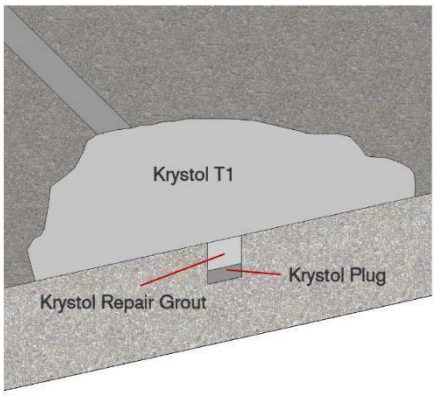
Krystol® Leak Repair System

Waterproofing Cracks, Holes & Joints

DESCRIPTION

The Krystol Leak Repair System is used to permanently waterproof leaking cracks, joints, and holes in concrete. It is installed in place of other less reliable crack repair systems and allows the concrete to be protected from any direction, even under high hydrostatic pressure.

The Krystol Leak Repair System uses Krystol crystalline technology which reacts with water and un-hydrated cement particles to grow insoluble needle-shaped crystals that fill capillaries, micro-cracks and pores in concrete to reduce permeability and stop water. The following application instructions are used for the repair of leaking cracks, holes & joints from either the positive or negative side.



Drawings and Specifications:

For section drawings, CAD details and specification language related to this product, visit www.kryton.com/technical-info/ or contact your authorized Kryton representative.

LIMITATIONS

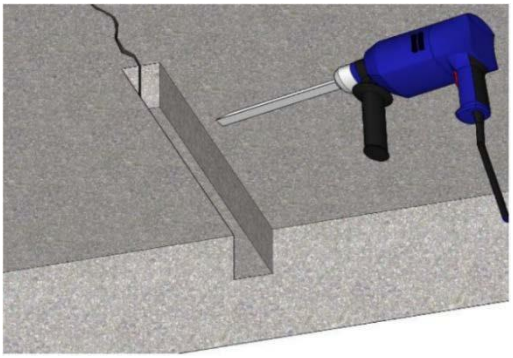
Krystol leak repair is effective for rigid structures only and may not reliably repair cracks or joints that are subject to movement. Moving cracks can only be repaired using a flexible system such as urethane injection. Consult a Kryton representative for project specific recommendations. Use typical cold weather practices if applying in cold climatic conditions. Installation during heavy rain must be avoided.

SAFETY PRECAUTIONS

Read and follow the Safety Data Sheets (SDS) for these products (available at www.Kryton.com). For professional use only. These products become highly caustic when mixed with water or perspiration. Avoid contact with skin or eyes. Avoid breathing dust. Wear long sleeves, safety goggles and impervious gloves.

STEP 1: PREPARE THE LEAKING CRACK OR JOINT

1. Using a sharp 25 mm (1 in.) square chisel, chip a 25 mm (1 in.) wide chase along the entire length of the crack to a minimum depth of 40 mm (1.5 in.). The shape of the chase is critical to your success. The chase must be rectangular shaped and deeper than it is wide. If the concrete breaks apart near the surface, you must chisel deeper to obtain the required 25 mm by 40 mm (1 in. by 1.5 in.) size and shape.
   When chiseling, do not place the chisel inside the chase. Instead, place the chisel on the concrete surface over the leaking crack or joint about one inch ahead of the chase and direct chisel pressure back towards the chase so that the piece being removed falls into the chase. Chisel to the full depth of 40 mm (1.5 in.) before moving on. This method is proven to be most productive, requires the least effort and will result in a chase that is the proper shape.

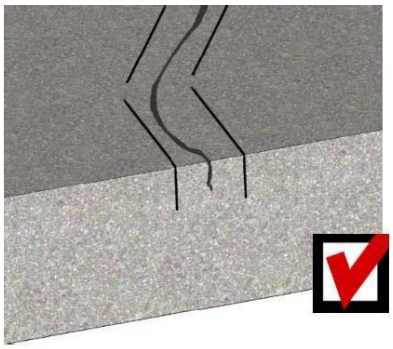


2. Wash the chase with water until it is clean and water runs clear. If necessary, use a vacuum to remove dust, debris or water.
3. Grind or wire brush the concrete 6 inches on either side of the repair to expose clean, sound concrete. This will provide better adhesion for the Krystol T1® coating (Step 4).

IMPORTANT: Be sure to repair the full length of the crack or joint. If you repair only the area that is currently leaking, the water will likely migrate to the un-repaired section and you will be back to repair a new leak.

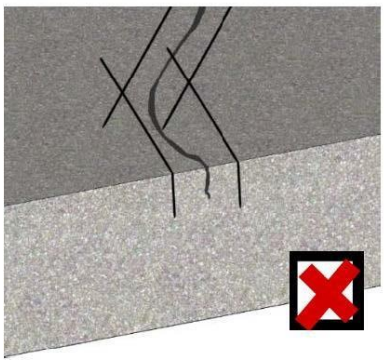
ALTERNATIVE METHOD FOR HORIZONTAL CRACK PREPARATION

To speed efficiency, saw cutting can be done before chiseling. This has been effective at doubling the speed in preparing the chase and increasing productivity. Saw cut the leaking crack using a Hilti DCH 230 Diamond cutter. Set the two blades apart using a slitting hood and set the cutting depth to 40 mm (1.5 in.). Align the crack between the two blades and saw cut the entire length of the crack. If the crack is not straight, reposition the saw and cut accordingly. Leave a space between saw cuts, do not overlap. See diagram. Chisel in between the saw cuts to create a chase and connect the unaligned saw cuts by chiseling. Expect to go over the entire chase with a chisel 3 times to get it at full depth. Try to roughen the sides of the chase without spalling the top.



NOTES:

- Know where the breakers are. Breakers may blow
- Use saw and vacuum or separate circuits
- Use heavy duty extension cord for the saw, vacuum can use a standard cord
- Move along slowly and evenly with the saw; don't cut from one stationary point



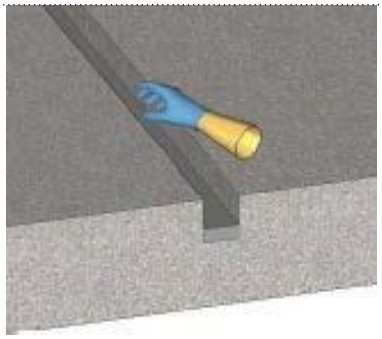
TOOLS NEEDED FOR ALTERNATIVE METHOD:

- Hilti DCH 230 Diamond cutter
- Hilti DCH-EX 180-SL slitting hood
- Two 177mm x 22mm (7 in. x 7/8 in.) diameter blades
- Vacuum

STEP 2: STOP FLOWING OR SEEPING WATER

If there is no active leaking at this time, you may skip to step 3.

1. Quickly mix four (4) parts Krystol Plug™ to one (1) part clean water by volume to a putty consistency. Mix only enough material as can be placed in 1 minute.
2. Using a gloved hand, immediately press the Krystol Plug firmly into the leaking chase while it is in a pliable form and hold still until it has set. Compact the Krystol Plug so there are no voids.
3. Repeat, working from one end of the crack to the other until the entire chase has been plugged and all water has been completely stopped.

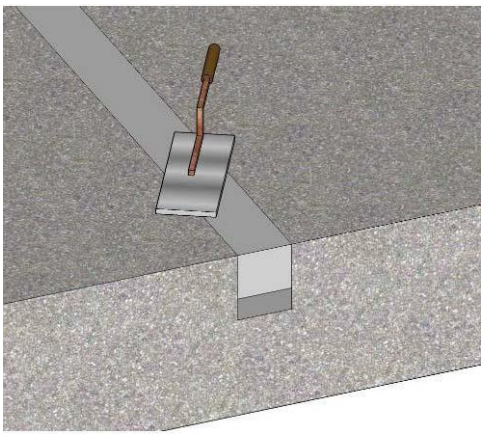


IMPORTANT:

- To avoid early water exposure, use separate measuring cups when portioning Krystol Plug Powder and water
- In hot weather, use cold water to slightly extend setting time
- In cold weather, use hot water to accelerate setting time
- Do not move or work the plug after it has started to set or it will break apart
- The Krystol Plug must not fill more than one-third of the chase. The maximum thickness of Krystol Plug is 13 mm (0.5 in.). Use a trowel or chisel to scrape out any excess Krystol Plug so that at least 25 mm (1 in.) of space remains in the chase
- Do not allow Krystol Plug to build up on the walls of the chase. Wire brush the chase to remove excess Krystol Plug from the walls so the remaining materials can bond directly to clean concrete
- All leaking water must be stopped before proceeding. Touch up work may be needed to stop all the water

TIP: In areas of very high water flow, insert a rubber hose at the highest flow area to direct water and install Krystol Plug around it.. Removing the hose will leave a deep narrow hole that is much easier to plug with a single ball of material. Fill the chase leaving the highest flow area to the end.

STEP 3: INSTALL KRYSTOL REPAIR GROUT



1. Wash the chase with water until it is clean and water runs clear. Ensure that the chase is in Saturated, Surface Dry (SSD) condition; saturate with water, then remove any standing water before proceeding.

2. Mix Krystol Repair Grout as follows: Slowly add powder to water while mixing (approximately 4.5 parts powder to 1 part water by volume). Mix thoroughly once all powder is added to obtain a non-sag putty consistency. The mixture will appear dry at first, but with mixing will become smooth and workable. If the grout sags during installation, mix in extra powder until the grout holds in place. **NOTE:** The mix ratio is only approximate and intended only as a guide since job site conditions may vary affecting the actual powder to water required.

   Large Repairs: For repairs with minimum width and depth of 50 mm (2 in.) or larger, Krystol Repair Grout may be extended with 10 mm (3/8 in.) pea gravel. Use clean, non-reactive, well-graded gravel complying with ASTM C33. Mix 4 parts grout powder: 2 parts gravel, and up to 1 part water to make a low-slump, cohesive mix. Perform trial batches to confirm workability, as aggregate properties can vary.

3. Tightly pack the Krystol Repair Grout into the keyway so that it is flush with the surface. Do not leave any voids.
4. Protect the Krystol Repair Grout application from damage by rain, rapid drying or freezing for at least 24 hours.

IMPORTANT: Mix only as much material as can be placed in 30 minutes. Warm temperatures will reduce working time. Note that material left standing will stiffen, but mixing will restore plasticity. Do not add water to the material once it has started to set. Over-watering will result in cracking.

STEP 4: APPLY KRYSTOL T1 COATING

- Once active leaks have been stopped, and cracks / defects have been repaired, apply Krystol T1 to the entire wall, floor and/or ceiling to ensure permanent waterproofing. See **Application Instruction 2.11 – Krystol T1 Surface Applied Waterproofing** for detailed instructions on this product.

COVERAGE

Material	Coverage
Krystol Plug	Approximately 30-42 m per 25 kg pail (100-138 ft per 55 lb pail)
Krystol Repair Grout	Yields approx. 13 L (0.46 cubic feet) per pail, as installed: Approximately 14 m per 25 kg pail (46 ft per 55 lb pail) when used without Krystol Plug Approximately 21 m per 25 kg pail (68 ft per 55 lb pail) when used with Krystol Plug
Krystol T1	Approximately 20 m² per 25 kg pail (225 ft² per 55 lb pail)

TOOLS & MATERIALS

- Krystol Plug
- Krystol Repair Grout
- Krystol T1
- Clean water supply
- Mixing bucket, drill and mortar paddle
- Natural bristle concrete brush
- Margin trowel
- Chipping Hammer or scrabbler