



FESTER CR-NANO TECH-99+

Powdered waterproofing system for concrete, activated by chemical reaction, enduring strong hydrostatic pressures

Cement-based product with selected silica sand with fine-granulometry and special additives based in nanotechnology.

Formulated for concrete, it offers a double action benefit, with a complete treatment based on the newest nanotechnology.

USES

- Fester CR-Nanotech 99+ is designed to be used in hydraulic and civil engineering and works as a waterproofing system for concrete or mortar structures already in use.
- As preventive, corrective and permanent waterproofing treatment, under strong hydrostatic pressure conditions in projects where it will be in contact with water or contain water within structural elements, including underground structures, such as: cisterns, basins, tanks, dams, deposits, water treatment plants, pipes, road tunnels, hydraulic tunnels, silos, sewer clean outs, frigorific chambers, underground constructions, docks, breakwaters, dykes, aquaria, aqueducts, pools, retaining walls, adjacent walls, embankment, foundation crawl spaces, fountains, water mirrors, floors to receive coatings, among others.

ADVANTAGES

- Reinforced formula with hydro repellent agents, thus, since the first 3 days placed on the grouts, the first benefits of the first action of Fester CR-Nanotech 99+ can be obtained.
- One single product to apply 2 or more layers.
- Wide open time mixture, making its application easier.
- The additives contained in the formula and in combination with concrete and water, lead to a second action, obtaining the major benefits as the nano agents penetrates (up to 30 cm*) into the concrete throughout its pores and capillaries.
- The chemical reaction produces active and insoluble networks in the capillaries and pores, becoming a whole and permanent part of the concrete.
- Excellent impermeability against water, even under strong positive or negative hydrostatic pressures.
- It improves the concrete chemical resistance by preventing water or water in combination with other chemical substances from flowing into the concrete interior.
- It protects concrete against deterioration due to salty-water infiltration and other chemical agents (light acids, alkalis, etc.) existing in the atmosphere, dilutions in the industry and in the subsoil.
- In waterproofing concrete, this product is the preventive and corrective solution against salty residue attack, as well as concrete and reinforcing steel corrosion, extending the useful life of it.
- Fester CR-Nanotech 99+ contains additives that keep active, so that is the reason of up to 0.4 mm fissure formation due to water or moisture, by filling the fissure and, consequently, stopping possible water flows.
- It increases the final compressive strength in a 5% by filling pores and capillaries.
- The grout applied does not have toxic substances, therefore, when the grout or the treated concrete is in contact with potable water, their properties are not modified.
- The product efficiency is achieved when it is applied on the concrete inside or outside a facility, offering advantages such the waterproofing of water deposits from the outside.
- It is gradually and deeply integrated to concrete, branching off to fill pores and capillaries, even in the presence of counter-current water.
- The waterproofed concrete preserves the transpiration





properties, which allows the trapped vapor to exit, but water penetration is blocked, and the structure gets increasingly dry, to the extent it can receive finish such as coverings, parquet, laminate, wood, carpets or stone coverings, as applicable.

Note: * The penetration level of the formula activates depends on the amount of cement used in the concrete, its compaction level, and the hydration conditions.

APPLICATION INSTRUCTIONS

1. Surface preparation:

Remove the curing membranes, coverings, plastering, grouts, paints and any substance that may affect the active penetration into the concrete and the grout adhesion.

It is indispensable that the concrete surface is thoroughly clean and at open pore.

The polished concretes must be treated with hydroblast, sandblast, carved with diamond cup wheels or fine bush-hammered, in order to open the surface pores.

Remove the concrete section in bad conditions and make the corresponding repairs. For this, there are available restorer choices of Fester CM's concrete and Fester grouts (see information sheet). Using high-pressure water and rubbing with brush, remove dust and, at the same time, saturate the surface with clean water.

2. Crack repair and critical point reinforcement

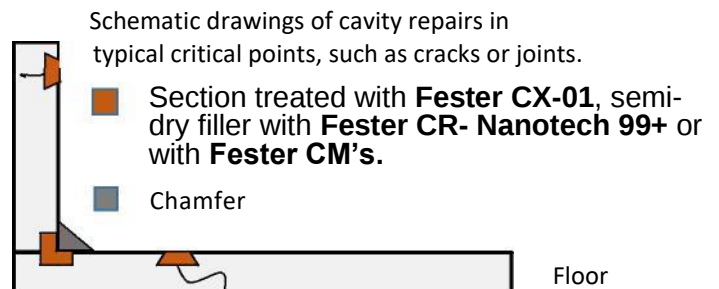
Through mechanical means (handheld, electrical or pneumatic chisels), open a cavity in the shape of a box or, even better, in a dovetail shape (see next figure) from 2 to 3 cm depth in every place to fix (the cavity must not be done in a "V" shape).

Remove any loose parts with water and a wire brush; let it drain and, if there is water in excess, dry it with clean cloths.

In case of evident filtrations or water runoffs throughout the cracks, joints or holes, make the previous treatment using Fester CX-01 cementing plug (see the Technical Data Sheet). This product can also be used to repair the same or different points even when there is not water flows yet. For this last case, it is very important to previously moisture the section to be repaired.

Another option is to repair cracks, joints or that have not presented filtrations yet with Fester CR-Nanotech 99+, preparing a semi-dry putty for using it as filler (see Product Preparation Instructions). Using the putty for blocking the prepared cavities, strongly compacting it by mechanical and manual means and level it to finish. Similarly, this mixture can be prepared to make chamfers. In this case, the best results are obtained only if previously to the reparation,

you apply a coating layer of grout with Fester CR-Nanotech 99+ and let it dry for 15 minutes. If you prefer, at this point, an excellent option is the Fester CM's restorer category (see Technical Data Sheets).



3. Product preparation

For application using grout

Fester CR-Nanotech 99+ is prepared just adding to it clean water in a mixing ratio of 5: 2 (in volume parts) and it is equivalent to 10 liters of water per bag of 24 Kg. The product is measured just at flush with container and without compacting. The mixture must be done mechanically to quickly eliminate all flocs and get a homogeneous, creamy, fluid and well-moisturized mixture. Review the mixture amount needed to prepare and pour the corresponding water in a bucket. Measure the powder volumes, and add the water bit by bit and stir, mixing with the appropriate blades and equipment according to the mixture volume. Stir for 3 minutes and then apply.

For application as filler in holes.

Fester CR-Nanotech 99+ is prepared in a ratio of 6.0 parts in volume per 1.0 of clean water. The product is measured just at flush with container and without compacting. The mixture can be done by an "kneading" with trowel or directly with hands (using industrial rubber gloves), removing clots and achieving a homogeneous mixture.

In both cases, the prepared mixtures must be applied in 20 minutes maximum.

In this case, wherever it is decided to use Fester CX-01, see Technical Information Data Sheets.

4. Product application

First waterproofing coating

The surface must be duly prepared with open pore, with any water runoffs eliminated to avoid eroded material applied previously and have done the corresponding repairs in concrete. Check that the concrete is dully saturated with clean water and keep it like that while you are continuing with the application. Then, apply the first coating layer on all the surface using paintbrushes, brushes with gross bristles or equipment to spread mortar.



WATERPROOFING SYSTEMS

The application must be controlled to achieve a uniform thickness, following the specified yield.

In case the prepared product loses fluidity, re-mix it and it will recover its consistency (do not add more water). Let the applied mixture gets its initial settling (3 hours approximately), so it can gain certain hardness to avoid any removals when applying the second coating layer. If the elapsed time or the environmental conditions make the applied product look predominantly dry in color and appearance, the surface must be wet and then let it dry before applying the next coating layer.

Second Waterproofing Coating

The second coating layer must be prepared with the same product; therefore, the mixture preparation conditions, as well as its applications, must also be the same. Ensure the yield control.

Curing

The curing of the application is indispensable to keep moisture and get the best results when preserving the chemical activity of the applied product.

Begin the curing of the application 4 hours after the last waterproofing coating.

The best indicator to begin the curing or the following cycles is when the application is changing its typical wet color for a dry color (from dark gray to light gray).

The curing must be done sprinkling water and repeating the operation 3 or 4 times a day, during the next 3 days. Other curing options is to block the access and lay down rubber sheets or wet blankets that help to preserve the moisture. This is highly recommended in high-temperature zones or, in general, to make less frequent curing cycles.

Note: When the product is used in structures containing potable water, it can be put into service 10 days after the curing.

In structures containing water, it is normal that, during the days following the application, moistures can still be observed. They will start to disappear with the passage of time. This is evidence of the product chemical reaction with concrete.

On treated concrete surfaces, where humidity is mostly evident,

YIELD

0.750 Kg of powdered product per m² per coating layer.

24 kg of product prepared for waterproof coating makes 20 liters of mixture, approximately.

24 kg of prepared product will cover 32 m² per coating layer

For filling applications, each kg performs the equivalent to 720 cm³ in cracks or holes.

it is normal that salinity becomes visible (white salts), because it is the result of chemical activity.

After the treatment, the salts can be removed by grubbing the surface in dry or with water, so the surface appearance is improved before applying any final coating, if required so.

IMPORTANT INFORMATION

The concrete minimal design resistance must be 250 kg/cm² (15% cement approximate content)

In treating runoffs or water puddles, avoid using electrical tools. For projects where concrete is going to be placed for the first time, the best choice recommended is the comprehensive and preventive Fester CR-Nanotech Admix waterproofing system solution since the mortar preparation (see the Technical Data Sheet)

For existing concrete and masonry elements with filtration issues on evident spots, the recommended product is Fester CX-01 instant filler (see the Technical Data Sheet).

Do not apply on concrete roof slab.

Prevent the product to sunlight exposure during its preparation. Keep the containers well closed to avoid any product alteration.

Do not apply on polluted elements that may affect or prevent the substrate from absorbing the mixture's water, which is a sign that a poor grout adhesion and deficient chemical reaction may be possible.

In order to avoid eroded and loss materials as well as deficient treatments, do not apply under rain threat or in areas with puddles.

Do not apply on elements where the surface does not have an open pore where there is a runoff or "weeping" water (make previous reparations).

The elements to be treated must be previously water saturated. Do not add more water than the recommended for the corresponding mixtures in product preparation.

PRECAUTIONS

To prevent any health damages when handling this product during its application, due to cement alkalinity and some actives of the formula, contact with skin, eyes and airways must be avoided, so it is necessary to use personal protective equipment, such as industrial rubber gloves, safety glasses, cotton long-sleeve T-shirts. See the Safety Data Sheet.

In case of eye or skin contact, wash out with plenty water for 15 minutes and see a medical specialist.



PACKAGING

PRESENTATION	24 kg Bucket: Colors gray and white
STORAGE	Keep it in the original container, protected from water and direct sunlight and store it at a temperature higher than 7°C.
EXPIRATION	12 months
MAXIMUM STOWAGE	24 kg Bucket: 5 pieces one on top of the other 5 beds

ECOLOGICAL FEATURES

Fester CR-Nanotech 99+ contributes to increase the demand of material and construction products extracted or manufactured in the region, reducing the environmental impact of transportation.

Fester CR-Nanotech 99+ contributes to improve the environmental quality, by reducing the amount of pollutants with bad smell, irritating or harmful to worker and resident well-being. Its VOC content is 0.00 g/L.

Manufactures site: Carretera Panamericana Km. 312 Tramo Libre Celaya-Salamanca, Guanajuato CP. 36700.

PHYSICAL PROPERTIES

TEST	STANDARD	SPECIFICATIONS		FESTER TYPICAL VALUES
Volume mixture proportion	----	For waterproof coat	5 parts of powder and 2 of water	Complies
		As filler	6 parts of powder and 1 of water	Complies
Mixture appearance	----	For waterproof coat	Creamy and fluid	Complies
		As filler	Soft plaster	Complies
Mixture open time [minutes]	----	For waterproof coat	25 minutes	Complies
		As filler	15 minutes	Complies
Mixture density (grouts) [kg/L]	----	1.69 ± 0.03		1.69
Application minimum temperature	----	+ 5.0 °C		Complies

Note: The data included was obtained under laboratory conditions, at 24 °C +/- 1, and at 50% of relative humidity. In the references about the laboratory test concrete, a 300 kg/cm² design was used.



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