

CONCRETE COATING INSTALLATION AND PROCEDURES

General Information & Standard Xypex Coating Installation Procedures for Use on Concrete

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The following are general directions on the installation and use of Xypex Concentrate and Modified coatings for Xypex modification of poured in place concrete elements. 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, curing procedures and other information surrounding the use of Xypex products for waterproofing and protecting concrete and while they normally provide an acceptable final appearance they are not meant as aesthetic finishes.

Weather and Concrete Conditions

1. The Xypex treatment must not be applied under rainy conditions or when ambient temperature is below 40°F (4°C).
2. Because Xypex requires water as a diffusion medium and to initiate the crystalline waterproofing process, all concrete, whether fresh or old, must be in a saturated surface dry (SSD) condition prior to coating application. (See Wetting Concrete below.)
3. The concrete surface must be a minimum of 20 hours old before application of the Xypex coating treatment.
4. For fresh concrete, the period between 24 hours and 72 hours is the optimum time within which to apply Xypex, as the new concrete is still “green” and requires very little pre-watering.

Coverage

For normal surface conditions, the coverage rate for each Xypex coat is 1.25 - 1.5 lb./sq.yd. (0.65 - 0.8 kg/m²). Where a single heavy coat is to be used the coverage rate is 2.0 lb./sq.yd. (1.0 kg/m²).

Surface Preparation

1. The concrete surface to be treated must be clean and free of laitance, dirt, film, paint, coatings or other foreign matter. The surface must also have an open capillary system to provide “tooth and suction” for the Xypex treatment. A CSP-3 per the International Concrete Repair Institute Guidelines and Surface Profile Chips is recommended.
2. If surface is too smooth (e.g. where steel forms are used) or if surface is covered with excess form oil or other foreign matter, the concrete should be lightly sand-blasted, water-blasted, or etched with acid.
3. Horizontal surfaces should have a rough wood float or broom finish. Concrete laitance must be removed from surface by light sand-blasting, water-blasting or etching with acid.

4. Surfaces to be etched with acid should be dampened with water before application of the acid. After acid etching flush concrete thoroughly with clean water.

Repairs Prior to Coating Application

For cracks larger than 0.02” (0.5 mm) or for actively leaking cracks the following repair procedures are recommended.

1. Chip out cracks, faulty construction joints and other structural defects to a depth of 1.5” (37 mm) and a width of one 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.
2. Clean slot, wet concrete and apply a brush coat of Xypex Concentrate (as described below) in cavity and allow to dry for 10 minutes.
3. Fill cavity by tightly compressing Dry-Pac into the groove with pneumatic packing tool or with hammer and wood block. (See below for Dry-Pac mixing instructions.)
4. Against a direct flow of water (leakage) or where there is excess moisture due to seepage, use Xypex Patch’n Plug in lieu of Dry-Pac followed by a brush coat of Xypex Concentrate. For expansion joints or chronic moving cracks, flexible materials such as expansion joint sealants should be used.

All areas of poor concrete consolidation (honeycomb or rock pockets) should also be repaired. Refer to Xypex Method Statements (www.xypex.com) or contact Xypex’s Technical Services Department or your local Xypex Technical Services Representative for more information.

Wetting Concrete

Xypex requires a saturated substrate and a dry surface. This is commonly referred to as a saturated surface dry or SSD condition. SSD concrete will not absorb any more water but has no glistening water on the surface. Concrete surfaces, therefore, must be thoroughly saturated

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with clean water prior to the application so as to aid the proper diffusion of the Xypex chemistry and to ensure the growth of the crystalline formation deep within the pores of the concrete. Remove excess water before the application such that there is no glistening water on the surface. If concrete dries out before application, it must be re-wetted.

Mixing

1. Mix Xypex with clean water only (potable water that is free of salt and other deleterious materials).
2. Mix Xypex powder into the clean water with a paddle on a slow speed electric drill (250 RPM) or with other equipment that ensures adequate mixing. For small jobs, Xypex may be mixed by gloved hand or by trowel.
3. Be sure that the quantity mixed can be applied within 20 minutes. As the mixture thickens, stir briefly to refluidize the mix but do not add water.

Mixing For Slurry Coat

Mix Xypex powder with clean water to a creamy consistency in the following volume 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)

Mixing Dry-Pac

Using a trowel, mix one part clean water with six parts Xypex Concentrate powder by volume for 10 - 15 seconds. Lumps should be present in this mixture. Do not mix more than can be applied in 20 minutes.

Applying Xypex

1. Apply Xypex with a semi-stiff nylon bristle brush, push broom (for large horizontal surfaces), or specialized spray equipment. Do not apply Xypex with a trowel, roller, paintbrush or paint sprayer. Contact Xypex's Technical Services Department or your local Xypex Technical Services Representative for further information.

2. The Xypex coating must be uniformly applied and should be just under 1/16" (1.25 mm) thick. A thicker coating can cause curing or other difficulties, especially in warm weather.

3. When a second coat (Xypex Concentrate or 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 application of the second coat.

4. For slab (horizontal) applications, care should be taken to spread the Xypex evenly, pulling a heavy broom over the fresh Xypex. This should be done in long strips and will serve to eliminate settlement of the Xypex in low spots on the slab and also to remove excess material which may have been applied.

5. In hot weather it is advisable to apply Xypex either early in the morning or late in the day. This will prevent the Xypex coating from drying out too quickly.

Note: Where a smooth, steel-trowelled finish is required for horizontal slab or where slab will be exposed to traffic (e.g. parking deck), apply Xypex Concentrate DS-1 or DS-2 by dry shake method. The wearability of Xypex Concentrate and Modified can be improved through an application of Xypex Quickset after the coatings have been cured and dried. Contact Xypex's Technical Services Department or your local Xypex Technical Services Representative for further information.

Curing

1. Generally a misty fog spray of clean water is 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.

2. Under normal conditions, it is sufficient to spray Xypex treated surfaces three times per day for 2 - 3 days. In hot or arid climates, spraying may be required more frequently to prevent premature drying of the coating. Wet burlap and some specialty curing blankets are also effective for curing. If plastic sheeting is used as protection, it must be raised off the Xypex treatment to allow the coating to breathe.

3. 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.

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

5. For structures holding particularly hot and/or corrosive liquids, Xypex should be cured for three days and allowed to set for 18 days before filling.

6. In situations where there is very high humidity and poor air circulation (e.g. small, enclosed reservoirs or wet wells), fans or blown air to create air movement within the space may be necessary to aid the curing of Xypex.

7. Xypex Gamma Cure may be used in lieu of water curing for certain applications: contact Xypex's Technical Services Department or your local Xypex Technical Services Representative. Gamma Cure should be applied using a garden type sprayer and must be diluted as per directions before use. Do not apply more Gamma Cure than is specified.

Backfilling

Backfilling can take place 36 hours after the Xypex application. If backfilling takes place within seven days after the application, the backfilling material should be moist so as not to draw moisture from the Xypex coating.

Application of Paints, Epoxies or Similar Coatings

Xypex requires a minimum of 21 days of curing and crystal generation before the application of any paint or epoxy. Consult epoxy and paint manufacturer for additional coating instructions and restrictions. Removal of the Xypex coating by high pressure washing or abrasive blasting following full curing is the best practice. Alternately, moderate pressure washing, light abrasive blasting or washing the Xypex surface with a 3 - 5% muriatic acid solution followed by a rigorous rinse with clean water is recommended before applying the coating. Be sure to flush all acid off the surface. Prior to the installation, it is recommended that a test section be completed under anticipated ambient and project conditions to demonstrate acceptable bond.

Application of Grout, Cement Parge Coat, Plaster or Stucco

It is recommended that any other cementitious system be applied over the Xypex coating after the Xypex has com-

pletely set but while it is still "green" (8 to 48 hours). The 12 to 24 hour window is considered ideal. applications: Contact Xypex's Technical Services Department or your local Xypex Technical Services Representative regarding surface preparation and other procedures for installations of other materials onto Xypex coatings older than 48 hours. Use of a polymer additive to help improve bond in the over coating mortar mix should be considered. Prior to the installation, it is recommended that a test section be completed under anticipated ambient and project conditions to demonstrate acceptable bond.

Note: Xypex Chemical Corporation makes no representations or warranties regarding the compatibility of Xypex products with plasters, stuccos, tiles and other surface applied materials. It is the responsibility of the installer of these surface-applied materials to take whatever measures are necessary, including testing, to ensure acceptance by or adhesion to the Xypex treated surface.

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.

Caution

Xypex is highly alkaline.

1. Avoid contact with skin or eyes.
2. Protect hands with rubber gloves when handling dry powder or wet mixture.
3. If skin comes into contact with Xypex material, wash immediately and thoroughly with water for 15 minutes. If discomfort continues, seek prompt medical attention.
4. Wear eye protection. If dry powder or wet mixture gets into eyes, flush immediately and thoroughly with water and seek medical aid.
5. Wear a suitable mask where there is potential for generating dust. If Xypex is ingested, do not induce vomiting; have affected person drink two glasses of water and obtain immediate medical attention.
6. For Safety Data Sheets, contact Xypex Chemical Corporation at 604.273.5265, toll-free 800-961-4477 or refer to SDS located at: www.xypex.com.