

HYDROSKY®

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Ministry of Land, Infrastructure, Transport and Tourism

NETIS New Technology Information System

NETIS number: KT-160095-VR

New technology name: Hydrofit method

(Composite impregnation injection method)

For Professional use

Hydrofit method

The Hydrofit method
completes construction
accurately, quickly
and safely.

Main features

The Hydrofit method

integrates the paste with the structure by injecting a blast furnace slag cement paste containing finely powdered silica. The highly permeable liquid penetrates deeper, preventing water absorption in the deteriorated surface layer and restoring alkali strength.

The Hydrofit method

This construction method aims to integrate the structure and improve durability. This construction method can be completed using the same construction method whether the construction area is large or small.

The Hydrofit method

Mixing SKY-G1 with SKY-CSP, a blast furnace slag cement containing finely powdered silica, not only prevents rust on the internal reinforcing bars, but also fixes heavy metals and induces a pozzolanic reaction.

The Hydrofit method

Since it is inorganic (water-based) and does not generate harmful gases, it can be applied even in closed spaces (measure against oxygen deficiency).

The Hydrofit method

After construction, the strength and durability are equal to or greater than those of concrete and are permanently stable.

The Hydrofit method

When re-work is performed, organic solvents require removal from the work site, but this work is not required.

The Hydrofit method

It can be applied even when the substrate is wet, and does not require curing time for the organic solvent to dry, making it highly workable. This leads to a reduction in construction time.

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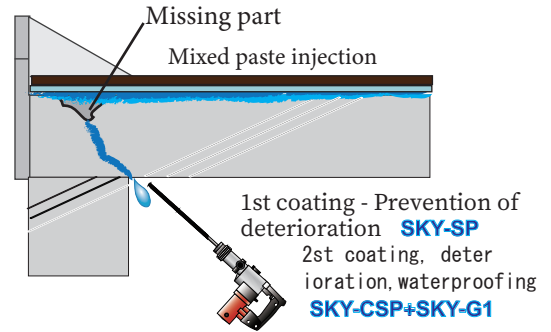
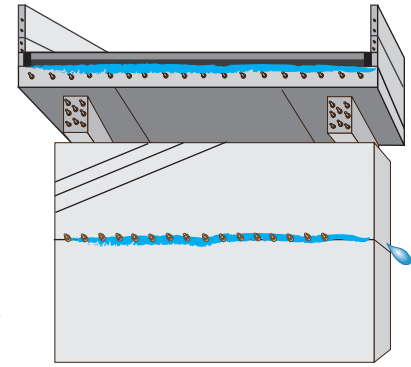
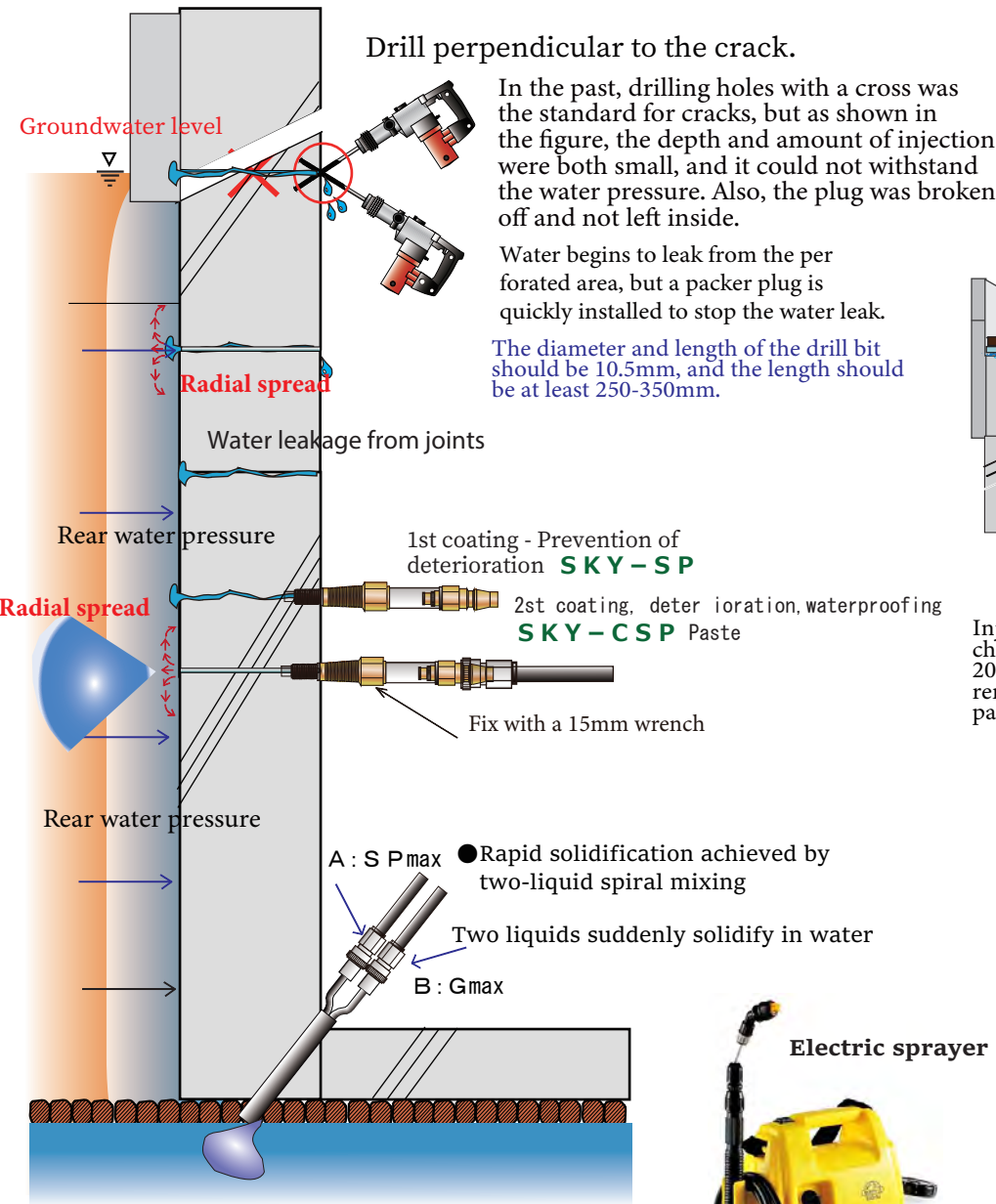


HydroSky Co., Ltd.

★The Hydrofit method is a revolutionary water-stopping method.

The number of plugs will be increased depending on the location and size of the leak, but the same construction method can be used regardless of the size of the leak.

Leaks in basements, elevator pits, underground passages and tunnels



Inject the primary and secondary pastes using a chemical pump through the packer plug. After 20 to 30 minutes, check that it has hardened and remove the plug. Fill any holes by rubbing in the paste.

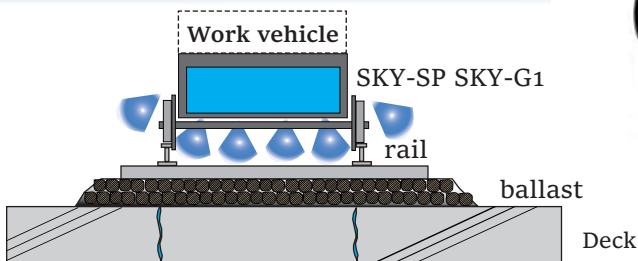
Concrete drill bit 10.5mm



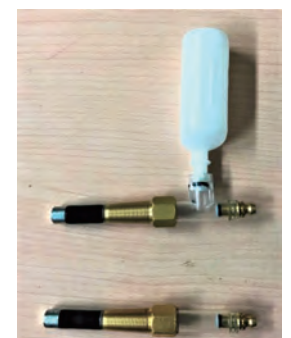
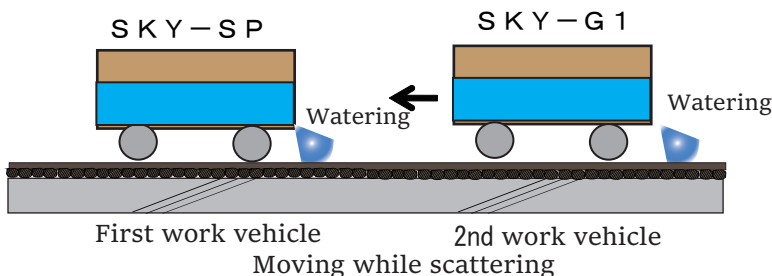
Hammer drill



Electric sprayer



Water leaking into facilities below: Tenants, parking lot, etc.



Construction method for architecture and civil engineering using the Hydrofit method

This method is primarily used to repair water leaks caused by deterioration or damage to concrete structures.

Hydrofit method and main combination materials

SKY-SP Silicate-based anti-deterioration agent

Can be applied even if the base is wet. Effective for restoring concrete alkalinity, preventing efflorescence, treating laitance, and preventing rust from internal rebar explosion by inhibiting and restoring carbonation.

SKY-G1 Calcium-based admixture

It is mainly used for injection work and concrete mixing. The combined use of SKY-CSP and SKY-SP as a hydrofit method is suitable for various repair work.

SKY-CSP Blast furnace slag cement containing fine silica powder

This powder is made from silica stone and is mostly composed of silicon (SiO₂). Of all substances, silicon is the least corroded by acids or chemicals, and has high physical strength. It is highly resistant to alkali, acid, heat, fire, weather, water, and abrasion, making it a highly physical material.

SKY-MX SKY-GS Silicone-based protective waterproofing agent

Unlike silane-based products, **MX and GS** have high elasticity due to the siloxy acid bond, and prevent frost damage by waterproofing after repairs.

SKY-CVL Silicate-silicone hybrid protective agent

Developed primarily as a civil engineering modifier. A hybrid of silicate and silicone. Effective for repair and improvement work when used in combination. For railway deck leaks, etc. Provides great reliability for injection water stoppage work.

SKY-MXC Acrylic resin silicone coloring protective waterproofing agent

After repairs, we can stain it to your preferred color for aesthetic treatment, resulting in a finish that looks just like new construction.



1. Large cracks and damage (*those with penetration into the structure and exposed rebars) For relatively large cracks and damage, inject or impregnate the deterioration prevention agent SKY-SP, drill holes with a vibratory drill and install injection plugs. Fill with a mixed paste of SKY-CSP and SKY-G1. Mixing ratio: SKY-CSP 1: SKY-G1 60%

2. Cracks/Damage (Medium) (*Estimated to be 15% or more of the structure thickness)

For relatively medium-sized cracks/damage, fill the inside of the structure with SKY-CSP paste. Then apply SKY-SP to the surrounding area and surface. Mixing ratio: SKY-CSP 1: SKY-G1 60%



3. Cracks and damage (small) (*Only seen on the surface of the structure)

For relatively small cracks and damage, fill and cover with SKY-CSP paste, then apply SKY-SP to the surrounding area and surface. Mixing ratio: 1 part SKY-CSP: 60% SKY-G1

4. Cracks (less than 0.1 mm) Remove the surface laitance, impregnate with SKY-SP, apply (rub in) SKY-CSP paste, then apply SKY-SP, an inorganic water absorption deterioration prevention material, to the surrounding area and surface. Mixing ratio: 1 part SKY-CSP: 50% SKY-G1



5. Cracks (0.1 mm or more): Impregnate the surface with SKY-SP, fill with SKY-CSP paste, and then apply SKY-SP to the surrounding area and surface. Mixing ratio: SKY-CSP 1: SKY-G1 50%

As deterioration due to alkali-aggregate reaction progresses, concrete structures may exhibit external changes such as 1) cracks, 2) pop-outs, 3) staining of the concrete surface due to deposits, and 4) blocked joints, damage, and displacement due to partial expansion. Pop-out occurs when aggregate and particles near the concrete surface expand, causing the concrete on the surface to pop out. Expansion of concrete due to alkali-aggregate reaction generates tensile stresses on rebars and PC tension agents that were not anticipated in the design, which can sometimes cause rebar breakage and reduce the strength of the structure.



✘ The Hydrofit method is an essential method for concrete structures. It protects the environment and is a sustainable development goal of the **SDGs**. It regenerates and revives structures without having to tear them down and rebuild them. It is possible to protect the environment and maintain their beauty.



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New Technology Information System
NETIS number: KT-160095-VR
New technology name: Hydrofit method
(impregnation composite injection method)

This is a revolutionary injection method, the Hydrofit method.

This method can be used above or below ground. It can also handle leaks from walls, ceilings, and floors. Regardless of the size of the construction site, the same construction is possible without affecting the surrounding environment. The newly developed blast furnace slag cement with fine silica powder is characterized by its resistance to both acids and alkalis, excellent resistance to harmful chemicals, and becomes stronger than normal concrete by releasing moisture. This effect can also be expected to be used as a stabilizer for ground improvement and as a measure to prevent liquefaction. By carefully planning the construction, the Hydrofit method is safe and economical.

Features of the Hydrofit Method

- ◇ Environmentally friendly blast furnace slag cement with finely powdered silica
- ◇ Integrates into cracks and hollow areas to prevent water absorption
- Alkalinity recovery is achieved.
- ◇ Integrates with concrete for excellent durability
- ◇ Excellent resistance to alkali, heat, fire, weather, water, and abrasion, etc., and increases physical strength
- ◇ Solvent-free (water-based) so no harmful or toxic gases are generated
- ◇ Can be injected even if there is water in the cracks
- ◇ Can be injected into fine cracks (0.05 mm wide)
- ◇ Can prevent rust on steel frames and suppress alkali-aggregate reactions
- ◇ These combinations can also stop seawater leaks, leaks from organic waste treatment facilities, and leaks from polluted material treatment facilities
- ◇ Expanded combinations with other Hydro Sky products

Applications

Main crack repair targets

- ◇ Leaking accidents from kitchens
- ◇ Rooftop leak repair
- ◇ Leaking from ponds, pools and large bathing facilities
- ◇ Leaking and countermeasures for dams, tunnels, rivers and levees
- ◇ Leaking or preventative measures for box culverts
- ◇ Repair measures for underground passages, subways, highways and bridge piers
- ◇ Waterproofing and deterioration measures for buildings and condominiums
- ◇ Leaking into elevator pits
- ◇ Concrete structures in general



Leak detection liquid

Dilute SKY-ARL about 10 times and spray it in areas where leakage is suspected. For water filling tests, pour in an appropriate amount of SKY-ARL. By spraying SKY-PH in areas where leakage is suspected, the leakage area will turn red. The discoloration will disappear in about 10 days.

Manufacturer and distributor **Hydro Sky Co., Ltd.**[®]

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The contents of this document are based on the materials of our Technology Development Department. In addition, they may be subject to change without notice due to new product development, improvements, or discontinuation.

Water leakage problem!

- ◇ The cause of the water leak is unknown
- ◇ We can't close for construction
- ◇ We handle food, so we can't use materials that emit odors
- ◇ We can't move kitchen equipment
- ◇ There is a limited time between closing and preparing for business
- ◇ We want to do work in parts as much as possible
- Leaking due to breakage of surface finishing material FRP/urethane paint
- Leaking due to deterioration and breakage of expansion joints
- Leaking due to breakage of holding concrete
- Leaking due to deterioration and breakage of asphalt waterproofing
- Leaking due to breakage of concrete slab

Construction features!

- ◇ It is an impregnating agent (penetrating), so it penetrates into cracks
- ◇ Unlike organic materials, it can be applied in wet areas
- ◇ Water-based, solvent-free, and odorless
- ◇ It penetrates even when heavy kitchen equipment is present
- ◇ By dividing the application area, it does not affect business operations
- ◇ Since it is a physical and chemical water stopper, additional repairs are possible
- ◇ High application applicability
- ◇ Used equipment and tools can be washed with water and reused

Construction preparation

- ◇ Tools, equipment, and materials
Hammer drill, drill bit 10.5mmφ, length 250-350mm, 800-1000mm depending on the water leakage condition of the structure
- ◇ Sprayer, trowel stand, plastering trowel, cement paste, mixing bucket
- ◇ Injection equipment
PK-NPT Packer type low pressure injector (with negative pressure tank)
PK-KP Packer type low pressure injector one-touch attachment
PK-ST Packer type low pressure injector straight type
Low pressure injection pump: Hand pump for SKY-SP
Type D hand pump (40cc)
Type B hand pump (160cc)
- ◇ Materials
Hydosky SKY-SP, SKY-G1, SKY-CSP, SKY-MX, SKY-MXC
Repair cement