



2880 E. 14th North
Ammon ID 83401
208-514-4441

Change Order

Order#: 05

Order Date: 11/07/2016

License: RCE-31727

To: City of Sun Valley
P.O. Box 416
Sun Valley ID 83353

Project: 199
Elkhorn Fire Station
100 Arrowleaf Rd
Sun Valley ID 83353

The contractor agrees to perform and the owner agrees to pay for the following changes to this contract.

Plans Attached

Ordered By: 13 Russell Morris

Customer Order:

Specifications Attached

Description of Work	Amount
Waterproof Concrete Wall Please see the attached quote from Guaranteed Waterproofing	9,126.00
10% Overhead & Profit	912.60

Notes

Negative changes will lower the overall contract price requiring no additional payment by owner.

Requested Amount of Change

10,038.60

The original Contract Sum was	244,336.00
Net change by previous Change Orders	15,546.25
The Contract Sum prior to this Change Order	259,882.25
The Contract Sum will be changed by this Change Order	10,038.60
The new Contract Sum including this Change Order will be	269,920.85
The Contract Time will be changed by	0 Days

Owner: _____

Date: _____

Contractor: Russell Morris

Date: November 7, 2016



Sun Valley Fire

Justin Mellen
 Guaranteed Waterproofing
 Contractors License # 7968359-5501
 Cel (801) 694-3812
 Fax 801-943-9115
 justin@guaranteedwaterproof.com

This bid is for coating Xypex Concentrate, Xypex Modified and Xypex patch n plug on cracks and joints on foundation wall of Sun Valley fire station.

Scope	Application	Price
Powerwashing and Coating walls with Xypex Concentrate and Modified	We will power wash the foundation walls of the fire station to help open up the pores and allow the Xypex crystalline waterproofing to migrate into the concrete. We will detail expansion joints and cracks as needed. We will then spray the concrete with Xypex Concentrate and Xypex modified as recommended by Manufacture. We figure there are 1,512 SF of walls hat need to be coated.	Mobilization- \$950 Surface Prep and Xypex 2 coat system - \$4.25 per SF. = \$6,426 We estimate there are up to 50 lineal feet of cracks that need to be detailed. 50' @ \$35 = \$1,750
Warranty	10- Year Warranty against leaks in treated areas.	Included in bid.



2880 E. 14th North
Ammon ID 83401
208-514-4441

Request For Information

Date of Request: 10/13/2016

RFI#: 10

Prepared By: Russell Morris

License: RCE-31727

To: City of Sun Valley
P.O. Box 416
Sun Valley ID 83353

Project: 199
Elkhorn Fire Station
100 Arrowleaf Rd
Sun Valley ID 83353

You are hereby invited to provide information on the following items.
Information must be received prior to

Attachments:

Potential Change in
Project Schedule

May require a
Change Order

Requires a Change
of Plans/Specifications

In four or five places along the east exterior wall there is water seeping through the concrete, that wall is called out to be painted. Please advise on a appropriate solution to correct the problem.

Information Supplied:

The East wall shall be treated with Xpex coatings on inside of the existing wall by a certified installer. Xpex shall be installed per manufactures recommended specifications and methods.

- a. Xypex Patch and Plug for cracks and joints.
- b. Xypex Modified
- c. Xypex Concentrate

Specifications and contact for certified installer are attached to this document.



Milwaukee





From: Xypex
To: [Stan Cole](#)
Subject: Fwd: Lowville, NY (XYPEX Coating)
Date: Monday, October 31, 2016 2:06:37 PM
Attachments: [csi-format-\(coating\).pdf](#)
[Xypex Concentrate.pdf](#)
[Xypex Modified.pdf](#)
[True Waterproofing Xypex patch"n-plug .pdf](#)

Stan,

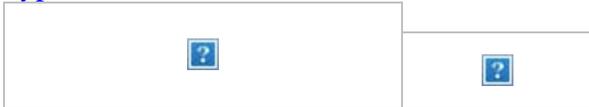
The (csi format coating attachment) has everything written in to meet your requests. Xypex Concentrate will be used as a first coat. The first coat will be followed up with a second coat of xypex modified. Bug holes, surface fillings, and cracks are detailed before the coatings with xypex patch n plug. (Slurry, patch n plug, slurry)

Here is contact info for our certified applicators if you are interested in a 10 year watertight warranty on this project.

Guaranteed Waterproofing & Construction
Contact: Justin Mellon
Website: guaranteedwaterproof.com
Email: justin@guaranteedwaterproof.com

Thanks,

Kip Whipperman
[385-477-9288](tel:385-477-9288)
xypex-it.com



Coatings CSI Format

Section 07160

PART 1 – GENERAL

1.01 SUMMARY

- A. **Section Includes:** Furnishing of all labor, materials, services and equipment necessary for the supply and installation of cementitious crystalline waterproofing to concrete substrates, above-grade or below-grade, on either dry or wet side of substrates, as indicated on drawings and as specified herein.
- B. **Related Sections:**
1. Section 03100 - Concrete Work
 2. Section 07900 - Joint Sealers
 3. Section 09900 - Paints and Coatings

1.02 REFERENCES

- A. **Applicable Standards:** The following standards are referenced herein.
1. American Society for Testing and Materials (ASTM)
 2. Army Corps of Engineers (CRD)
 3. NSF International (NSF)

1.03 SYSTEM DESCRIPTION

- A. **Cementitious Crystalline Waterproofing:** Blend of portland cement, fine treated silica sand and active proprietary chemicals. When mixed with water and applied as a cementitious coating, the active chemicals cause a catalytic reaction which generates a non-soluble crystalline formation of dendritic fibers within the pores and capillary tracts of concrete. This process causes concrete to become permanently sealed against the penetration of liquids from any direction.

1.04 SYSTEM PERFORMANCE REQUIREMENTS

- A. **Testing Requirements:** Crystalline waterproofing system shall be tested in accordance with the following standards and conditions, and the testing results shall meet or exceed the performance requirements as specified herein.
- B. **Independent Laboratory:** Testing shall be performed by an independent laboratory meeting the requirements of ASTM E 329-95 and certified by the United States Bureau of Standards. Testing laboratory shall obtain all concrete samples and waterproofing product samples.
- C. **Crystalline Penetration:** Crystallizing capability of waterproofing material shall be evidenced by independent SEM (Scanning Electron Microscope) photographs

documenting penetration of crystal-forming waterproofing material to a depth of 2 inches (50 mm).

- D. **Permeability:** Independent testing shall be performed according to U.S. Army Corps of Engineers CRD C48-73 "Permeability of Concrete".
1. Concrete samples (treated and untreated) to have design strength of 2000 psi (13.8 MPa) and thickness of 2 inches (50 mm). No admixtures permitted.
 2. Coatings to have maximum thickness of 0.05 inches (1 mm) per coat with up to two coats permitted.
 3. Samples to be pressure tested to 175 psi (405 foot head of water) or 1.2 MPa (123.4 m head of water).
 4. Treated samples, after crystalline growth has occurred, shall exhibit no measurable leakage.
- E. **Chemical Resistance:** Independent testing shall be performed according to ASTM C 267-77 "Chemical Resistance of Mortars" and ASTM C 39-86 "Compressive Strength of Cylindrical Concrete Specimens".
1. Concrete samples (treated and untreated) to have design strength of 4000 psi (27.6 MPa). No admixtures permitted.
 2. Coatings to have maximum thickness of 0.05 inches (1 mm) per coat with up to two coats permitted.
 3. Untreated and treated specimens to be immersed for a minimum of 84 days in following chemical solutions: hydrochloric acid (3.5pH), brake fluid, transformer oil, ethylene glycol, toluene, caustic soda.
 4. Treated specimens shall exhibit no detrimental effects after exposure, and shall have a minimum of 14% increase in compressive strength versus untreated control specimens.
- F. **Potable Water Approval:** Independent testing shall be performed according to NSF Standard 61 and approval for use of waterproofing material on structures holding potable water shall be evidenced by NSF certification.

1.05 SUBMITTALS

- A. **General:** Submit listed submittals in accordance with conditions of the Contract and with Division 1 Submittal Procedures Section.
- B. **Product Data:** Submit product data, including manufacturer's specifications, installation instructions, and general recommendations for waterproofing applications. Also include manufacturer's certification or other data substantiating that products comply with requirements of Contract Documents.
- C. **Test Reports:** Submit for acceptance, complete test reports from approved independent testing laboratories certifying that waterproofing system conforms to performance characteristics and testing requirements specified herein.
- D. **Manufacturer's Certification:** Provide certificates signed by manufacturer or manufacturer's representative certifying that the materials to be installed comply in all respects with the requirements of this specification, and that the applicator is qualified and approved to install the materials in accordance with manufacturer's product data.

- E. **Manufacturer's Field Report:** Provide copy of report from manufacturer's representative confirming that the surfaces to which waterproofing material is to be applied are in a condition suitable to receive same.

1.06 QUALITY ASSURANCE

- A. **Manufacturer Qualifications:** Manufacturer shall be ISO 9001 registered, and shall have no less than 10 years experience in manufacturing the cementitious crystalline waterproofing materials for the required work. Manufacturers that cannot provide the performance test data specified herein will not be considered for the project.
- B. **Applicator:** Waterproofing applicator shall be experienced in the installation of cementitious crystalline waterproofing materials as demonstrated by previous successful installations, and shall be approved by the manufacturer in writing.
- C. **Pre-Installation Conference:** Prior to installation of waterproofing, conduct meeting with waterproofing applicator, installers of work adjacent to or which penetrates waterproofing, Architect/Engineer, owner's representative, and waterproofing manufacturer's representative to verify and review the following:
1. Project requirements for waterproofing as set out in Contract Document.
 2. Manufacturer's product data including application instructions.
 3. Substrate conditions, and procedures for substrate preparation and waterproofing installation.
- D. **Technical Consultation:** The waterproofing manufacturer's representative shall provide technical consultation on waterproofing application.

1.07 DELIVERY, STORAGE AND HANDLING

- A. **Delivery:** Deliver packaged waterproofing materials to project site in original undamaged containers, with manufacturer's labels and seals intact.

1.08 PROJECT CONDITIONS

- A. **Compliance:** Comply with manufacturer's product data regarding condition of substrate to receive waterproofing, weather conditions before and during installation, and protection of the installed waterproofing system.

1.09 WARRANTY

- A. **Manufacturer's Warranty:** Manufacturer shall provide standard product warranty executed by authorized company official. Term of warranty shall be [specify term] years from Date of Substantial Completion.
- B. **Applicator's Warranty:** Applicator shall warrant the waterproofing installation against

defects caused by faulty workmanship or materials for a period of [specify term] years from Date of Substantial Completion. The warranty will cover the surfaces treated and will bind the applicator to repair, at his expense, any and all leaks through the treated surfaces which are not due to structural weaknesses or other causes beyond applicator's control such as fire, earthquake, tornado and hurricane. The warranty shall read as follows:

1. **Warranty:** The applicator warrants that, upon completion of the work, surfaces treated with cementitious crystalline waterproofing will be and will remain free from water leakage resulting from defective workmanship or materials for a period of [specify term] years from Date of Substantial Completion. In the event that water leakage occurs within the warranty period from such causes, the applicator shall, at his sole expense, repair, replace or otherwise correct such defective workmanship or materials. Applicator shall not be liable for consequential damages and applicator's liability shall be limited to repair, replacement or correcting of defective workmanship or materials. Applicator shall have no responsibility with respect to water leakage or other defects caused by structural failure or movement of the structure, or any other causes beyond Applicator's control.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. **Acceptable Manufacturer:**
Xypex Chemical Corporation
13731 Mayfield Place, Richmond, B.C., Canada V6V 2G9
Tel: 800 961.4477 or 604 273.5265 Fax: 604 270.0451
- B. **Proprietary Products:** Xypex crystalline waterproofing materials as follows:
 1. Xypex Concentrate
 2. Xypex Modified
 3. Xypex Patch'n Plug

Note: Supplemental specifications are available for Xypex Admix C-Series C-500, C-1000, C-2000 (admixture), and Xypex Concentrate DS-1/DS-2 (dry shake).

- C. **Substitutions:** No substitutions permitted.
- D. **Source Quality:** Obtain proprietary crystalline waterproofing products from a single manufacturer.

2.02 MIXES

- A. **General:** Mix waterproofing material by volume with clean water which is free from salt and deleterious materials. Mix waterproofing material in quantities that can be applied within 20 to 30 minutes from time of mixing. As mixture thickens, stir frequently, but do not add additional water. Do not mix bonding agents or admixtures with crystalline waterproofing materials.
- B. **Brush Application Mix:** Measure dry powder and place in mixing container. Measure

water and mix into the dry powder with a paddle on a slow speed electric drill (250 RPM) or other type mixer which is acceptable to manufacturer. Mixing proportions shall be as follows:

Coverage	Proportions (by Volume)
1.5 lb./sq. yd. (0.8 kg/m ²)	5 powder to 2 water
2.0 lb./sq. yd. (1.0 kg/m ²)	3 powder to 1 water

- C. **Spray Application Mix:** Mixing shall be same as specified for brush application except that mixture shall be thinner. Use following proportions as a guide only. Adjust proportions to match type of spray equipment and pressures used. Mixing proportions shall be as follows:

Coverage	Proportions (by Volume)
1.5 lb./sq. yd. (0.8 kg/m ²)	5 powder to 3 water

- D. **Dry-Pac Mix:** Using a trowel, mix 1 part clean water with 6 parts Xypex Concentrate powder for 10 to 15 seconds. It is acceptable that lumps may be present in mixture. Mix only as much as can be applied in 15 minutes.

PART 3 – EXECUTION

3.01 EXAMINATION

- A. **Site Visit:** Prior to waterproofing installation, arrange visit to project site with waterproofing manufacturer's representative. Representative shall inspect and certify that concrete surfaces are in acceptable condition to receive waterproofing treatment.
- B. **Verification of Substrates:** Verify that concrete surfaces are sound and clean, and that form release agents and materials used to cure the concrete are compatible with waterproofing treatment.
- C. **Examination for Defects:** Examine surfaces to be waterproofed for form tie holes and structural defects such as honeycombing, rock pockets, faulty construction joints and cracks. Such defects to be repaired in accordance to manufacturer's product data and 3.02 below.

3.02 PREPARATION

- A. **Concrete Finish:** Concrete surfaces to receive waterproofing treatment shall have an open capillary system to provide tooth and suction, and shall be free from scale, excess form oil, laitance, curing compounds and foreign matter. Horizontal surfaces shall have a rough wood float or broom finish. Where a smooth trowel finish is required on horizontal surface, crystalline waterproofing material shall be applied by dry shake method at time of concrete finishing in accordance with manufacturer's product data.
- B. **Surface Preparation:** Smooth surfaces (e.g. where steel forms are used) or surfaces



PATCH'N PLUG

03010 | PATCHING & RESURFACING

Concrete Waterproofing

Description

XYPEX PATCH'N PLUG is a specially designed, fast-setting, non-shrink, high-bond-strength, hydraulic cement compound for concrete patching and repair. Patch'n Plug stops flowing water in seconds and is used to seal cracks, tie holes, and other defects in concrete. The high performance characteristics of Patch'n Plug are enhanced by Xypex's unique crystalline waterproofing technology.

Recommended for:

- Stopping an active flow of water through cracks
- Repair of concrete substrates before the application of Xypex coating materials

Advantages

- Single component (simply add water)
- Fast setting: two to three minutes at 70°F (21°C)
- Excellent structural strength
- As durable as the masonry and concrete to which it is applied
- Non-metallic (won't rust or deteriorate)
- Non-toxic

Packaging

Xypex Patch'n Plug is available in 20 lb. (9.1 kg) pails and 60 lb. (27.2 kg) pails.

Storage

Xypex products must be stored dry at a minimum temperature of 45°F (7°C). Shelf life is one year when stored under proper conditions.

Coverage

One 60 lb. (27.2 kg) pail of Xypex Patch'n Plug will produce 0.54 cubic feet (0.0154 cu. metres) of mortar.

Test Data

Physical Property	Test Method	Typical Result	
		psi	MPa
Compressive Strength	ASTM C109	psi	MPa
@ 24 hours		2100	14.3
@ 7 days		3100	21.3
@ 28 days		4500	31.0
Setting Time	ASTM C266	min.	sec.
Initial Set		3	50
Final Set		9	10
Tensile Bond Pull-Off	CSA A23.2-6B	psi	MPa
		120	0.8

NOTE: Samples prepared with 1 part water to 3.25 parts dry powder by volume (1 part water to 4 parts dry powder by mass). Setting time was determined using Gilmore needles.

Plugging Instructions

1. **PREPARATION** Rout out crack or hole by chiseling or chipping to a minimum depth of one inch (25 mm). Form a square or dovetail shaped space (do not use a "V" cut). Flush away all loose materials and dirt from the cavity with water and a stiff brush.

2. **MIXING** Add 1 part water to 3.5 parts Patch'n Plug by volume and mix to the consistency of a stiff putty. Do not mix more than can be used in 3 minutes. For best results, water temperature should be approximately 60°F - 70°F (15°C - 20°C).

3. **PLUGGING** Form plug with gloved hand. Place plug into cavity pressing firmly until plug is hard. When sealing cracks, begin at the highest point and work down.

NOTE: Where there is a high volume of water flow due to extreme hydrostatic pressure, a bleeder hose may be necessary to relieve the water pressure while sealing the repair area. (See procedures on reverse side.)

Follow These Steps:

- a. With a concrete chisel and hammer (or chipping gun), cut open a cavity at the point of greatest water flow.
- b. Place a stiff section of hose or pipe into the cavity and secure in place with Patch'n Plug to force water through the hose. This relieves the pressure so that the area can be patched. Allow a minimum of 24 hours for hardening.
- c. Remove bleeder hose and plug remaining hole. If necessary, reduce water flow by inserting steel wool or wooden plug in the remaining hole before patching.

Patching Instructions

1. **SURFACE PREPARATION** Rout out faulty concrete until sound substrate is reached. Remove all loose materials from area and saturate with clean water. Allow water to be absorbed into the concrete, then remove excess water.

2. **MIXING** For fast repairs to concrete or masonry, add water to Patch'n Plug powder (1.5 parts water to 4 parts powder by volume). Mix to a workable mortar consistency and trowel on as required. For large repairs, mix 1 part Patch'n Plug with 2 parts mason sand or small aggregate (3/8 in. or 10 mm minus crushed stone). Maximum ratio is 40 lb. (18.2 kg) stone to one 60 lb. pail (27.2 kg) of Patch'n Plug.

Abnormal Temperatures

During above normal ambient temperatures, mixing water should not exceed 90°F (32°C) and Xypex Patch'n Plug material should not exceed 70°F (21°C). Below normal ambient temperatures will retard the setting time of Patch'n Plug. In this situation, Xypex materials should be stored at normal temperatures (see Storage) and mixing water should be heated to increase setting speed.

Technical Services

For more instructions, alternative application methods, or information concerning the compatibility of the Xypex treatment with other products or technologies, contact the Technical Services Department of Xypex Chemical Corporation or your local Xypex representative.

Safe Handling Information

Xypex is alkaline. As a cementitious powder or mixture, Xypex may cause significant skin and eye irritation. Directions for treating these problems are clearly detailed on all Xypex pails and packaging. The Manufacturer also

maintains comprehensive and up-to-date Material Safety Data Sheets on all its products. Each sheet contains health and safety information for the protection of workers and customers. The Manufacturer recommends you contact Xypex Chemical Corporation or your local Xypex representative to obtain copies of Material Safety Data Sheets prior to product storage or use.

Warranty

The Manufacturer warrants that the products manufactured by it shall be free from material defects and will be consistent with its normal high quality. Should any of the products be proven defective, the liability to the Manufacturer shall be limited to replacement of the product ex factory. The Manufacturer makes no warranty as to merchantability or fitness for a particular purpose and this warranty is in lieu of all other warranties expressed or implied. The user shall determine the suitability of the product for his intended use and assume all risks and liability in connection therewith.



covered with excess form oil or other contaminants shall be washed, lightly sand-blasted, water-blasted, or acid etched with muriatic acid as necessary to provide a clean absorbent surface. Surfaces to be acid-etched shall be saturated with water prior to application of acid.

- C. **Repair of Defects:** Surface defects shall be repaired in accordance with manufacturer's instructions as follows:
1. Form Tie Holes, Construction Joints, Cracks: Chip out defective areas in a "U" shaped slot one inch (25 mm) wide and a minimum of one inch (25 mm) deep. Clean slot of debris and dust. Soak area with water and remove excess surface water. Apply a slurry coat of Xypex Concentrate at the rate of 1.5 lb./sq. yd. (0.8 kg/m²) to the slot. Allow slurry to reach an initial set, then fill cavity with Dry-Pac. Compress tightly into cavity using pneumatic packer or block and hammer.
 2. Rock Pockets, Honeycombing or Other Defective Concrete: Rout out defective areas to sound concrete. Remove loose materials and saturate with water. Remove excess surface water and apply a slurry coat of Xypex Concentrate to area. After slurry has set, but while still "green", fill cavity to surface level with non-shrink grout.
- D. **Wetting Concrete:** Prior to application of waterproofing treatment, thoroughly saturate concrete surfaces with clean water as required to ensure migration of crystalline chemicals into voids and capillary tracts of the concrete. Remove free surface water before application.

3.03 APPLICATION

- A. **Construction Joints:** Apply Xypex Concentrate in slurry form at a rate of 2.0 lb./sq. yd. (1.08 kg/m²) to joint surfaces between concrete pours. Moisten surfaces prior to slurry application. Where joint surfaces are not accessible prior to pouring new concrete, consult manufacturer for application procedure.
- B. **Sealing Strips and Coves:** Prepare concrete surfaces that will come into contact with sealing strips and coves by applying one coat of Xypex Concentrate in slurry form at a rate of 1.5 lb./sq. yd. (0.8 kg/m²). Then apply Xypex Concentrate in Dry-Pac form (sealing strip) or Xypex Modified in mortar consistency (cove) after slurry coat has reached an initial set but is still "green".
1. Sealing Strips: Where indicated on drawings, fill preformed grooves, one inch (25 mm) wide and minimum of 1.5 inch (37 mm) deep, located at construction joints with Xypex Concentrate in Dry-Pac form. Compact Dry-Pac tightly into groove using a pneumatic packer or hammer and block.
 2. Coves: Where indicated on drawings, trowel apply and pack Xypex Modified mortar into a cove shape.
- C. **Surface Application:** After repairs, surface preparation, treatment of construction joints and sealing strip placement have been completed in accordance with manufacturer's product data and as specified herein, apply Xypex treatment uniformly to concrete surfaces with semi-stiff bristle brush or broom, or suitable spray equipment. Application rates and locations shall be as indicated in the

drawings and in accordance with manufacturer's product data. When brushing, work slurry well into surface of the concrete, filling surface pores and hairline cracks. When spraying, hold nozzle close enough to ensure that slurry is forced into pores and hairline cracks.

1. First Coat (of one or two coat application): Apply Xypex Concentrate slurry coat to locations indicated on drawings in accordance with manufacturer's product data.
 2. Second Coat (of two coat application): Where indicated on drawings or as required by manufacturer's product data, apply Xypex Modified slurry coat while first coat of Xypex Concentrate is still "green" but after it has reached an initial set. Use light prewatering between coats when rapid drying conditions exist.
- D. **Sandwich (Topping) Application:** When treated structural slabs are to receive a concrete or other topping, place the topping while waterproofing material is still "green" but has reached an initial set. Lightly prewater when rapid drying conditions exist.

3.04 CURING

- A. **General:** Begin curing as soon as Xypex coating has hardened sufficiently so as not to be damaged by a fine spray. Cure Xypex treatment with a mist fog spray of clean water three times a day for 2 to 3 days, or cover treated surfaces with damp burlap for the prescribed period. In warm climates, more than three sprayings per day may be necessary to prevent excessive drying of coating.
- B. **Air Circulation:** Do not lay plastic sheeting directly on the waterproofing coating as air contact is required for proper curing. If poor circulation exists in treated areas, it may be necessary to provide fans or blown air to aid in curing of waterproofing treatment.
- C. **Holding Structures:** For concrete holding structures such as swimming pools, reservoirs, water treatment tanks and wet wells, cure Xypex treatment for three days and then allow treatment to set (air cure) for 12 days before filling structure with liquid. For structures holding hot or corrosive liquids, cure waterproofing treatment for three days and allow to set for 18 days before filling.
- D. **Protection:** During the curing period, protect treated surfaces from damage by wind, sun, rain and temperatures below 36°F (2°C). If plastic sheeting is used for protection, it must be raised off of waterproofing coating to allow sufficient air circulation.
- E. **Curing Agent:** If moist curing is not possible, use a chemical curing agent that is specifically designed for or compatible with the approved crystalline waterproofing treatment. Curing agent shall have at least two years of successful field use and shall be approved by waterproofing manufacturer in writing.

3.05 INTERFACE WITH OTHER MATERIALS

- A. **Backfilling:** Do not backfill for 36 hours after application. If backfill takes place within seven days after application, then backfill material shall be moist so as not

to draw moisture from waterproof coating.

- B. **Paint, Epoxy or Similar Coatings:** Do not apply paint or other coatings until waterproofing treatment has cured and set for a minimum of 21 days. Before applying paint or coating, neutralize treated surface by dampening with water and then washing waterproofed surface with 15% muriatic acid, diluted in a ratio of one part acid to four parts water by volume. Flush acid off treated concrete surfaces.
- C. **Grout, Cement Parge Coat, Plaster or Stucco:** Because the waterproof coating forms a relatively smooth surface and the resulting crystalline formation fills the concrete pores thereby reducing suction characteristics of the concrete, it may be necessary to use a suitable bonding agent for proper bonding of cementitious systems. Trial applications are recommended to ensure that adhesion requirements are satisfied.
- D. **Responsibility to Ensure Compatibility:** Xypex Chemical Corporation makes no representations or warranties regarding compatibility of Xypex treatment with coatings, plasters, stuccos, tiles or other surface-applied materials. It shall be the responsibility of the installer of the surface-applied material that is to be applied over the Xypex waterproofing treatment, to take whatever measures are necessary, including testing, to ensure acceptance by or adhesion to the waterproofing treatment.

3.06 FIELD QUALITY CONTROL

- A. **Observation:** Do not conceal installed waterproofing system before it has been observed by Architect/Engineer, waterproofing manufacturer's representative and other designated entities.
- B. **Flood Testing:**
 - 1. Perform flood test on completed waterproofing installation before placement of other construction.
 - 2. Plug or dam drains and fill area with water to a depth of two inches (50 mm) or to within 0.5 inch (12.5 mm) of top of waterproofing treatment.
 - 3. Let water stand for 24 hours.
 - 4. If leaks are discovered, make repairs and repeat test until no leaks are observed.

3.07 CLEANING AND PROTECTION

- A. **Cleaning:** Clean spillage and soiling from adjacent surfaces using appropriate cleaning agents and procedures.
- B. **Protection:** Take measures to protect completed Xypex coating from damage after application. Do not permit traffic on unprotected coating.

End of Section 07160



CONCENTRATE

07160 | CEMENTITIOUS CRYSTALLINE

Concrete Waterproofing

Description

Xypex is a unique chemical treatment for the waterproofing, protection and repair of concrete. XYPEX CONCENTRATE is the most chemically active product within the Xypex Crystalline Waterproofing System. When mixed with water, this light grey powder is applied as a cementitious slurry coat to above-grade or below-grade concrete, either as a single coat or as the first of a two-coat application. It is also mixed in Dry-Pac form for sealing strips at construction joints, or for the repairing of cracks, faulty construction joints and honeycombs. Xypex prevents the penetration of water and other liquids from any direction by causing a catalytic reaction that produces a non-soluble crystalline formation within the pores and capillary tracts of concrete and cement-based materials.

Recommended for:

- Reservoirs
- Sewage and Water Treatment Plants
- Underground Vaults
- Secondary Containment Structures
- Foundations
- Tunnels and Subway Systems
- Swimming Pools
- Parking Structures

Advantages

- Resists extreme hydrostatic pressure
- Becomes an integral part of the substrate
- Can seal hairline cracks up to 0.4 mm
- Allows concrete to breathe
- Highly resistant to aggressive chemicals
- Non-toxic
- Does not require a dry surface
- Cannot puncture, tear or come apart at the seams
- No costly surface priming or leveling prior to application
- Does not require sealing, lapping and finishing of seams at corners, edges or between membranes
- Can be applied to the positive or the negative side of the concrete surface
- Does not require protection during backfilling or during placement of steel, wire mesh or other materials
- Less costly to apply than most other methods
- Not subject to deterioration
- Permanent

Packaging

Xypex Concentrate is available in 20 lb. (9.1 kg) pails, 60 lb. (27.2 kg) pails and 50 lb. (22.7 kg) bags.

Storage

Xypex products must be stored dry at a minimum temperature of 45°F (7°C). Shelf life is one year when stored under proper conditions.

Coverage

For normal surface conditions, the coverage rate for each Xypex coat is 6 to 7.2 sq. ft./lb. (1.25 - 1.5 lb./sq. yd. or 0.65 - 0.8 kg/m²).

Test Data

PERMEABILITY

U.S. Army Corps of Engineers (USACE) CRD C48-73, "Permeability of Concrete", Pacific Testing Labs, Seattle, USA

Two in. (51 mm) thick, 2000 psi (13.8 MPa) Xypex-treated concrete samples were pressure tested up to a 405 ft. (124 m) water head (175 psi/1.2 MPa), the limit of the testing apparatus. While untreated samples showed marked leakage, the Xypex-treated samples (as a result of the crystallization process) became totally sealed and exhibited no measurable leakage.

DIN 1048, "Water Impermeability of Concrete", Bautest – Corporation for Research & Testing of Building Materials, Augsburg, Germany

Twenty cm thick Xypex-treated concrete samples were pressure tested up to 7 bars (230 ft./70 m water head) for 24 hours to determine water impermeability. While the reference specimens measured water penetration up to a depth of 92 mm, Xypex-treated samples measured water penetration of zero to an average of 4 mm.

ÖNORM B 3303, "Water Impermeability of Concrete", Technologisches Gerwerbemuseum, Federal Higher Technical Education & Research Institute, Vienna, Austria

Xypex-treated concrete samples were pressure tested to a maximum 7 bars (230 ft./70 m water head) for 10 days. Test revealed that while 25 ml of water had penetrated the untreated concrete samples, zero ml had penetrated the Xypex-treated samples. Test specimens were then

broken and showed water penetration to a depth of 15 mm on untreated samples but no measurable water penetration on the Xypex-treated samples.

CSN 1209/1321, "Impermeability and Resistance to Pressurized Water", Institute of Civil Engineering, Technology and Testing, Bratislava, Slovak Republic

Xypex-treated and untreated concrete samples were exposed to 1.2 MPa of pressure to determine water permeability. Results showed the Xypex-treated samples provided effective protection against hydrostatic water pressure. Treated and untreated samples were also subjected to contact with silage juices and various petroleum products (e.g. diesel oil, transformer oil, gasoline) at 14 kPa for 28 days. The Xypex-treated samples significantly reduced the penetration of these solutions.

CHEMICAL RESISTANCE

ASTM C 267-77, "Chemical Resistance to Mortars", Pacific Testing Labs, Seattle, USA

Xypex-treated cylinders and untreated cylinders were exposed to hydrochloric acid, caustic soda, toluene, mineral oil, ethylene glycol, pool chlorine and brake fluid and other chemicals. Results indicated that chemical exposure did not have any detrimental effects on the Xypex coating. Tests following chemical exposure measured an average 17% higher compressive strength in the Xypex-treated specimens over the untreated control samples.

IWATE University Technical Report, "Resistance to Acid Attack", Tokyo, Japan

Xypex-treated mortar and untreated mortar were measured for acid resistance after exposure to a 5% H₂SO₄ solution for 100 days. Xypex suppressed concrete erosion to 1/8 of the reference samples.

FREEZE/THAW DURABILITY

ASTM C 672, "Standard Test Method for Scaling Resistance of Concrete Surfaces Exposed to De-icing Chemicals", Twin City Testing Lab, St. Paul, USA

Xypex-treated samples restricted chloride ion concentration to below the level necessary to promote electrolytic corrosion of reinforcing steel. Visual examination of untreated panels after 50 freeze/thaw cycles showed a marked increase in surface deterioration compared to Xypex-treated samples.

JIS A 6204, "Concrete Freeze/Thaw", Japan Testing Center for Construction Materials, Tokyo, Japan

The resonating frequency of both untreated and Xypex-treated concrete samples were measured throughout 435 freeze/thaw cycles. At 204 cycles, the Xypex-treated samples showed 96% relative durability compared to

90% in the untreated samples. At 435 cycles, the Xypex-treated samples measured 91% relative durability compared to 78% in the untreated reference samples.

POTABLE WATER EXPOSURE

NSF 61, "Drinking Water System Component-Health Effects", NSF International, Ann Arbor, USA

Exposure testing of potable water in contact with Xypex-treated samples indicated no harmful effects.

RADIATION RESISTANCE

U.S.A. Standard No. N69, "Protective Coatings for the Nuclear Industry", Pacific Testing Labs, Seattle, USA

After exposure to 5.76 x 10⁴ rads of gamma radiation, the Xypex treatment revealed no ill effects or damages.

Application Procedures

1. **SURFACE PREPARATION** Concrete surfaces to be treated must be clean and free of laitance, dirt, film, paint, coating or other foreign matter. Surfaces must also have an open capillary system to provide "tooth and suction" for the Xypex treatment. If surface is too smooth (e.g. where steel forms are used) or covered with excess form oil or other foreign matter, the concrete should be lightly sandblasted, waterblasted, or etched with muriatic (HCL) acid.

2. **STRUCTURAL REPAIR** Rout out cracks, faulty construction joints and other structural defects to a depth of 1.5 in. (37 mm) and a width of 1 in. (25 mm). Apply a brush coat of Xypex Concentrate as described in steps 5 & 6 and allow to dry for 10 minutes. Fill cavity by tightly compressing Dry-Pac into the groove with pneumatic packing tool or with hammer and wood block. Dry-Pac is prepared by mixing six parts Xypex Concentrate powder with one part water to a dry, lumpy consistency.

NOTE:

i. Against a direct flow of water (leakage) or where there is excess moisture due to seepage, use Xypex Patch'n Plug then Xypex Dry-Pac followed by a brush coat of Xypex Concentrate. (Refer to Xypex Specifications and Applications Manual for full details.)

ii. For expansion joints or chronic moving cracks, flexible materials such as expansion joint sealants should be used.

3. **WETTING CONCRETE** Xypex requires a saturated substrate and a damp surface. Concrete surfaces must be thoroughly saturated with clean water prior to the application so as to aid the proper curing of the treatment and to ensure the growth of the crystalline formation

deep within the pores of the concrete. Remove excess surface water before the application. If concrete surface dries out before application, it must be re-wetted.

4. MIXING FOR SLURRY COAT Mix Xypex powder with clean water to a creamy consistency in the following proportions:

For Brush Application

1.25 - 1.5 lb./sq. yd. (0.65 - 0.8 kg/m²)
5 parts powder to 2 parts water

2.0 lb./sq. yd. (1.0 kg/m²)
3 parts powder to 1 part water

For Spray Application

1.25 - 1.5 lb./sq. yd. (0.65 - 0.8 kg/m²)
5 parts powder to 3 parts water
(ratio may vary with equipment type)

Do not mix more Xypex material than can be applied in 20 minutes. Do not add water once mix starts to harden. Protect hands with rubber gloves.

5. APPLYING XYPEX Apply Xypex with a semi-stiff nylon bristle brush, push broom (for large horizontal surfaces) or specialized spray equipment. The coating must be uniformly applied and should be just under 1/16 in. (1.25 mm). When a second coat (Xypex Concentrate or Xypex Modified) is required, it should be applied after the first coat has reached an initial set but while it is still "green" (less than 48 hours). Light pre-watering between coats may be required due to drying. The Xypex treatment must not be applied under rainy conditions or when ambient temperature is below 40°F (4°C). For recommended equipment, contact Xypex Chemical Corporation or your nearest Xypex distributor.

6. CURING A misty fog spray of clean water must be used for curing the Xypex treatment. Curing should begin as soon as the Xypex has set to the point where it will not be damaged by a fine spray of water. Under normal conditions, it is sufficient to spray Xypex-treated surfaces three times per day for two to three days. In hot or arid climates, spraying may be required more frequently. During the curing period, the coating must be protected from rainfall, frost, wind, the puddling of water and temperatures below 36°F (2°C) for a period of not less than 48 hours after application. If plastic sheeting is used as protection, it must be raised off the Xypex to allow the coating to breathe. Xypex Gamma Cure may be used in lieu of water curing for certain applications (consult

with Xypex Chemical Corporation or your nearest Xypex distributor).

NOTE: For concrete structures that hold liquids (e.g. reservoirs, swimming pools, tanks, etc.), Xypex should be cured for three days and allowed to set for 12 days before filling the structure with liquid.

Technical Services

For more instructions, alternative application methods, or information concerning the compatibility of the Xypex treatment with other products or technologies, contact the Technical Services Department of Xypex Chemical Corporation or your local Xypex representative.

Safe Handling Information

Xypex is alkaline. As a cementitious powder or mixture, Xypex may cause significant skin and eye irritation. Directions for treating these problems are clearly detailed on all Xypex pails and packaging. The Manufacturer also maintains comprehensive and up-to-date Material Safety Data Sheets on all its products. Each sheet contains health and safety information for the protection of workers and customers. The Manufacturer recommends you contact Xypex Chemical Corporation or your local Xypex representative to obtain copies of Material Safety Data Sheets prior to product storage or use.

Warranty

The Manufacturer warrants that the products manufactured by it shall be free from material defects and will be consistent with its normal high quality. Should any of the products be proven defective, the liability to the Manufacturer shall be limited to replacement of the product ex factory. The Manufacturer makes no warranty as to merchantability or fitness for a particular purpose and this warranty is in lieu of all other warranties expressed or implied. The user shall determine the suitability of the product for his intended use and assume all risks and liability in connection therewith.



13731 Mayfield Place, Richmond, BC, Canada V6V 2G9 Toll-free: 1.800.961.4477
Tel: 604.273.5265 Fax: 604.270.0451 E-mail: info@xypex.com Web: www.xypex.com
XYPEX is a registered trademark of Xypex Chemical Corporation. Copyright © 1975-2009 Xypex Chemical Corporation.





MODIFIED

071616 | CEMENTITIOUS CRYSTALLINE

Concrete Waterproofing

Description

Xypex is a unique chemical treatment for the waterproofing, protection and repair of concrete. XYPEX MODIFIED can be applied as a second coat to reinforce Xypex Concentrate, or applied by itself to damp-proof the exterior of foundation walls. Applied as a second coat, Xypex Modified chemically reinforces Xypex Concentrate where two coats are required and produces a harder finish. Where damp-proofing is required, a single coat of Modified may be used as an alternative to a spray/tar emulsion. Xypex prevents the penetration of water and other liquids from any direction by causing a catalytic reaction that produces a non-soluble crystalline formation within the pores and capillary tracts of concrete and cement-based materials.

Recommended for:

Xypex Modified is recommended as a single coat for the damp-proofing of foundations or as a second coat with Xypex Concentrate for the following applications:

- Reservoirs
- Sewage and Water Treatment Plants
- Secondary Containment Structures
- Tunnels and Subway Systems
- Underground Vaults
- Foundations
- Parking Structures
- Swimming Pools

Advantages

- Resists extreme hydrostatic pressure
- Becomes an integral part of the substrate
- Can seal hairline cracks up to 0.4 mm
- Can be applied to the positive or the negative side of the concrete surface
- Allows concrete to breathe
- Highly resistant to aggressive chemicals
- Non-toxic
- Does not require a dry surface
- Cannot puncture, tear or come apart at the seams
- No costly surface priming or leveling prior to application
- Does not require sealing, lapping and finishing of seams at corners, edges or between membranes
- Does not require protection during backfilling or during placement of steel, wire mesh or other materials
- Less costly to apply than most other methods
- Not subject to deterioration

- Permanent
- Available in white for enhanced illumination

Packaging

Xypex Modified is available in 60 lb. (27.2 kg) pails and 50 lb. (22.7 kg) bags.

Storage

Xypex products must be stored dry at a minimum temperature of 45°F (7°C). Shelf life is one year when stored under proper conditions.

Coverage

For normal surface conditions, the coverage rate for each coat is 6 - 7.2 sq. ft. per lb. (1.25 - 1.5 lb. per sq. yd. or 0.65 - 0.8 kg/m²).

Test Data

When used in conjunction with Xypex Concentrate:

PERMEABILITY

U.S. Army Corps of Engineers (USACE) CRD C48, "Permeability of Concrete", Pacific Testing Labs, Seattle, USA

Two in. (51 mm) thick, 2000 psi (13.8 MPa) Xypex-treated concrete samples were pressure tested up to a 405 ft. (124 m) water head (175 psi/1.2 MPa), the limit of the testing apparatus. While untreated samples showed marked leakage, the Xypex-treated samples (as a result of the crystallization process) became totally sealed and exhibited no measurable leakage.

DIN 1048 (equivalent to EN 12390-8), "Water Impermeability of Concrete", Bautest – Corporation for Research & Testing of Building Materials, Augsburg, Germany

Twenty cm thick Xypex-treated concrete samples were pressure tested up to 7 bars (230 ft./70 m water head) for 24 hours to determine water impermeability. While the reference specimens measured water penetration up to a depth of 92 mm, Xypex-treated samples measured water penetration of zero to an average of 4 mm.

EN 12390-8, "Depth of Water Penetration on Samples Treated with Concentrate Coating", OL-123, Czech Technical University, Prague, Czech Republic

Three replicate 150 mm concrete cubes from four different mix designs (strength classes) were coated with Xypex

Concentrate at a thickness of 0.8 mm to 1 mm. Controls for each of the different mix designs were also cast for comparison purposes. All samples were exposed to 0.5 MPa (73 psi) of water pressure for 72 hours from the opposite side of the treated surface. Specimens from each set were split transversely from the treated surface at 28 days and 91 day to measure depth of water penetration from the exposed surface. After 28 days, the Xypex coating reduced the depth of water penetration by 90 to 94% compared to the control mixes for the four mix types. At 91 days all Xypex-treated samples measured <1 mm of water penetration.

DEPTH OF PENETRATION

***“Measurement of Mass Concrete Humidity”,
Czech Technical University, (CVUT) Faculty of Civil
Engineering, Prague, Czech Republic***

A coating of Xypex Concentrate was applied to one face of a 300 mm x 300 mm x 220 mm set of concrete blocks; two replicate sets of blocks were left untreated. Water filled containers were tightly sealed onto the opposite face of the treated blocks and one set of the untreated blocks while the third untreated block set was kept in the laboratory as a control. Humidity probes were installed in 6 mm diameter holes that were drilled to within 30 - 40 mm of the water exposed surface. Mass humidity was recorded at intervals of 28, 45, 90, 125 and 132 days. Final results showed that the Xypex-treated specimens had an average humidity reading of 4.6%, the untreated sample measured 7.9% and the control block with no water exposure was 4.4%, essentially equivalent to the Xypex specimens' results. The Xypex reactive chemicals had diffused at least 190 mm in 132 days.

***“An Enhancement in the Nature of Concrete with a
Multiplicative Cement Crystal-Type Concrete Material”,
Central Research Laboratory of Nikki Shoji in
association with Hosei University, Japan***



A 60 cm x 70 cm x 40 cm concrete block was cast and a Concentrate coating was applied to the surface and cured. The block was left outdoors for approximately 1 year. Subsequently, a 40 cm (15.75 in.) long cylinder was then cored perpendicular to the Xypex treatment and cut into 18 slices of equal length.

SEM photographs utilizing a 1000x magnification were taken of slices from various depths from the treated surface to determine the extent of crystalline growth. While the crystalline structure was most dense in specimens located closest to the treated surface, there was evidence of the crystalline structure at 30 cm (12 inches) from the treated surface.

SEALING CRACKS

***ASTM C856 “Standard Practice for Petrographic
Examination of Hardened Concrete”, Setsco Services
Pte, Ltd., Singapore***

A coat of Xypex Concentrate was applied to a slab that had developed numerous hairline cracks. To determine the crack sealing ability of the Xypex treatment, cores were extracted from a slab at 3, 10, 14 and 20 days following application. Thin sections were taken from each core in order to examine hairline cracks utilizing a polarizing and fluorescent microscope (PFM). In each case, there was evidence of the Xypex crystalline structure in the cracks to a depth of about 20 mm. Photographs taken this depth at 100x magnification showed the Xypex crystalline structure had reduced the width of the cracks dramatically.

TENSILE BOND STRENGTH

***EN 1542 “Products and Systems for the Protection
and Repair of Concrete Structures – Test Methods
– Measurement by Pull-off”, Trow Associates Inc.,
Burnaby, B.C., Canada***

Two coats of Xypex Concentrate were applied at 0.8 kg per m² with a total cured thickness of 0.9 mm to a standard concrete substrate meeting EN 1766 MC (0,40) (meeting ICRI CSP-4). The coating was applied and cured to the manufacturer's technical specifications and tested at 30 days age for bond strength. The average tensile bond strength of five replicates was 1.23 MPa.

CHEMICAL RESISTANCE

***ASTM C 267, “Chemical Resistance to Mortars”,
Pacific Testing Labs, Seattle, USA***

Xypex-treated cylinders and untreated cylinders were exposed to hydrochloric acid, caustic soda, toluene, mineral oil, ethylene glycol, pool chlorine and brake fluid and other chemicals. Results indicated that chemical exposure did not have any detrimental effects on the Xypex coating. Tests following chemical exposure measured an average 17% higher compressive strength in the Xypex-treated specimens over the untreated control samples.

***IWATE University Technical Report,
“Resistance to Acid Attack”, Tokyo, Japan***



Xypex-treated mortar and untreated mortar were measured for acid resistance after exposure to a 5% H₂SO₄ solution for 100 days. Xypex suppressed concrete erosion to 1/8 of the reference samples.

ASTM C876 “Influence of Xypex Coating System on Residual Service Life of Concrete Structures” Durability Assessment Section, Xypex Australia

A bridge pier in a tidal splash zone was starting to experience reinforcing steel corrosion after +40 years of service. An investigation was conducted to examine the effectiveness of the Xypex coating system on the durability performance of the structure. Three corrosion prediction test methods were conducted before and after application of a) one coat and b) two coats of Xypex Concentrate. Test methods included corrosion current (galvanostatic pulse transient), corrosion potential (Cu/CuSO₄ half-cell) and electrical resistance. After 6 months of surface treatment corrosion rates were reduced by an average of 36 to 51%. Half-cell potentials were less negative and concrete resistance was increased. Corrosion activity level in the structure was reduced considerably.

RILEM CPC-18 “Carbonation Resistance of Samples Treated with a Xypex Concentrate Coating”, Construction and Maintenance Technology Research Center (CONTEC), Sirindhorn International Institute of Technology (SIIT) – Thammasat University, Bangkok, Thailand

Control and Xypex Concentrate coated samples were carbonated in an accelerated carbonation chamber. The average depths of carbonation were measured at 28, 56, 77 and 91 days. The depth of carbonation of these Xypex Concentrate coated samples was reduced by 35 - 40% compared to the controls. Following initial carbonation, one set of samples was coated with Xypex Concentrate to model old concrete already damaged by carbonation. For these specimens, testing indicated that carbonation was arrested and in one specimen reduced.

FREEZE/THAW DURABILITY

ASTM C 672, “Standard Test Method for Scaling Resistance of Concrete Surfaces Exposed to De-Icing Chemicals”, Twin City Testing Lab, St. Paul, USA

Xypex-treated samples restricted chloride ion concentration to below the level necessary to promote electrolytic corrosion of reinforcing steel. Visual examination of untreated panels after 50 freeze/thaw cycles showed a marked increase in surface deterioration compared to Xypex-treated samples.

POTABLE WATER EXPOSURE

NSF 61, “Drinking Water System Component-Health Effects”, NSF International, Ann Arbor, USA

Exposure testing of potable water in contact with Xypex-treated samples indicated no harmful effects.

RADIATION RESISTANCE

U.S.A. Standard No. N69, “Protective Coatings for the Nuclear Industry”, Pacific Testing Labs, Seattle, USA

After exposure to 5.76×10^4 rads of gamma radiation, the Xypex treatment revealed no ill effects or damages.

Application Procedures

1. SURFACE PREPARATION Concrete surfaces to be treated must be clean and free of laitance, dirt, film, paint, coating or other foreign matter. Surfaces must also have an open capillary system to provide “tooth and suction” for the Xypex treatment. When applied as a single coat, a CSP-3 per the International Concrete Repair Institute Guidelines and Surface Profile Chips is recommended. If surface is too smooth (e.g. where steel forms are used) or covered with excess form oil or other foreign matter, the concrete should be lightly sandblasted, waterblasted, or etched with muriatic (HCL) acid.

2. STRUCTURAL REPAIRS – PRIOR TO COATING APPLICATION For cracks larger than 1/64” (0.4 mm) or for actively leaking cracks the following repair procedures are recommended. Chip out cracks, faulty construction joints and other structural defects to a depth of 1.5 inches (37 mm) and a width of 1 inch (25 mm). A “V” shaped slot is not acceptable. The slot may be saw cut instead of chipped but ensure that the slot is dovetailed or otherwise shaped such that there will be mechanical interlock of materials placed into the slot at a later stage. Clean and wet the slot and apply a brush coat of Xypex Concentrate as described in steps 5 & 6 and allow to dry for 10 minutes. Fill cavity by tightly compressing Dry-Pac into the groove with pneumatic packing tool or with hammer and wood block.

NOTE:

i. Areas of poor concrete consolidation that show evidence of leakage should also be repaired.

ii. Against a direct flow of water (leakage) or where there is excess moisture due to seepage, use Xypex Patch’n Plug then Xypex Dry-Pac followed by a brush coat of Xypex Concentrate.

iii. For expansion joints or chronic moving cracks, flexible materials such as expansion joint sealants should be used.

3. WETTING CONCRETE Xypex requires a saturated surface dry (SSD) condition. Concrete surfaces must be thoroughly saturated with clean water prior to the application so as to aid the diffusion of the Xypex chemistry and to ensure the growth of the crystalline formation deep within the pores of the concrete. Remove excess surface water before the application. If concrete surface dries out before application, it must be re-wetted.

4. MIXING FOR SLURRY COAT Mix Xypex powder with clean water to a creamy consistency in the following proportions:

For Brush Application

1.25 - 1.5 lb./sq. yd. (0.65 - 0.8 kg/m²)
5 parts powder to 2 parts water

2.0 lb./sq. yd. (1.0 kg/m²)
3 parts powder to 1 part water

For Spray Application

1.25 - 1.5 lb./sq. yd. (0.65 - 0.8 kg/m²)
5 parts powder to 3 parts water
(ratio may vary with equipment type)

Do not mix more Xypex material than can be applied in 20 minutes. Do not add water once mix starts to harden. Protect hands with rubber gloves.

5. APPLYING XYPEX Apply Xypex with a semi-stiff nylon bristle brush, push broom (for large horizontal surfaces) or specialized spray equipment. The coating must be uniformly applied and should be just under 1/16 in. (1.25 mm). When a second coat (Xypex Concentrate or Xypex Modified) is required, it should be applied after the first coat has reached an initial set but while it is still “green” (less than 48 hours). Curing by misting the coating with water should be done between coats. Ensure first coat is in SSD condition before the application of the second coat. The Xypex treatment must not be applied under rainy conditions or when ambient temperature is below 40°F (4°C). Avoid the application of the Xypex coating in hot and windy conditions as the coating may dry out prematurely. For recommended equipment, contact Xypex’s Technical Services Department or your local Xypex representative.

6. CURING Generally, a misty fog spray of clean water must be used for curing the Xypex treatment. Curing should begin as soon as the Xypex has set to the point where it will not be damaged by a fine spray of water. Under normal conditions, it is sufficient to spray Xypex-treated surfaces three times per day for two to three days. In hot or arid climates, spraying may be required more frequently. Wet burlap and some specialty curing blankets are also effective for curing. During the curing period, the coating must be protected from rainfall, frost, wind, the puddling of water and temperatures below 36°F (2°C) for a period of not less than 48 hours after application. If plastic sheeting is used as protection, it must be raised off the Xypex to allow the coating to breathe. Xypex Gamma Cure may be used in lieu of water curing for certain applications (consult with Xypex’s Technical Services Department or your local Xypex representative).

NOTE:

i. For concrete structures that hold liquids (e.g. reservoirs, swimming pools, tanks, etc.), Xypex should be cured for

three days and allowed to set for 12 days (18 days for waste water or corrosive solutions) before filling the structure with liquid.

ii. For Xypex coated slabs that will be a wearing surface, an application of Xypex Quickset after the coating has been cured and dried is recommended. Contact your local Xypex Technical Services Representative for assistance.

iii. If any other cementitious system is applied over the Xypex coating, it should be after the coating has completely set but while it is still green (12 to 48 hours); the 12 to 24 hour window is considered ideal. For installations onto a Xypex coating older than 48 hours contact your Xypex Technical Service Representative regarding surface preparation and application recommendations. Xypex Chemical Corporation makes no representations or warranties regarding the compatibility of Xypex products with plasters, stuccos, tiles and other surface-applied materials. Prior to the installation, it is recommended that a test section be completed under anticipated ambient and project conditions to demonstrate appropriate bond strength.

Technical Services

For more instructions, alternative application methods, or information concerning the compatibility of the Xypex treatment with other products or technologies, contact the Technical Services Department of Xypex Chemical Corporation or your local Xypex Technical Services Representative.

Safe Handling Information

Xypex is alkaline. As a cementitious powder or mixture, Xypex may cause significant skin and eye irritation. Directions for treating these problems are clearly detailed on all Xypex pails and packaging. The Manufacturer also maintains comprehensive and up-to-date Safety Data Sheets on all its products. Each sheet contains health and safety information for the protection of workers and customers. The Manufacturer recommends you contact Xypex Chemical Corporation or your local Xypex representative to obtain copies of Safety Data Sheets prior to product storage or use.

Warranty

The Manufacturer warrants that the products manufactured by it shall be free from material defects and will be consistent with its normal high quality. Should any of the products be proven defective, the liability to the Manufacturer shall be limited to replacement of the product ex factory. The Manufacturer makes no warranty as to merchantability or fitness for a particular purpose and this warranty is in lieu of all other warranties expressed or implied. The user shall determine the suitability of the product for his intended use and assume all risks and liability in connection therewith.



13731 Mayfield Place, Richmond, BC, Canada V6V 2G9 Toll-free: 1.800.961.4477
Tel: 604.273.5265 Fax: 604.270.0451 E-mail: info@xypex.com Web: www.xypex.com
XYPEX is a registered trademark of Xypex Chemical Corporation. Copyright © 1975-2016 Xypex Chemical Corporation.

