

Krytol T1® & T2® Waterproofing System

Waterproofing with Surface-Application (Spray Method)

DESCRIPTION

Krytol T1 and T2 is a surface-applied crystalline waterproofing treatment for concrete structures that is used to protect against the ingress of water. It is a dry powder, that when mixed with water becomes a slurry that is applied to the inner or outer sides of a concrete structure. Use these instructions in conjunction with the Krytol® Leak Repair System (Application Instruction 5.12 — Waterproofing Cracks, Holes & Joints) to create fully tanked, waterproof concrete structures. These instructions are for applying Krytol T1 and T2 using spray equipment; for brush application, see Application Instruction 2.11 — Waterproofing with Surface Application (Brush Method).

LIMITATIONS

The Krytol T1 and T2 Waterproofing System is an effective waterproofing system for rigid concrete structures only and may not be reliable for structures that experience constant or repeated movement. Consult a Kryton representative for project specific recommendations. Air and surface temperature at the time of application must be at least 4°C (40°F).

SAFETY PRECAUTIONS

Read the Safety Data Sheets (SDS) for these products. For professional use only. These products become extremely 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: SURFACE PREPARATION

1. Repair all defects, including cracks and honeycombs, before applying Krytol T1 and T2 using the following procedures:
 - a. Cracks and joints: Application Instruction 5.12 — Waterproofing Cracks, Holes & Joints
 - b. Pipe penetrations: Application Instruction 5.32 — Waterproofing Pipe Penetrations (Existing Construction).

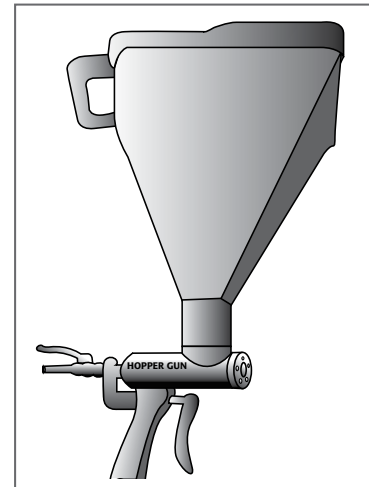
IMPORTANT: All leaking defects must be repaired. However, even defects not currently leaking may leak in the future if not repaired before applying the surface coating. In most cases, all defects should be repaired whether they are currently leaking or not. Consult your Kryton representative for project specific recommendations.

2. Concrete surfaces must be clean and free of paint, sealers, form release agents, dirt, laitance or any other contaminants. Prepare the surface by sandblasting, high pressure water blasting (minimum 3,000 psi), scarifying, shot blasting or other method of mechanical surface preparation to remove loose concrete and surface contaminants. Concrete with some exposed aggregate is ideal. Wash and rinse the surface with a detergent or concrete degreaser if needed.
3. Even for uncontaminated surfaces, mechanical surface preparation will assist by opening up pores closed due to smooth trowelled surfaces, formwork etc. The freshly roughened surface will provide maximum adhesion and better penetration of the waterproofing chemicals.

Tip: Acid etching is not recommended. If acid etching must be used, all traces of acid must be neutralized and rinsed away before applying the Krytol T1 and T2.

4. Surfaces to receive Krytol T1 and T2 must be brought to a saturated-surface-dry (SSD) condition. The concrete must be completely saturated with water to allow the Krytol chemicals to penetrate deeply and react. The outer surface, however, must be only slightly damp, so as not to dilute and weaken the bond. Thoroughly pre-soak the surface with water; then remove excess water with a sponge or vacuum just before applying Krytol T1.

Tip: High pressure water blasting is effective at cleaning and saturating the concrete in one step.



Equipment: Texture Gun and Hopper

STEP 2: APPLY KRYSTOL T1 (1ST COAT)

IMPORTANT: Ensure that Krystol T1 and T2 are only applied to a damp (SSD) surface. As you apply the Krystol T1 and T2 coatings, you may need to rewet the concrete ahead of you to maintain a damp (SSD) surface. Failure to bring the surface to an SSD condition will result in a weak bond between the Krystol coating and the concrete, and may lead to dusting, flaking and delamination of the Krystol treatment.

1. Mix Krystol T1 to a thick paste (approximately 3 parts powder to 1 part clean water). Adjust the mix ratio if needed to achieve consistency that can be pumped and sprayed efficiently without segregating in the hopper or sagging on vertical surfaces. If too much water is added, you may experience segregation and settling of the product and possibly caking in your equipment.
2. Mix only as much as can be placed in 20 minutes. Once fully mixed, do not add additional water during spraying operations. Mixed material left standing will quickly stiffen, but resumed mixing will restore flowability. Continuously stirring the product is recommended.
3. Ensure the surface is damp (SSD).
4. Spray the Krystol T1 coating in a uniform layer over the concrete at a coverage rate of 0.8 kg/m² (1.5 lb. /sq. yd.). Keep the nozzle at 90° to the receiving surface, and apply the coating using small, circular motions. The ideal spraying distance from the wall is generally 30-100 cm (1-3 ft.); although this distance will vary depending on equipment (nozzle pressures of 30-75 psi are generally sufficient).
5. Ensure that the sprayed surface retains a rough texture if a second coat of material is required (see step 3 on back brushing).
6. Apply at 0.8 kg/m² (1.5 lb. /sq. yd.).

TIP: Do not spray in windy conditions as wind will disrupt the material stream and promote rapid drying of the applied material.

STEP 3: BACK BRUSHING (IF APPLICABLE)

IMPORTANT: An ideal spray application will project material with sufficient force to compact the slurry onto the concrete surface, resulting in good adhesion. If compaction is too low, back brushing with a stiff bristle concrete brush will be required to ensure adequate contact with the concrete surface. Back brushing may also be required if the first coat has a smooth textured surface which will not provide enough “tooth” for the second coat. Always back brush applications on rough or uneven surfaces or any application that does not appear uniform and well compacted after spraying.

1. With a concrete brush, use an aggressive, circular scrubbing motion to apply the Krystol T1 coating over the concrete. Push the coating into any voids in the concrete surface to ensure a good bond.

STEP 4: APPLY KRYSTOL T2 (2ND COAT)

Tip: To ensure complete coverage with no missed or thin spots, we recommend that you always apply two coats. While it is permissible to use Krystol T1 for both coats, using Krystol T2 for the second coat will give a harder, more durable finish. Note that in certain cases it may be acceptable to use a single coat of Krystol T1 and eliminate the second coat. Consult your Kryton representative for project specific recommendations.

1. The second coat can be applied as soon as the Krystol T1 has set hard (usually 6-24 hours depending on conditions). Wash and rinse the hardened Krystol T1 to remove surface bloom before applying Krystol T2. Some exposed aggregate in the Krystol T1 coating is ideal.
2. Ensure the hardened Krystol T1 surface is damp (SSD).
3. Install Krystol T2 by following the same procedure used to install Krystol T1. Back brushing of the second coat is generally not needed unless a specific surface profile is desired.

STEP 5: CURING & PROTECTION

IMPORTANT: Krystol T1 and Krystol T2 must be kept damp and “wet cured” for at least 3 days to develop its full properties. Curing for several days or even weeks will be beneficial in most cases. Do not apply curing water if the coating is still soft to the touch; this will wash out the coating and produce poor results. Instead, use protective surface coverings to retain moisture during the initial hardening period.

1. Cover the freshly applied Krystol coating with tarps or plastic to prevent water loss due to evaporation. Wet curing should begin as soon as the Krystol coating has hardened enough not to be damaged by the application of curing water, usually 6-24 hours depending on conditions. Wet curing should also begin if the coating starts to dry out.
2. Do not allow water to pool on the surface during the first 24 hours or until the coating is hard. Once the coating has hardened, mist the surface with water as needed to keep the repair damp for 3 days. Curing water should be applied at least three times each day for three days. More frequent application may be needed in hot, dry weather.
3. Keep protective coverings in place during the curing period to retain moisture. As the coating gains strength, thoroughly soak the surface to keep the coating fully saturated.
4. Protect the repair from frost, rain and traffic for at least 24 hours. Heavy traffic must be avoided during the curing period.

IMPORTANT: Krystol T1 and T2 may develop a surface bloom that may inhibit adhesion of following coats. Take care to clean and prepare the surface adequately. It is strongly recommended to perform a test patch.

NOTES

- Roughen Krystol T1 and Krystol T2 coating to remove loose surface particles before applying any further coating or finish. Finishes containing Portland cement may be applied over Krystol T1 and T2 following the curing period. If paints and coatings are used, they must be suitable for use on new concrete. Apply paints and coatings according to the manufacturer's instructions. Test coatings or other finishes for compatibility before completing the work.
- Each coat will be approximately 1 mm - 1.5 mm thick, and a two coat application will be 2 - 3 mm thick. Very rough surfaces may require more material.
- Wait at least 7 days before filling treated tanks and reservoirs. For reservoirs that will contain drinking water, cure longer if possible, and then rinse with fresh water several times. Initially, the drinking water may need pH adjustment using citric acid or similar water treatment chemicals.

COVERAGE

Material	Coverage
Krystol T1 (1 st Coat)	0.8 kg/m ² (1.5 lb. /sq. yd.) =31 m ² per 25 kg pail (330 sq. ft. per 55 lb. pail)
Krystol T2 (2 nd Coat)	0.8 kg/m ² (1.5 lb. /sq. yd.) =31 m ² per 25 kg pail (330 sq. ft. per 55 lb. pail)

TOOLS & MATERIALS

- Krystol T1
- Krystol T2
- Clean water source
- Mixing bucket, drill and paddle
- Natural bristle concrete brush
- High pressure water blaster
- Spray equipment (see below)



SPRAY EQUIPMENT

- All equipment must be suitable for pumping and spraying abrasive materials containing cement and fine aggregate. Spray equipment intended for smooth textured materials such as house paint are not adequate.
- For small jobs it is sufficient to use a spray nozzle attached directly to a gravity fed hopper and a source of compressed air. A gun and hopper typically used to install ceiling texture works well, such as the Diana Gun and Hopper manufactured by Goldblatt (www.goldblatttool.com). For larger jobs, greater application rates can be achieved using a mechanical pump and a larger hopper.
- Pump: Pump configuration will vary by manufacturer. Pumps that operate by piston, rotar/stator, or peristaltic principles are suitable. The following equipment suppliers are provided for reference:
 - Hy-Flex Corp <http://www.hyflexcorp.com>
 - Quikspray Inc. <http://www.quikspray.com>
 - Spray Forc <http://www.sprayforce.com>
- Air Source: Minimum recommended spray pressure is 30 psi, although a pressure of 75 psi or greater at the nozzle can be desirable. Air capacity will vary according to pump specifications; consult nozzle manufacturer for required output.
- Hoses and Nozzle: A 25 mm (1 in.) material line is recommended. Spray nozzle should have a minimum diameter of 6 mm (0.25 in.).