


<지주 시험체 설치>

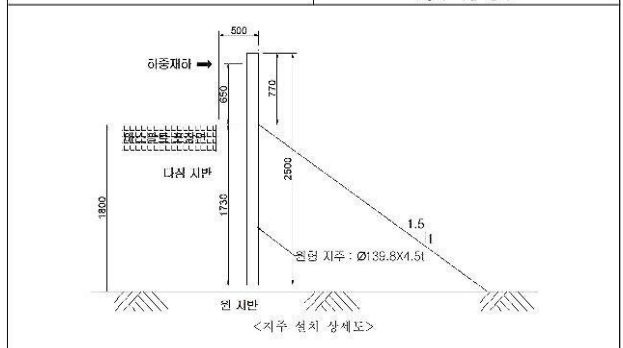
<지지력 시험 후 지주>



<퇴매물 재료 체분석 결과(KS F2302)>



<경적 시험 결과>



### 3. Product Overview Test Report

## Korea Expressway Corporation guard lane performance test report

시험번호 : 2020-3-0024-2-001

### 성토부 노측용 방호울타리 성능시험 결과

첨부 #1 : 방호울타리 성능평가 출품시험 결과 총괄표

시험물의 명칭	성토부 노측용 방호울타리 (K명명 : BSR-SES)		신청자명	케이엑스엔지니어링 / 이종균	
<b>방호울타리 제원</b>					
종류	원형 방호울타리	등급	SES	적용장소	노측용(성토부)
높이	770 mm	재료	원재(SGT275), PVC 합성수지	기초형식	정면다중시판 (성토부 사면)
기본형식	4단 웨이브프, 원형지주	피스	원지갈이	지주의 수평지거리	3.03 m
비고	※시험제 평가 조건 본 제품은 성토부 사면(1:2.5)에 설치되는 성토부 노측용 방호울타리로서, 성토부 사면의 K11'에 의해 원형지주에 대하여도 충돌시험을 수행하였다. 본국의 용역에 K11'에 위치하도록 적용된 파일 → 합성수지 파일인 파일연결 웨이브프를 삽입하여 설치한다. 충돌시험을 위한 시험재의 설치방법은 소정의 출품문의 28페이지에 설치하였다.				

#### 출품시험 수행기관

시험 기관명	한국도로공사 도로교통연구원	시험 시설명	도로안전시험 성능시험장
시험일자	소형차 : 2020년 06월 16일(화)	시험번호	2020-3-0024-2-001

#### 시험 조건

합승차 보조인승 평가 충돌시험 (시험일 2020년 06월 16일)		
시험차량중량(kg)	충돌속도(mph)	충돌각도(°)
1,250 (1,300)	103.6 (100)	20 (30)

주) 1)는 시험 조건값을 나타내고 충돌시험 결과가 시험 조건에 대해 상대적으로 이루어지는지를 나타낸다.

## Graphene Ultra Power Saving Boiler System

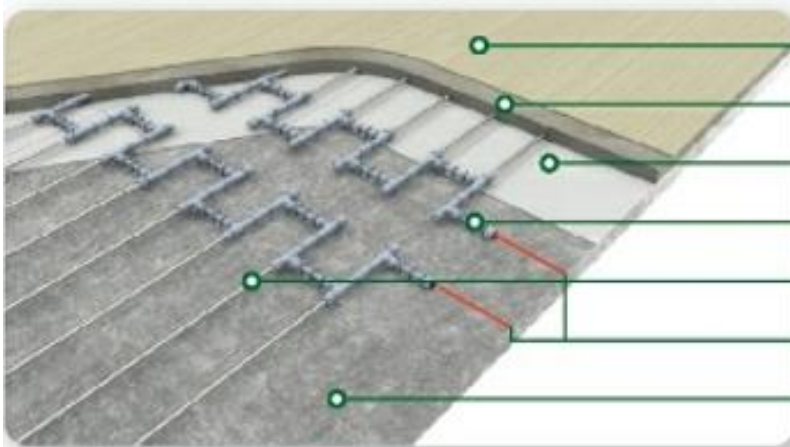
### Characteristic

Sungrab using graphene material is a building

All windows that let in light, such as It fits well.

boiler wet

- 1) Up to 60% reduction in heating costs
- 2) Fast heat conduction and exothermic
- 3) 10%~20% of heating water consumption
- 4) Reinforcing corrosion resistance by



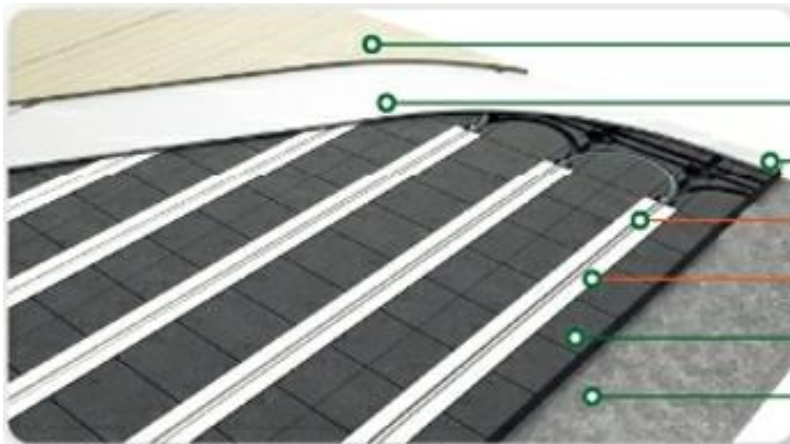
- Finishing material (floor)
- plastering (mortar)
- insulator
- Heating piping
- stainless steel tubing
- Heating in/out
- Existing floor (cement)

1) Water does not enter the pipe , and heating water passes only between

How to save hot water and energy .

- 2) Used for
- 3) Possible to install anywhere

boiler dry



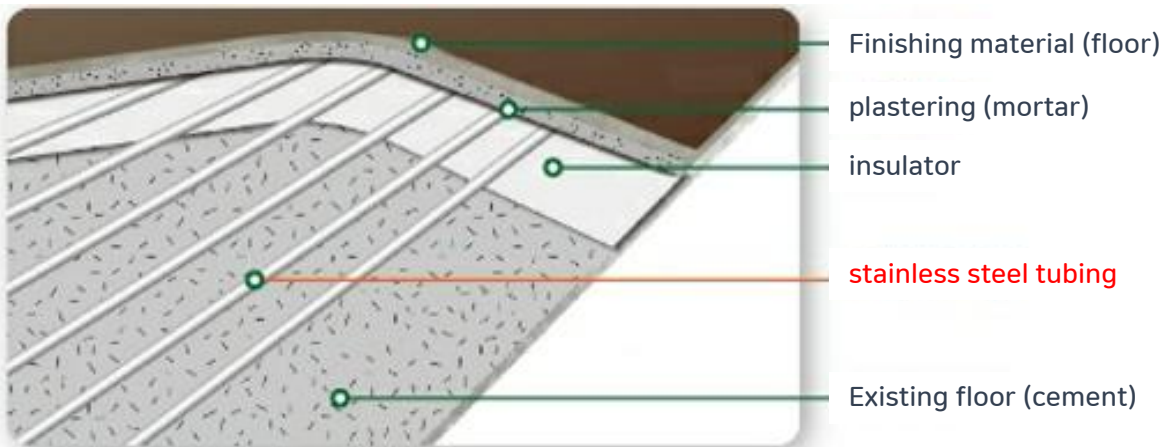
- Finishing material (floor)
- steel plate fastening tape
- Plated steel and board (6mm)
- stainless steel pipe
- aluminum heatsink
- high strength insulation
- Existing Floor (Cement/Wood)

- 1) A method that maximizes the effect of heat retention by applying insulation pads and inserting aluminum heat sinks without plastering
- 2) Pensions and hotels , mobile homes , dormitories Used
- 3) Quick installation anywhere

### 3. Product Overview ESR Graphene Ultra Power Saving Boiler System

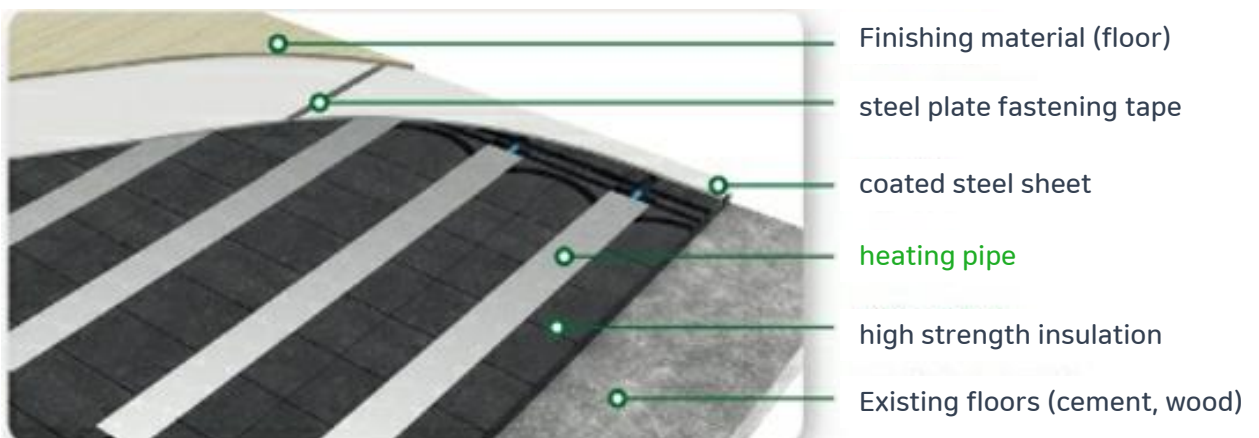
## Graphene Ultra Power Saving Boiler System

electric wet



- 1) stainless steel pipe material, and there is no worry about corrosion and electromagnetic waves. No , installation method on concrete
- 2) Used for Pensions, houses, shops, dormitories
- 3) Can be installed anywhere new or extended
- 4) Electricity flows only through the heating cable, reducing power consumption

electric dry



- 1) A method that maximizes the effect of heat retention by applying insulation pads and inserting aluminum heat sinks without plastering
- 2) Pensions and hotels , mobile homes , dormitories Used
- 3) Quick installation anywhere
- 4) Electricity flows only with the heating wire , reducing power consumption savings

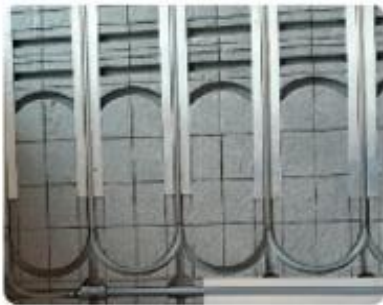
### 3. Product Overview Graphene Ultra Power Saving Boiler System

#### Graphene Ultra Power Saving Boiler System Construction Photo

boiler wet



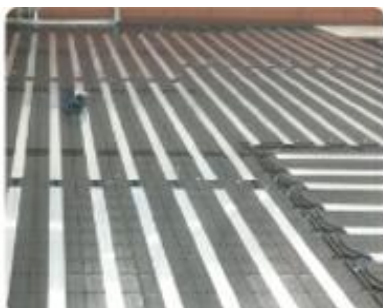
boiler dry



electric wet



electric dry



### 3. Product Overview Excellent technology evaluation company certificate

#### Excellent technology evaluation company certificate



# 1. License registration certificate

## ISO certificate



## 2. Patent certificate

### Patent certificate

**특허증**  
CERTIFICATE OF PATENT

**특허** 제 10-2253976 호  
Patent Number

출원번호 제 10-2018-0106310 호  
Application Number

출원일 2018년 09월 06일  
Filing Date

등록일 2021년 05월 13일  
Registration Date

발명의 명칭 Title of the Invention  
강화 와이어케이블이 삽입되어 있는 가이드레일 플레이트의 조립체

특허권자 Patentee  
주식회사 이에스알그래핀(110111-\*\*\*\*\*)  
서울특별시 구로구 디지털로34길 55, 801호(구로동, 코오롱사이언스밸리2차)

발명자 Inventor  
등록사광환에 기재

위의 발명은 「특허법」에 따라 특허등록원부에 등록되었음을 증명합니다.  
This is to certify that, in accordance with the Patent Act, a patent for the invention has been registered at the Korean Intellectual Property Office.

2021년 05월 13일

**특허청장**  
COMMISSIONER,  
KOREAN INTELLECTUAL PROPERTY OFFICE

김용래

 QR코드로 현재기준 등록사항을 확인하세요



  
**특허청**  
Korean Intellectual Property Office



## 2. Patent certificate

## Certificate of design patent registration

**디자인등록증**  
CERTIFICATE OF DESIGN REGISTRATION

**등록** 제 30-1041837 호  
Registration Number

**출원번호** 제 30-2019-0025825 호  
Application Number

**출원일** 2019년 05월 30일  
Filing Date

**등록일** 2020년 01월 13일  
Registration Date

**등록의 구분** 심사 등록  
Type of Registration (EXAMINED REGISTRATION)

**물품류** Class  
제25류  
디자인의 대상이 되는 물품 Product  
가드레일용 판재

**디자인권자** Owner  
등록사항란에 기재

**창작자** Creator  
등록사항란에 기재

위의 디자인은 「디자인보호법」에 따라 디자인등록원부에 등록되었음을 증명합니다.  
This is to certify that, in accordance with the Design Protection Act, a design has been registered at the Korean Intellectual Property Office.

2020년 01월 13일

 QR코드로 원제기온  
등록사항을 확인하세요

**특허청장**  
COMMISSIONER,  
KOREAN INTELLECTUAL PROPERTY OFFICE

**박원주**

  
**특허청**  
Korean Intellectual  
Property Office

# 1. Plant and hardware

## Factory view and machinery



Reactor



Ribbon Blender



Basketville



Dissolver

## 2. Major construction performance

### Samsung Raemian

#### After

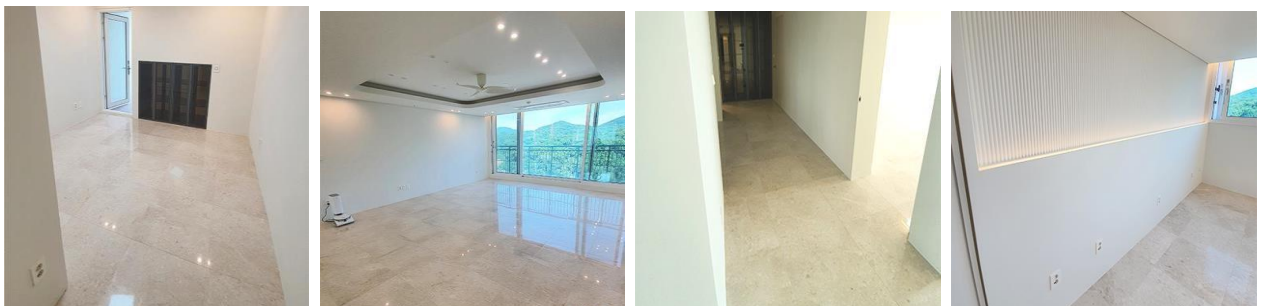


### Indeokwon Central Xi

#### Before



#### After



## 2. Major construction performance

### Hanyang Sujain Seongnam Mark View

#### Before

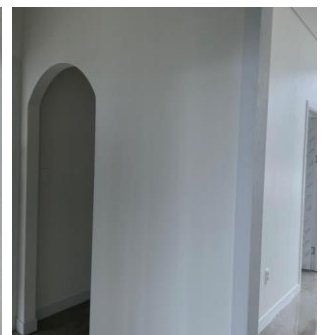
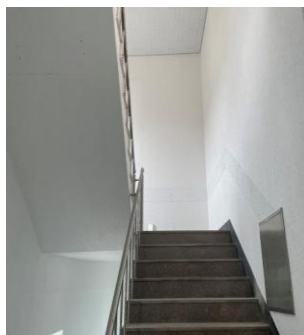
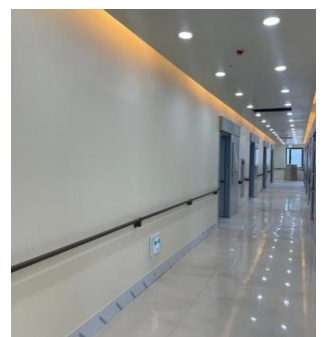
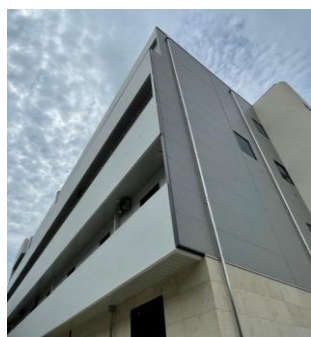


#### After



### Yesan Medi Plus Hospital

#### After



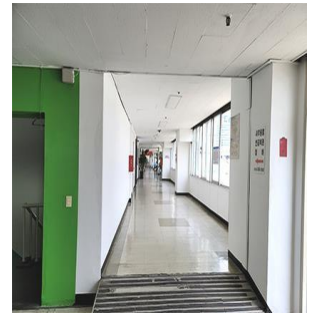
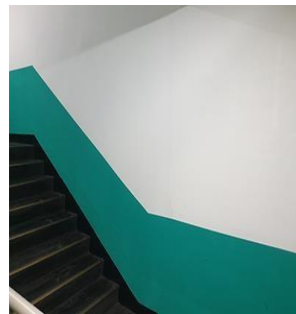
## 2. Major construction performance

### Garak Market

*Before*

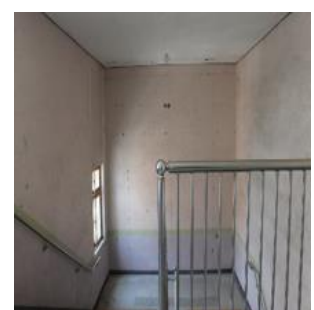


*After*

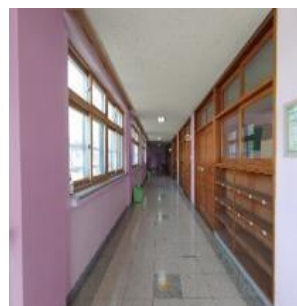


### Downon Elementary School

*Before*



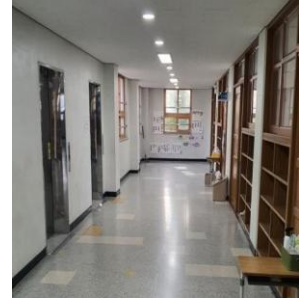
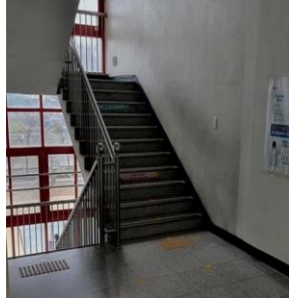
*After*



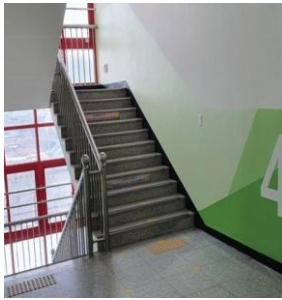
## 2. Major construction performance

### Wolpo Elementary School

*Before*

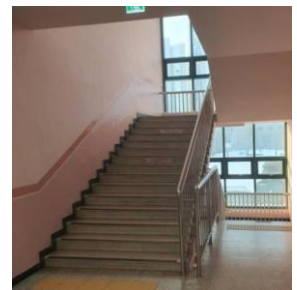
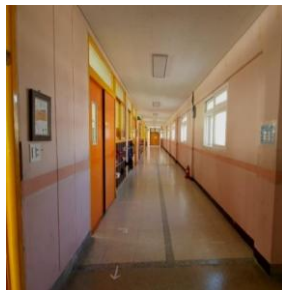


*After*



### Seoryong Elementary School

*Before*



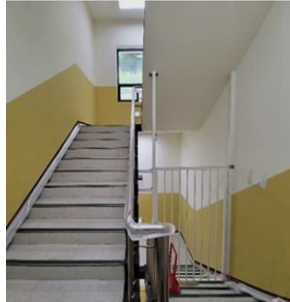
*After*



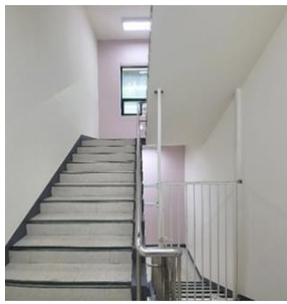
## 2. Major construction performance

### Shinsung High School

*Before*

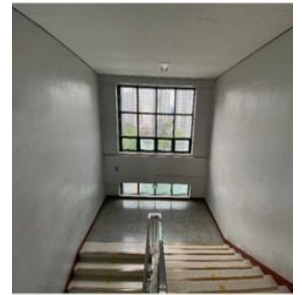
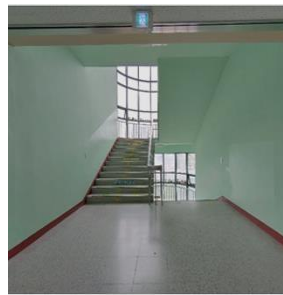


*After*

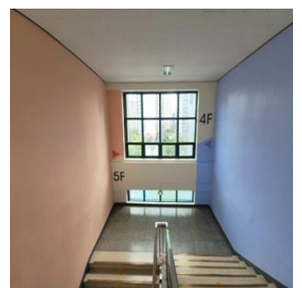
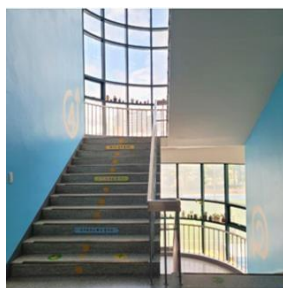


### Chilbong Elementary School

*Before*



*After*



## 2. Major construction performance

# Delivery performance

construction day	construction site	Construction name	Scale
Jan 2020	Busan Gwangan District Gwangan Zai	inside the apartment graphene diatomite bio	262 generations
Mar 2020	Busan Bongnae District Eileen's Garden	inside the apartment graphene diatomite bio	155 generations
May 2020	Gyeonggi Seongnam Hanyang Sujain Seongnam M arkview	inside the apartment graphene diatomite bio	182 generations
November 2020	Gyeonggi Anyang Anyang Hogye Doosan We've	inside the apartment graphene diatomite bio	176 generations
December 2020	Gyeongbuk Gimhae Juchon Seohui Star Hills	inside the apartment graphene diatomite bio	232 generations
Jan 2021	Gyeongbuk Sangju Sangju Taewang Honors	inside the apartment graphene diatomite bio	125 generations
Feb 2021	daegu Namsan Xi Haneulchae	inside the apartment graphene diatomite bio	245 generations
Mar 2021	Siheung, Gyeonggi Janghyun Vista Dongwon Roy al Duke	inside the apartment graphene diatomite bio	166 generations
Mar 2021	Dongdaegu Vista Dongwon Royal Duke	inside the apartment graphene diatomite bio	157 generations
Apr 2021	Gyeonggi Hwaseong Vista Dongwon Royal Duke	inside the apartment graphene diatomite bio	7 8 generations
May 2021	Gyeonggi Anyang Hanyang Sujain Pyeongchon Riverview	inside the apartment graphene diatomite bio	172 generations
May 2021	Incheon Sosaеul Station Shinil Happy Tree	interior wall , ceiling graphene diatomite bio	231 generation
July 2021	Gangwon Samcheok Iseongtruel	inside the apartment graphene diatomite bio	126 generations
Aug 2021	Incheon Bupyeong E Comfortable World Urban L uce	inside the apartment graphene diatomite bio	188 generations



## 2. Major construction performance

# Delivery performance

construction day	construction site	Construction name	Scale
Sep 2021	Busan Sasang Jurye Lotte Castle	inside the apartment graphene diatomite bio	274 generations
October 2021	Ansan, Gyeonggi Super regional central foret	inside the apartment graphene diatomite bio	156 generations
December 2021	Siheung Woldong District Shinhan Hessen	inside the apartment graphene diatomite bio	132 generations
December 2021	Osan, Gyeonggi Youngmuye Daum	inside the apartment graphene diatomite bio	8 5th generation
Jan 2022	Osan, Gyeonggi Youngmu Parad	inside the apartment graphene diatomite bio	7 3rd generation
Mar 2022	Tap-dong, hildesheim	inside the apartment graphene diatomite bio	62 generations
04/04/2022	Gyeongnam Hadong La Poem	inside the apartment graphene diatomite bio	125 generations
May 2022	Hongje, Seoul Garden Platz	inside the apartment graphene diatomite bio	74 generations
Jun 2022	Seodaegu KTX Yeongmu Ye Daum	inside the apartment graphene diatomite bio	8 5th generation
07/07/2022	daegu Hyosung Harrington Place	inside the apartment graphene diatomite bio	151 generations
Aug 2022	Incheon Rowan City Berhill	inside the apartment graphene diatomite bio	159 generations
Sep 2022	Seodaegu Station Bando Bora Yu Bora Centum	inside the apartment graphene diatomite bio	8 3rd generation
Sep 2022	Geoje Asiad Ssangyong Double Platinum	inside the apartment graphene diatomite bio	128 generations
October 2022	Gyeonggi Uijeongbu Prugio Centum	inside the apartment graphene diatomite bio	169 generations
October 2022	Dongdaegu Haringdon Plate	inside the apartment graphene diatomite bio	153 generations

## 2. Major construction performance

# Delivery performance

construction day	construction site	Construction name	Scale
December 2022	DMC SK Buai Park Foret	inside the apartment graphene diatomite bio	275 generations
Mar 2023	Gwangju Mudeungsan Korea Adelium Urban Centr al	inside the apartment graphene diatomite bio	154 generations
04/04/2023	Seomyeon, Busan Vista Dongwon	inside the apartment graphene diatomite bio	67 generations
May 2023	Jeonbuk Iksan Songak-dong yes next	inside the apartment graphene diatomite bio	8 3rd generation
06/2023	Gangwon Pyeongchang The Richmond	inside the apartment graphene diatomite bio	5 8 generations
06/2023	Gangwon Hongcheon Far East Starcles	inside the apartment graphene diatomite bio	6 2nd generatio n

Construction name	construction details	construction scale
Gangnam University Complex	dormitory , lifelong education center , s ports facility , Neighborhood Living Facility Complex	26,073.56㎡
Jeonju Hyoja-dong Medical C enter Major Repair Work	Medical facilities and Class 1 neighborh ood living facilities	2 floors below ground , 5 floors above gr ound (17,849.11㎡)
Sineun-ri, Nam-myeon, Taea n-gun commercial , residential	Type 1 and 2 shopping mall and housing new construction	1st basement floor , 2nd floor above gro und 5 shops , 17 houses _ _ (15,479㎡)
Seonjaeri Sea Island	construction	1 basement floor , 4 floors above ground 1st floor sales facility , general food , res t food , indoor swimming pool , 54 guest rooms on 1st-4th floor , Rooftop - Outdoor swimming pool (4,586.67㎡)
Hyoja-dong, Jeonju medical center	Cancer patient medical center new cons truction	2 floors below ground , 5 floors above gr ound (17,849 ㎡)
Anrim-dong, Chungju-si	New construction of urban living housin g	17-5 Anrim-dong, Chungju-si and 8 lots
Seorak-dong, Sokcho-si	Civil engineering and demolition work	Seorak-dong 15-25 and 6 lots
Gokseong-gun, Jeollanam-do	Medical hospital new construction	1 basement floor , 4 floors (5,388.26 ㎡)



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