# *CONCRETE PENETRATE SEALER (CPS)-NANO GRADE*

## Low Cost Waterproofing Solutions

***CONCRETE PENETRATE SEALER (CPS)*** solution was originated in Nevada, U.S.A, in early 1910. The aim at that era was designed to protect concrete from the airborne chemicals (salts) used in the deicing procedures in the northern United States.

Subsequently its performance as a waterproofing product, as a concrete sealer and hardener, as well as its ability to protect concrete from airborne pollutants and chemicals harmful to the long life of concrete, has made ***CONCRETE PENETRATE SEALER (CPS)*** unique in its price/performance when compared with traditional alternatives.

***CONCRETE PENETRATE SEALER (CPS)*** is a colourless, odourless, non-toxic, non-caustic, non-flammable, deep penetrating concrete treatment.

**ITS TECHNOLOGY IS SUCH THAT IT REPLACES, AND OUT-PERFORMS MANY OF THE EXISTING SEALERS, MEMBRANES AND COATINGS IN MOST APPLICATIONS.**

## Main Features

- Penetrates normal concrete by more than 20 mm.
- Hardens the penetrated concrete.
- Protects the concrete from deterioration by chlorides and airborne pollutants.
- No change to the features of the concrete, i.e. slip resistance and aesthetics.
- Inhibits the ingress of oils, greases and light acids.
- User and environmentally friendly.
- Has a life expectancy similar to concrete.


PHOTO: COMPARE WITH TREATED & UNTREATED DIFFERENCE

## HOW DOES IT WORK

Whilst there are many sealant available in the market, some which sound similar, there is a history to ***Concrete Penetrate Sealer (CPS)*** which has proven the claims made for this product to have substance in the long term. The design concept of the product has given ***Concrete Penetrate Sealer (CPS)*** a multiplicity of applications. Where, with other systems a number of products have to be used to achieve an objective, ***Concrete Penetrate Sealer (CPS)*** can achieve most objectives with one application. As well as penetrating deeply into the concrete, it sets up a long term pore blocking action which creates its own hydrophobic barrier to water penetration. At the same time it bonds with the particles of the penetrated concrete causing the penetrated area to harden. By the pore blocking action it densifies the concrete without affecting the strength

characteristics of the original concrete design. No visible change takes place to the surface, therefore the application of aesthetic finishes such as tiles, paint or screeds are not affected.

## COST EFFECTIVENESS

***Concrete Penetrate Sealer (CPS)*** application costs are well below those of reasonable quality membranes and have the added advantage that no protective screed is required. This creates quite interesting price differences, resulting in cost savings in the structure.

This different approach has enabled small design changes in certain structures which also contribute, substantially, to the overall cost savings.

## APPLICATION METHOD

***CONCRETE PENETRATE SEALER (CPS)*** is applied by brush, roller or most preferred is the spray method, at a rate of 3 ㎡ per liter, to a slightly damped surface. The surface should be pre-wetted when it was too dry. It is normally applied to the hydrostatic side.
It can also be applied on the negative pressure side. For best performance, the concrete should be at least 7 to 28 days old, to achieve optimum penetration.

**AFTER APPLICATION IT IS ALLOWED TO DRY FOR AT LEAST 2-4 HOURS AND IS THEN WATERED THOROUGHLY.**

All glass, aluminum and wood stained areas should be protected during the spraying and watering procedures. Application should be avoided during high wind conditions.

The best results are achieved when used on reinforced concrete. Application to other materials should be discussed prior to application.

All oils, greases, paint or failed membranes and coatings should be completely removed prior to application. This can be done by the application of *water-based* cleansing products such as ***Pro-Cleaner.***

***CONCRETE PENETRATE SEALER (CPS)*** should not be applied in temperatures lower than 5℃or higher than 45℃. In fact it should not be applied if there is a likelihood that because of concrete temperature the product may evaporate before it penetrates.

**THE ONLY SITE INTERFERENCE IS DURING THE APPLICATION AND THE FIRST WATERING PERIOD. AFTER THIS THE SURFACE IS OPEN TO HUMAN OR VEHICULAR TRAFFIC**.

Although ***CONCRETE PENETRATE SEALER (CPS)*** has a wide range of uses, each structure has its own unique problem, which will require the use of ancillary products to achieve the total result required. Areas such as cold joints, expansion joints and shrinkage cracks at the slab/parapet interface are examples where a system approach would be required.

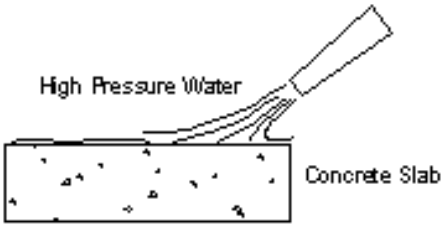
The application of ***CONCRETE PENETRATE SEALER (CPS)*** is limited to Approved Applicators, and no guarantees will be issued unless done by currently Approved Applicators.

On normal concrete, ***CONCRETE PENETRATE SEALER (CPS)*** should be successful within a seventy-two hour period. However some materials such as screeds, plaster, low quality concrete or concrete blocks may take a little longer to perform due to the size of the voids within the material.

## OPERATION PROCEDURE

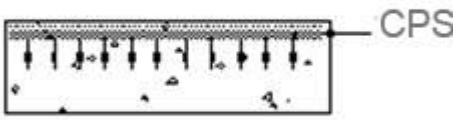
Step 1

Rinse with high pressure water (no puddle)



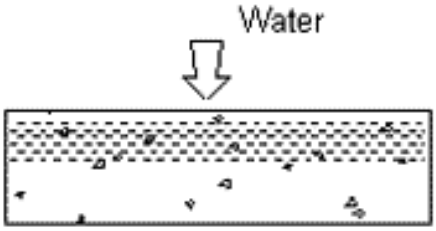

Setp 2

Spray **CPS** to the surface, **CPS** penetrates into the concrete



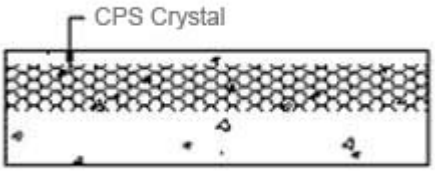

Step 3

After 30mins, spray fresh water onto the treated area. **CPS** will be penetrated into a much deeper layer




Step 4

After 21 to 28 days, chemical reaction (crystallization) is fully completed




## TECHNICAL SPECIFICATION

| | |
|---|---|
| Toxicity | Nil |
| Odour | Nil |
| Flammability | Nil |
| Boiling Point | 100 deg. C |
| Freezing Point | 0 deg. C |
| Thinning | Not necessary |
| Solubility | 100% in water |
| Viscosity | approx. 7 centipose |
| PH value | 10.3 |
| Specific Gravity | 1.13 at 25 deg. C |
| Vapours | water only |
| Colour | transparent, colourless after drying |
| Eements Present | Na, Si, Fe, Ni, Cu, Zn, Zr. Major constituent – sodium silicate |
| Hazard Data | No flash point, non-explosive, classed non-flammable, Hazardous chemical – sodium silicate 74% |
| Health Hazards | Oral: none, Skin: some irritation over long exposure, Eye: severe irritation (wash immediately), Inhalation: none |

SEE THE **MATERIAL SAFETY DATA SHEET** FOR FURTHER INFORMATION.

## COMMON QUESTIONS

Effects of UV – None. ***CONCRETE PENETRATE SEALER (CPS)*** has effectively sealed in the first 20~30 mm of the concrete. On the surface, pore-blocking polymers, which are subject to ultraviolet degradation, will bio-degrade over time. This is not a problem, as there is 20~30 mm of protection present internally.

Puncture Resistance – ***CONCRETE PENETRATE SEALER (CPS)*** has hardened the penetrated area of more than 20mm. A puncture of more than this depth would probably fracture the concrete and repair would be necessary anyway. This is why ***CONCRETE PENETRATE SEALER (CPS)*** is ideally suited to high traffic conditions.

Elasticity - ***CONCRETE PENETRATE SEALER (CPS)*** is totally compatible with concrete, which makes it react in the same way as the concrete. This makes it quite unique when compared to alternative traditional methods. New thermal stress cracks should not occur after treatment, however if severe thermal stress does cause new cracks then ***CONCRETE PENETRATE SEALER (CPS)*** should reseal automatically.

Bonding - ***CONCRETE PENETRATE SEALER (CPS)*** will increase the bond strength by 25% (tensile strength improves by 53%). This bonding is important when addressing spalling repairs, or the cold joint which can occur in parapet pours.

Coatings - ***CONCRETE PENETRATE SEALER (CPS)*** can be coated with many materials such as screeds, membranes, coatings, paints, plaster, tiles etc. The only precaution is to make sure that all excess silicates have been removed from the surface during watering process.

Durability – The known performance life is over 70 years to date. However the design concept and the bio-chemical reactions are such that academics familiar with these concept and the performance of the product believe there is a possibility the product should have a life similar to the concrete. This belief is based on the fact that once the hydrophobic seal and the deep penetration have taken effect there is no environmental influences, which should be able to destroy that seal. This, of course, excludes leaks caused by structural faults or mechanical damage.

## APPLICATIONS

***CONCRETE PENETRATE SEALER (CPS)*** is used in each of the following applications. To achieve a total system result to meet the user objectives, ancillary products are used, but are not discussed in this brochure. These ancillary products are of a similar high quality and carry similar warranties of performance.

### Car Parks

***CONCRETE PENETRATE SEALER (CPS)*** will seal thermal stress cracks up to 3 mm wide, harden the surface to that of granite to the depth of penetration, will stand high levels of thermal stress. One example is concrete temperature of 65℃ dropping to 18℃ with rain within a 30 minute period. The concrete was power float finished and no additional material was used.

### Swimming Pools

***CONCRETE PENETRATE SEALER (CPS)*** has been used on both RC pools and Shotcrete (Gunnite) Pools. Special procedures at the corners and interfaces were instituted. Special grout was used when applying the tiles. A full water test must be done before the tiles are applied particularly when Shotcreting is used. The surrounding desk system has also been designed to give no problems. The use of chlorine in fresh water pools is often overlooked as the source of problems in the long term and this is the key to the success of the Pool System.

### Tanks

This system covers water tanks, aquariums and other water holding vessels. Because ***CONCRETE PENETRATE SEALER (CPS)*** is non-toxic, it is ideally suited for these vessels. Similar techniques as swimming pools are used. The

outside of water tanks is often overlooked, and should be viewed from the concrete protection's point of view.

## Roofs

Use of the ***CONCRETE PENETRATE SEALER (CPS)*** System approach on flat RC roofs, has resulted in the cost savings of more than 30% than in the cost of the roof structure. ***CONCRETE PENETRATE SEALER (CPS)*** has enabled small design changes to standard procedures, which remove the potential for problems in the traditional approach. All elements of the roof such as the slab edges, interfaces, plinths, parapets and drains are included in the roof system.

## Basements

The development of new technologies and construction design have enabled the development of low cost basement system in water tables. Basements have the problem that once completed there is virtually no guaranteed way to fix them if something goes wrong. So special care has been taken in the design of the basement systems.

Photo: Port facility in Germany➢

## Bathroom / Toilets

A traditional source of pain for contractors and developers has been overcome by the development of a system, which guarantees no problems. All elements such as the slab and drains are treated to ensure success.

## Concrete Protection

Many walls in the building are allowed to stand for long periods before the paint is applied. This allows the ingress of pollutants, which will cause the paint to deteriorate. By applying ***CONCRETE PENETRATE SEALER (CPS)*** to protect the concrete, this will have the effect of stopping the pollutants from permeating the concrete. The development of long life paints will give long-term cost / benefit performance.

## Flooring

Because of its ability to harden concrete to that of granite to a depth of 20-25mm ***CONCRETE PENETRATE SEALER (CPS)*** makes an excellent hardener. Unlike most flooring system which place a hard material on the concrete or into the top 1-2 mm, ***CONCRETE PENETRATE SEALER (CPS)*** hardens the concrete itself. All other methods rely on the bonding ability of the flooring material. Concrete is good material in its own right.

***CONCRETE PENETRATE SEALER (CPS)*** simply enhances concrete's own capabilities. It does not try to compete with materials such as epoxy screeds, which are expensive, but provides a low cost alternative where the objectives of the end user can be met at the right price.

## Non-Standard Applications

***CONCRETE PENETRATE SEALER (CPS)*** has been used in many non-standard situations where the "fix" required is going to be very expensive or disruptive. The key to the chemical reaction of ***CONCRETE PENETRATE SEALER (CPS)*** is the availability of free calcium ions. It is unusual for these not to be present. Together with these ions is the ability of the applicator to ascertain the path of the water. If both of these conditions can be met, it is likely that a result will be achieved. Some examples are, cracks underneath tiles, overflow drains in the swimming pools, retaining walls behind fill, concrete pipes inside beams are a few examples where ***CONCRETE PENETRATE SEALER (CPS)*** has been successful.

The use of ***CONCRETE PENETRATE SEALER (CPS)*** to rehabilitate "powdering" plaster, which is debonding, has a degree of success. Similarly with block walls where the quality of the blocks has allowed leaking to occur.

The key to the success of these non-standard applications has been the ability to analyse the problem correctly.

## ***CONCRETE PENETRATE SEALER (CPS)*** when used correctly, is the KEY to low cost waterproofing solution

# 混凝土防水滲透液(納米級)

## 產品介紹

混凝土之基本材料為水泥粉，水和砂子。水泥粉本身是鹼性，跟水混合後便立即發熱，故此在凝固時便有收縮裂紋和熱應力等問題。而『**混凝土滲透防水液(納米級)**』是一種鹼激活之化學物品，遇上水泥中之鹼性物質，產生一種化學變化，首先使鹼跟『混凝土滲透防水液(納米級)』形成果凍狀*(Aero-gel)*之不透水層(在處理面之小空隙)，在 21~28 天後，果凍狀物質便變成固態晶體，永遠藏在處理面，令水，油，酸，鹼，不能透過，成為一永久之防水層存在混凝土內。

防水功能只是『**混凝土滲透防水液(納米級)**』功能之一，基本上它是一種混凝土保護劑，能令混凝土由製造伊始，便不會受內部和外界之因素影響而被破壞。例如其強度增加，硬度增加，防塵，防雨雪，防鹼硅現像，防老化和風化，加上施工異常方便，故此被受用家歡迎。

## 特別用途:

| | |
|---|---|
| ***『混凝土滲透防水液(納米級)』***可使用在所有混凝土的材料上，如水泥、水泥磚、混凝土預製件等。它可增強任何混凝土的坡度表層，有防塵及防水作用，其最突出之處是能將新和舊的混凝土連結起來而不脫層。 |  |

## 優點

- 不改變或影響混凝土表面的顏色和結構。
- 無需與其它原料混合，即可使用。
- 使油漆壽命延長約 300%。

- 減低腐蝕、灰塵及輪胎痕。
- 增強混凝土和其表面層的密度及硬度。
- 清除路上冰雪時比較容易。
- 防止細菌和霉產生。
- 增強和保護油漆、水泥表層、階磚、和混凝土之間連結性。
- 對剛脫模板之混凝土塊，兼且在無壓力情況下，只需施工於處理面一次。
- 較市面任何防水劑更有效，能永久防水。兼且油污，油脂，酸性等物不會侵入。

使混凝土均勻養護，防止髮狀輻裂和局部乾燥產生。新造混凝土不用澆水養護。

**物理情況**

| | | | |
|---|---|---|---|
| 毒性---無 | 氣味---無 | 燃燒性---無 | 沸點---100℃ |
| 稀釋度---不必 | 結冰損耗---無 | 結冰溫度---0℃ | 所需清理溶液---水 |
| 聚合作用---優良 | 環保損害---無 | 顏色--透明，乾後無色 | 使用時氣味--極輕微 |
| 處理面積： | 粗糙面---約3㎡/公升 | 光滑面--約 6~7 ㎡/公升 | 儲存年限『三年開瓶後』 |

***注 意*** 本產品絕對不適用於含琉磺量高之污染劣質水泥粉, 例如: #425 標號以下水泥製品

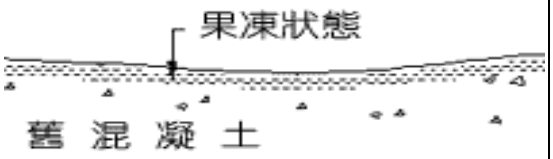
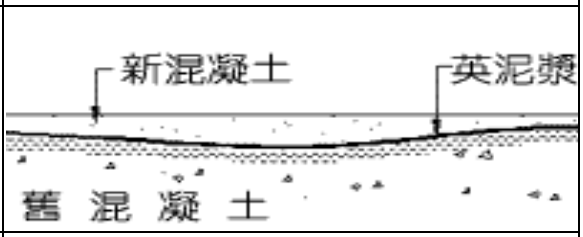
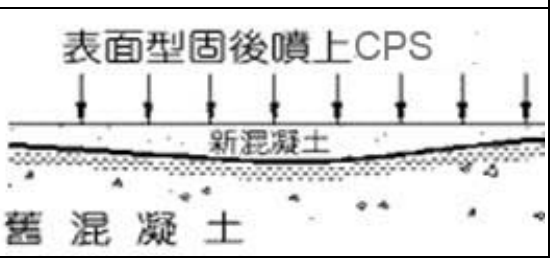
# 新舊混凝土接合法

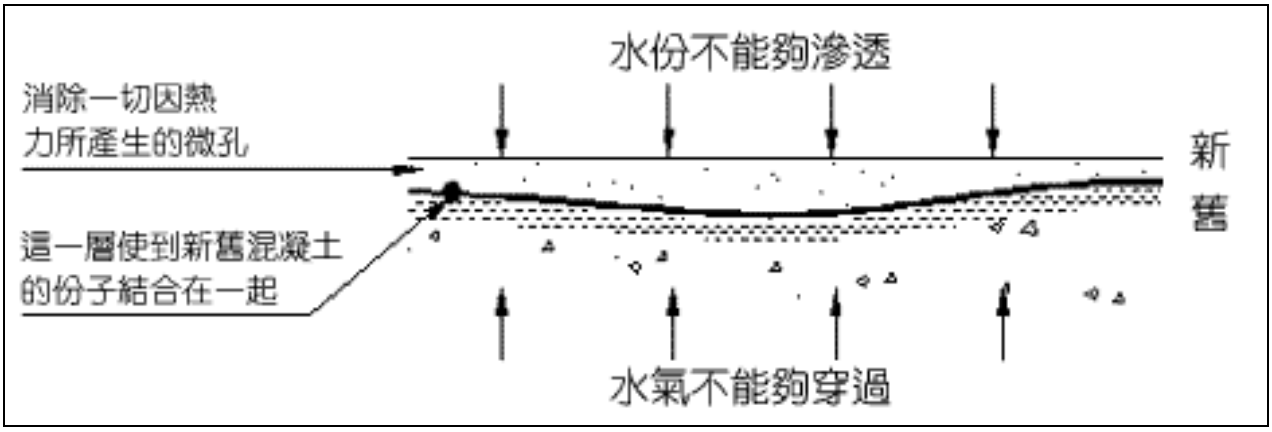
**適用於樓齡長需再維修之外牆，令新舊混凝土更穩固**

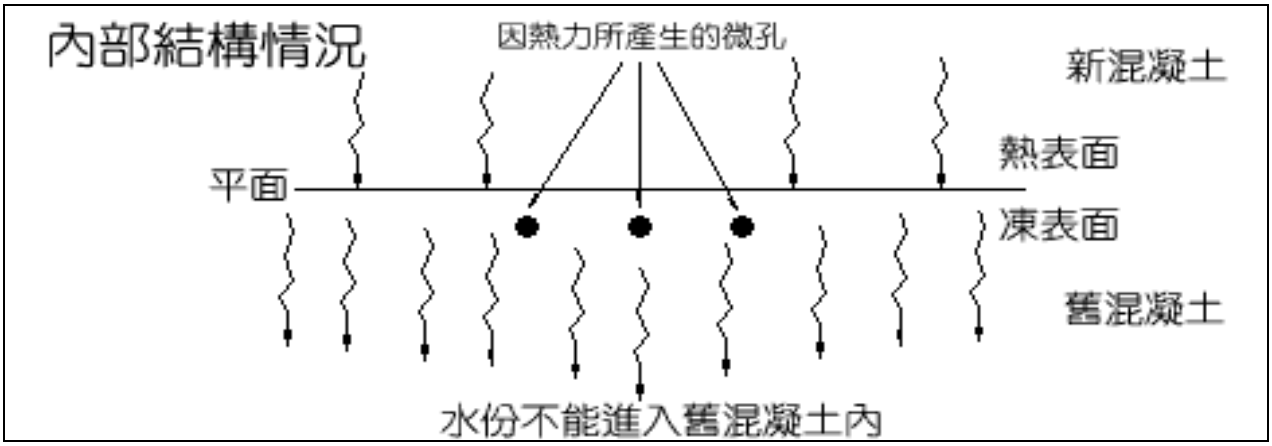
特點:

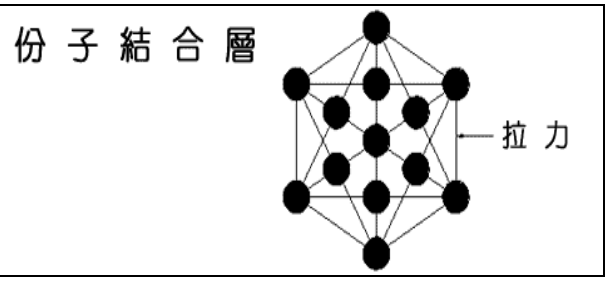
- 是水基性（環保）
- 更穩固地張新舊混凝土結合，節省再維修之機會。
- 維修後之混凝土更有防水之效能。

**簡單施工程序**

| | |
|---|---|
| 把「**混凝土防水滲透液**」噴上施工面，會自動滲進混凝土內。化學變化令舊混凝土內之鹼性混合成晶體狀 |  |
| 即時塗上新混凝土令新舊混凝土之鹼性結一起。 |  |
| 隔一日，噴上「**混凝土防水滲透液**」於表面上後，完成。 |  |




| | |
|---|---|
| 新舊混凝土內之份子，因**混凝土防水滲透液**之特性，穩固地張新舊混凝土結合，較傳統之工藝更耐用。 |  |

End