Concrete and the conclusion agent for stones of a reaction

Product name: A "HYDROPROOF" stone and the conclusion agent of a concrete reaction **Manufacturer: CHEMIX Co., Ltd**

Outline of a product :

This product is a conclusion agent of a perviousness reaction to the no solution various concretes and the stone which consist of minerals solution and a high reactivity catalyst and which are transparent, do not stretch a film and are not discolored.The catalyst included in this product makes the isolation alkali in concrete and a stone react, forms air silica gel, and brings a lasting ceiling and lasting dampproofing to a stone and concrete.Moreover, the intensity of concrete also increases and the durability over efflorescence or crush is raised. Even if it uses this article, breathability on the surface of concrete is not barred, but neither surface color nor textures is changed.

Subject :

HYDRPROOF is used for the slab hardening dust proof of each part of the upper layer of a structure, underground, and a foundation side, and waterproofing for the surface concrete of all cementum, a block, brick, a terrazzo, etc.

An effect and a performance: There is the following lasting effect by application once.

1. Prevention of Moisture and Waterproofing
2. still water carry out dynamic watermaintenance
3. Prevent degradation of the surface.
4. Decrease osmosis of grease, oil, and acid.
5. Prevent the crack by freeze.
6. Prevent mold.
7. Make it harden inside from the surface.
8. Raise heat resistance and cold resistance.
9. Make freezing easy to take.
10. Increase the elasticity of concrete.
11. Demonstrate high performance as ground material of concrete, and increase the durability of a paint.
12. Prevent the crack of the paint by moisture and humidity, and peeling.

Restriction matter :

1. Ifitismadetoadheretotheglasssurface,etchingwilloccur.
2. Erode aluminum.

Ingredient :

It has perviousness strong against cementum and the nature substance of a stone with the minerals solution which added the catalyst, and air silica gel is formed in an inside.

Conformity standard: ASTM C-67

Section 7 (Water absorption)
Section 9 (sucton)
Section 10 (effiorrescence)
ASTMC-666 (freeze-them resistance)

ASTEM G-23-69 and ASTM E42-65 (artificialwarkeing),
And for stain and dusting resistance (ORF method)
Use permission with the food processing institution by the U.S. Department of Agriculture, and proof of heat insulation nature. (U.S. Testing Labo In New Jersey)

Technical data:	1. dilution agent	: Needlessness
	2. Freeze Temperature	: -17 ℃
	3. Freeze Damage	: Nothing
	4. Boiling Point	: 110 ℃
	5. The Amount Used	: Per 1 riter 4 or 8m2
	6. Cleaner	: water
	7. Color	: Clear
	8. Bad Smell	: Nothing
	9. Inflammability	: Nothing
	10.Transpiring (under Work)	: Nothing
	11. Pollution	: Nothing
	12. Increase in R Factor	: About 10 - 15%

The construction method :
It applies to cementum and the stone surface once. It is most desirable to make the surface become wet with water before an application.Although any of a brush, a roller, and a spray are sufficient, it applies enough uniformly. Dryness is usually about 2 hours. Application tools carry out washing in cold water immediately after use.There is no restriction of a pot life. Immediately after removing a mold if concrete becomes hard or, the surface saturates and carries out a grade application.
Although it can apply as it is even if it does not pretreat the surface painted with oiliness or distemper, since the paint of a vinyl system, an acrylics system, and speciallatex does not permeate, you have to remove it with a sadist blast, a wire brush, etc.オ Although especially the necessity for cleaning does not have the surface which became dirty from oil, grease, and acid, either, dirt will be lost if it washes in cold water 2 hours after an application.
However, you have to remove before construction especially the grease which adhered thickly, wax, and adhesives.

● Chemicalresistance of HYDRPROOF
By applying to concrete, HYDRPROOF forms a protection layer and raises chemical resistance.This protection layer can also prevent the erosion from about preventing the erosion from the concrete surface and the bottom in concrete.Although a paint covers the surface of concrete, and the surface of a stone and decreases contact to detrimental medicine, it is only a strictly temporary surface treatment.
If formation of a protection layer is the foundations function of the improvement in durability of concrete, HYDROPROOF will be functioned completely everlastingly.

● The action of acid and alkali
Acids, basic solution, and water (based on purity and temperature) make reactivity amount of aqueous solution into which react to with the water calcium oxide in the Porto land cement binder which hydrate and concrete is made to disassemble.Strong alkali acts

on the composition ingredient of cement, and disassembly of concrete is urged to it.

● **An action of sulfate**

Sulfate solution (Na, K, Mg) may react with the tricalcium aluminum chloride in Porto land cement, may form the calcium sulfuration aluminum chloride of the quantity of the more than originally included, and may cause concrete decomposition.Moreover, the increase in this generation thing causes a crack of concrete.erode by sulfuric acid is partially controllable with use and combined use of borazon like sulfuric acid proof Porto land cement or a fly ash.Use of the concrete with comparatively high density which made the mixture ratio of water low can also make the performance of sulfuric acid-proof nature look up.

● **Corrosion of a steelrod**

Osmosis of the water inside concrete and existence of basic solution chemicals bring about corrosion locally a steel rod. Generating of rust added expansion to the concrete which touches iron material, and cracking and degradation were urged to it, finally it had the bad influence also on the surface, and has done damage to the bridge, the elevated route, the highway, etc.The expensive and temporary method of corrosion prevention of iron material cannot but give anticorrosive coating at a factory to iron material.The corrosion preventive measures with a cheaper and lasting effect are carrying out the waterproofing seal of the surface and the inside of concrete by HYDROPROOF.
(The experiment showed that oxidization was delayed, when iron material was soaked in HYDROPROOF as the interested side)

● **Contamination of a product**

The structure made from concrete is often used for storage and conveyance of a liquid and a solid.
The solution of water with high purity or a chemistry substance may be polluted by contacting concrete or a cement secondary product. Moreover, it is spoiled with the concrete and the cement product with which tastes or scents, such as food, have not carried out a certain processing, either.Since HYDROPROOF gives waterproofness to a concrete cement product increases hardness and does not have any side effects and very prolonged durability can be made to hold use permission at the factory of food is given from the U.S.A. Ministry of Agriculture and Forestry.

Even a steel frame reacts.

Damage by the chemicals of concrete

Generally three elements can be considered as a weak point over the chemicals of concrete and a cement product.That is, (1) water permeability, the degree of (2) alkali, and (3) reactivity are them.
Although the degree of penetration of a liquid or gas is considerably influenced by the kind of a concrete cement product, and quality and it is called highest class concrete it is not said that water permeability is close to zero.Water permeability is greatly influenced by progress of a water cement ratio, the rate of water, and material again.osmosis to the

concrete of a liquefied chemistry substance is boiled occasionally is carried out and reacts even to cement aggregate and a steelrod, and a steel frame.
The alkali hydrosulfide substance of Prtoland cement reacts with an acid substance. It leads to usually generating a soluble substance, disappearing occasionally and finally disassembling concrete at this reaction.When a reaction generation thing is insolubility, a sediment is formed in the surface or the inside of concrete, and hydrosulfide reaction velocity is sharply made late.

● Speed and influence of erode of chemicals to a cement product

The speed of erode is usually proportional to the concentration of the reactant substance in solution.As for ph7 then seven or less so called acidity aprotic solvent has eroder to concrete.
Although the canal nature solid which also dried the physical properties of science medicine with the important element does not show erode nature at all to the dry cement product, if even a certain kind of canal nature substance may erode the high cement product of the rate of water and water is carried out, erode nature is shown to a cement product like the solution with which a solid with reactivity also has erode nature.
Also in the state of dryness it may combine with the moisture in concrete and a reactant substance may be eroded.
Damp erode nature gas shows such strong erode nature that concrete and a cement product are disassembled.Temperature also has an important relation to the speed of erode.The speed of a chemical reaction increases exponentially to temperature. That is reaction velocity is doubled about every Centigrade 10 degrees C.Moreover, although a temperature rise promotes dryness of concrete also indirectly if it dries it will become easy to absorb the erode nature solution of further others.If temperature falls a crack will be produced from volume contraction and it may also happen to make easy permeation of a lot of erode nature substances.In case the speed of erode is considered the quantitative scale must also be considered and it must combine.For example when the concrete building builds on acid soil a structure receives decisive damage.
Especially a repetition of dryness and moisture has a possibility of it being detrimental promoting the chemical reaction of alkali aggregate and leading to destruction of concrete.
The substance occasionally dissolved moves in the inside of concrete and makes a sediment on the surface by barring transpiring of the moisture from concrete.This sediment is a normal soluble generation thing and a thing generated various reactant results.These are "efflorescence" seen by concrete brick or the stone.At the time of a freeze and dissolution concrete receives a serious damage from a water simple substance with basic solution.
After sprinkling a melting snow agent to highway pavement this damage is mitigable from a freeze dissolution or basic solution by supplementing with moderate entrained air owing to the damage in which it can see well.Use of HYDROPROOF can prevent such damage everlastingly completely.

● **The substance which erode concrete**

organic acids and inorganic industrial waste water, sludge, fruit juice, sour milk, acid weak base solution and acid not processed water of a certain kind cause degradation of concrete besides acidsAlmost all ammonia salts generate ammonia gas and a hydrogen ion under the alkaline situation of concrete and are very detrimental to concrete.These are replaced by the insoluble calcium in concrete. This result becomes being the same as that of the desalination action by acid.

The discarded animal for meat becomes acid which oxidizes in air and invades concrete. The saponification action which occurs between hydrosulfide of animal oil and fats and Porto land cement generates salts and alcohol and does acid and a similar bad influence. Many scientific action agents erode concrete. They change the chemistry structure of concrete by the reaction mechanism as which only the part is solved very much.

Sea water erode hygroscopic concrete. They are because the tricalcium aluminum chloride which cement has for the sulfide probably contained all over sea water is invadedA multi hydroxyl group organic compound like Glycol glycerol or sugar erode slow and concrete.

● The substance which does not erode concrete

There are the chloride fluoridation thing and silicic acid compound of almost all the carbon compounds nitrogen compound part in the general neutral salts which do not invade concrete.Limewater is usually useful to concrete.That is because a hydrosulfide reaction is promoted without exhausting the lime in concrete.Other weak alkalinity solution is not usually detrimental.The derivative from fatty oil or the oil with which other potential acid substances are not contained is harmless to the usually cooled concrete.Make concrete discolor, paint is invaded, or needless to say, there is another substance which makes the cause which is not desirable and it is not this limitation.

A problem originates in the alkali of a concrete wall and a floor.

Concrete is calcic similar to the rock which blended sand and the gravel with cement and water alkaline.Pure alkali does not exist but lacks stability again.Each of the element of alkali is equipped with the electron and molecule which always want to start other elements and a chemical reaction.Two most important alkaline metals are sodium and potassium and a visual check cannot be carried out although sodium is occupied and potassium occupies 2.5% 2.6% of the crust.That is these two elements are because it always exists as a compound with other elements.Free existence of these two elements cannot be recognized in air or steam.

The moisture and alkali which are contained in concrete must recognize that it is greater than the influence to a paint or a floor cover ring so that the increase in the sub floor in the latest construction and inclination of a building may see.This state where it is known with "the problem of alkali" is the problem of "humidity" fundamentally.

Alkali exists in concrete, obtains moisture and increases detrimental nature.

In the portion with which concrete is touching the ground directly and a portion with inadequate ventilation moisture passes along slab by the capillary tube phenomenon enters the inside of concrete begins to melt alkali salt and appears as alkaline solution detrimental to the surface.But one of the detrimental nature of this alkaline solution that

should be apprehended has a hydrolysis action.This causes a reaction with oil and fats and alkali is the same as that of the principle used for manufacturing soap and becomes the cause which is made to harden paint of concrete causes peeling produces a crack or is made into the shape offlakes.
Even if there is a situation difference it is shown that moisture is always in the inside of the atmosphere or soil and the fact that alkali is always in concrete always has "the problem of alkali" over concrete again. It is.The concrete slab of the thing which "are dry" and which is judged to be a state is dangerous.
If concrete is painted or a flooring is pasted up transpiring of moisture will be checked alkali solution slump and erode happens to the bottom of it.

● Capillary tube phenomenon

According to a capillary tube phenomenon humidity and water conduct especially the inside of a stone so that it may be sucked up in the upper part and all the directions from the lower part.and we tend to be alike occasionally tend to do and tend to underestimate the quantity of the humidity by this capillary tube phenomenon and moisture.According to the result of an experiment about 50 liter water was transmitted to the slab surface of 100cc on the first and when forcible dryness was carried out this 50liter water evaporated.When slab is covered with a paint or a flooring material the adhesives which moisture makes accumulate may be invaded or in case this moisture moves at alkali a basic substance or the time it may be accompanied also by addition medicine and emulsification decomposition of a paint or the adhesives may be carried out.This phenomenon degrades paint with frost dew condensation, rain, snow, humidity, etc. not only in the level surface but in vertical planes such as a wall and a pillar. The distance which the moisture by the capillary tube phenomenon conducts is also underestimated.There is an example to which concrete sucked up to the ground the groundwater which is 12 feet(6.3m) below ground.
If concrete is in the underground it absorbs subterranean humidity just like sponge.This is because it is based on the combination of the water absorptivity which not only a capillary tube phenomenon but the concrete itself has, and various pressure. ∟ However this absorbed moisture will surely move if conditions are ready.

● Dew condensation a wall

an affinity of as opposed to about dew condensation of a wall one first important the molecule of water in the surface of the charge of a stone it is powerful.The molecule film of moisture is balanced in relative humidity and all the space (a stoma a gap capillary tube) that a stone has is completely filled up with the saturation point.And if the situation of the circumference which brings about the humidity of a building raw internal and external superfluous is eased humidity reaches porosity wall material at the saturation point and it will become water and will adhere.If steam infiltrates even into a portion with the low humidity inside wall material and reaches a dewing point such at the time the interior surface of a wall will be solidified and dewed.The humidity of temperature wind velocity and soil causes dew condensation. If processing of dew condensation prevention is neglected, since interior will be damaged it will suffer serious damage such as exfoliation a spot mold and efflorescence and repair will take immense expense especially suitable processing is required for the wall material of a stone system.

● **Waterproofing**

HYDRPROOF can prevent invasion of the water to concrete or a stone and a penetration by the side of water.HYDRPROOF fills up the circumference of a capillary tube with gel permeating the quality of a stone deeply and reacting to the alkali and lime in concrete continuously. In this case the more alkali the gel is generated. And as long as there are alkali and humidity it continues and it is interrupted and this chemical action is repeated.Inside concrete, about 360 times as much alkali as the surface is contained.Therefore, the effect of HYDRPROOF which it permeates carries out the chemical change of the contained alkali to the stable gel is more nearly permanent than what surface seal material of the others which will cause weathering and degradation several years after.Use of the conventional surface coating is dangerous. because there is not only the necessity for repair periodically but the superiority or inferiority of work produce unexpected leak and inquiry and repair of a leak part take unexpected expense to it.

By filling this stoma and a gap the seal of concrete a cement secondary product and the stone itself is carried out and waterproofness is brought about. Of course waterproofness can be maintained by HYDRPROOF from the inside of the concrete foundation under GL.

● **Dumping proof**

A dump proof is preventing passage of the water to the inside of concrete or a stone. By conventional dump proof coating and the conventional processing method, maintenance of the side of continuous or intermittent water is very difficult.When there is especially a crack or it generates later the action is not made at all. HYDRPROOF is the only product which can essentially improve the cause ofthecrackofconcreteandcanholdthesideof water.

● **Encapsulation of concrete**

The big problem which occurs when the upper part of concrete slab is covered in paints etc. and the waterproofing layer is given to the lower part is encapsulation of concrete.

Water usually piles up in the inside of concrete and causes freeze damage under low temperature.Moreover if temperature rises rapidly especially when the difference of temperature in the daytime is remarkable the steam pressure inside concrete will cause peeling.There is breathability a waterproofing layer not needing to be constructed for the use part of HYDRPROOF but maintaining waterproofness.

● **Dusting**

The coarse particulate of concrete has goods also on a human body and has a bad influence also on a machine.Although the problem is amplified with the chains of a car this coarse particulate is an always generated thing and when concrete has weakened it is generated mostly.The action which solidifies the concrete surface and an inside by the chemical reaction of the alkali of HYDRPROOF and lime can control generating of a coarse particulate lungs can be protected damage on an expensive court rank can be prevented and it can contribute to losing dirt greatly.

● **Laitance**
laitance is the substance of the shape of a "weak" film produced on the concrete surface in combination of cement and water when there is too much water.If this is made, the intensity on the surface of concrete will fall and trouble will be caused to paint and adhesion.When laitance occurs, there is no other way but squeeze or to HYDRPROOF process.

● **Effrorescence**
With the basic white sediment which usually adheres to the concrete surface efflorescence begins to melt oozes out from the inside of concrete and is generated by evaporation.Moreover as various soluble bases and the Lord, sulfate oozes out in connection with humidity or water inside concrete from soil or the circumference is discharged with humidity from a still concrete inside, and is solidified on the concrete surface.

● **Hydrolysis**
Hydrolysis (saponification action) is especially a reaction which occurs by combination to oil and fats and alkali of a certain kind and promotes degradation of concrete paint obtained by manufacture of soap.This is a phenomenon produced as a result of alkaline solution's exuding on the concrete surface according to a capillary tube phenomenon.

The construction method of HYDRPROOF the fine sight of concrete

● **Flooring material**
Concrete slab has the character which sucks in water from underground etc. like sponge. Humidity is mixed with the alkali which always exists through poa and void of concrete.
If slab is covered with a flooring this water absorption action will be promoted.Moreover the humidity containing a part for alkali can be pulled up on the surface of slab and comes to have the adhesives of a flooring and contact.
Such alkaline moisture emulsifies almost all adhesives or serves as a reason of deterioration.Finally it leads to foaming, degradation and a twist a crack and peeling, and a large amount of repair expense is required.In considering many elements of coming influence they do not influence separately but use of HYDRPROOF should be considered to be the system which is given to the performance durability of paint or floor finish and which keeps protection and the fine sight of finish material fundamentally and synthetic over a long period of time.
Of course it is ideal to weave use of HYDRPROOF into a design from the beginning not only because of protection of a floor but the improvement in durability of the whole building.

● **Paint and coating finish**
Although fine sight sufficient with the natural complexion of concrete can also be maintained depending on a building there is the necessity of enough for paint on a fine sight with a practical use top.
You have to consider that they remove the factor which checks them since the serious requirements in the case of paint or coating finish material use are in the adhesive

strength and durability.
For example it is contamination of a laitance, efflorescence coarse particulate the shortage of hardening the shortage of dryness an exfoliation agent or an additive agent etc.Even if it gives the surface treatment of a ground, don't forget for hydrolysis to be one of paint or causes of degradation of coating finish material further.The amount is contained in alkali a paint etc. inside concrete oil and fats become the cause by which start hydrolysis and a paint and coating finish material separate.
When especially an oil paint is used it is remarkable and paints such as a vinyl system a synthetic rubber system and a latex system also produce a crack and peeling by this hydrolysis.Anyway the thing which the cause of degradation depends on the moisture which pulls out the alkali and lime in concrete also suspect there is nothing.By itself since any paints are impossible preventing erosion of this alkaline solution spends cost and it must repaint them repeatedly.Repeat coats is still more dangerous suffocates concrete and is made to result in decomposition.
Although HYDRPROOF permeates the inside of concrete also from oil and fats or a water paint it permeates neither a vinyl system nor a latex system paint.
HYDRPROOF reaches to an extreme of the character of the concrete itself from a completely different viewpoint in the conventional repellency for concretes a waterproofing agent.They are strengthening of the epoch making concrete which processes completely the isolation alkali which is the weak point by the chemical reaction and produces lasting waterproofness and corrosion tightness a stone and a synthetic stone, waterproofing and a desiccant.

The object of construction

Whether it has got dry even if moist or it is new and even if old it can construct to any concretes a cement secondary product or a stone.
Prevention of efflorescence waterproofing and neutrality surface strengthening and a target with the passage of time have an internal reinforcement action.
Moreover it is effective rust prevention of a steel rod. The effect excellent also in floor processing of the manufacture factory of the oil for industry such as floor processing of a food processing place lubricating oil, greases, etc., such as an outer wall, an inner wall, a floor, slab, a basement, an underground passage, a bridge, an elevated route, National Expressways, a dam, a tank, a silo, PC board, a Hume pipe, a U character slot, a tie, tank lining, a terrazzo, stucco, brick, a block, and food.

● Before construction

When the construction subject is dry at high temperature please let me fully become wet with water with a construction side for a good effect and economical efficiency from HYDRPROOF.

● The method of an application

Please apply fully until a construction side is saturated with HYDRPROOF.In the level surface please pour out of a container directly and apply until suction is lost with a brush, a mop etc.Please apply a perpendicular wall fully by the spray.
If pressure is made low (1.5-2.0 kg/Cm2) and it repeats several times from a top to the

bottom when using a compressor it is effective and economical.Even if it sprays so much at once it flows and falls and is uneconomical. Osmosis in the inside of concrete of HYDRPROOF finishes in 1-2 hours.

Cautions of construction

● **The damp field and the wetfield**
The field where water is always flowing and the covered field should work, after losing the water.The damp field should work as it is.Since waterproofness sufficient by one work may be unable to be acquired, the place where waterproofness is demanded strongly should perform two construction.

● **The field where oil grease and acid have adhered**
Except when a lot of greases adhere, it is not necessary to wash especiallyPlease apply HYDRPROOF fully and flush oil and acid which came floating with the brush for floor washing etc. at the time of washing in cold water ofthenextday.

● **Wax adhesives a field with floor finish construction**
Please work after removing so that osmosis may not be barred when abundant wax grease or thick floor finish materialisusedforthesurface.

● **Concrete immediately after placing**
If concrete and mortar solidify or if a mold is removed please let HYDRPROOF permeate fully immediately.Although solidification becomes early by using HYDRPROOF hardening progresses slowly.
Therefore surface hardness increases waterproofness is demonstrated and the tolerance of a coarse particulate or a hair line crack is made.

● **A cement block ALC an extrusion fabrication cement plate**
When osmosis is intense, a repetition of two-three construction is required. In a block please repeat 3 to 4 times.

● **Brick**
Please continue washing in cold water 2 to 3 times until it stops since surplus alkali may ooze on the grade surface with the structure material of brick for ten to 14 days.

● **Floor hippo ring**
When there is much water content of slab please apply twice. Please carry out grade dryness for three to seven days after washing in cold water until it starts adhesion.

● **The place where temperature is high**
Please apply after cooling from early morning for a heat source or direct rays pouring the evening or water when a construction side is Centigrade 50 degrees C or more.

Prevention of Efflorescence by HYDROPROOF

By our company, an efflorescence discovery mechanism is examined and its attention is paid to the efflorescence discovery preventing method by the chemistry article.
Minerals osmosis reaction type degradation water absorption prevention agent to which the following seven items are satisfied was developed in 1985, and I have made research and the improvement for test construction in piles in more spots.Now, it produces commercially as a brand name "HYDROPROOF" and the thing actual result with since sale abundant has been acquired.

① Object machine material is not damaged.（They are alkalinity and minerals.）
② Permeation of water is prevented.
③ Breathing nature is maintained.（A paint film is not made.）
④ Are rich in durability.（Formation of a protection layer）
⑤ Itissafe and excels in workability.（They are water and minerals.）
⑥ There is no electrification nature.
⑦ Appearance and a fine sight are not changed.（It does not gloss or gets wet and a color.）

The action and effect are as follows.

① **Osmosis**
The HYDROPROOF ingredient in the solution below the half of water permeates deeply through the capillary tubes water gap and air gap of concrete and the quality of a stone.

② **Reaction**
HYDROPROOF which permeated reacts with the water calcium oxide in the concrete and the quality of a stone which becomes the origin of efflorescence or infinite form silica and becomes a non-water solubility inorganic compound gradually within water gap,air gap.

③ **Strengthening : water absorption prevention**
The generated inorganic compound serves as a substance stabilized from combination before is filled up with water gap and air gap and prevents permeation of the water from the outside by precise of a basis material surface organization and does not bar a steamy penetration.

④ **Protection:improvement durability**
In this way the precise protection layer stabilized on the basis material surface by the concrete and the quality of a stone by which HYDROPROOF processing was carried out is formed not only efflorescence generating but also neutrality or damage from salt water and freeze damage is prevented and the durability and the stability of a concrete building are raised sharply.

The construction point of HYDROPROOF to a concrete

1 Foundation adjustment

(1) Crack : when the 0.3mm oftheabove cracks is in a construction side
(A) Do V cut of along with a crack and repair with resin mortar after HYDROPROOF HT-SP applying to a cut side.

(B) Pour in an epoxy resin.theabove (A) and (B) it repairs by one of methods

(2) When there are honeycomb a deficit part honeycomb and a deficit part squeeze a surrounding brittle part and repair HYDROPROOF HT-SP with the upper resin mortar of an application.

(3) When there is a steel rod explosion part a surrounding brittle part and a steel rod part often chips rust and applies rust prevention material.It repairs with resin mortar after applying HYDROPROOF HT-SP to the concrete part after dryness.

2 basic washing

The garbage of a construction side dust dirt etc. are fully washed with a middle pressure washing machine (50-70kg/m2). (This is for improving osmosis of HYDROPROOF.)

3 dryness

(1) Although itmaybesomewhatmoistmakeitdryaspossibleafteraflush.

(2) Refrain from construction in case of rainy weather or snowfall. It waits for after rain and snowfall until moisture of the surface pulls.

4 Application of HYDROPROOF HT-HX

It applies until a roller brush spray is saturated either.
(1) Since suction is intense apply especially a brittle part in large quantities.

(2) In the case of a roller. as drawn through upwards from the bottom run after apply it twice.

(3) In the case of a spray run after with apply it twice so that it may be made low pressure possible made fog and may be no futility.

(4) The amount of applications is per 1 ㎡ / 150-300cc and an average although based on the situation (many years past degradation and density) of a building. Carry out and apply 200cc.

(5) When especially the surface takes repellency apply HT-GT after an HT-SP application instead of HT-HX.

5 Notes

When a summer direct rays hit and the temperature of an application side is going up (Surface temperature avoids Centigrade 50 degrees C or more of applications and applies from a shadow portion.)

6 General Protection

(1) Protention for 24 hours after a HYDROPROOF application so that rain, snow, etc. may not start.

(2) Cultivation (garden tree potted plant and flower bed) windowpane aluminum sash and a car take care so that may start splash of HYDROPROOF neither. When HYDROPROOF adheres to a car, a window etc.,

(A) If it is immediately after, wipe strongly with the cloth washed well. (It repeats 2 to 3 times)

(B) When it gets dry has become a white crystal attach water to sponge brush and rub against it carefully.

7 Prior Test

(1) When a til side is located in a construction,It may remain on the surface without HYDROPROOF permeating according to the kind of tile.Since it dries and becomes a white crystalfullywipeoff with a towel after an application.

(2) Please be actually sure to carry out a prior test before construction on the spot.

It is the construction point of HYDROPROOF concrete surface.

1 Washing

(1) Many years past and the construction side deteriorated and polluted and it removes an adhesion thing.

(2) Degradation is too excessive and as for the take squeeze case the brittle part applied HYDROPROOF HT-SP upwards by middle pressure washing and carry out cross sectional restoration with resin mortar etc.

(3) The new concrete surface performs middle pressure washing in order to remove the exfoliation agent of a mold.

2 Care of Take

(1) Although itmaybesomewhatmoist, make it dry as much as possible after a flush.

(2) Refrain from construction in case of rainy weather snowfall and wait for get wet pulls after rain and snowfall until surface.

3 Application of HYDROPROOF HT-HX (in the Case Only of HT-HX)

Although it applies until it is saturated with either a roller or brush and spray.

(1) Since suction is intense apply especially a brittle part in large quantities.

(2) In the case of a roller as drawn through upwards from the bottom run after and apply it twice.

(3) In the case of a spray run after with apply it twice so that it may be made low pressure possible made fog and may be no futility.

(4) The amount of applications is per 1 ㎡ / 150-300cc and an average although based on the situation (many years past degradation and density) of a building. Carry out and apply 200cc.

(5) When especially the surface takes repellency apply HT-GT after an HT-SP application instead of HT-HX.

4 Notes

When a summer direct rays hit and the temperature of an application side is going up (Surface temperature avoids Centigrade 50 degrees C or more of applications and applies from a shadow portion.)

5 General Protection

(1) Protection for 24 hours after a HYDROPROOF application so that rain, snow, etc. may not start.

(2)an application side snow and rain take care for 12 hours.

6 When HYDROPROOF Adheres to Glass Aluminum Sash Etc.、

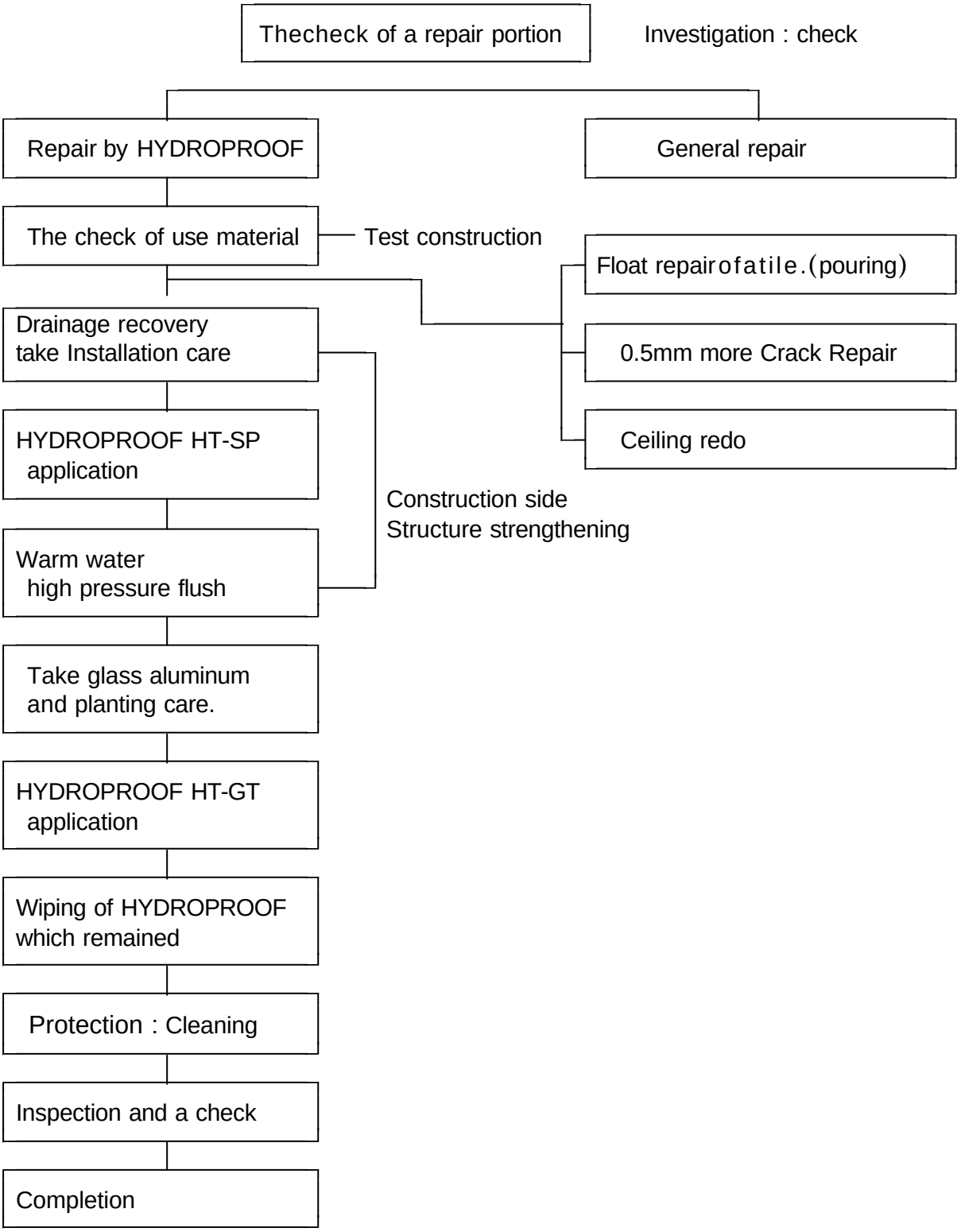
(1) If it is immediately after wipe.

(2) When it gets dry has become a white crystal attach water to sponge brush and rub against it carefully.

7 Prior Test

Kind of new mortar concrete HYDROPROOF permeates and there are what changes a color somewhat, and a thing not changing**.** Since it may discolor black under the influence of a mixture agent etc please be sure to carry out a prior test before real construction on the spot.
Please be actually sure to carry out a prior test before construction on the spot.

The repair method of a tile side



Attention on brick tile construction

1 Washing
An application side is washed.(When dirt is excessive hight pressure washing).

2 Take care
Although the construction side may be somewhat moist it is made to dry after a flush.

3 HYDROPROOF HT-HX application
Although applied with either of the roller brush sprays、
(1) Make a mortar portion permeate enough.
(2) In the case of a roller as drawn through upwards from the bottom run after and apply ittwice.
(3) Wipe the tile surface with a damp towel within 5 minutes immediately after an application.
(4) Good, when requiring repellency also at HT-GT

4 When a summer direct rays hit and the temperature of an application side is going up (Surface temperature avoids Centigrade 50 degrees C or more of applications and applies from a shadow portion.)

5 General Take Care
(1) take care for 24 hours after a HYDROPROOF application so that rain, snow, etc. may not start.
(2)an application side snow and rain take care for 12 hours.

6 When HYDROPROOF Adheres to Glass Aluminum Sash Etc.、
(1) If it is immediately after wipe.
(2) When it gets dry has become a white crystal attach water to sponge brush and rub against it carefully.

7 Prior Test
Kind of new Brick tile HYDROPROOF permeates and there are what changes a color somewhat, and a thing not changing. Since it may discolor black under the influence of a mixture agent etc please be sure to carry out a prior test before real construction on the spot.
Please be actually sure to carry out a prior test before construction on the spot.
The tile which cannot permeate easily permeates a mortar portion a crack and a pinhole is raised enough.Please wipe the other surfaces with a damp towel within 5 minutes after an application the passage of (3) of 3.

The construction method of a new stone

Clening・Washing	The dryclothremovesthegarbagedust of a construction sideetc. *When it washesmakeitdrymorethan"1hour."
⇩	
Application	It appliessothatHYDROPROOFHT-SP may be stuffed into the fully dried construction side with a roller. The field which cannot be applied with a roller is fully applied with a brush.
⇩	
Dryness	It ismadetofullydry. Before HT-GT application carry out natural more dryness of by winter for 6 hoursinsummerforatleast3hours.Moreover,youmaycarry out forcible dryness with a fan a ventilation drier etc.
⇩	
Finish	It appliessothatclothetc.maybeinfiltratedintotheconstructionside dried completely and HT-GT may be rubbed intoit.*Itistheglossof a mirror finish portion and you may use it for business.

The construction method of an old stone

Washing

HYDROPROOFHT-SPwithasterilization action is fully applied to a construction side andiscarefullywashedafter5minutes.
When not becoming beautiful once it carries out repeatedly any number of times until it becomesbeautiful.
* middle pressure washing although it changes with the grades or the quality of the materials of degradation.
Pressure standard 20 - 70 kg/㎠

⇩

Dryness

It is madetodry more than the minimum"1hour."

⇩

Application

It applies so that HYDROPROOF HT-SP may be stuffed into the fully dried construction side with a roller.
The field which cannot beapplied with a roller is fully applied with a brush.

The 1st time
⇩

Dryness

It is madetofullydry.

⇩

Application

It applies so that HYDROPROOF HT-SP or HT-HX may be pushed in with a roller.
The field which cannot beapplied with a roller is fully applied with a brush.
Moreover,HT-HX isapplied to the intensestone of degradation once again after dryness.

The 2nd time
⇩

Dryness

It is madetofullydry.
Before HT-HX and HT-GT application carry out natural more dryness of by winter for 6 hoursinsummerforatleast3hours.Moreover,youmaycarry out forcible dryness with a fan a ventilation drieretc.

Finish

It applies so that cloth etc. may be infiltrated into the construction side dried completely and HT-GT mayberubbed intoit.*Itistheglossofamirrorfinish portion and you may use it for business.

The shape generality of HYDROPROOF HT-SP

Main ingredients	Alkaline metal salt ＋ Silicic acid compound ＋ High reactivity inorganic catalyst	
Specific gravity	1.03	(Centigrade 20 C)
Surface tension	32 dyn/cm	(Centigrade 20 C)
PH	12.0	（Strong alkalinity）
Solvent	Water	
Viscosity	3 cps less	
Appearance	Transparent and colorless or a translucence liquid	

If HYDROPROOF HT-SP is applied to concrete and a mortar side it will permeatedeeply in capillary tube space etc. The isolation alkali and the chemical reaction in
concrete and mortar are started.And the reaction generation thing turns into a newcompound which changed to the canal nature substance and had repellency.Therefore the canal nature crystal by which grant generation was carried out in alkalinity turns a surface into the neutrality concrete precisely and there is astrengthening action. Moreover it can painttoaconstruction side.
Although HYDROPROOF HT-SP can be constructed if the subject is moist since itis a water base please prevent rain and snow after construction for winter 24hours for summer 12 hours. HYDROPROOF HT-SP usually permeates concrete about 2mm（based on the density of a subject and many years past）.
The repellency layer which has breathability in the most is made and the water absorption prevention is discovered. Especially unlike what makes a film on the surface and takes out the waterproofing effect to it and a water-soluble silicic acid compound there is a remarkable difference in durability and breathability is also held further.

The shape generality of HYDROPROOF HT-GT

Main ingredients	Alkaline metal salt ＋ Silicic acid compound ＋ High reactivity inorganic catalyst	
Specific gravity	1.03	(Centigrade 20 C)
Surface tension	32 dyn/cm	(Centigrade 20 C)
PH	12.8	（Strong alkalinity）
Solvent	Water	
Viscosity	3 cps less	
Appearance	Transparent and colorless or a translucence liquid	

If HYDROPROOF HT-GT is applied to a natural stone brick and the plster stucoo surface it will permeate in capillary tube space will make a repellency layer to the most and will discover the water absorption prevention effect.With some which make a film the surface and take out the waterproofing effect to it especially there is a difference remarkable in the durability and opposite contamination nature and there is the mold prevention effectfurther.

The repellency effect on the building surface 12 hours after HT-GT reacts with carbon dioxide.

Therefore, please avoid that after construction requires rain water.There is a possibility that a white spot may come out to the stone surface of a dark color especially with few water absorptivities.Be careful of applying too much.

Since HT-GT contains water oxidization potassium, solution is strong alkalinity.Please take care not to disperse in an eye, the skin, clothing, and the other surroundings.It adheres to aluminum or glass.

When you disperse, please wash out strongly immediately with a lot of water.

Since HT-GT contacts the carbon dioxide in the atmosphere and it begins to become muddy please seal after use immediately. since it corrodes a lead zinc tin aluminum etc should avoid contact if it is kept with the seal container at least 12 months is stable.

The shape generality of HYDROPROOF HT-HX

Main ingredients	Alkaline metal salt ＋ Silicic acid compound ＋ High reactivity inorganic catalyst	
Specific gravity	1.03	(Centigrade 20 C)
Surface tension	33 dyn/cm	(Centigrade 20 C)
PH	11.9	（Strong alkalinity）
Solvent	Water	
Viscosity	3 cps less	
Appearance	Transparent and colorless or a translucence liquid	

If HYDROPROOF HT-SP is applied to concrete and a mortar side it willpermeate deeply in capillary tube space etc. The isolation alkali and the chemicalreaction in concrete and mortar are started.
And the reaction generation thing (crystal) turns into a new compound which changed to the canal nature substance and had repellency.
This crystal also prevents the leakage of water from the hair crack below 0.3mm width. Although HYDROPROOF HT-HX can be constructed if the subject is moist since it is a water base please prevent rain and snow after construction for 48 hours.
HYDROPROOF HT-SP usually permeates concrete about 2mm (based on the density of a subject and many years past).
The repellency layer which has breathability in the most is made and the water absorption prevention is discovered. Especially unlike what makes a film on the surface and takes out the waterproofing effect to it and a water-soluble silicic acid compound there is a remarkable difference in durability and breathability is also held further.

The performance test of HYDROPROOF HT-HX

A] The experimental purpose and range

Water absorption of concrete and the qualityofastoneandthefollowingcharacter of HYDROPROOF HT-HXaiming at degradation prevention were examined based on ASTM and ORF.

1. Rate water absorption: 24-hourimmersed. 5-hour boiling ASTM C-67 Section 7
2. Amount water absorption: ASTM C-67
3. Freeze dissolution resistance: ASTM C-666
4. Promotion Season: ASTM C-23-69,E-42-65
5. Efflorescence: ASTM C-67 Section 10
6. Pollution resistance : ORF Method
7. Coarse particulate proof: ORF Method
8. Damage salt water: ASTM C-666 5% solutionuseofsodiumchloride

The amount of applications to it is 1 gallon per 150 ft^2 with the concrete from redy mixed concrete.Moreover take care the applied sample 50% of humidity and 20 degrees C for 6 weeksbeforetest implementation.

B]The resultofanexamination

1. Rate Water Absorption

Three samples processed by HYDROPROOF HT-HX and three non-processed samples were dipped underwater for 24 hours and wereboiledimmediately after for 5 hours.

	Samples No.	24hours dips flooded	5hour boiling
Nonprocessing	1	6.5	6.9
	2	6.5	7.1
	3	6.3	7.0
	Average	6.4(100%)	7.0(100%)
HYDROPROOF - HXprocessing	1	1.0	1.4
	2	1.0	1.4
	3	0.9	1.1
	Average	1.0(16%)	1.3(19%)

2 Amount Water Absorption

It is the result of being immersed for 1 minute and obtaining an examination sample underwater for the purpose of measuring the amount of water absorption immediately after touching water for this examination.

	Sample No.	Amount Water Absorption(g)	
No processing	1	3.94	
	2	3.80	
	3	3.98	
	Average	3.91	(100%)
HYDROPROOF	1	0.01	
HT-HX processing	2	0.01	
	3	0.02	
	Average	0.01	(0.3%)

3 Freeze Dissolution Resistance

Six samples which are processing and not processed were immersed underwater 0 to 40 degrees F "-18 degrees C to 4.4 degrees C" were repeated for environmental temperature every 4 hours and change of the appearance of each sample was recorded.

The number times of a repeat freeze dissolution	Sample	Observation
42	Noprocessing	The surface collapsed for a while. (light spalling)
	processing	Abnormalities are hardly seen. (light spalling)
63	Noprocessing	Although most angles are perfect the crack of a degree is seen to the center from the end in the middle.
	processing	Abnormalities are hardly seen.
84	Noprocessing	Most of ends and angles have intense collapse and a crack.
	processing	Slight collapseandahairlinecrackareseen along anend.

1. Weathering Promotion

Carbon arc light is continuously applied to a sample and water is poured on it with automatic spray equipment every 18 minutes.This repetition was continued for 300 hours.What was used for the rate examination of water absorption of 1.was reused for the sample burned to this examination.Therefore, measurement of the rate of water absorption was also carried out simultaneously with Weathering examination.

ProcessingSample	Rate water absorption before Weathering examination		Rate water absorptionafter Weathering examination	
	24hours dips flooded	5hour boiling	24hours dips flooded	5hour boiling
1	1.0	1.4	1.1	1.5
2	1.0	1.4	1.1	1.5
3	0.9	1.1	1.1	1.3
Average	1.0	1.3	1.1	1.4

2. Efflotrscence

The sample was immersedinsulfuric acid soda 5% solution for seven days and change of appearance was observed.(Although brick should originally have been examined by being above methods were taken in order to promote shift of the metal saltinconcrete)
Seven days after being immersed although efflorescence is looked at by all no processed samples efflorescence is hardly looked at by the sample processed by HYDROPROOF HT-HX.

6. Pollution Resistance

Whereitwashed after blue ink wasdropped at the sample surface and passing 1 minute in order to measure the resistance was observed.
remains of inknoprocessedfieldare about 5 times for a diameter toitofaprocessingside the trace of the ink of a processing sideisnotacceptedbytheappearancetop.

7.Tolerance Coarse Particulate

Wire brush with a fixed rotation speed wasapplied to the sample for 10 minutesandweight was measured.

Sample No.			Reduction in weight(g)
No processing	1		0.066
	2		0.070
	3		0.071
		Average	0.069 (100%)
processing	1		0.011
	2		0.011
	3		0.013
		Average	0.012 (17%)

8. Resistance damage from salt water

It is the method of a freeze dissolution resistanceexamination and the sample was soaked in 5% of salt solution instead of fresh water and the appearance of the sample at thetime of 42 cycle end wasobserved.

Freeze dissolutioncycle	Sample	Appearance
42 times	Noprocessing	Verysevere disintegration ; 75% ormoreonthesurfaceofasamplebecamepowder.
	processing	Degradation slight into the portion of an angle was seen and about 5% of the wholesurface areahasdeteriorated considerably.

B] **Conclusion**

It became clear that the limit is also shown with the physical properties advantage with which concrete is strengthened by HYDROPROOF HT-HX from the result of this examination.

1. The absorptivity was a 81% decrease to the non-processed sample in 84% decrease (24hour immersed) 5hour boiling.

2. By the processed sample the amount of water absorption was 0.3% of a non-processed thing.

3. The resistance effect of HYDROPROOF HT-HX wasaccepted to freeze dissolution.
4. The rate of water absorptionafter the promotion examination of weather meter 300 hours does not almost have a change with the rate of water absorption in front of an exam.Therefore it isadmitted thatthere is weather durability.

5. When it processes by HYDROPROOF HT-HX, a remarkable effect is in waterproofing of efflorescence.

6. Sufficient effect of HYDROPROOFHT-HX is accepted to contamination.

7. Coarse particulate nature has a little less than 6time effect to processing.

8. A remarkable effect is accepted even if the effect of HYDROPROOF HT-HX to damage from salt water passes through the cycle of freeze dissolution.

Rate measurement comparison water absorption

April 1, 1992

MitsumisikagakusansiLtd.researchinstitute

Sample		Mortar (g)	Application natural dryness dayafter (g)	Sealm aterial after application (g)	Immediately after water absorption	Amount water absorption (g)	Rate water absorption (%)
1	Plain mortar	134.4	134.4	136.9	140.1	4.2	3.06
2	Hydroproof HT-SP	134.1	134.2	138.7	140.8	2.1	1.51
3	Hydroproof HT-HX	131.1	131.3	134.2	135.5	1.2	0.89
4	A Co. PRF	129.7	130.2	132.5	135.5	3.0	2.26
5	B Co.X-100	132.7	132.8	135.2	138.0	2.8	2.07

Examination object: JISstandard mortar 50 × 50 × 25mm

Sample application: It runsaftertoasurfacesideis2timescoating.(5minuteinterval)

The amountof1timeapplications 20 gr／㎡ ～ 300 gr／㎡

Are immersed: ① at the next day about 5mm width is applied for end of the mortar circumference and an application surface with wax (for water absorption prevention)

② It puts into a plastic bag and is immersed to underwater seven days aftersealandonewholedayandnight.

Measurement: Underwater immersing back extraction and surface adhesion water are wiped with cloth, and are measured immediately after.