

EPOXY-XP50

Two Component, Low-modulus, Epoxy Adhesive and Binder for High Friction Overlays

CSI Div. 03

03 01 00 Maintenance of Concrete
 32 01 26.74 Concrete Overlays

Product Description:

EPOXY-XP50 is a two component, low-modulus, epoxy adhesive and binder for bonding high friction, skid-resistant broadcast overlays onto bridges, elevated slabs, asphalt and PCCP (Portland Cement Concrete Pavement). EPOXY-XP50 can also be used as a binder in trowel-applied mortar applications for patching small repair areas of concrete.

Typical Applications:

- Bridge decks
- Road surfaces such as curve ramps and approaches to intersections
- Parking garage entrances, exits, ramps, and vehicle parking areas

Advantages:

- Fast-curing formula reduces the time needed for lane closures
- Increases safety in icy conditions
- Designed for automated equipment or hand application
- Easy to mix - 1:1 ratio
- No primer required
- Excellent bond strength
- Superior compressive strength
- Zero VOCs

Complies With:

- ASTM C881 and AASHTO M235
 - Type III (bonding skid-resistant materials to hardened concrete and as a binder in epoxy mortars)
 - Grade 1 (low viscosity)
 - Class B (application temperature from 40°F to 60°F)
 - Class C (application temperature from 60°F to manufacturer's stated limit)
- VOCs (meets requirements in all US States)

Note: Codes and regulations will vary between cities, counties, states, and federal divisions. Parking structures will typically have different requirements. Always verify that EPOXY-XP50 (and the selected aggregate) meet the specified project requirements.

Substrate Preparation:

- All surfaces must be dry, clean and free from loose sand, dirt, laitance, curing compounds, sealers, paint, road markings, existing coatings, oil, grease, and other substances that could interfere with adhesion.
- **ASPHALT: Overlays using EPOXY-XP50 are not a replacement for repairing damaged, deteriorated, or cracked areas of asphalt pavement.** Widespread deterioration will most likely require repaving prior to the application of EPOXY-XP50.
 - Asphalt must be at least 30 days old.
 - Repair all areas of damage, deterioration, weakness, and

Physical and Technical Data	
Mixing Ratio:	1 part A:1 part B
Viscosity @ 77°F (25°C):	1700 cps
Gel Time (60 g mass):	20 minutes
Tack Free Time @ 77°F (25°C):	3-5 hours
Recoat Time, ASTM D1640:	3 hours
Initial Cure Time @ 80°F (27°C): @ 75°F (24°C): @ 70°F (21°C): @ 65°F (18°C): @ 60°F (15°C):	2.5 hours 3 hours 4 hours 5 hours 6 hours
Compressive Strength, ASTM C579 @ 2 hours: @ 24 hours: @ 7 days:	1,500 psi (10 MPa) 5,000 psi (34 MPa) 5,200 psi (35 MPa)
Compressive Strength, ASTM D695 @ 7 days:	5,000 psi (35 MPa)
Compressive Modulus, ASTM D695 @ 7 days:	110,000 psi (758 MPa)
Tensile Strength, ASTM D638:	2,800 psi (19 MPa)
Tensile Strength, ASTM C307:	2,900 psi (20 MPa)
Tensile Elongation, ASTM D638:	40%
Tensile Elongation, ASTM C307:	<1%
Bond Strength to Concrete, ASTM C1583:	300 psi (2 MPa)
Slant Shear, ASTM C882 @ 2 days: @ 7 days:	2,000 psi (14 MPa) 2,800 psi (19 MPa)
Flexural Strength, ASTM D790:	3,000 psi (21 MPa)
Shrinkage on Cure, ASTM D2566:	0.2%
Water Absorption, ASTM D570 @ 24 hours:	0.2%
Chloride Ion Permeability, AASHTO T277:	0.0 Coulomb
Thermal Compatibility, ASTM C884:	Pass
Color:	Amber
VOCs:	0 g/L
All data are average values obtained under laboratory conditions. In practical use temperature, humidity and absorbance of the substrate may influence the above given values. Dynamic coefficient of friction values will vary depending on final surface texture achieved at the jobsite.	

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potholes, using suitable, high-quality materials approved for asphalt repair. Replace all temporary surface patches with full-depth or deep patches. All repair areas must be rectangular in shape, and have saw cut straight edges. Follow MS-16 Asphalt in Pavement Preservation and Maintenance methods and procedures.

- Fill cracks with high-quality materials designed for asphalt crack repair in DOT applications.
- Prepare asphalt surfaces and remove markings by shot-blasting or high pressure water blasting according to agency specifications. Allow to dry.
- Immediately before application, clean dry asphalt surfaces by high-pressure air blasting using oil-free compressed air.
- **CONCRETE: Overlays using EPOXY-XP50 are not a replacement for repairing damaged, deteriorated, or cracked, concrete pavement or concrete structures.**
 - Concrete must be at least 30 days old, and must have reached a minimum 3,000 psi (20 MPa) compressive strength.
 - Repair all areas of spalling, delamination, damage, deterioration, potholes, and cracks using a suitable concrete repair product such as MORTAR-40 CI. Small repair areas up to 2" deep, can be patched using EPOXY-XP50 as a trowel-applied mortar. All repair areas must have saw cut straight edges with a minimum 3/8" (10 mm) depth as per ICRI Guideline 310.1R-2008.
 - Fill cracks with high-quality materials designed for concrete crack repair in DOT applications.
 - Mechanically prepare concrete surfaces to achieve a minimum CSP (concrete surface profile) of 4 as per ICRI Guideline No. 310.2R-13, Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair.
 - Use high pressure water blasting to remove all debris. Allow to dry.
 - Immediately before application, clean dry concrete surfaces by high-pressure air blasting using oil-free compressed air.

Mixing:

- Epoxy resins are temperature sensitive and care should be taken to condition all components to between 65°F to 85°F (18°C to 29°C) for a minimum of 24 hrs. prior to mixing and placement. Large units of EPOXY-XP50 may need 48 hrs.
 - Use chemical resistant gloves and goggles when mixing EPOXY-XP50.
1. Do not alter mixing ratios. The volume mixing ratio is 1 part component A to 1 Part component B (1A:1B).
 2. Pre-mix the "A" and "B" components of EPOXY-XP50 individually to ensure all raw materials are dispersed uniformly. Then accurately measure out each part by volume before combining together.
 3. Combine A and B components of EPOXY-XP50, and mix to a uniform consistency (approx. 3 - 5 minutes) using a slow speed drill (approx. 300 to 450 rpm) with a jiffy mixing blade. Occasionally scrape the bottom and sides of the container while mixing. Avoid entrapping air. Do not mix in an up and down motion.
 4. **(optional use as a trowel-applied mortar for patching concrete):** The ratio of EPOXY-XP50 to aggregate is typically 75 lbs of clean, dry, bagged aggregate per gal. of EPOXY-XP50, which will yield approx. 0.6 cubic feet. After mixing EPOXY-XP50, reserve enough to be used neat as a primer in the application area. Then add clean, washed, dry aggregate to the remaining mixed EPOXY-XP50. Refer to project specifications for aggregate selection. As a general rule, the

epoxy mortar should be applied 3 times the thickness of the maximum aggregate size used in the mix.

Once mixed, apply immediately!

Aggregate Selection for Skid-Resistance:

Broadcast aggregate determines the skid-resistance of the overlay and is critical for compliance with codes and regulations including HFST (High Friction Surface Treatments). Calcined bauxite is the only aggregate permitted for HFST under specified for HFST and to comply with AASHTO MP 41-19. The majority of individual aggregate pieces should range in size from 1 mm to a maximum of 4 mm. Always verify aggregate choice with administering agency/project owner before beginning project. All aggregate used with EPOXY-XP50 must be clean, washed, dry and bagged.

Application:

Read all instructions thoroughly prior to installation.

- Air and substrate temperatures must be between 50°F to 95°F (10°C to 35°C). Temperatures must be maintained in this range for at least 8 hours after the application.
- Dew Point must be 5°F (3°F) or more below the surface temperature.
- Do not apply if humidity is at or above 95%.
 - **Skid-resistant Overlay Using Truck-Mounted Automated Equipment for Single Course Application:** Apply EPOXY-XP50 at a rate of 25 to 32 sq. ft. per gallon. See coverage chart on page 3 for guidance. Immediately, broadcast clean, calcined bauxite until refusal (approx. 14 lbs of aggregate per sq. yd.). Allow to cure. Remove excess aggregate using a vacuum truck or power broom.
 - **Skid-resistant Overlay Using Truck-Mounted Automated Equipment for Two Course Application:** Apply first layer of EPOXY-XP50 at a rate of 25 to 32 sq. ft. per gallon. See coverage chart on page 3 for guidance. Immediately, broadcast clean, calcined bauxite until refusal (approx. 14 lbs of aggregate per sq. yd.). Allow to cure. Remove excess aggregate using a vacuum truck or power broom. Continue to protect area from traffic. Apply second layer of EPOXY-XP50 within 12 hours at a rate of 25 to 32 sq. ft. per gallon. Immediately, broadcast clean, calcined bauxite until refusal (approx. 14 lbs of aggregate per sq. yd.). Allow to cure. Remove excess aggregate using a vacuum truck or power broom.
 - **Skid-resistant Overlays Applied by Hand or by Spray Bar for Two Course Application:** After mixing, immediately pour EPOXY-XP50 onto the asphalt or concrete in ribbons. Distribute and spread material evenly using a 3/16" to 1/4" V-notched rubber squeegee at a rate of 40 sq. ft. per gallon. See coverage chart on page 3 for guidance. Immediately, broadcast clean, calcined bauxite until refusal (approx. 10 lbs of aggregate per sq. yd.). Allow to cure. Remove excess aggregate. Continue to protect area from traffic. Then apply second layer of EPOXY-XP50 within 12 hours at a rate of 20 sq. ft. per gallon. Immediately apply second course of aggregate until refusal (approx. 14 lbs of aggregate per sq. yd.). Allow to cure. Remove excess aggregate.
 - **Trowel-applied Mortar for Patching:** After applying EPOXY-XP50 (neat) to the application area as a primer, pour EPOXY-XP50 mixed with aggregate onto the application area while primer coat is still fresh/wet. Spread material using a trowel or a gauge rake and finish with a flat trowel to create a smooth surface. Mortar can be applied up to 2" (5 cm) in a single lift. Allow to cure. Pay close attention to recoat times.

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Apply the overlay of EPOXY-XP50 within 12 hours [based on 75°F (24°C) and 50% RH].

Protection:

Protect areas from pedestrian traffic for at least 48 hours. [based on 75°F (24°C)]. Protect areas from vehicle traffic for at least 72 hours [based on 75°F (24°C)].

Clean-up:

Clean tools and equipment with acetone or similar product immediately after use. Cured material must be removed mechanically. Soaking tools in an epoxy-stripper will help when mechanical removal is necessary.

Limitations:

- Do not mix more material than can be used within 15 minutes [based on 77°F (25°C) and 50% RH].
- Do not thin with solvents, or dilute in any manner.
- Do not apply EPOXY-XP50 over magnesium phosphate cement concrete.
- For colored demarcation overlays, use EPOXY-XMARK instead.
- High temperatures, high humidity, large batches, and thicker applications will significantly reduce the working time and cure time. Lower temperatures and/or low humidity will extend the cure time.
- Contact Aquafin Technical Department or your local Aquafin Representative for guidance in conditions outside the stated temperature limits.
- Once containers have been opened, use material as soon as possible.

Note:

Proper application is the responsibility of the user. Field visits by AQUAFIN personnel are for the purpose of making technical recommendations and not for supervising or providing quality control on-site.

Packaging:

- 10-gallon unit
Component A: (1) 5-gallon pail
Component B: (1) 5-gallon pail

- 100-gallon unit
Component A: (1) 50-gallon drum
Component B: (1) 50-gallon pail

- 500-gallon unit
Component A: (1) 250-gallon tote
Component B: (1) 250-gallon tote

NOTE: Aggregate is not included in kits.

Shelf Life & Storage:

- 2 years in unopened, original packaging when stored at temperatures between 40°F to 90°F (4°C to 32°C).
- Keep containers closed, store in a dry, cool place away from heat, direct sun, and moisture.
- Protect material from freezing.

Safety:

Refer to SDS. For commercial use only. Avoid contact with skin and eyes. Wear rubber gloves and safety goggles during mixing and application. After contact with skin, wash with plenty of water. In case of eye contact, rinse immediately with plenty of water for 15 minutes and seek medical advice. KEEP OUT OF REACH OF CHILDREN.

LIMITED WARRANTY: AQUAFIN, INC. warrants this product for a period of one year from the date of installation to be manufactured free of defects and to be consistent with its technical properties as stated in our current Technical Data Sheet. This product must be used as directed and within its stated shelf life. AQUAFIN INC. will replace or at our discretion refund the purchase price of any product, excluding cost of labor, which is proven to be defective. Our product recommendations are based on industry standards and testing procedures. It is the buyer's obligation to test the suitability of the product for an intended use prior to using it. We assume no warranties written, expressed or implied as to any specific methods of application or use of the product. AQUAFIN INC. MAKES NO WARRANTY AS TO MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE AND THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES EXPRESS OR IMPLIED. AQUAFIN, INC. shall not be liable for damages of any sort including remote or consequential damages, down time, or delay. Any claim for a defective product must be filed within 30 days of discovery of a problem, and must be submitted with written proof of purchase.

For Professional Use Only.

EPOXY-XP50 - Coverage Rates				
	WFT (wet film thickness)	Volume of EPOXY-XP50 Required per 100 sq. ft.	Coverage Rate in sq. ft. per gallon	Approx. Weight of Aggregate Required in lbs. per sq. yd.
Single Course Application Using Automated Equipment: Layer/Course 1:	50 to 65 mils	3 to 4 gal	25 to 32 ft ² per gal	14 lbs/yd ² (7.5 kg/m ²)
Two Course Application Using Automated Equipment: Layer/Course 1:	50 to 65 mils	3 to 4 gal	25 to 32 ft ² per gal	14 lbs/yd ² (7.5 kg/m ²)
Two Course Application Using Automated Equipment: Layer/Course 2:	50 to 65 mils	3 to 4 gal	25 to 32 ft ² per gal	14 lbs/yd ² (7.5 kg/m ²)
Two Course Application By Hand (or by Spray Bar) Layer/Course 1:		2.5 gal	40 ft ²	10 lbs/yd ² (5 kg/m ²)
Two Course Application By Hand (or by Spray Bar) Layer/Course 2:		5 gal	20 ft ²	14 lbs/yd ² (7.5 kg/m ²)
Notes: Application rates and yield values are approximate. Actual coverage may vary due to texture and absorption of substrate. When EPOXY-XP50 is applied beyond the recommended application rates, product performance will be reduced.				