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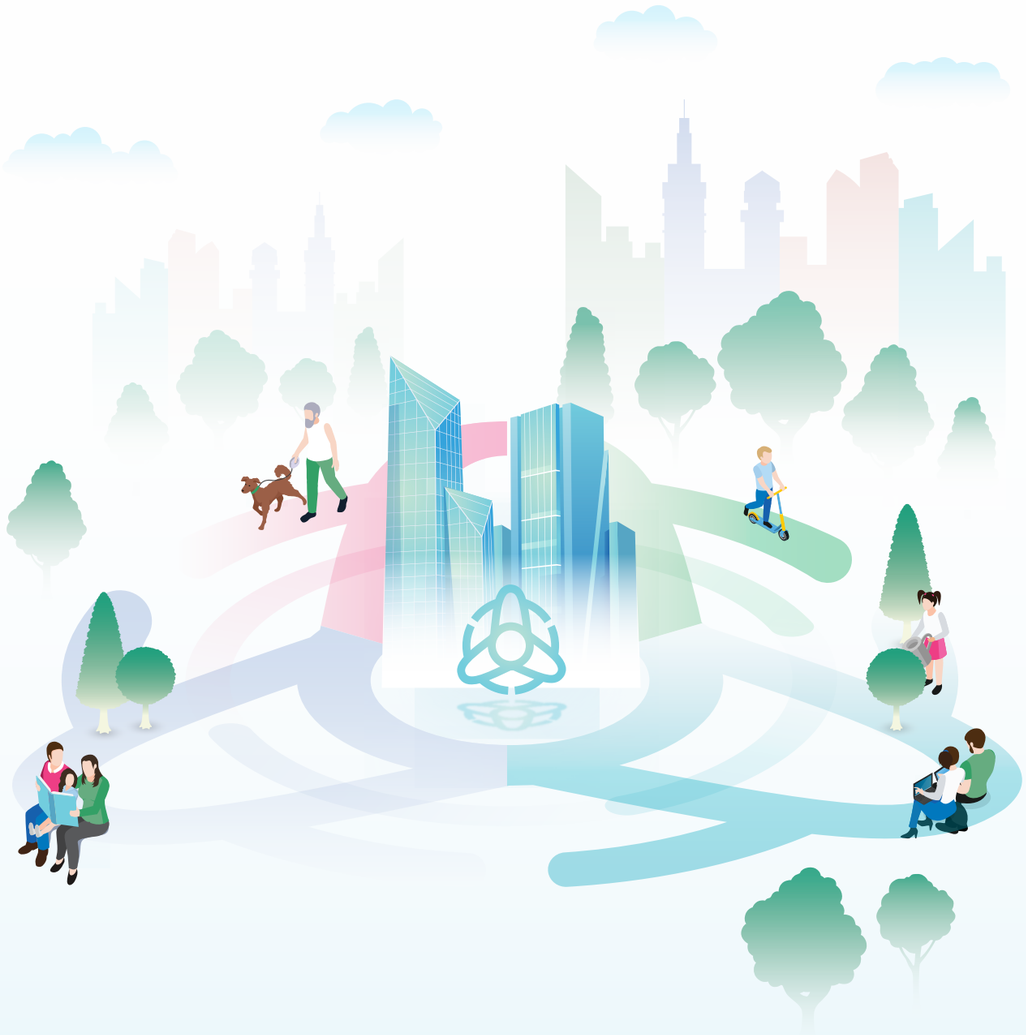
SUNGHYUN CHEMICALS

A company that leads advanced architectural culture



SUNGHYUN CHEMICALS

A company that leads advanced architectural culture

Headquarter : 3rd Floor, Sunghyun Building, 578 Gangnam-daero, Gangnam-gu, Seoul, Republic of Korea
T : 02-3446-2931~4 F: 02-3446-2935
Branch : 305, Country Hill, 176 Geumdan-ro, Geumjeong-gu, Busan, Republic of Korea
T : 051-513-2932 F: 051-518-6168
Factory : 465 Chogeum-ro, Geumwang-eup, Eumseong-gun, Chungcheongbuk-do, Republic of Korea
T: 043-877-7808 F: 043-877-7657

COMPANY INTRODUCTION

Sunghyun Chemicals co.,Ltd

A company leading the advancement of architectural culture.
We value trust with our customers above all through thorough customer-oriented services, and we will continue to grow our dream of becoming a global leading company through constant challenges and innovation.

To realize the customer-centered management philosophy, we create
"Nature-friendly living spaces and human-respecting humanistic spaces."
From the very beginning, SungHyun Chemicals is always with you.

Since its establishment in 1986 as a specialized manufacturer of refractory and insulation materials, Sunghyun Chemicals co.,Ltd has prioritized customer satisfaction through quality-first management. With the highest level of technology in the country, we produce and supply the most economical and environmentally friendly refractory, insulation, and sound-absorbing materials, always considering the environment and people first.

Our flagship product, fireproof coating material, serves as the last line of defense to protect people and property from fires and prevent building collapse. Recognizing this importance, we have obtained international certifications (UL certification) and applied for domestic and international patents, putting all our efforts into accumulating world-class technology.
In addition, in line with the era's call for eco-friendly green growth and energy savings, we have acquired eco-friendly certifications for all our products. We firmly believe that customer satisfaction is the mission of the company, and we continuously strive to manufacture and supply affordable and high-quality products without settling for the status quo.

All of us at Sunghyun Chemicals co.,Ltd are committed to carrying out our mission in this era. Based on our long-accumulated technology and expertise, we will always be there with you at the forefront of creating nature-friendly living spaces and human-respecting, humanistic environments.

COMPANY HISTORY

2022 ~ 2011

- **2022** 02 Certificate of Fire-resistant Construction for 3-Hour Intumescent Paint for D-Column Composite Column
- 05 Certificate of Fire-resistant Construction for 2-Hour Intumescent Paint for Steel Column
- **2021** 08 Certificate of Fire-resistant Construction for 3-Hour Intumescent Paint for HyFo Composite Beam
- 12 Certificate of Fire-resistant Construction for 1-Hour Intumescent Paint for Steel Beam & Column
- **2020** 08 Certificate of Fire-resistant Construction for HICOTE ET-IV(SFRM) for Steel Beam & Column
- **2015** 10 Certificate of Fire-resistant Construction for HICOTE SH (Intumescent Paint)
- 02 Certificate of Fire-resistant Construction for HICOTE ET-II(SFRM) for Steel Beam & Column
- **2013** 03 Launched new product HICOTE ET-II
- **2012** 06 Received Commendation from the Minister of Environment
- **2011** 08 U.S and Iran Patent Registration about Fire-resistant for TSC Composite Beam

2010 ~ 2004

- **2010** 04 UL263 Certificate
  Acquired eco-friendly certification for production items
- **2009** 10 Certificate of Fire-resistant Construction for New-HICOTE TP-II TSC Composite Beam (KICT)
- 06 Certificate of Fire-resistant Construction for HICOTE EF (KICT)
- 05 Certificate of Fire-resistant Construction for New-HICOTE TP-II (KICT)
- 02 HICOTE SP-II, New-HICOTE TP
- **2007** 10 HICERACOTE environmental mark certification
- 07 Awarded the Republic of Korea Construction Technology Award by the Ministry of Construction and Transportation
- 02 Certificate of Fire-resistant Construction for New-HICOTE TP (KICT)
  KS Korean Industrial Standards certification for thermal insulation products
- **2005** 08 Certificate of Fire-resistant Construction for New-HICOTE TP-II (KICT)
- **2004** 05 Certificate of Fire-resistant Construction for New-HICOTE SP (KICT)
  Certificate of Fire-resistant Construction for New-HICOTE TP (KICT)
- 03 Changed company name to Sunghyun Chemicals Co., Ltd.

1999 ~ 1986

- **1999** 10 Certificate of Fire-resistant Construction for New-HICOTE (KICT)
- 09 Obtained 건 Mark
- **1997** 12 Acquired ISO 9001 certification
- **1992** 04 Certificate of Fire-resistant Construction for HICOTE DP
- **1991** 04 Changed company name to Sejong Steel Pipe Co., Ltd.
- **1987** 12 Certificate of Fire-resistant Construction for HICOTE DP-1
- **1986** 05 Established Daehyun Industry Co., Ltd.

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SUBSIDIARY INTRODUCTION

SUNGHO Co., Ltd.

- Establishment : September 2002
- Address : Seonghyeon Building, 578, Gangnam-daero, Gangnam-gu, Seoul, Republic of Korea
- Contact information : Phone 02-547-5621 / Fax 02-547-5622
- Business Areas : Building maintenance, office interiors

Sunghyun Perlite Co., Ltd.

- Establishment : July 1995
- Address : Seonghyeon Building, 578, Gangnam-daero, Gangnam-gu, Seoul, Republic of Korea
- Contact information : Phone 02-542-2931 / Fax 02-542-2930
- Website : http://www.e-sunghyun.com

Product Introduction	Detailed Information
Industrial Materials	- Filter aid (New-Cell) - Insulation material (New-Perlite Insulation) - Cryogenic filling insulation (New-Perlite Cryogenic Filling Insulation)
Construction Materials	- New Perlite (New-Perlite) - New Crete (New-Crete)
Agricultural and Horticultural Materials	- Soil conditioner (New-Green) - Comprehensive soil conditioner (New-Green Super) - Medium for hydroponic cultivation (New-Farm)
Landscaping Materials	- Artificial soil (New-So)

Sunghyun Technology Research Institute

- Establishment : February 9, 1998 (Recognized as an in-house company research institute
  - Certificate No. 20062186 by Korea Industrial Technology Association)
- Address : 465 Chogeum-,ro, Geumwang-eup, Eumseong-gun, Chungbuk, (Postal Code: 46215), Republic of Korea
- Contact information : Phone 043-877-7808 / Fax 043-877-8948

Sunghyun Industries Co., Ltd.

- Establishment : October 1982
- Address : Seonghyeon Building, 578, Gangnam-daero, Gangnam-gu, Seoul, Republic of Korea
- Contact information : Phone 02-546-2667~8 / Fax 02-3446-2936
- Painting License : 94-Seoul-05-15

Capital and Business Area		Specialized Construction Area
October 5, 1982	Established the company with businesses in housing construction, housing rental and sales, and the sale of construction materials (total of 9 business categories)	• Steel structure fireproof coating work • Sound-absorbing and insulation work • Fireproof paint work • General painting work • Perlite and vermiculite spray work • Foam concrete work • Flooring work • Urethane work
October 28, 1994	Increased capital to KRW 710 million	
December 5, 1994	Increased capital to KRW 1.16 billion	
December 30, 1994	Obtained painting construction business license	
1997	Contract limit of 1 KRW billion	
1998	Contract limit of KRW 2.02 billion	
1999	Contract limit of KRW 2.732 billion	
2000	Contract limit of KRW 2.651 billion	
2001	Contract limit of KRW 5.629 billion	
2003	Contract limit of KRW 9.937 billion	

Sunghyun Steel Pipe Co., Ltd.

- Establishment : November 1990
- Address : Seonghyeon Building, 578, Gangnam-daero, Gangnam-gu, Seoul, Republic of Korea
- Factory : 126 Seokam-ro 1-gil, Iksan-si, Jeollabuk-do (Palbong-dong), Republic of Korea
- Contact information : Phone 02-3446-2841 / Fax 02-3446-2845
- Factory contact information : Phone 063-835-3526 / Fax 063-835-3528
- Website : http://www.seongho.co.kr

Company History

1990.11	Established Seongho Steel Pipe Co., Ltd.	1999.06	Designated as a venture company (Small and Medium Business Administration)
1992.12	Completed construction of Iksan Factory	1999.12	Awarded Innovation in Technology Award (Small and Medium Business Administration)
1993.07	Acquired KS Korean Industrial Standards Mark	1999.12	Designated as new technology (Ministry of Construction and Transportation)
1995.08	Awarded Quality Management Award (Governor of Jeollabuk-do)	2000.03	Recognized for usability of new construction method (Korea Land Corporation)
1985.10	Registered 12 invention patents and utility model patents	2000.09	Designated as a promising small and medium enterprise (Jeollabuk-do)
1995.11	Designated as a military service exemption company	2000.09	Acquired ISO 9002 certification
1996.02	Began construction of the second factory	2000.09	"Double-Walled Pipe" awarded U.S. patent certification
1996.05	Started production of resin corrugated steel plates	2001.05	Recognized as an excellent product (Public Procurement Service)
1996.07	Completed construction of the second factory (resin corrugated steel plates)	2002.01	Signed export contract (United States)
1997.07	Awarded Quality Management Award (Governor of Jeollabuk-do)	2003.10	Designated as a new usability material by Korea Land Corporation
1998.04	Selected as "Technology-Intensive Promising Small and Medium Enterprise" by MBC	2003.11	Designated as a new usability material by Korea Housing Corporation
1998.07	Awarded Quality Contribution Award (Governor of Jeollabuk-do)		

PRODUCT INTRODUCTION

Intumescent Paint

With 30 years of accumulated knowledge and expertise

these are the best products designed to prevent steel structures from being exposed to high temperatures during a fire. When exposed to fire heat, the coating expands 60 to 100 times to form an insulating layer, preventing building collapse and aiding in fire suppression and rescue of lives.

Thermal and Sound Insulation Materials

We think beyond people and the environment.

Our products are made from eco-friendly inorganic materials that not only provide excellent insulation performance but also emit beneficial far-infrared rays to the human body.
These ceramic-based products are stable and environmentally friendly, leading the way in creating comfortable living spaces.

Sprayed Fire-Resistant Materials (SFRM)

We think beyond customer satisfaction

Sunghyun Chemicals, with its 30 years of tradition and accumulated technology, uses nature-friendly inorganic materials that have undergone high-temperature processing. We were the first in Korea to apply a ceramic SYSTEM, ensuring superior fire resistance and developing eco-friendly products that enhance comfortable living environments.

Composite Structures

A high-performance composite structure specialized for 10 different synthetic structures.

Sunghyun Chemicals, in collaboration with the Senkuzo Research Institute, developed the world's first high-performance fireproof coating for TSC composite structures.
By using eco-friendly materials, we contribute to creating pleasant and sustainable living spaces.

DIRECTIONS

Seoul Headquarter

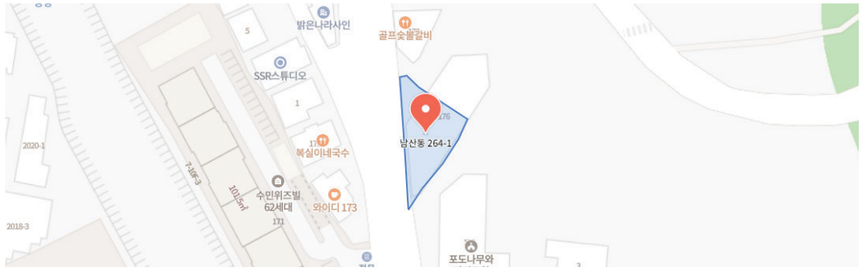
- Address : 3rd Floor, Seonghyeon Building, 578 Gangnam-daero, Gangnam-gu, Seoul, Republic of Korea
- Postal Code : 06043
- Phone : 02-3446-2931~4
- Fax : 02-3446-2935

Factory

- Address : 465 Chogeum-ro, Geumwang-eup, Eumseong-gun, Chungcheongbuk-do, Republic of Korea
- Phone : 043-877-7808
- Fax : 043-877-7657

Busan Branch

- Address: 305 Country Hill, 264-1 Namsan-dong, Geumjeong-gu, Busan, Republic of Korea
- Phone : 051-513-2932
- Fax : 051-518-6168



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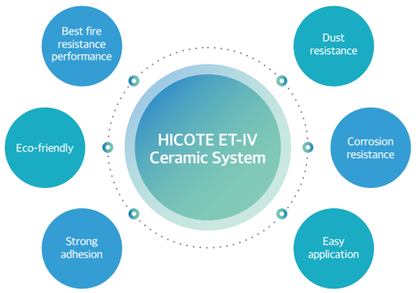
HICOTE ET-IV

Sprayed Fire-Resistant Materials

Sunghyun Chemicals Co., Ltd. is the leading company in the fireproof coating market, holding the number one market share, possessing the technology for the thinnest coating in Korea, and being the first in the country to obtain UL certification.

With 30 years of accumulated expertise and advanced technology, we have developed a ceramic-based(CAS-based) steel structure fireproof coating made primarily of eco-friendly inorganic natural calcium. This ensures the highest fire resistance performance while creating a comfortable living space with environmentally friendly products.

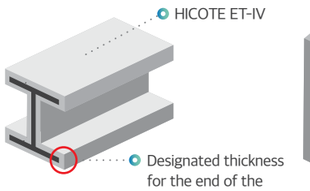
Product Characteristics



· Physical Properties of HICOTE ET-IV

Item	Physical Property	Test Method
Density	330 kg/m³ or more	KS F 2901
Adhesion strength	0.056MPa. (5,710 kg/m²) (0.056 N/mm²) or more	KS F 2902

· Beam



· Column

· HICOTE ET-IV Fire-Resistant Construction Certificate and content of Certificate

Structure	Fire Resistance Time	Coating Thickness (mm)	Certification
Beam	1 hour	8mm or more	KICT
	2 hour	18(16)mm or more	
	3 hour	28(23)mm or more	
Column	1 hour	10mm or more	
	2 hour	20mm or more	
	3 hour	30mm or more	

Construction Method

Preparation for Work

· The construction should begin after the basic work for ceiling accessories, such as anchors for ducts and pipes, has been completed.

· Inspect the surface to be worked on, and remove any foreign substances such as dust, rust, oil, or paint before proceeding with the construction.

· Ensure that the temperature of the construction site and the surface to be coated is maintained at 5˚C or higher during the working and curing periods. Begin heating or other warming measures 24 hours before starting the work.

Construction Method

· Mix HICOTE ET-IV with water in a ratio of 1 (product) : 1.1~1.3 (water) by weight, and mix thoroughly for about 35 minutes.

· Maintain a distance of 30~60 cm between the nozzle and the surface, and the spray angle should ideally be 90˚.

· Ensure to follow the instructions in the user manual and the construction manual during the work.

Fire Resistant Construction

· Fire Resistant Construction

Buildings required to have fire-resistant structures	
Depending on the purpose and number of floors of the building	Total Floor Area Used for Each Purpose
Hazardous materials storage and processing facilities	All such buildings must have fire-resistant structures
Spectator assembly facilities, religious assembly halls, dance, entertainment, restaurants, general ceremony halls with spectator seating or assembly rooms	If the outdoor spectator seating area is 200㎡ or more : applicable to spectator seating areas or assembly rooms with a total floor area of 1,000㎡ or more
Sports halls, playgrounds, delegation facilities, exhibition facilities, transportation facilities, tourism rest facilities, local youth facilities, sales facilities, broadcasting communication facilities, restrooms, cleaning facilities, and automobile-related facilities	Fire-resistant structures are required if the total floor area is 500㎡ or more
Factories	Fire-resistant structures are required if the total floor area is 2,000㎡ or more
Lodging facilities on the 2nd floor of buildings, youth hostels, medical facilities, child care facilities, elderly care facilities, officetels, multi-use facilities apartment buildings, dormitories	Fire-resistant structures are required if the total floor area is 400㎡ or more. Detached houses, official residences, livestock barns, plant-related facilities
Fire-resistant structures are required for buildings with three or more stories or with basements.	All buildings except correctional facilities and cemetery-related facilities must follow these fire-resistant structure requirements.

Performance Standards

· Fire Resistant Construction

Usage			Structural Components								
			Exterior Wall			Interior Wall			Beams and Columns	Floors	Roof & Roof Frame
Usage Classification		Usage Scale Number of floors / Maximum height (m)	Load-bearing wall	Non-load-bearing: Parts with fire hazard	Non-load-bearing: Parts without fire hazard	Load-bearing wall	Non-load-bearing: Parts with fire hazard	Non-load-bearing: Parts without fire hazard			
General Facilities	Office facilities, sales and business facilities, military facilities among public facilities, broadcasting stations, power plants, telegraph and telephone offices, studios, and similar facilities, communication facilities, tourism rest facilities, sports facilities, cultural and assembly facilities, Class 1 and Class 2 neighborhood living facilities, entertainment facilities, crematoriums among cemetery-related facilities, education, research, and welfare facilities, automobile-related facilities (excluding repair shops).	12/50 Above	3	1	1/2	3	2	2	3	2	1
		12/50 Below	2	1	1/2	2	1 1/2	1 1/2	2	2	1/2
		4/20 Below	1	1	1/2	1	1	1	1	1	1/2
Residential Facilities	Multi-family homes, multi-unit homes, official residences, apartment buildings, lodging facilities, medical facilities.	12/50 Above	2	1	1/2	2	2	2	3	2	1
		12/50 Below	2	1	1/2	2	1	1	2	2	1/2
		4/20 Below	1	1	1/2	1	1	1	1	1	1/2
Industrial Facilities	Factories, warehouse facilities, sewage and waste treatment facilities, automobile-related facilities including repair shops, hazardous materials storage and processing facilities.	12/50 Above	2	1 1/2	1/2	2	1 1/2	1 1/2	3	2	1
		12/50 Below	2	1	1/2	2	1	1	2	2	1/2
		4/20 Below	1	1	1/2	1	1	1	1	1	1/2

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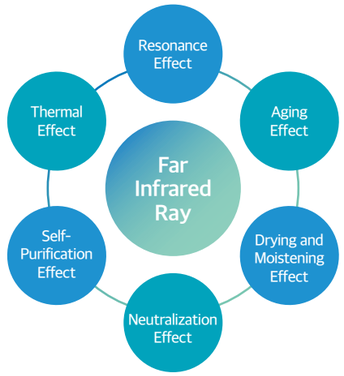
HICOTE-ET COMPOSITE BEAM

HICOTE

Certificate Products

The world's first recognized fireproof coating for composite beams, HICOTE-ET

A combination of the world's first high-performance composite beam technology developed by Sunghyun Chemicals, with 30 years of tradition, and structural engineers.
It maximizes fire resistance performance and has led to the development of the first dedicated fireproof coating for composite beams in Korea. This ensures stable fire resistance performance, shortens construction time, reduces costs, and utilizes eco-friendly materials to create comfortable living spaces.



Product Characteristics

- Fire-Resistant Construction Certificate and Content of Certificate

Application Areas	Fire-Resistance Rating	Thickness	Remarks
Composite Beam	2 hours	16mm or more	
	3 hours	21mm or more	

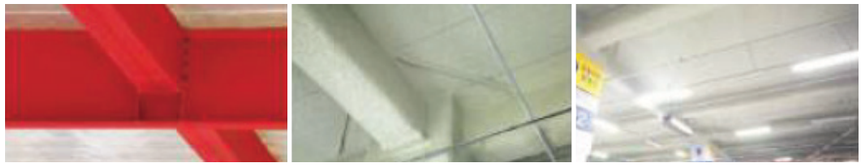
Approval Status by Structural Engineer

- SEN Structure - TSC Composite Beam
- Better Structure - HyFo Composite Beam
- 3D Engineering - AU Composite Beam (Harmony/Act Partner)
- CG Plan - CG Composite Beam

Category

Density	Physical Properties
Adhesion Strength	0.33g/cm² or more
Physical Properties	More than 0.056MPa(5,710Kg/m² 0.056N/m²)

Construction Photos



Construction Method

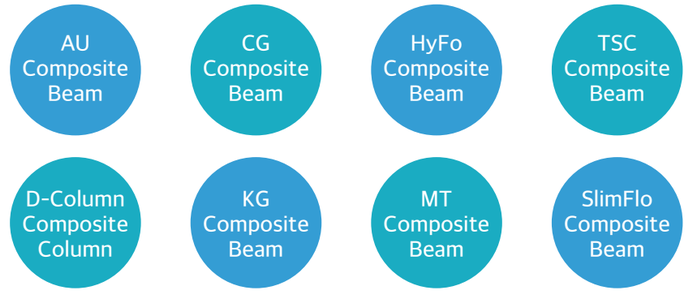
Preparation

- Construction should begin after the basic construction of ceiling accessories such as anchors required for ceilings, ducts, and pipes has been completed.
- Inspect the surface of the work area, and remove any foreign substances such as dust, rust, oil, or paint before starting construction.
- Ensure the temperature of the construction site and the surface to be coated is maintained at 5℃ or higher throughout the construction and curing period by using heating or insulation measures starting 24 hours before the work.

Construction Method

- For installing attachment pins, follow the instructions and construction manual specified in the specifications.
- Mix the HICOTE-ET Composite Beam at a 1 (product) : 1.1~1.3 (water) weight ratio.
  Mix thoroughly for about 3-5 minutes.
- Maintain a distance of 30~60 cm between the nozzle tip and the surface to be coated, and aim for a 90° angle during application.
- For other key details, familiarize yourself with the user manual and construction guide before proceeding with the work.

Application of Composite Structures



HICOTE SP-III

Insulation and Soundproofing Material

Thinking beyond humans and the environment
HICOTE SP-III made of eco-friendly ceramic material

What is Ceramic?

The word "ceramic" originates from the Greek word "keramos," meaning "something fired in a kiln." Its dictionary definition refers to non-metallic inorganic solid materials made by firing at high temperatures, used in glass, ceramics, cement, bricks, refractories, implants, and more.

Additionally, ceramics are hard, stable at high temperatures, and have porous qualities, making them increasingly applied as new materials in fields such as insulation, aerospace, semiconductors, and medicine.

Product Characteristics

- **Uniform and Stable Quality - KS Standard**

  A product that has acquired the Korean Industrial Standard (KS F 4040), ensuring more stability and excellent quality.

- **Easy Application**

  It can be sprayed to a uniform thickness even on irregular surfaces, allowing for seamless construction, and it can be easily repaired in case of partial damage.

- **Eco-friendly Building Material**

  Achieved the highest grade of the "Environmental Label Certification (Eco Mark)" and "Eco-friendly Building Material Certification (HB Mark)" for improving resource circulation, saving energy, and reducing noise and vibration.

- **Fire Safety**

  Composed mainly of natural inorganic calcium, making it a non-combustible material that is safe in the event of a fire.

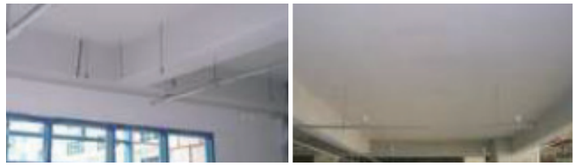
Product Physical Properties

Category	Physical Properties
Thermal Conductivity	0.035~0.040W/mk
Adhesion Strength	More than 10,200Kg/m' (0.1 N/㎟)
Density	More than 0.25g/㎤
Fire Resistance	Class 1 Fire-Resistant Material
Sound Absorption	More than 0.80 N.R.C
Eco-friendliness	ECO Mark Certification (Ministry of Environment)
Air Purification	Clover Mark, Highest Grade

Applications

- Non-combustible spray finishing for ceilings in educational, cultural, and sports facilities
- Non-combustible spray finishing for ceilings on the top and bottom floors of buildings
- Areas that are vulnerable to fire or require non-combustible performance

Construction Photos



Construction Method

Preparation

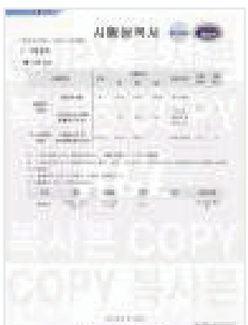
- Inspect the surface of the work area and remove any foreign substances such as dust, rust, oil, or paint.
- Ensure the temperature of the construction site and the surface to be coated is maintained at 5℃ or higher throughout the construction and curing period by using heating or insulation measures starting 24 hours prior to the work.

Construction Method

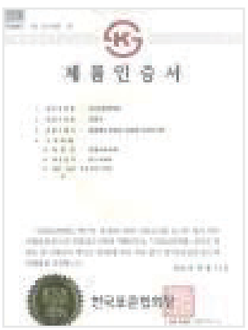
- Mix HICOTE SP-III at a 1 (product) : 1.0 ~ 1.2 (water) weight ratio. Mix thoroughly for about 3-5 minutes.
- Maintain a distance of 30~60 cm between the nozzle tip and the surface to be coated, and aim for a 90˚ angle during application.
- Familiarize yourself with the user manual and construction guide before proceeding with the work.

Test Reports

Environmental Label Certification



Non-combustibility Test Report



KS Product Certification

HICOTE SH

Intumescent Paint

Sunghyun Chemicals Co., Ltd. is the leading company in the fireproof coating market, holding the number one market share, possessing the technology for the thinnest coating in Korea, and being the first in the country to obtain UL certification.

With 30 years of accumulated expertise and advanced technology, we have launched the fireproof paint "HICOTE SH," an Solvent based fireproof paint with excellent fire resistance and stability, as part of our efforts to become a specialized fireproof technology company. HICOTE SH prevents steel structural members from being exposed to high temperatures in the event of a fire, thereby maintaining the structural performance of steel structures. Additionally, it offers superior fire resistance, strong adhesion, and durability, making it a functional coating that can be applied even during winter construction.

Product Characteristics

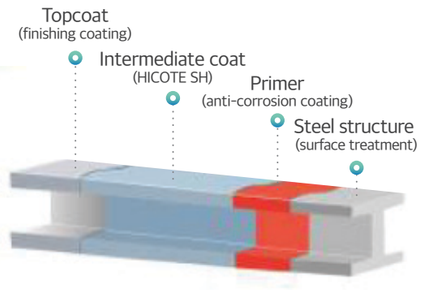
Excellent durability and impact resistance

Superior workability and ease of application

Strong adhesion

Smooth surface finish

· Cross-Section of HICOTE SH



Product Properties

Category	Property	Remarks
Adhesion Strength	0.2 MPa or more	ASTM D 4541-22
Toxic Gas Resistance	9 minutes or more	KS F 2271 : 2021
Non-volatile Content	70±5%	

Construction Photos

Painting System

Category	Product Name	Drying Time		Dry Film Thickness(㎛)	Number of Coats	Recoat Interval	Usage	Diluent
		Touch Dry	Hard Dry					
Undercoat	KSM6030-1 type or higher equivalent rustproof paint	4	16	50	1		General rustproof paint	
Intermediate	HICOTE SH beams, columns	2	12	700	1~2 times	More than 24 hours (20℃, below 85%)	1-hour fire-resistant coating	Specified product
Intermediate	HICOTE SH 2-hour beams	2	12	3,350	4~5 times	More than 24 hours (20℃, below 85%)	2-hour fire-resistant coating	Specified product
Intermediate	HICOTE SH 2-hour Columns	2	12	2,500	3~4 times	More than 24 hours (20℃, below 85%)	2-hour fire-resistant coating	Specified product
Topcoat	Product equivalent to or better than the recommended brand by our company			50				

Fire Resistant Construction

· Fire Resistant Construction

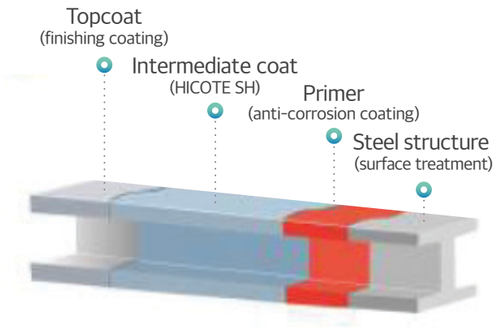
Buildings required to have fire-resistant structures	
Depending on the purpose and number of floors of the building	Total Floor Area Used for Each Purpose
Hazardous materials storage and processing facilities	All such buildings must have fire-resistant structures
Spectator assembly facilities, religious assembly halls, dance, entertainment, restaurants, general ceremony halls with spectator seating or assembly rooms	If the outdoor spectator seating area is 200㎡ or more : applicable to spectator seating areas or assembly rooms with a total floor area of 1,000㎡ or more
Sports halls, playgrounds, delegation facilities, exhibition facilities, transportation facilities, tourism rest facilities, local youth facilities, sales facilities, broadcasting communication facilities, restrooms, cleaning facilities, and automobile-related facilities	Fire-resistant structures are required if the total floor area is 500㎡ or more
Factories	Fire-resistant structures are required if the total floor area is 2,000㎡ or more
Lodging facilities on the 2nd floor of buildings, youth hostels, medical facilities, child care facilities, elderly care facilities, officetels, multi-use facilities apartment buildings, dormitories	Fire-resistant structures are required if the total floor area is 400㎡ or more. Detached houses, official residences, livestock barns, plant-related facilities
Fire-resistant structures are required for buildings with three or more stories or with basements.	All buildings except correctional facilities and cemetery-related facilities must follow these fire-resistant structure requirements.

HI-TOP SH TOP COAT — HICOTE

TOP COAT

HI-TOP SH is a paint with acrylic resin as the main component, offering good adhesion, workability, fast drying, strong adhesion, durability, and stain resistance. Therefore, it is suitable as a topcoat for protecting Intumescent Paint or Intermediate Coat on steel structures and enhancing the appearance of interior Intumescent Paint or Intermediate Coat in buildings.

Solids Content	Approximately 43%	Dry Film Thickness	50~75㎛
Number of Coats	1	Theoretical Coverage	8.5㎡/L (based on a dry film thickness of 50㎛)
Drying Time (20℃)	2 hours (full cure)	Thinner	Recommended by Sunghyun Chemicals
Recoat Interval (20℃)	Minimum 2 hours	Shelf Life	1 year
Packaging Unit	18L	Color	Gray, Ivory



Painting Specifications

1. Surface Preparation

- Inspect the surface to check for any foreign substances or surface defects, and remove any materials that may interfere with urethane foam application.

2. Painting Conditions

- The ideal temperature for painting is between 5℃ and 35℃. If the humidity is high and the temperature is elevated, condensation may occur, which can lead to defects in the paint film.

3. Application Equipment

- Airless spray equipment, brushes, and rollers can be used for painting, but airless spraying is the preferred method. Areas that are difficult to paint with airless spray due to site conditions can be painted with a roller or brush.

GREEN SMART INDUSTRY CREATION - SUNGHYUN CHEMICALS CO., LTD. — HICOTE

Sunghyun Chemicals Co., Ltd.

creates top-tier eco-friendly products by applying Green Smart technology, which integrates low-carbon green growth, green technology, and smart technology, to building finishing materials. The company prioritizes cutting-edge technology and customer satisfaction above all.

Sales Items

- Sunghyun Chemicals Co., Ltd. Sales Items - Building Materials Section

Category	Item
Fire-Resistant Paint	HICOTE SH 1-Hour Beam, Column
	HICOTE SH 2-Hour Beam, Column
	HICOTE HyFo, TU, D-Column Composite Structure
Fireproof Coating	HICOTE ET-IV
	HICOTE-ET
	UL HICOTE SP
	HICOTE-ET Composite Structure
Sound Absorption Material	HICOTE SP-III
	HICOTE SP-III (Organic Insulation Material)
	HICERACOTE

FES FOAM

HICOTE

Thermal and Sound Insulation Material

When the best meets the best, greater synergy is created.

With 30 years of accumulated expertise and technology in handling nature-friendly inorganic materials at high temperatures, Sunghyun Chemicals Co., Ltd. has developed a new method through a business collaboration with KPX Chemical, the first urethane raw material company in Korea.

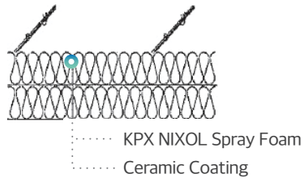
Product Characteristics

- **Maximized Insulation**
  Provides excellent thermal insulation performance based on outstanding thermal conductivity (0.021 W/mK).
- **Excellent Fire Resistance**
  For the first time in Korea, a performance-focused composite design was successfully implemented by applying a ceramic coating on flame-retardant urethane, achieving fire resistance (non-combustible materials) in composite systems.
- **Seamless Airtightness**
  Even in areas where conventional insulation materials are difficult to apply, the airtight construction prevents thermal bridges.
- **Strong Adhesion**
  Can adhere to various building materials such as wood, metal, and plastic.

Usage

- Prevents insulation condensation on ceilings, walls, and roofs of general buildings.
- Used for insulation and sound absorption in exposed areas of parking garages.
- Prevents insulation condensation on the ceilings of the top and bottom floors of buildings.
- Applied to areas vulnerable to fire or requiring semi-noncombustible performance.

- **KPX NIXOL Spray (N-FES-224) Foam with Ceramic Coating**



Construction Method

FES Foam Construction Method

1. Check the surface for any foreign substances or surface irregularities, and remove any substances that may interfere with the urethane foaming process.
2. The A/B mixture should be foamed at a weight ratio of 1:1, and before construction, ensure the A/B temperature is maintained at a minimum of 10℃.
3. For the ceramic coating on the urethane foam, mix at a weight ratio of 1:1.0 to 1.2 (water), and stir thoroughly for about 3 to 5 minutes.
4. For the composite system, ensure to follow the user manual and construction manual during the process.

Product Properties

Item	Density	Thermal Conductivity	Compressive Strength	Water Absorption	Fire Resistance
Physical Property	30 kg/m³ or more	0.021 W/mK	10 N/m² or more	3.0 g/100 cm² or less	Semi-noncombustible

Construction Photos

PU Spray System

Products	NOTE
DIN 4102 B3 / PUR Type	
NIXOL RNF - 224L	Low density
NIXOL RNF - 226L	Middle density
NIXOL RNF - 228L	Middle density
NIXOL RNF - 230L	High density
DIN 4102 B2 Type	
NIXOL RNF-231B2	High density
FES Foam Type	
NIXOL FES - 224	Low density
NIXOL FES - 226	Middle density
NIXOL FES - 228	Middle density
NIXOL FES - 230	High density
Eco-friendly Urethane (HFC-245/a)	
NIXOL-RNF-224EF	Low density

Product Classification

Products	NOTE
Thermal	
HICOTE SP-III	Sound Absorption Material
Fireproofing	
HICOTE ET-IV	Steel structure Fireproof Coating
Composite beam	
HICOTE-ET Composite Beam	Composite Beam Fireproof Coating
HICOTE-ET Composite Beam	
UL	
HICOTE SP	Steel structure Fireproof Coating
HICOTE ET	

A company that leads advanced architectural culture

HICERACOTE

HICOTE

Insulation and Soundproofing Material

"HICERACOTE, thinking beyond humans and the environment"

HICERACOTE is made of an eco-friendly inorganic material with excellent insulation performance that emits beneficial far-infrared rays to the human body. Sunghyun Chemicals produces ceramic-based insulation and soundproofing spray materials, leading the way in creating comfortable living spaces with stable and eco-friendly products.

Product Characteristics

- **Dust Resistance**

  Easily applied to any structure while minimizing dust for environmental consideration.

- **Strong Adhesion**

  Using a durable natural inorganic binder, the adhesive state is maintained semi-permanently.

- **Heat Retention and Insulation**

  Formed by countless continuous foam layers, it has extremely low thermal conductivity and no seams, preventing heat loss.

- **Sound Absorption and Insulation**

  The porous, irregular surface finish absorbs and blocks loud noises and impact sound waves, providing both sound absorption and insulation.

- **Bio Far-Infrared Effect (Eco-friendliness)**

  Provides thermal effects, self-purification, drying and wetting effects, neutralization, resonance, and aging effects. Not only ensures the safety of buildings but is also asbestos-free, certified as an eco-friendly construction material that addresses environmental concerns.

- **Easy Application**

  Even on irregular surfaces, it can be sprayed evenly, allowing for integrated construction, and it can be easily repaired in case of partial damage.

Product Classification

Products	NOTE
Thermal	
HICOTE SP-III	Sound Absorption Material
Fireproofing	
HICOTE ET-IV	Steel structure Fireproof Coating
Composite beam	
HICOTE-ET Composite Beam HICOTE-ET Composite Beam	Composite Beam Fireproof Coating
UL	
HICOTE SP HICOTE ET	Steel structure Fireproof Coating

Applications

- Insulation, sound absorption, and condensation prevention for ceilings and walls of buildings
- Sound absorption in noisy areas such as machine rooms, boiler rooms, workshops, and air conditioning rooms
- Insulation and sound-absorbing finishes for ceilings in educational, cultural, and sports facilities
- Insulation and condensation prevention for the ceilings of the top and bottom floors of buildings
- Areas that are vulnerable to fire or require non-combustible performance

Construction Photos

Construction Method

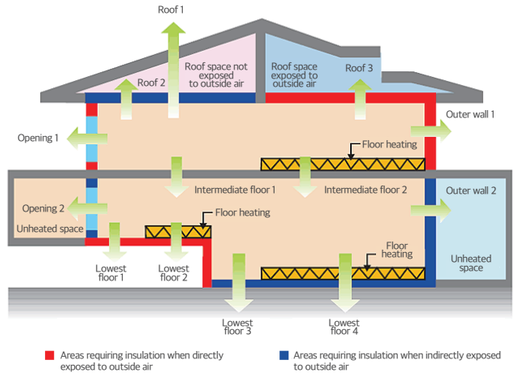
Preparation

- The timing for work should be after the basic construction of ceiling fixtures such as anchors and hangers required for ceilings, ducts, and pipes has been completed.
- Inspect the surface of the work area, and remove any foreign substances such as dust, rust, oil, or paint before construction.
- Ensure the temperature of the construction site and the surface to be coated is at least 4℃ by taking heating or insulation measures starting 24 hours before the work begins and continuing throughout the working and curing period.

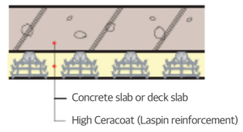
Construction Method

- Mix HICERACOTE at a 1 (product) : 0.8~1.0 (water) weight ratio. Mix thoroughly for about 5-7 minutes.
- Maintain a distance of 30~60 cm between the nozzle tip and the surface to be applied, and aim for a 90˚ angle during application.
- For applications thicker than 80mm, reinforce with wire mesh (Laspin).
- Familiarize yourself with the user manual and construction guide before proceeding with the work.

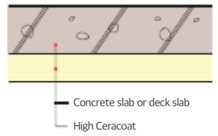
- **Examples of Areas Directly and Indirectly Facing Outdoor Air**



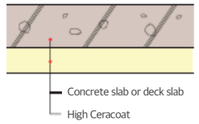
1. Insulation of ceilings on the top and bottom floors (80mm~220mm)



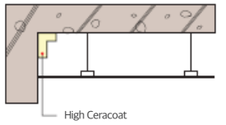
2. Sound absorption, finishing, and condensation prevention for exposed areas in parking lots (10mm)



3. Sound absorption finish for ceilings in noisy places such as machine rooms and air conditioning rooms



4. Insulation of sidewalls above ceiling tiles



HICOTE SP-III

Insulation and Soundproofing Material

"HICOTE SP-III, thinking beyond humans and the environment"

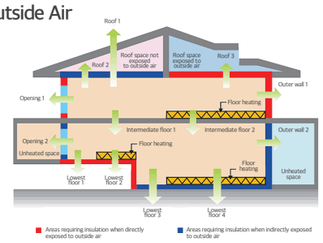
HICOTE SP-III is an eco-friendly inorganic material with excellent insulation performance that emits beneficial far-infrared rays to the human body. Sunghyun Chemicals produces ceramic-based insulation and soundproofing spray materials, with natural inorganic calcium as the main ingredient, and is leading the way in creating comfortable living spaces with stable and eco-friendly products.

What is Ceramic?
The word originates from the Greek word "keramos," meaning something fired in a kiln. Its dictionary meaning refers to non-metallic inorganic solid materials made by firing at high temperatures, and it is used in glass, ceramics, cement, refractories, bricks, and implants.

Additionally, ceramics are hard, stable at high temperatures, and porous, making them increasingly applied in new materials for industries such as aerospace, semiconductors, insulation, and medicine.

Product Characteristics

- **Dust Resistance**
  Easily applicable to any structure, with minimized dust generation for environmental consideration.
- **Strong Adhesion**
  By using a highly durable natural inorganic binder, the adhesion is maintained semi-permanently.
- **Excellent Sound Absorption**
  The porous, irregular surface finish absorbs and blocks loud noises and impact sound waves, providing both sound absorption and soundproofing.
- **Maximized Insulation**
  Using carefully selected ceramics as the main material, the insulation performance has been maximized.
- **Easy Application**
  Even on irregular surfaces, it can be sprayed to a consistent thickness, allowing for integrated construction. Additionally, it can be easily repaired in case of partial damage.
- **Examples of Areas Directly Exposed to the Outside Air and Areas Indirectly Exposed to the Outside Air**



Physical Properties

Category	Physical Properties
Thermal Conductivity	0.035~0.040W/mk
Adhesion Strength	More than 10,200Kg/m' (0.1 N/㎟)
Density	More than 0.25g/㎤
Fire Resistance	Class 1 Fire-Resistant Material
Sound Absorption	More than 0.80 N.R.C
Eco-friendliness	ECO Mark Certification (Ministry of Environment)
Air Purification	Clover Mark, Highest Grade

Applications

- Insulation, sound absorption, and condensation prevention for ceilings and walls of buildings
- Sound absorption for noisy areas such as machine rooms, boiler rooms, workshops, and air conditioning rooms
- Insulation and sound-absorbing finishes for ceilings in educational, cultural, and sports facilities
- Insulation and condensation prevention for ceilings on the top and bottom floors of buildings
- Areas that are vulnerable to fire or require non-combustible performance

Construction Photos

Construction Method

Preparation

- Construction should begin after the basic construction of ceiling accessories such as anchors and hangers required for ceilings, ducts, and pipes is completed.
- Inspect the surface of the work area and remove any foreign substances such as dust, rust, oil, or paint before construction.
- Ensure the temperature of the construction site and the surface to be coated is maintained at 5℃ or higher throughout the construction and curing period by using heating or insulation measures starting 24 hours prior to the work.

Construction Method

- Mix HICOTE SP-III at a 1 (product) : 1.0 ~ 1.2 (water) weight ratio. Mix thoroughly for about 3-5 minutes.
- Maintain a distance of 30~60 cm between the nozzle tip and the surface to be coated, and aim for a 90˚ angle during application.
- Familiarize yourself with the user manual and construction guide before proceeding with the work.