

XYPEX CRYSTALLINE CRACK REPAIR

TYPE 1 - Full Crack Repair, Leaking (Minor Crack and Cold Joints)

2018-06

The information presented is in addition to Xypex product data sheets and is not meant to replace these or any other installation guides but rather is meant to give a general description of the installation practices and procedures surrounding the use of Xypex products for waterproofing and protecting concrete and while normally provide an acceptable final appearance they are not meant as aesthetic finishes. Refer to Safety Data Sheets for safety information, applicators need to use all products and equipment in line with manufacturers and industry requirements.

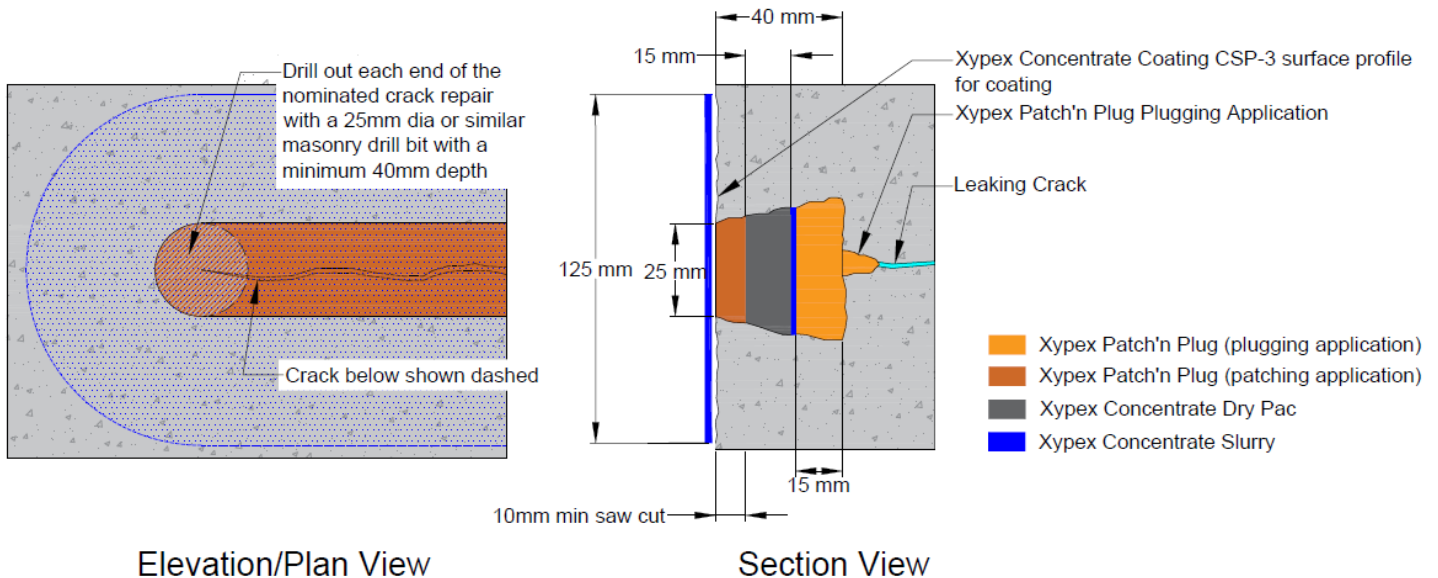


Figure 1, Details of the leaking crack repair/cold joint (Schematic)

This type of crack repair method applies to all structures subjected to hydrostatic pressure such as sewer systems, water and waste water treatment plants, reservoirs, dams and irrigation systems, basements, tunnels and underground structures, swimming pools, and aquatic facilities.

A. ACTIVE LEAKING CRACKS OR FAULTY COLD JOINTS

ROUTING

- Form a dovetail or rectangular shaped rout (A "V" shaped rout is not acceptable) along the entire length of the crack or faulty construction joint with a dimension of approximately 25 mm of width and 40 mm of depth as follows: *Saw cut the perimeter to the whole depth of 40 mm. Remove the concrete from the rout using a jackhammer (pneumatic, electro-mechanical or hydraulic). Remove all the loose and unsound materials. Care is to be taken to avoid damage to the sound concrete adjacent to the repair. Roughen edges of the rout to CSP-3 minimum profile. Recommend diamond based masonry with soft matrix blade for rough finish.*
- Clean the rout including 50 mm of concrete surface from each side of the rout using high pressure water blasting (approx. 3500 – 5000 psi or as required) to remove all the dirt, debris and loose particles and saturate the substrate. Conduct test wash prior to full application. Ensure route surface is rough with a surface profile CSP-5 to International Guidelines, refer to Surface Profile Chips.
- For localised/high flows, conduct plugging by mixing Patch'n Plug three and a half (3.5) parts dry powder to one (1) part clean water by volume into stiff putty. DO NOT add more water. Form plug with gloved hand. For

PLUGGING LEAK/CRACK

Although every care is taken by XYPEX to ensure that the material contained in this publication is accurate, XYPEX does not guarantee the suitability, completeness or accuracy of any of the material in this publication. Consequently, XYPEX can accept no responsibility for unsuitable, incomplete or inaccurate material and application, which may be contained here. The user shall determine the suitability of the product for its intended use.

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leaking cracks, begin at the point of lowest water flow and work towards the point of greatest water flow. Place plug into the cracked/leaking cavity firmly until the plug is hard and continue application into the crack/leak until the water flow has diminished. Where there is high volume water flow or high hydrostatic pressure a bleeder hose may be necessary to relieve the water pressure while sealing the crack/leak. Refer to data sheet for bleeder hose applications.

PLUGGING LAYER

4. Mix *Xypex Patch'n Plug* three and a half (3.5) parts dry powder to one (1) part clean water by volume into stiff putty. DO NOT add more water. Form into plugs by rolling the putty in gloved hands with approximate length of 100 mm and diameter of 25 mm.
5. Ensure the concrete is saturated and absorbed by concrete then remove excess water to achieve a saturated surface dry (SSD) state. Compress the hardened *Xypex Patch'n Plug* plugs into the base of the rout using a hammer and a block until the water flow stops. In case of vertical repair works, start compressing plugs from the top of the rout and continue to the bottom. The approximate thickness of plugging application should be maximum 15 mm. Ensure all waterflow has ceased before applying *Xypex Concentrate*.

NOTE: Conduct test application of *Xypex Patch'n Plug*. *Xypex Patch'n Plug* is a very rapid setting product. Project conditions may require variation of mixing up to 3.25 parts powder to 1 part water by volume. Water temperatures should be 15°C-20°C. Test application to ensure adequate finish and mixing ratios are compatible with project conditions. Refer to *Xypex Patch'n Plug* Data Sheet.

CONCENTRATE SLURRY

6. Mix five (5) parts *Xypex Concentrate*, dry powder to two (2) parts clean water by volume into slurry consistency. Allow mix to stand and start to harden, then reagit. Apply *Xypex Concentrate* slurry coat over the *Xypex Patch'n Plug* using a semi-stiff nylon bristle brush. Slurry coating must be uniformly applied with a nominal thickness of 1.25 mm (0.65 - 0.8 kg/m²).

7. Allow the *Xypex Concentrate* slurry coat to near initial set with some tackiness.

DRY PAC LAYER

8. Mix six (6) parts dry powder *Xypex Concentrate*, to one (1) part clean water by volume as Dry Pac. Lumps should be present in mix. Compress very firmly over the entire rout surface with a hammer and block or use pneumatic packing device to fill an approximate depth of 15 mm.
9. Remove any loose material from the rout using brush and ensure required thickness of *Xypex Patch'n Plug* can be applied. Clean edges of the rout. Apply a fine mist spray of clean water to seal the Dry Pac surface.

PATCHING LAYER

10. Mix four (4) parts dry powder *Xypex Patch'n Plug* to one and a half (1.5) parts clean water by volume to achieve a workable mortar consistency. Apply *Xypex Patch'n Plug* as scrub coat and patching application over the Dry Pac to return the rout to profile WITH CSP-3 (brush finish) (approximately with the thickness of 10 mm). Allow a minimum of 1 hour to set the applied material.

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CONCENTRATE FINAL COATING

11. Ensure that the repaired zone including 50 mm of concrete surface from each side of the repaired rout is saturated surface dry (SSD) condition. If the surface dries out after initial water application, it must be re-wetted using a fine mist spray of clean water. Remove any excess surface water so no glistening water present.

NOTE: Do not use high pressure water blasting for re-wetting of repaired zone and surrounding concrete surface. High pressure water blasting may cause damage to the repaired area.

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12. Mix as per point 6. and apply a nominal 1.25 mm *Xypex Concentrate* slurry (0.65 - 0.8 kg/m²) over the repaired area covering a total width of 125 mm (50 mm to each side of the rout). When applying *Xypex Concentrate*, ensure the slurry penetrates and fills any minor defects such as cracks/pores/voids. Application by stiff bristle brush must use a circular or 'figure 8' brush stroke motion to create a non-uniform pattern. The application and this required method is to ensure no weak plane in the coating is developed, creates a consistent/uniform application of the slurry and achieves an appropriate slurry thickness and roughness. Start curing of *Xypex Concentrate* coating as soon as the coating has set to the point where it will not be damaged by a fine mist spray of clean water (about 2-4 hours after application depending on the weather conditions). Cure the applied coating with a fine mist spray of clean water at least 3 times a day for 2-3 days.
- The suitability of this crack repair needs to be considered in relation to the structures performance, movement, usage, design, condition, reason for cracking, extent and width of cracking, potential future cracking, deflections, access, extent of deterioration, deterioration mechanisms effecting the structure, and state of corrosion. Other conditions/standards/specification may also be applicable. Specialist technical services or Xypex technical department may assist in this assessment if requested.

NOTE:

- For joints requiring early trafficable/hydrostatic pressure. Contact the Xypex Technical Department for possible alternatives.
- For joints where *Xypex Patch'n Plug* plugs do not 'hold'. A bleeder hose may require installation. Contact your Xypex Representative or the Xypex Technical Department for bleeder requirements
- For joints subject to movement (construction joints, expansion joints, contraction joints, isolation joints) contact a Xypex Representative or Xypex Technical Department for possible alternatives.
- Information presented is in addition to Xypex Data Sheets and is not meant to replace these or any other information surrounding the use of Xypex Products.
- This joint method, while normally provides an acceptable final appearance, is not meant for aesthetic finishes.
- Refer to *Xypex Concentrate* Method Statement for application requirements for paints, epoxies, grout, cement parge coat, plaster, tiles, stucco or similar products.
- Refer to Safety Data Sheet for safe application requirements.