특허청 2021년 특허기술상 지식경상 특허등록 제2116577호

ISO 9001 인증기업

Venture for Tomorrow

www.biocrete.co.kr

# BioCrete

Hardened at minus 30 degrees

Innovative construction materials for floor repair in freezer.


BioCrete.Co.,Ltd.

# BioCrete

**BioCrete** is a high-performance ceramic material and is the next generation of innovative repair and reinforcement materials.

## BioCrete of flooring in a freezer that can be used semi-permanently.


This technology is a self-exothermic reaction based on the acid-base reaction of magnesium and phosphate. Using the characteristic that hydration reaction Proceeds even in a low-temperature environment, it is formulated to allow self-curing without freezing even at -30°C ultra-low temperature. As a core technology designed, it is a self-heating ceramic mortar thathas secured freezing stability, high strength, high durability, and excellent dhesion even in the floor repair work of a refrigerated warehouse.

### High early Strengths

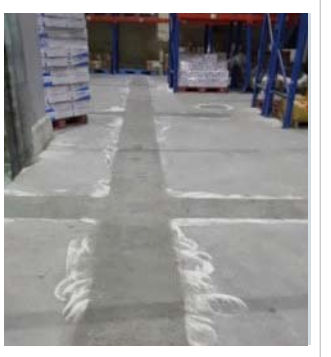
1. Passable within 90 minutes after flooring of the freezer at minus 30 degrees Celsius.
2. Zero contraction due to hardening, so no cracks

### Easy workability

1. Repair work is possible even during freezing operation.
2. Excellent crack resistance and insulation to prevent cold air from falling out.
3. Construction by mixing water without primer.

### Eco-friendly & High durability

1. Eco-friendly ceramic materials without harmful ingredients.
2. Excellent tensile strength for seismic reinforcement.
3. Excellent abrasion resistance prevents dust from occurring.



## BioCrete of flooring in a freezer that can be used semi-permanently.


## Conditions of flooring materials for cryogenic freezer

### Semi-permanent floor material

1. Flooring integrated with the mother body, highly adhesive and durable materials
2. Material that can combine the life of the flooring with the life of the building.

### Perfect heat dissipation and moisture dissipation

1. Insulation and waterproof flooring that blocks external heat and does not allow cold air to escape

### Prevention of cracks

1. Flooring with excellent volumetric stability without shrinkage and expansion

### Eco-friendly flooring materials

1. Use of eco-friendly flooring materials free of harmful substances as a freezer for storing food

## Applicable Field

- Floor repair of freezer warehouse.
- Fast set high strength cold weather repair
- Highways and bridge decks
- Airport runways, taxiway repair

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## Strength Comparison at Room Temperature and -30 Degrees

Check the flexural strength and compressive strength by age under standard and ultra-low temperature (-30 °C) environmental conditions, and measure the adhesion strength according to the base material (mortar, steel plate) to compare and evaluate the adhesion durability under ultra-low temperature (-30 °C) environmental conditions it's one test

| Test Items | Unit | Test Time | Room Temperature | -30°C | Other |
|---|---|---|---|---|---|
| Compresive Strengths | $N/mm^2$ | 2h | 28.9 | 21.4 | |
| | | 4h | 39.6 | 25.9 | |
| | | 1d | 62.3 | 29.8 | |
| | | 3d | 68.9 | 30.7 | |
| | | 7d | 74.1 | 31.8 | |
| | | 28d | 79.4 | 33.2 | |

| Test Items | Unit | Test Time | Room Temperature | -30°C | Other |
|---|---|---|---|---|---|
| Flexural Strength | $N/mm^2$ | 2h | 4.7 | 2.5 | |
| | | 4h | 6.0 | 3.3 | |
| | | 1d | 7.8 | 3.4 | |
| | | 3d | 8.4 | 3.7 | |
| | | 7d | 9.3 | 3.9 | |
| | | 28d | 11.9 | 4.0 | |

| Test Items | Unit | Test Time | Room Temperature | -30°C | Other |
|---|---|---|---|---|---|
| Bond Strength (test base: Motar) | $N/mm^2$ | 3d | 2.0 | 1.5 | |
| | | 7d | 2.1 | 1.6 | |
| | | 28d | 2.6 | 1.8 | |
| Bond Strength (test base: Steel plate) | $N/mm^2$ | 3d | 0.6 | 0.5 | |
| | | 7d | 0.9 | 0.7 | |
| | | 28d | 1.0 | 0.8 | |

KTR. Korea Chemical Convergence Research Institute's Accredited Test Report  Test Result Report : TBK 2021-000352

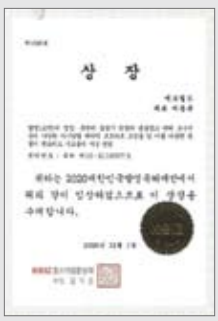

Patent


ISO 9001 Certificate


Venture company confirmation


Green Certificate


G-PASS Specification


Inventive Patents in Korea

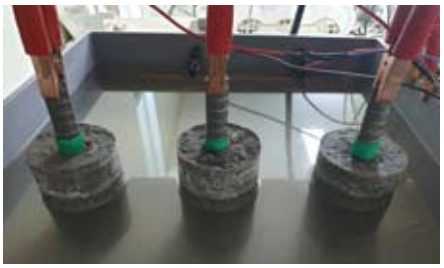
## Comparative test for accelerating rebar corrosion

'Biocrete (model name: SPW-900)' is a ceramic material, a technology that can not only repair and reinforce concrete structures but also replace concrete under ultra-low temperature environments. This test is to confirm the superiority of penetration resistance and carbonation resistance performance.


→ 12v power supply test in 3% saline solution



→ After 28 days, OPC mortar and concrete are severely corroded.

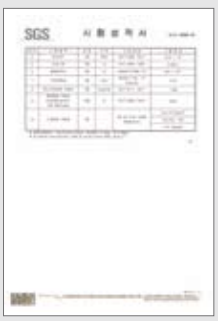


→ After 28 days, biocrete mortar and concrete are not corroded.

KTR. Korea Chemical Convergence Research Institute's Accredited Test Report  Test Result Report : TBK 2021-002894


KS F 4042


Korea Expressway Corporation quality standards


Inorganic waterproofing material test


Heavy metal dissolution test


Construction material pollutant emission test

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## Ceramic products that make a world of difference !!!

## BioCrete SPW-900 Mixing Method

### Mixing Tools

### Water Mixing Ratio

SPW-900 [1kg] : Water [130g] 13%±1

### Specification

① Cut the bottom part and sell it to a depth of 30mm.

② Clean the foundation area clean.

③ Put water in a mixing container and add bio-crete.

④ Mix thoroughly for 3 minutes.

⑤ Blend the mixed mortar.

⑥ After cheing the cured condition, 90 minutes later, the vehicle passes.

### Caution Content

| | |
|---|---|
| 1 | The mixing time must be followed by 3 minutes. |
| 2 | Use cold water during the summer. |
| 3 | As curing time is very fast, apply it immediately after mixing. |
| 4 | First, test a small amount, identify physical properties, and perform main construction. |
| 5 | Refer to MSDS for safety information. |

## Repair Work

### 1. Refrigeration Warehous Repair Work


Crack Repair


Patch Repair


Forklift Road Repair


Replace Hiting Cable


Crack Repair


Heating Temperature after Laying


Maintenance of the Entrance


Newly-frozen Warehous


Removable Rack Repair


Crack Repair

### 2. Winter Repair Work

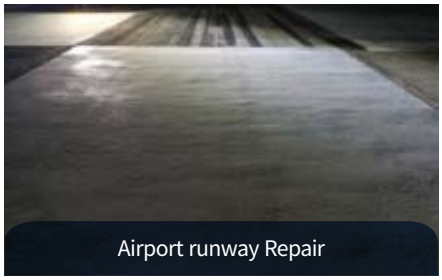

Roadside Repair during Winter


Roadside Repair during Winter


Bridge Repair during Winter


Bridge Repair during Winter


Airport runway Repair


Airport runway Repair

*“Creative Solutions Through A New Perspective”*

**BioCrete**, the next generation of advanced ceramic materials that change the world



**BioCrete.Co.,Ltd.**

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