

台灣盛隆建材股份有限公司

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SL-669

單液型聚胺脂 親水性發泡止水劑



地下結構止水填補材

Underground Structure Sealing Complement Material

『產品簡介』 Introduction

我們經常可以從隧道、地下室及各種不同型態建築構造物上,發現諸多的漏水現象,然而一般(傳統式)都將漏水處打開成V-Cut狀,以速凝水泥等材料,覆蓋表面充填止水,然而這一類的施作工法,所達到的效果往往只能處理表面5~10cm的擋水效用,卻無達到一定程度上的深層填補和止水,在一段時間後又會再產生第二次或第三次漏水。

這是因為從隧道或構造物外側土壤內與地盤流出之地下水,經由裂縫、二次接縫、包泥處或蜂巢處等流出,止水行為若不能達到深層的固結與封填並加以阻擋,則將很難達到長久止水效能。 所以近年來建築業採用高壓灌注止水法,效果卓越,廣為建築界、營造業一些重大建設工程之業主接受;如地下鐵、衛生下水道、捷運系統等,甚至一般建築工地及民宅修護等。

Usually we can see may leaking phenomenon from tunnels, basements and various types of constructingstructures. However, general (traditional) disposing method is to open V-Cut shape on leaking positions, using materials such as quick-solidifying cement to do faces covering in order to seal water. But these kinds of construction often only reach the blocking effect of faces 5~10 cm disposing work, it could not getto a certain level of deep filling and sealing function. After a period of time, the 2nd or 3th leaking thus will be generated.

This is because the underground water from site, tunnels or outside soil of structure, flow out from cracks, second joint, earth covering places, or combs which could not reach deep solidifying or filling and blocking, permanent sealing effect will become hard to reach.

So in recent years, in construction the adverse high-pressure injection sealing work method is adopted which performs well, and also accepted widely by construction and architecture scopes on subways, hygiene drains, MRT systems, and even general constructing sites and houses maintenance.

『產品特性』 Product Characters

SL-699止漏劑為一種單劑型聚胺基甲酸乙脂MDI為基材之親水性發泡止水劑在與水作用後迅速膨脹填補裂縫或蜂巢等達到止水目的。

SL-669 leaking sealing agent is a kind of hydrpohilic foaming water sealing agent of single agent type which uses polyurethanes MDI as basic material. After reacting with water, it expands quickly to fill cracks or combs to reach sealing purpose.

由於漿液遇水後即產生化學反應,並產生二氧化碳氣體,造成體積迅速膨脹,產生較大膨脹壓力,並促進漿液二次膨脹,加大擴散範圍,最終交聯生成不溶於水的聚合體,即有一定彈性的凝膠體。

As to liquid meets water to generate chemical react, and also carbon dioxide air to make volume expand quickly and also bigger expansion pressure to push second expansion, broaden scope, ultimately generates the flexible polymer gel object which is not dissolved in water.

這類高效灌漿材料是其他化學漿液(如炳烯氨酰、水玻璃類、木質素類、脲醛樹脂類等)所沒有的優點,因此廣泛應用於土木工程建築中的錨固、加固、密封、止水等工程上。

This kind of high-effect injecting material has many merits which other kinds of chemical liquids do not have, such as polyscrylamide, water glass, lignin, ureaformaldehyde resin. So it is applied widely to civil engineering on anchoring, reinforcing, sealing and water sealing.

SL-669屬於MDI為主原料之單液聚氨脂系發泡止水漿材,可用於地盤改良,如砂層易塌陷流失地層,可先灌注SL-699與砂完全混合固化,形成一膠質彈性體,如開挖時不致造成砂層塌陷。

SL-669 belongs to singld liquid polyurethanes foaming water sealing material with MDI as main material. It can be used on site improvement, for example, for sand layer sinking and stratum ranning off, SL-699 can be injected and mix and solidify well with sand to form a gel flexible object to protect sand layer and avoid sinking.

SL-669屬於親水性、單液型發泡聚胺脂,與水作用後,迅速膨脹堵塞其裂縫,達到止水之目的;亦可與低量催化劑配合使用,依實際施工需要來調整發泡速度,以期達到止漏之功用。

SL-669 is hydrophilic, single liquid foaming polyurethanes. After reacting with water, it can expand quickly to block cracks to reach the purpose of water sealing. Also, it can be used with low quantity of accelerator, and the foaming rapid can be adjusted according to practical construction to reach water sealing purpose.

SL-699與水反應形成一止水膠體,具有止漏水及填補縫隙之功能,整個產品的特性如下:

SL-669 reacts with water to form a water sealing gel object which can seal water and fill cracks. SL-669 can mix with water with proportions of 1:1, 1:5, and even 1:12. The characters are as below:

優點 Advantages:

 本身產品黏度低,可使得灌漿設備管內不因黏度不斷提高而造成堵塞且容易施工、操作性佳, 亦可完全滲入細縫內。

Lower viscosity is better. The low viscosity product do not block equipment hose because increasing viscosity while constructing, easy to be operated, and can penertate into tiny cracks.

2. 與水互溶性很好,如此不易造成縫隙內有殘餘的水分存在,長時間會破壞發泡體,造成二次漏水。

Can be dissolved into water very well, so no left water in cracks. Residual water will destroy foaming after a period of time, and cause second leaking.

3. 反應性佳,與水反應約30~120秒完成膠化,3~5小時可完成硬化。

Good reaction. Colloid can be completed within $30\sim120$ seconds after reacting with water. Hardening can be finished in $3\sim5$ hours.

4.安定性佳,在開封後,可以在施工的時間內不會變壞;未開封時,產品可儲存長達半年以上不會變質。

Good stability. After opening, no deformation within construction period. While no opening, the product can be stored above 6 months without denaturalization.

5. 與混凝土接著性好,不會與混凝土脫層,完全膠著。

Good ropiness with concrete. No delamination with concrete. Completely adhesive.

6. 可與偏酸或偏鹼甚至海水的水質反應而不影響發泡體的物化性。

Can be react with acid-slanting or alkali-slanting even ocean water quality, and no affecting foaming physical properties.

7. 結構性強、韌性高,可長時間耐水。

Strong structure, good tenacity, can remain long time for water-resisting.

8. 有水壓式地下水流之裂縫注射,可配合催化劑使用,在3秒內形成泡沫,雨水接觸後2分鐘內,可完全膨脹及凝固。

The crack injection of water-pressure groundwater flow, can use with accelerator. Foam would be formed within 3 seconds. After touching water for 2 minutes, it can be thoroughly expansion and solidified.

缺點 Defects:

1. 灌注遇到水量太大,發泡後發現產品會收縮,如此使得發泡體未完全填滿縫隙,會造成二次漏水,因此可建議可於第一次灌注發泡完成後,再持續第二~三次灌注填塞發泡體內空隙,以降低乾縮現象,發泡體倍數約1~12倍左右,可於二次遇水膨脹後填補縫隙。

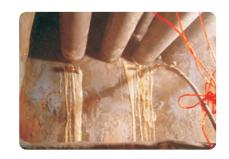
The product will contract, this makes foaming object can not fill cracks totally which causes second leaking. It is recommanded that after the complement of first injection and foaming, do 2nd and 3rd injection and filling to the cracks of foaming object to reduce dry and contracting phenomenon. The foaming multiple is about 1~12 which can fill cracks in second expansion with water.

2. SL-699止水完成後,溢出藥劑附著在壁面上很難清除,可以先以水噴濕,讓藥劑發泡完成後 再刮除乾淨,以免表面披土或水泥漆覆蓋修飾時,產生二次反應膨脹。

While finishing SL-699 water-sealing process, the overflowed medicament on wall surfaces is difficult to be rinsed out. To clean faces, spray water on it to make the complement of foaming then rinse it out. This is for avoiding second expansion while cloak or covering decoration of cement paint.









1.大底湧水現況 Plate water gushing



2.大速凝水泥急結凍水 Quick coagulating cement quick



3.高壓灌注斷水
High-pressure injection and water supply cut off

『應用範圍及用塗』 Appling Scopes and Purposes

1. 主要使用於伸縮縫止水、地盤改良,開挖時連續壁面包泥砂處,預防坍塌加固擋土、止水,窗框填縫不密實處填縫止水,預留筋止水,PVC管與混凝土交接處止水,使用於連續壁、隧道、箱涵、裂縫、地下室外牆、髮絲裂縫、窗框、內外璧水、庫港灣工程、頂板、環片止水等。

The product is mainly applied on expansion joint, site improvement, and disphrgam walls with covered sediment to prevent from collapsing, do strengthening work for blocking earth, and providing sealing function. Also, it can be used on diaphragm walls, tunnels, box culvert, cracks, outside walls of basement, haircracks, window frames, inside and outside walls, reservoir and harbor engineering, top boards, loop sealing...etc.

2. SL-699發泡成型後形成彈性橡膠體可適應於任何結構面止水。

After SL-669 emulisfing and foaming completed and make a shape, its elastic rubber object can accommodated to every kind structure faces sealing.

3. SL-699灌注完成填縫止水後,本身屬橡膠彈性體,再次遇水後產生二次膨脹填縫止水。

After SL-669 injection work finished to fill up cracks and water sealing, its rubber flexible object would generate second expansion to fill cracks and seal water while touching water.

『硬化特性』 Hardening Characters

止水劑與水的混合比例、溫度會影響凝結時間及強度和膠體乾縮現象甚鉅。水量多寡與凝結時間成 正比、與膠體強度成反比和膠體乾縮現象成正比;溫度高低與凝結時間成反比、與膠體強度成正 比;故於使用前一做簡單的測試、以發揮產品最大的功效。

The mixing proportion of sealing agent and water, and temperature will affect solidifying time, intensity, and drying and contracting phenomenon of gel object. Temperature is in inverse proportion to solidifying time, in direct proportion to sealing gel object. So a simple test before using is necessary for the product's maximum performance.

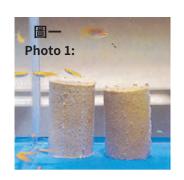
「物性」 Physical Properties

比重 Specific gravity g/cm3	≥1.10
黏度 Viscosity Brookfidld,cps(25°C,No.2/60rpm)	≥500
與水混合比,(重量比:SL-699/水) Mixing proportion with water, (weight proportion:SL-669/water)	1/1~1/12
膨脹率,倍數 Expansion proportion, multiple	1/12
混合時間,與80%水混合,秒 Mixing time, mix with 80% water, second	10/30
硬化時間,與80%水混合,秒 Hardening time, mixed with 80% water, second	100/120
操作溫度,°C Operation temperature	10~40
PH值 PH value	5.0~5.5

毒性:試體浸之蒸餾水7天,與生物體(小魚)試體,小魚於168小時後活動自如。 Toxicity:dip specimen into distilledwater for 7 days, and also creature object(small fishes). Fishes are still active after 168 hours.

鋼筋腐蝕性:氯離子未檢出 Steel bars erosion: no chlorine ion inspected

固成分:≥80% Solid ingredients:



▶無毒測試體放入魚缸內 168小時後,目視觀察 該魚活動自如。

Put nontoxic testing object into fishbowl. After 168 hours, fishes are still dynamic which is viewed by eyes.



▶ SL-699噴塗或灌注於 砂土面形成彈性膜

The flexible membrane from the spraying or injecting of SL-669 on sand surfaces.

『高壓灌注工法簡介』

High Pressure Injection Working Method Introduction

高壓灌注止水工法大致上是以使用高壓灌注機在3000~6000PSI或更高的壓力將聚胺脂發泡止水漿料注入結構體內。在結構體內與水作用發泡而將璧體內之孔洞與裂縫填補。

Basically speaking, high pressure injection sealing working method uses electric pump (3000~6000psi), or higher pressure to inject polyurethanes foaming sealing cream material into structure object. The material functions with water inside structure object which can fill cavities and cracks inside ground.

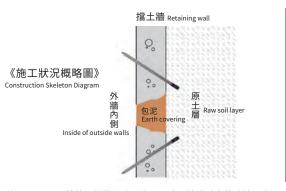
一、連續壁包泥漏水處理 Diaphragm wall earth covering leaking disposal:

地下室開挖時,如遇到包泥砂現象,暫時停止開挖,於包泥砂旁堅實面45度傾斜鑽孔,以 璧體厚度為準,鑽到璧體外側包泥砂缺口處埋設針頭(如璧體1M厚需埋設1M長針頭)鎖緊, 高壓灌注SL-669止水劑直到漿料由包泥處流出為止,或以探測器探測漿料已完全將包泥砂 漿處包裹固化,再以快乾水泥補平或封模板,灌注混凝土或無收縮水泥砂漿,硬化完成後 再往下開挖。

When start basement construction, once having earth and sand covering phenomenon, stop digging temporarily, then drilling holes with sloped 45 degrees next to the earth and sand covering places on firm faces. Take ground thickness as standard, drill till the breach and instlal pinheads (for example, 1m long pinhead is needed for 1m wall thickness). Lock well, do high pressure injection of SL-669 till sizing overflowing from earth covered place, or make sure that the sizing enfolding and solidifying the earth covered place completely. Dig earth and sand covered place to 2/3 depth, wash and clean inferior materials, place quick-drying cement or sealable film board, inject cement or non-contracted cement mortar. Continue after the hardening process is finished.



地下室連續包泥處理 Basement continuous earth covering disposal



注入SL-699到外牆內側將泥砂固化,預防開挖時砂土牆隨地下水湧入。 Inject sL-669 to the inside of outside wall to solidify sand, to prevent from the affluence of earth wall with groundwater while starting to dig.

混凝土結構 Concrete structure 水膨脹橡膠止水條 Water expansion rubber water-sealing strip Cracks filling materials

注入SL-699將伸縮縫填飽預防地下水渗入 Inject SL-669 to fill expansion joint to prevent from the affluence of groundwater

《施工狀況概略圖》

二、伸縮縫漏水處理 Expansion joint leaking disposal:

1.於伸縮縫最低處左或右5~10CM處傾斜45度角,鑽孔至結構體厚度之一半深度,循序由低處往高處鑽點孔距為10~40CM為宜,鑽至最高處後再一次埋設灌注針頭。

Aiming to the lowest left or right 5~10cm of expansion joints with sloped 45 degree, drill a hole till the half thickness of structure object. Drill by order, from bottom to top, or left to right, the distance between holes must remain 10~40cm. While drilling to the toppest place, install injecting pinhead again.

灌注針頭設置完成後,再以高壓灌注機由下往上或由左、右注入止水劑至止水劑於結構體表面滲出時再灌注其他針頭。

After finishing the installment of injection pinheads, inject water-sealing agent by high-pressure injection machine from bottom to top, or left to right. Till the water-sealing agent overflows from the faces of structure objects, then inject other pinheads.

3. 止水完成後,不可立即拆除灌注針頭。待1~2天觀察確定不漏水後再拆除針頭,並將孔洞 以封口膠填補。

While completing water-sealing work, it's better not to demolish injection pinheads immediately. After $1\sim2$ days, the pinheads could be demolished once make sure that no leaking occured. Then seal holes with sealing gel.

三、結構體龜裂漏水處理 Structure object chaps leaking disposal:

1. 請於裂縫最低處左或右5~10CM處傾斜45度角,鑽孔至結構體厚度1/2深度,循序由低處往高處鑽,孔距為10~40CM為宜,鑽至最高處後再一次埋設灌注針頭。

Please drill holes to $\frac{1}{2}$ depth of structure object, on the lowest left or right of cracks $5\sim10$ cm places with sloped 45 degree. Drill from the lowest to topest by order, $10\sim40$ cm hole distance is adequate. Install injecting pinhead while drill to the topest place.

2. 灌注針頭設置完成後,再以高壓灌注機由下往上注入止水劑至止水劑於結構體表面滲出時,再灌注 其他針頭。

While the installment of injection pinheads is completed, inject water-sealing agent by high-pressure injecting machine from bottom to top till the agent overflows from surface, then inject other pinheads.

3. 止水完成後,不可立即拆除灌注針頭。待1~2天觀察確定不漏水後再拆除針頭,並將孔洞以封口膠填補。

After finish water-sealing work, do not demolish injection pinheads immediately. Make sure that after 1~2 days, there is no leaking happened again then the pinheads could be removed. Use seal gel to fill cavities.



Drill cavities



Fix pinheads and lock tiely



Inject medicament



Clean off foaming leftovers on walls



Demolish pinheads



Fill cavities after demolishing pinheads

四、窗框漏水處理 Window fram leaking disposal:

1.確定漏水處在窗框下緣時,以標準制式窗為例,在窗框下緣兩邊窗角距離RC面5~10CM的位置埋設針頭,鑽尾對向窗角傾斜45度角鑽孔,下緣中間位置再鑽孔埋設一支針頭,另在窗框兩側離底座約25CM處,同樣距離RC面5~10CM的位置各鑽一孔埋設灌注針頭,鑽尾需對向下緣鑽孔。

(在灌注施工前請先作好適當之防護及防止污染之措施)。

Once sure the leaking parts are on under borders of window frames, to take a standard window as example, install pinheads on two window corners of window fram under borders whose distance from RC faces is 5~10cm. Drill tail aims to window corner with 45 degree slope then drill. Drill a hole to install a pinhead in the middle of window frame under border. And, drill holes and install pinheads respectively on two sides of window frame whose distance from it is around 25cm, the positions which are 5~10 cm from RC faces. Drill tail needs to aim to under border for drilling holes. (Adequate pollution proof and prevenation measures are needed to be taken before injection work.)

2. 灌注止水劑前建議先行灌水,之後再進行灌注止水藥劑,止水劑經與水反應後會將窗框內中空部分與RC面內部裂縫填滿,即可完全解決漏水問題

Pour water in before injecting water-sealing agent. Then water-sealing agent injection could be proceeded. Hollow parts and cracks inside RC faces will be filled after the reaction of water-sealing agent and water. This could solve leaking problem totally.

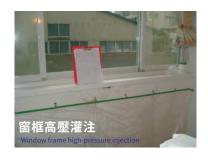
3. 一般窗框以低壓灌注工法較不破壞結構面,鋁窗鑽孔先注入清水,再注入SL-669乳化填縫,填滿後拉釘封孔。

For general window frames, low-pressure injection method will be better not to destroy structure faces. Drill aluminum material and pour in water, then inject SL-669 emulsified cracks filling. Pull out pins and seal holes after.

窗框灌注止水工法示意圖

Window Frame Injection Water-Sealing Work Method Schematic Diagram



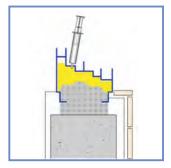






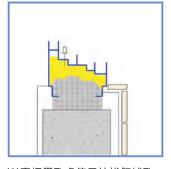
(1)窗框鑽洞明顯開口裂縫處, 須先以矽利康補縫。

Obvious cracks from drilling on window frame, use silicon to fill first.



(2)灌注防水填補劑滿空繫,阻擋外 水滲入,拔除針筒,清理窗框藥劑。

Inject water-proof filling agent to fill cracks, which can block water to penetrate from outside. Pull out pinhead, clean agents on window frame.



(3)窗框鑽孔處使用拉拔釘補孔。

Use drawn nails to fill holes on window frame drilling places.



五、環片隧道止水工法 Loop tunnel water-sealing working method:

環片厚度皆為25cm,為工廠預鑄完成在工地推進組裝。

說明:淺盾隧道工法係由淺盾機推進環片組裝而成,而環片皆由預鑄廠預鑄完成,運送至工地 組裝,施工期間可能造成漏水現象。其約如下所述:

狀況1.環片本身裂縫。 狀況2.環片:片與片之間漏水。

狀況3.每一環與環之間漏水。 狀況4.螺帽灌漿孔滲水。

The thickness of loops is 25cm, which are prefabricated in factory and installed well in construction site. Interpretation: shield tunneling is installed by loops which are drived by shield machine. Loops are prefabricated in prefabricated factory, and then sent to construction site to installed. During construction period, leaking phenomenon may be occured.

Situation 1. Cracks on loops.

Situation 2. Loops: leaking between slices.

Situation 3. Leaking between loops.

Situation 4. Water permeating in screw hat injection holes.

處理工法(環片厚度為25CM) Disposed working method: (loop thichness is 25cm)

狀況1.於裂縫兩側約5~10CM處對角鑽孔,其鑽孔深度為不超過10~15CM為宜。 狀況2、3.於片與片之間或環與環間距約5MM處對角鑽孔,鑽孔深度為不超10~15CM為宜。 狀況4.灌漿孔蓋鑽5MM孔,再由此孔注入止水材至止漏完成。

Situation 1.

Drill holes on $5\sim10$ cm opposite corners of both side of cracks. The drilling depth is no more than $10\sim15$ cm. Situation 2, 3.

Drill holes on $5\sim10$ cm opposite corners between slices or loops. The drilling depth is no more than $10\sim15$ cm. Situation 4.

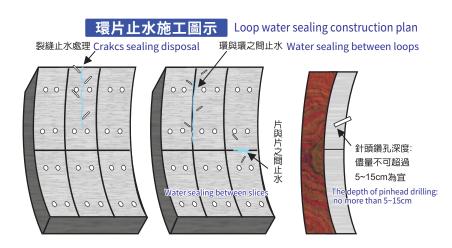
Drill 5mm holes on injecting cover. Inject water sealing material via the holes till leaking sealing

特殊狀況處理 Special situation disposal:

以上狀況1.2.3若只能暫時止水,則需採用地盤改工法,請於漏水處鑽孔超過環片厚度 (25CM),約先鑽孔三處以利洩水壓,再由第一支灌注針頭注入止水材,循序施工即可。

If above 1,2,3 only can seal water temporarily, site improvement working method is adopted necessarily. Please drill hoes on leaking position whose thickness is more than 25cm loop. Drill 3 holes for leting water pressure out, and then inject water sealing material via first injection pinhead. Then work by order.





施工注意事項 Construction Hints

為便於清除施作面溢流之發泡體,請於灌注前先將施作面之範圍施以噴塗離形劑,以 利爾後之清除工作。

鑽孔時請特別注意給排水管路之位置,避免發泡止水劑注入管內發泡後,無法溶解造 成阻塞。倒料完成後請蓋緊料杯蓋密封。

For easy cleaning the foaming overflowing on construction faces, please spray release agent on construction scopes before injection. Please pay attention to the positions of drainage piping while drilling holes, to avoid blocking caused by no melting while foaming sealing agent injecting into hoses and foaming. Tie material cup cover and seal well after material pourring completed.

『施工人員安全注意事項』 Construction Staff Safty Hints

使用時避免噴濺眼睛請戴護目鏡施作,如噴到請速送往醫院處理。通風不良之處所,為保 護施工人員之安全,請用無味型止水漿材系列產品。

Avoid splashing to eyes while using. If so, wash eyes with water and then go to hospital. In bad entilation place, for protect construction staff's safty, please use bland water sealing series materials.

『材料存放注意事項』 Material Store Hints

請勿儲存於-5℃以下低溫處或高溫處放置。置放於乾燥處,保存期限6個月。

Do not store under-5°C temperature, or in high temperature places. Put in dry place. Expiry for 6 months.

『包裝方式』 Packaging Capacity

5加侖/圓塑桶裝 5 gallons in round barrel

Note: 本說明書的內容是建立在於真實準確的數據與理念上,供材料使用者參考,由於無法改變控制施作時天候所造成之材料質變等各種不確定因素,所以我們無法負責保證現場施作所得之結果。請詳閱我方所提供之產品說明,我方銷貨條件及有關聲明和建議,都不可用來違反法律規則或侵犯第三者利益。

The content of this manual is created on real and precise statistics and principles as a reference for material users. As some factors can not be made sure such as material qualitative change by different climates, we are not responsible for the result because of different construction conditions. Please read our product instructions, selling conditions and related statements and suggestions, which are not used to violate law rules or to invade the right and advantage of third party.









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