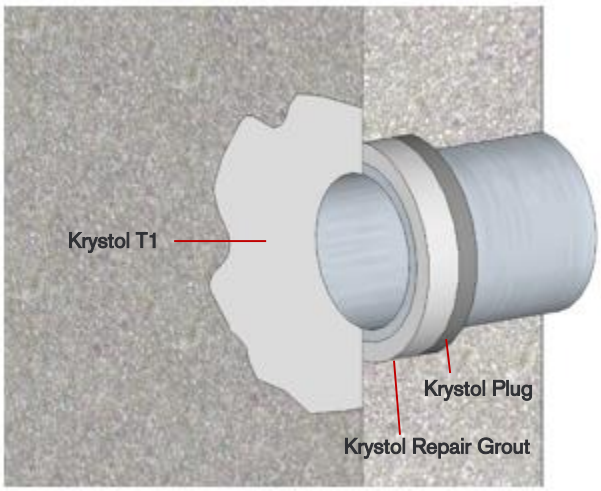
Krystol® Leak Repair System

Waterproofing Pipe Penetrations

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 to repair leaking cracks or holes from pipe penetrations.

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.

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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.

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 inches). 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: PIPE PREPARATION

1. Before installing Krystol Repair Grout, it is necessary to prepare the pipe surface so that the repair products will adequately adhere to the pipe.
    a. Metal Pipes: The surface of a metal pipe must be prepared by cleaning and roughening the area that will be in contact with the Krystol® repair materials. Remove all grease, oil, corrosion, and scale. Abrade by coarse sanding or sandblasting to achieve a coarse surface profile.

2. PVC or ABS Pipes: The surface of a PVC or ABS pipe must be prepared by applying a silica sand layer to the area that will be in contact with the Krystol repair materials. The sand is adhered to the pipe using the joint cement (glue) that is normally used to assemble the pipe sections.
    a. Using the appropriate joint cement for the material (either PVC or ABS joint cement), apply a heavy coating of joint cement to the pipe in the area that will be in contact with the Krystol repair materials. Immediately apply dry silica sand to the joint cement to completely cover it.
    b. Allow the joint cement to harden then remove excess loose sand using a blow pipe or vacuum. This will result in a continuous coating of dry silica sand firmly cemented around the pipe. This dry sand layer will provide for adhesion of the Krystol repair materials.

STEP 4: 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 to a stiff putty consistency as follows: Start by mixing four (4) parts Krystol Repair Grout with one (1) part clean water by volume until smooth. Add an additional half (0.5) part of powder for a total of approximately 4.5 to 1 and continue mixing to obtain a sag free paste. 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 jobsite conditions may vary affecting the actual powder to water required

   For large repairs with a minimum repair cross section of 50 x 50 mm (2x2 inches) to a maximum 100 x 100 mm (4 x 4 inches), mix Krystol Repair Grout with clean 5 mm minus gravel (1/4 inch). For large repairs with a minimum repair cross section of 75 x 75 mm (3 x 3 inches), mix Krystol Repair Grout with clean 10 mm minus gravel (3/8 inch). Mix 4 parts Krystol Repair Grout with 2 parts clean gravel. Slowly add a maximum of 1 part clean water until the desired consistency is obtained. Work Krystol Repair Grout into the prepared surface and ensure good bonding.
   NOTE: Because sources of gravel vary, trial batches may be needed to determine the optimal mix.

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 20 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.

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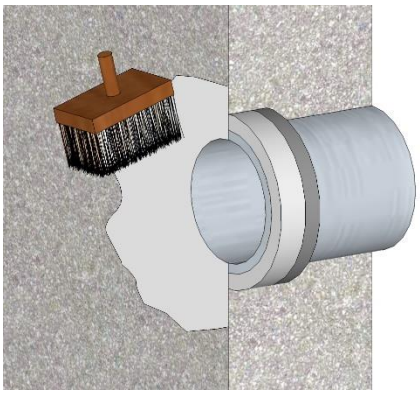
STEP 5: APPLY KRYSTOL T1 COATING (RECOMMENDED)



1. Mix Krystol T1 to a fluid paste like coating, three (3) parts powder to one (1) part clean water by volume. Mix only as much as can be placed in 30 minutes.
2. Ensure that the concrete is in SSD condition.
3. With a concrete brush, use an aggressive, circular scrubbing motion to apply the Krystol T1 coating over the repair, extending at least 15 cm (6 in.) around the circumference of the pipe. Apply at 0.8 kg/m² (1.5 lb. /sq. yd.). The coating should be a 1-2 mm finish with a lighter pressure to achieve the correct thickness.
   TIP: It is highly recommended that the entire wall, floor and/or ceiling be coated with Krystol T1. For more information, see Application Instruction 2.11 — Waterproofing with Surface Application (Brush Method) or 2.12 — Waterproofing with Surface Application (Spray Method).
4. Protect the repair from drying out. Cover the repair with tarps or plastic to prevent water loss due to evaporation. Once the Krystol T1 coating has hardened, mist the surface with water as needed to keep the repair damp for at least 3 days. Protect the repair from frost, rain and traffic for at least 24 hours.

MATERIALS AND COVERAGE

Material	Coverage
Krystol Plug	Approximately 30 m per 25 kg pail (100 ft. per 55 lb. pail)
Krystol Repair Grout	Approximately 10 m per 25 kg pail (33 ft. per 55 lb. pail) when used without Krystol Plug
	Approximately 15 m per 25 kg pail (50 ft. per 55 lb. pail) when used with Krystol Plug
Krystol T1	Approximately 31 m² per 25 kg pail (330 sq. ft. per 55 lb. pail)

TOOLS

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

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