

The Crystalline Waterproofing Solution

CrystalTec
waterproofing chemistry



CrystalTec™
**Concrete
Waterproofing and
Restoration System**

X-CALLIBUR®
STRUCTURAL SYSTEMS

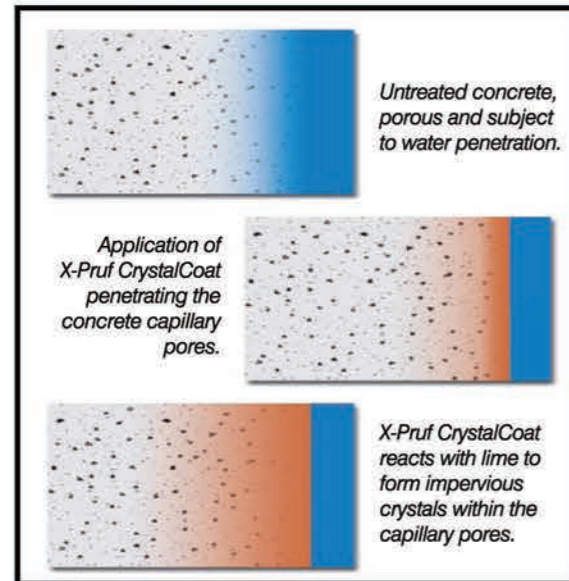
The X-Calibur® CrystalTec System Concrete Waterproofing and Restoration

Typical Applications

Introduction

The X-Calibur range of crystalline, capillary, pore blocking waterproofing and restoration products have been developed using CrystalTec chemistry. This Proven technology is based on a simple chemical process that has been optimized to provide high performance solutions in demanding conditions.

How it works?



When combined with water and concrete, CrystalTec reacts with unhydrated cement particles to form millions of active crystals. Over a period of weeks and months, these crystals grow, filling the naturally occurring pores and voids in concrete, and permanently blocking the pathways for water and waterborne contaminants. If cracks form due to shrinkage, incoming water triggers the crystallization process and additional crystals begin to grow, filling cracks and ensuring that the structure's waterproofing barriers is maintained and protected.

Where to use CrystalTec?

CrystalTec products are used to waterproof and protect concrete structures that are exposed directly to the atmosphere, ground or liquids. They are particularly useful in providing a repair solution to leaking or porous concrete structures and for application to wet and damp substrates in both positive and negative side waterproofing situations.

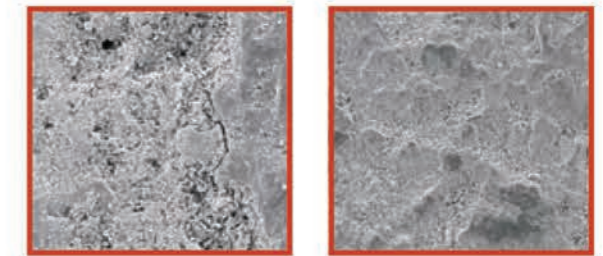


For large areas use X-calibur Spray Pump

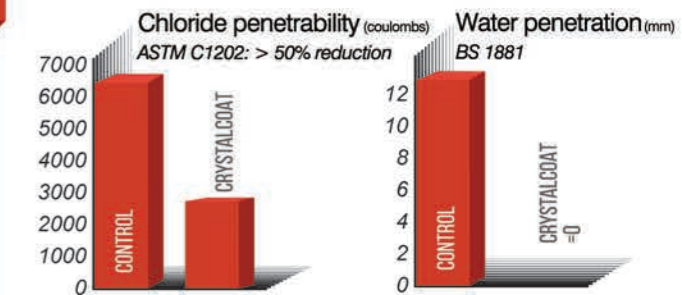
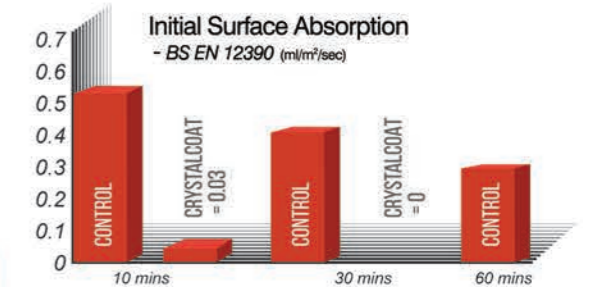


Laboratory Test Data

Pore Blocking Analysis by Scanning Electron Microscope



Control After 90 days



Chemical Resistance

Concrete coated with X-Pruf CrystalCoat is resistance to most alkaline and hydrocarbon chemicals. It is also resistant to many dilute acids.

It is not resistant to the following:

- Nitric Acid > 10% Hydrochloric Acid
- > 1% Sulfuric Acid > 10% Phosphoric Acid
- > 10% Formic Acid

Potable Water

CrystalCoat was tested and certified by NSF and has been tested to BS6920 and found to be suitable for use in contact with potable water.

Curing

CrystalTec products must remain moist to allow the crystals to form. All applications must be kept moist for a minimum of 48 hours to encourage crystal formation. After initial set, moist cure CrystalTec products using water. Spray the treated surface with water 3 to 4 times daily for the 48 hour period. In warmer climates, more frequent spraying may be required. Protect freshly applied product from extreme weather conditions, such as rain, strong winds, high temperatures and freezing for a period of not less than 48 hours after application. It can take up to 21 days for water leaks to seal completely however a reduction in leakage will be noticed on a daily basis until completely sealed.

Application Summary

X-Pruf CrystalCoat

Mixed with a 250 to 750 rpm drill and X-Calibur MP3 mixing paddle and applied immediately by brush or spray as a slurry. Applied as a powder direct on freshly placed concrete in slabs. Once it has absorbed water from the concrete mix it is power troweled into the surface.

X-Pruf CrystalBraid

Dampened and dry packed using a hammer and suitably shaped tool to compact the product and break up the fibres.

X-Roc CrystalPatch

Mixed using a forced action mixer applied by hand and finished with a trowel.

X-Roc CrystalPlug

Mixed using with a 250 to 750 rpm drill and X-Calibur MP3 mixing paddle, and applied direct to the leak by hand in a single seamless operation.

X-Mix CrystalMix

Added either at the batch plant or direct into a ready-mix truck at the job and mixed until fully dispersed.

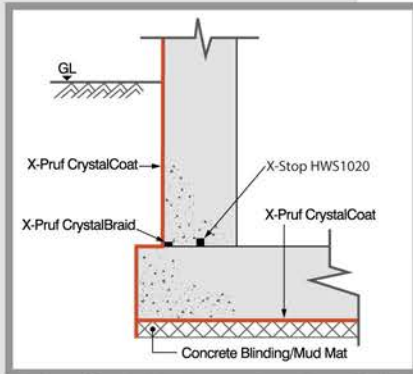
Benefits

- Barrier to the passage of water
- Deep penetration
- Self-healing
- Seals cracks up to 400 microns wide
- Permanent water-tightness for the life of structure
- Easy to apply
- Can be used for positive and negative side applications
- Resists high hydrostatic pressure > 100m
- Excellent water vapor transmission
- Improves chemical resistance
- Improves chloride and sulfate resistance
- Reduces freeze thaw damage
- Applied to fresh, damp and green concrete
- Applied as a slurry (brush or spray) dry-shake or admixture
- Suitable for use with potable water

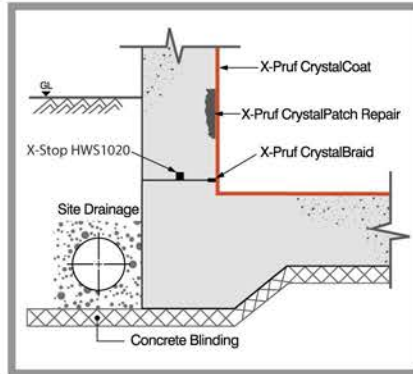
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Typical Details

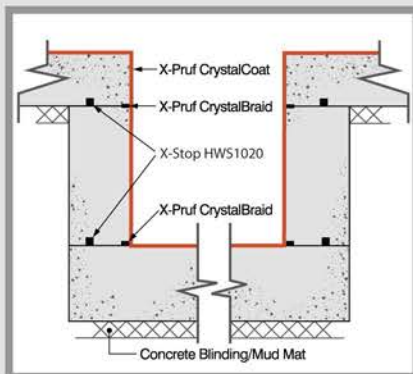
The details shown below are graphic representations of actual details available from your X-Calibur affiliate.



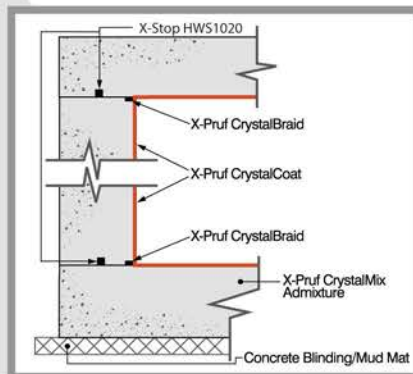
Below Grade Waterproofing (New Build)



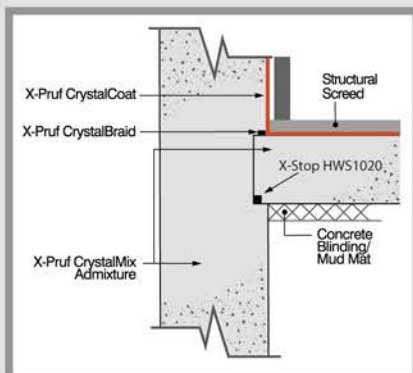
Below Grade (Remedial)



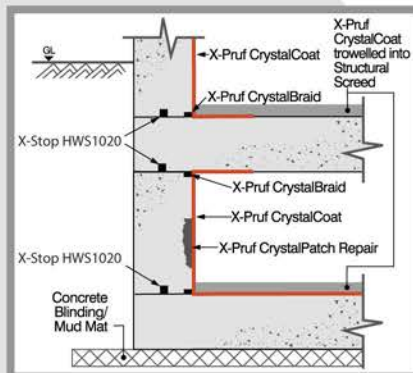
Lift Pit



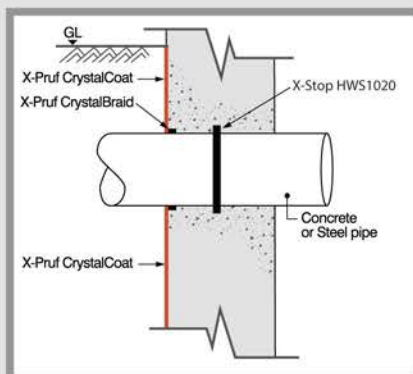
Water Tank (New Build)



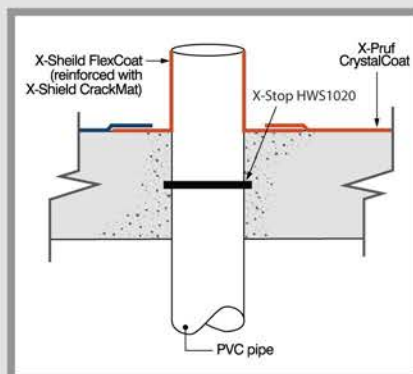
Diaphragm Wall (New Build)



Car Park (Remedial)



Concrete/Steel Pipe Entry



PVC Pipe Entry

Where not to use

Many companies promote the use of similar products as the answer for every waterproofing problem. The X-Calibur philosophy is to offer the best technology for each particular application. Therefore common applications we do not recommend CrystalTec products for are as follows. These recommendations are relevant to all crystalline waterproofing products no matter who makes them.

1. Wet areas (bathrooms, kitchens etc)

Waterproofing products used in these applications have to be fully compatible with a wide range of substrates, take movement as the building shrinks and is brought to its operational temperature and bond effectively to tile adhesives. X-Pruf SaniPruf has been developed specifically for use in wet areas.

2. Concrete that has to be over-coated with a coating or direct adhered finish.

The highly alkaline and dense matrix produced using CrystalTec coatings and mortars makes it is very difficult to prepare the treated surface to ensure the effective adhesion of any coating. There are techniques that can be employed such as abrasive blast and acid treatments but these can be hazardous and messy and the results are not always successful.

Note: X-Pruf CrystalMix is suitable for use in this application

3. Highly acidic environments

CrystalTec treated concrete has improved acid resistance over normal concrete due to its higher alkalinity and lower permeability therefore can be used as a cost effective treatment in low acid environments such as certain areas in the waste water treatment process. However in areas of high acid concentration it will deteriorate just like concrete. Alkaline surfaces do not like acids that's a chemical fact.

4. Abrasion

If subjected to highly abrasive and trafficked situations the coating may be worn away before the chemical reaction has been fully completed. If the area to be treated cannot be protected and subjected to moisture for 14 to 21 days after application then other treatments such as X-Calibur's range of coatings should be considered.

Note: X-Pruf CrystalMix is suitable for use in this application. If X-Pruf CrystalCoat is trowelled directly into fresh concrete it is also suitable.

5. Movement

If the structure will be subject to movement that may produce static cracks in excess of 0.4mm an elastomeric waterproofing system such as X-Shield ProFlex or X-Pruf 836/TP80/PU1 should be used.

6. Roofs

Roofs are normally subjected to wide temperature ranges which create movements that can induce relatively large cracks. While the design of the roof may suggest cracks will be small and they can be waterproofed using X-Pruf CrystalCoat the reality can be totally different. Elastomeric systems such as X-Shield ProCoat or X-Pruf Elastocem are much better options.