

# Handy Repair Stick

## Quick and Natural Repair of Concrete Cracks

### DESCRIPTION

Handy Repair Stick is developed by original technology that shapes cementic powder without water. It is an unhydrated cementic particle compact. Try a Handy Repair Stick on unlighty cracks and pocks on the concrete surface. It will perfectly recover the surface appearance.

### PACKAGING



#### ■ Six sticks pack

Standard Pack: 2 sticks for each of 3 color of L, R and D,

Monocolor Pack: 6 sticks for one color of SL, L, R, D or SD.

#### ■ 12 sticks pack

Standard Pack : 4 sticks for each of 3 color of L, R and D

■ Each stick is vacuum packed.

■ Each pack contains finger cots, a crack gauge, zip bag for dry keeping as accessories.

■ A stick covers 10 meters on use to patch regular sized cracks.

### PROPERTIES

■ Handy Stick Shaped:

■ Easy Application : All you need is a repair stick and water. No expertise.

■ Natural Finish : You can choose five colors of Super Dark(SD), Dark(D), Regular(R), Ligh(L), Super Light(SL) to blend in the surface.

■ Pinpoint Mending :: For a Handy Repair Stick is used only on cracks, not on the surroundings The mark of patch hardly catches eyes.

■ Quick Curing : Cures in 30 minutes for it is quick-setting cement based.

■ Assuring high strength : It gains higher strength than the surrounding concrete after curing.

### PRECAUTION

■ Please examine the condition and structure of the concrete surface. Use only on the place where the crack coat is considered effective.

■ Before use of Green Repair Stick, clean dust on the surface and in the inside of the crack.

■ Handy Repair Stick has alkaline property. Use of the accessory finger cots are necessary to protect your skin.

■ Apply Handy Repair Stick repeatedly when more waterproofness or filling is needed.

■ This product is cured by water. Avoid water and moisture on storage and use.

■ This product becomes alkaline in wet condition and causes rough skin. Protective glasses and accessory finger cots or gloves are necessary during use.

■ If this product comes in contact with skins or eyes, flush immediately with plenty of water. Get medical attention

■ Read the MSDS before use.



### 01: Characteristics and Scope of application

It is fabricated in the shape of a stick, maintaining water-admixture activity based on our unique technology which forms out of powder cement (without using water). It is the best for the quick and wonderful-looking recovery from cracks and pockmarks you worry.

Although this product is similar to a "crack covering method of construction" in a general crack repair method of construction, that covers only the surface part of a crack, our handy repair stick enables you to do pinpoint covering and filling, and the trace of repair hardly remains. That is because we put the chief aim especially on the concept of wonderful-looking recovery. On the other hand, as it is not intended for the repair inside a crack, it limits the applicable scope.

The following table quoted from "The indicator of crack investigation, repair and reinforcement of concrete," edited by Japan Concrete Institute, shows the judgment on whether or not crack repairing is necessary. Please review the table thoroughly for reference in application of this product.



Sorting	Other 1) main factors	Environment 2)	In terms of durability			In terms of water proofing	The Applicable scope of Handy Repair Stick
			Severe	In Between	Mild	-----	
Crack width (needs repairing) (mm)	High		0.4<	0.4<	0.6<	0.2<	Applicable for the surface finish in a crack pouring method of construction
	Medium		0.4<	0.6<	0.8<	0.2<	
	Low		0.6<	0.8<	1.0<	0.2<	
Crack width (doesn't needs repairing) (mm)	High		0.1>	0.2>	0.2>	0.05>	Perfectly suits
	Medium		0.1>	0.2>	0.3>	0.05>	
	Low		0.2>	0.3>	0.3>	0.05>	

1)1) The grade of detrimental effect on the durability and the waterproof property of a structure; the depth of a crack, the pattern, covered, painted or not, material/combination, construction joint, etc.

2) The environmental conditions mainly seen from the perspective of formation of rust on steel materials, Others: Please also fully examine the amount of opening and closing of a crack, progression, load conditions, airtightness, and external environment. Moreover, please ask an engineer; a concrete specialist or the concrete chief engineer, etc., for a judgment on a crack with the width of the range in between on the table above. (For example, a crack with a width of 0.1mm in terms of waterproof property.)

## Handy Repair Stick





## 02: Product information and Color

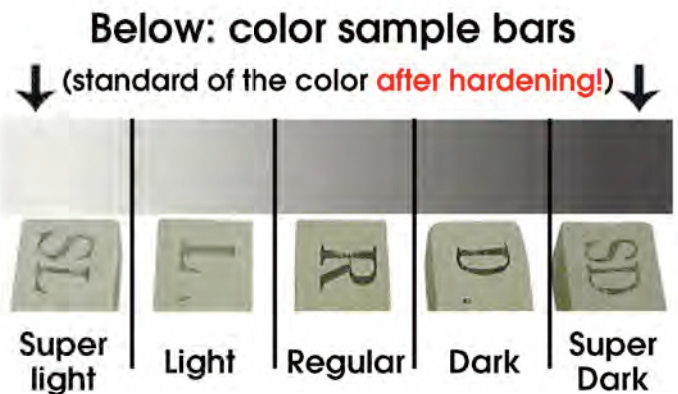
### Product information

- Product Name** :Crack repairing material for concrete and mortar.
- Use** :Covering repair and wonderful -looking recovery for surface cracks on bare concrete and mortar walls.
- Main ingredients** :Ultra rapid hardening and water sealing cement.
- Hardening time** :15 minutes (in summer) to 45 minutes (in winter).
- Product color** :5 colors=**Super Light (SL), Light (L), Regular (R), Dark (D), and Super Dark (SD)**
- Packing** :Each stick is vacuum moisture-proof packed preventing weathering.
- Packaging** :2 types; 6 sticks/box and 12 sticks/box.
- Package type** :A box of 12 sticks contains 4 sets of L, R and D each. A box of 6 sticks contains 2 sets of L, R and D each, or each of 6 colors.
- Accessories** :5 fingertip protection sacks, 1 crack gauge, and 3 moisture-proof storage Zip bags.
- Quantity consumed** :1 stick (5 cm) can repair approximately a 10-m crack.
- Shelf life** :Less than six months after the manufacturing date in the case of indoor and vacuum packing unopened storage.

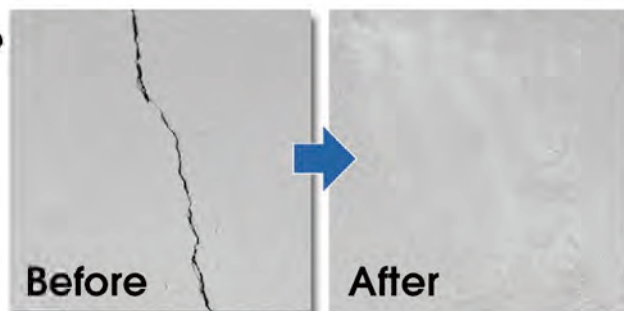
### About the color

A color tone is also changed according to the environment and the quantity of moisture added. The color sample bars above show "the color after hardening." Please use them as one standard. These color sample bars are printed in the catalog and the packing box.

In addition, the expression systems of color is different in the monitor and color printer of a personal computer (they don't agree), so the same colors won't be shown. Though a monitor could be more helpful since the way of a monitor can express many colors, please understand beforehand that the color may differ a little from the one after hardening, depending on the adjustment state of the colors of a monitor. Moreover, please take it into consideration that what was printed on paper by a color printer is usually expressed in deeper colors.



Reference photo





### 03-1: Example of use ----Wet process

A wet process is a method of crack covering by making the target crack and deficit part fully wet with water beforehand, rubbing and pushing this product in there with pinpoint accuracy. This product causes enough hydration reaction with the moisture prepared beforehand to wet the target crack, and completely hardens in about 10 to 30 minutes in general. As the usage of this product, it is the most recommended method and it is also very simple and speedy. If you wait until it hardens and, with a brush etc., carefully remove the part hardened around the crack, it is possible to recover so beautifully that the trace of repair can be hardly distinguished unless it is seen close-up.

If you don't use up one stick, please cut the wet part of the stick, tightly-seal and store in an attached Zip bag to block off humidity.



**1: Start!** Please fully remove repair disturbance factors beforehand, such as dust and dirt around or inside the crack.



**2:** Wet the target crack beforehand, to the point of which moisture slightly remains inside the crack.



**3:** Rub the product in. If it is rubbed in finely at the right-angled direction to the crack, it will go in deeply.



**4:** Push the shaving powder remained around the crack inside it. Precise filling will be attained by this work and the intensity after hardening also improves.



**5:** Wait until it is dry. Usually, it takes 15 to 30 minutes. Please do not clean the portion remained around the crack at this time. The filling part will also get damaged.



**6: Finish!** Remove and clean the portion around the crack with a brush etc., after checking the filling part is completely hardened. You can hardly distinguish a trace.

**If you think once is not enough, repeat the procedure of 1-6 again after it hardens. It will get flatter and you'll get excellent crack covering with wonderful-looking recovery.**





**03-2: Example of use ----Dry process**

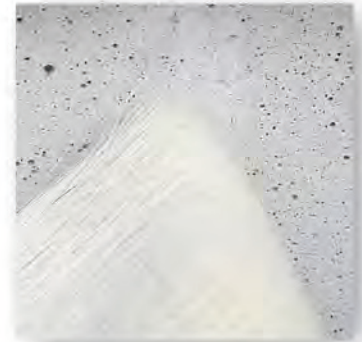
A dry process is suitable for fine-looking recovery of a very thin crack in the quickest way. You rub the product directly into a crack. It is the method of filling the crack just like the way of writing on a blackboard with chalk. Wet the surface lightly with a spray bottle so that the shaving powder covering the crack won't fall off. Since its main ingredient is ultra rapid hardening and water sealing material with very high water-admixture activity, it hardens fully and promptly with a very small amount of moisture. During humid season etc., it can also harden with the moisture in air



**1: Start!** A very thin surface crack which hasn't penetrated. Please fully remove repair disturbance factors beforehand, such as dust and dirt around or inside the crack.



**2:** Rub the product directly into a crack. In this case, the light color (L) is used.



**3:** Carefully remove the shaving powder of the product hardened around the crack with a brush etc. This is the main point for lessening color differences with the concrete wall.



**4:** Wet the crack slightly with a spray. Only a little bit of moisture, 1 spray is enough. Be careful not to lose the filling you just applied.



**5:** Wait until it is dry. Usually, it takes 15 to 30 minutes. Please do not clean the portion remained around the crack at this time. The filling part will also get damaged.



**6: Finish!** Remove and clean the portion around the crack with a brush etc., after checking the filling part is completely hardened. You can hardly distinguish a trace.

**If you think once is not enough, repeat the procedure of 1-6 again after it hardens. It will get flatter and you'll get excellent crack covering with wonderful-looking recovery. It is especially effective in dry process.**





### 04: Hardening time

This product uses ultra rapid hardening and water sealing cement as the main ingredient whose hardening time set up in 1 to 15 minutes, and its powdered ingredient is fabricated in the shape of a stick, maintaining water-admixture activity. Therefore, when you supply moisture to the deficit part after filling it up with the stick, it gives full scope to its original ultra rapid hardening and water sealing ability and harden. 1 of the features of this product is pinpoint filling repair of the defective part, and since the quantity of the product with which a crack is filled up is usually several milligrams and very small, please be careful not to supply excessive moisture. Usually, the moisture to wet the crack beforehand in the wet process, or a spray in the dry process is sufficient.

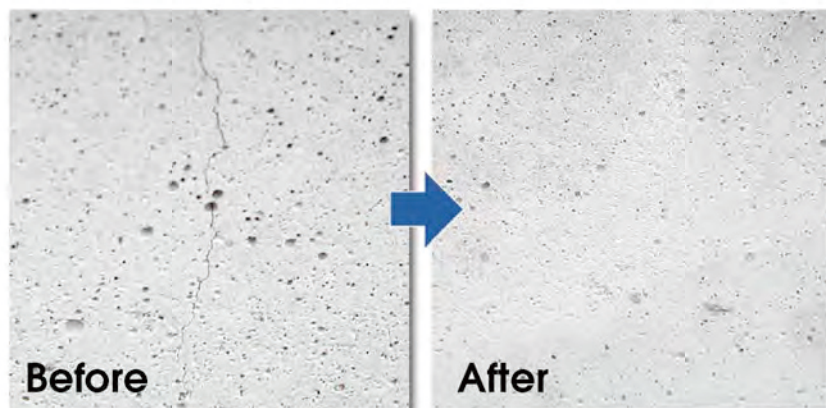
The following table shows the starting time of the product (the ratio of the water to the product weight in this case is 75%) by JISR5201 "cement physical examination method." Although, in actual work, it is impossible to measure the weight of the powder of the product with which the crack was filled up, please refer as a standard of hardening time.

Table : onset time of hardening, minutes,

Type	Hardening time (minutes)		
	68°F (20°C)	86°F (30°C)	41°F (5°C)
Super Light (SL)	19	14	32
Light (L)	15	10	25
Regular (R)	15	10	25
Dark (D)	18	14	30
Super Dark (SD)	16	12	28

Reference photo:

Fine-looking recovery work of very thin tortoise shell cracks (dry process, rubbing process)

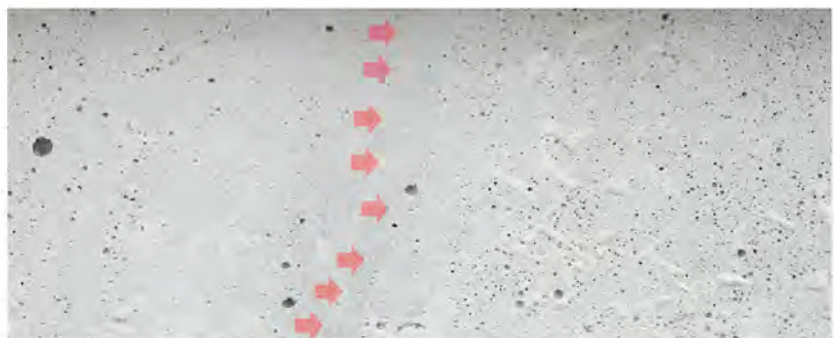




### 05: Physical performance

This product produces equal or higher compressive strength than of commonly used concrete when suitable amount of water is supplied. In order to evaluate compressive strength quantitatively, the following table shows the result of the measured compressive strength of a whole bar after filling in water for 1 minute, leaving it as it is and making it harden on the assumption that the amount of moisture is almost equivalent to the actual use of the product. The table shows that all of those three colors of this product generally develop more than 30N/mm<sup>2</sup> strength, which is equivalent or better of commonly used concrete.

Type	Material age	Compression strength (N/mm <sup>2</sup> )		
		68°F (20°C)	86°F (30°C)	41°F (5°C)
Super Light (SL)	1hr.	14	19	4
	7day	32	33	30
	28day	38	39	38
Light (L)	1hr.	16	23	5
	7day	38	36	38
	28day	42	39	39
Regular (R)	1hr.	18	27	6
	7day	41	42	36
	28day	45	47	37
Dark (D)	1hr.	10	17	4
	7day	32	34	33
	28day	35	36	35
Super Dark (SD)	1hr.	11	16	7
	7day	34	34	38
	28day	37	34	35



Reference photo:

The foundation which is so beautifully recovered that it is almost impossible to be distinguished. (Wet process)