



# EPIWELD<sup>®</sup> 580

**Pourable two-component, moisture intensive 100%-solids epoxy binder and adhesive**

**Advantages:**

- High modulus
- High strength
- Excellent flow
- Medium viscosity
- Moisture insensitive
- V.O.C. compliant
- Fast setting

**Coverage:**

- Over smooth surface yields approximately 100 ft<sup>2</sup> per gal (2.5m<sup>2</sup>/L)
- Over rough surface yields approximately 60 ft<sup>2</sup> per gal (1.5m<sup>2</sup>/L)

**See Coverage section for full details**

**Packaging:**

- 2 gal-total Unit (7.6L)  
1 gallon (3.8 liters) per Part A and Part B
- ½ gal-total Unit (1.9L)  
1 quart (0.95 liters) per Part A and Part B



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## Product Description

EPIWELD<sup>®</sup> 580 is a solvent-free, gray colored epoxy adhesive, binder, and mortar for concrete, masonry and steel. It is a medium viscosity moisture insensitive epoxy conforming to ASTM C-881. EPIWELD<sup>®</sup> 580 has a high modulus of elasticity that allows structural bonding to dry and damp concrete surfaces that are free of standing water or hydrostatic pressure. When used as an epoxy mortar, EPIWELD<sup>®</sup> 580 accepts good aggregate loading without appreciable strength reductions.

EPIWELD<sup>®</sup> 580 was primarily designed to be used as a bonding agent for new, fresh concrete being placed on or to structurally sound (cured) hardened concrete. It soon found additional usage as a structural adhesive for bonding masonry, metal, ceramic, and wood materials. It has been used successfully as a base coating for aggregates cast on concrete for non-skid ramps. Grouting bolts, dowels, pins, etc. are also some of the common uses of EPIWELD<sup>®</sup> 580.

## Installation

Before using this product, please refer to the Material Safety Data Sheet for additional information. Proper handling precautions MUST be followed. The conditions of use, handling, and application of this product and information (whether verbal or written), including any suggested formulations and recommendations, are beyond Lambert Corporation's control. Therefore, it is imperative that testing be performed to determine satisfaction and suitability for intended use and health, safety, and environmental issues. The following information is meant as a guideline of best industry practices. While Lambert Corporation does suggest adherence to these guidelines, unforeseeable variables and/or developed successful installer practices may cause variation in methods and/or results.

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Supersedes all previous publications

## Surface Preparation-Concrete

Success of any adhesive application is directly proportional to the completeness of substrate preparation and the care in application. Surface must be clean and structurally sound. All concrete surfaces to be bonded, coated or repaired should be dry for best results, however a slightly damp, surface-dry, condition is acceptable. Concrete must be free of any standing water. Mechanical scarifying to remove laitance and expose sound, coarse aggregate, will result in optimum bond. Non-porous, dense or glassy type concrete surfaces must be roughened by sandblasting or be etched with a solution of muriatic acid and neutralized. New concrete must be permitted to age or cure before an epoxy is applied. The industry standard for cure time is 28 days.

## Surface Preparation-Steel

Exposed rebar, anchor bolts, etc. to be bonded must be free of rust, paint, oil, and dirt. Metals should be sanded or sandblasted to a commercial blast finish. If mechanical cleaning is impractical, chemical cleaning should be used, such as a 10% solution of muriatic acid followed by a water rinse and neutralization. A lightly abraded surface gives a better mechanical key.

## Cautions

Due to many variables in bonding to damp or dry surfaces, be certain to test application under the same conditions as the full-scale work. When bonding to damp or slightly wet surfaces, be certain to test if dampness or moisture is caused by hydrostatic pressure prevalent in, on, or below grade application. Moisture passing through the substrate by pressure during application and curing of epoxy will cause bond failures.

## Mixing

The individual components of EPIWELD<sup>®</sup> 580 should be thoroughly stirred before the two are mixed together. The resin (part-A) and hardener (part-B) should then be mixed in the proper ratio (1 part resin (A) to 1 part (B) by volume) for 3 to 5 minutes resulting in a

homogenous and uniformly gray colored material. It is recommended that a slow speed drill (600 RPM max.) and paint paddle or a jiffy mixer be used for mixing. Hand mixing with paint paddle is also acceptable but a uniform gray color must be achieved. EPIWELD® 580 is designed for application both neat and as a grout or mortar. Proportion of aggregate to 1 part mixed epoxy varies with proposed end use. 2 to 3 parts clean dry silica sand or Lambert premium emery aggregate to 1 part mixed EPIWELD® 580 is a good general formula and/or recommendation.

### **Caution**

Aggregate must be oven dried to avoid encapsulation of moisture. Condition components to 60-70°F (15.6-21.1°C) prior to use. Epoxies stored below 60°F (15.6°C) will cause the epoxy to thicken substantially making it difficult to blend the two materials and obtain a proper mating of resin and hardener. Pot life of mixed EPIWELD® 580 at 70°F (21.1°C) is about 30 minutes. Pot life is dependent upon material temperature and quantity catalyzed. The greater the mass the shorter the pot life. Increased mass and temperature result in higher exothermic and shorter pot life. Higher temperatures decrease pot life, lower temperatures and the addition of aggregate lengthen pot life. Temperatures of substrate will have similar results on pot life.

EPIWELD® 580 can be applied by brush, squeegee, trowel, or roller.

### **Bonding Fresh Concrete to Hardened Concrete**

Make sure sufficient coating of EPIWELD® 580 is applied to the surface to coat all voids and crevices. Only an area of which fresh concrete will be placed within the cure time should be coated. If epoxy sets before the fresh concrete is placed, it will have to be removed and reapplied. Under certain conditions, recoating may be acceptable. It is mandatory that the epoxy be tacky when fresh concrete is poured. Porous concrete may rapidly absorb EPIWELD® 580 and leave surface dry. A prime coat may be needed in this case. Thickness of topping or patch should be sufficient to maintain its own structural strength. EPIWELD® 580 prevents migration of water from the new slab into the old concrete thus producing a stronger concrete. EPIWELD® 580 also becomes a moisture barrier preventing subsurface water coming through the concrete.

### **Bonding Hardened Concrete to Hardened Concrete**

Brush coat each of the mating surfaces with a liberal amount of EPIWELD® 580. Allow 10 minutes for penetration. It is important that the EPIWELD® 580 be tacky when mating surfaces are placed together. Bonded parts should be left undisturbed for at least 24 hours. Support pressure may be required during cure time.

### **Binder for Epoxy Aggregate Grout, Mortar, Concrete**

To produce a sand filled grout, add 2 to 3 parts (by volume) of clean, dry silica sand to 1 part mixed EPIWELD® 580. For proper strength development, all components should be at temperatures of 50°F (10.0°C) and rising. Additional aggregate may be added (up to 5 parts sand to 1 part EPIWELD® 580). To avoid air entrapment, placement of grout mixes should be made from only one side of work area.

### **Anchoring Bolts, Rebar, Dowels, and Pins:**

Used as neat epoxy. For efficient transfer of stress, the hole should be no more than 1/4 inch larger than the diameter of the bolt, rebar, dowel, pin to be embedded. Depth of embedment is 10 to 15 times the bolt, rebar, etc. diameter. EPIWELD® 580 can be mixed with fine dry silica sand (40/140 gradation) at a 1-to-1 ratio for further economy and to increase the modulus of elasticity.

### **Hole Preparation:**

Holes should be clean and free of debris. Air or water flushed rotary percussive drilling equipment is recommended. Holes should be brushed with a nylon or wire brush to dislodge drilling debris. Use compressed air to clean out the hole. Diamond drilled holes are not recommended as they do not provide a rough hole profile which establishes the epoxy anchorage. Concrete should be fully cured (28 days or more).

### **Bolt Placement:**

After placing EPIWELD® 580 in the hole, insert the bolt, rebar, etc. with a twist action for maximum contact between EPIWELD® 580 and hardware and expulsion of air voids. Position hardware with wedges, jigs, etc. until initial cure. For vertical or overhead installations use EPIWELD® 560 or 9-N-11 gel epoxy.

### **Patching Compound:**

After mixing parts A & B together as per instructions, thoroughly blend the selected aggregate into the mixture. For patches greater than 3/4-inch (19.2 mm) in depth, coarse aggregate whose maximum size is 1/3 the thickness of the patch may be mixed with the sand used in the epoxy mortar. Deep patches should be applied in one-inch increments with subsequent layers applied after the preceding one has cooled to touch but still tacky. Epoxy-to-aggregate ratios (by volume) are generally in the range of 1 part mixed epoxy to 2-3 parts aggregate

### **Limitations**

EPIWELD® 580 should not be used at temperatures below 40°F (4.4°C) or over 100°F (37.8°C). During cold periods, temperatures should be 40°F (4.4°C) and rising at time of application. New concrete or other materials being bonded should be placed while EPIWELD® 580 is still tacky. If it dries, a fresh coat must be applied. Do not apply to wet, "puddled" areas. To minimize differential shrinkage stress, concrete substrate should be fully cured prior to bonding with EPIWELD® 580. When used as a bonding medium for non-slip surfaces, apply EPIWELD® 580 to a dry or slightly damp substrate and use only dry aggregates. Do not thin EPIWELD® 580.

## **Technical Data**

### **Applicable Standards**

- ASTM C-881, Type I, II, IV, V Grade 2, Class B & C
- Florida D.O.T. Specification Section 926 Epoxy Compounds Type A, B, F-2
- AASHTO-M 235

**NEAT EPOXY BINDER****Mixing Properties** 1 part A to 1 part B by volume**Color**

Part A Resin	Clear/Amber
Part B Hardener	Gray

**Viscosity** Neat Epoxy 40 - 100 poise max**Pot Life** Neat epoxy 30 - 60 min**Tack Free Time** (thin film)

45°F (7.2°C)	14-16 hours
75°F (23.9°C)	2-4 hours
90°F (32.2°C)	1-2 hours

**Bond Strength** (ASTM C-882)

Hardened to Hardened Concrete	
2 days (moist cure)	1200 PSI (8.3 MPa) minimum
14 days (moist cure)	1600 PSI (11.0 MPa) minimum

**Water Absorption** (ASTM D-570)

24 hours	0.5% max
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**Compressive Strength** (ASTM D-695)

24 hours	3200 PSI (22.1 MPa) @ 75°F (23.9°C)
	3600 PSI (24.8 MPa) @ 90°F (32.2°C)
3 days	9100 PSI (62.7 MPa) @ 75°F (23.9°C)
	9600 PSI (66.2 MPa) @ 90°F (32.2°C)
7 days	10500 PSI (72.4 MPa) @ 75°F (23.9°C)
	9600 PSI (66.2 MPa) @ 90°F (32.2°C)

**Tensile Properties** (ASTM D-638)

14 days	Tensile Strength 7000 PSI (48.3MPa)
Elongation at break 1.6%	

**Modulus of Elasticity** 3.3 x 10<sup>5</sup> PSI**Flexural Properties** (ASTM D-790)

14 days	7600 PSI (52.4 MPa)
Tangent Modulus of Elasticity in Bending 4.8 x 10 <sup>5</sup> PSI (0.7MPa)	

**EPOXY GROUT MORTAR**

**Compressive Strength** Fl. D.O.T Test  
 2"x 2" x 2" cubes - 1 part mixed epoxy, 2 parts sand  
 Average 3 cubes @ 3 days -- 11480 PSI (79.2 MPa)

**Coverage****ESTIMATED COVERAGE**

over concrete surfaces

Smooth surface	100 sq. ft. per gallon (2.5m <sup>2</sup> /litre)
Rough surface	60 sq. ft. per gallon (1.5m <sup>2</sup> /litre)

**EPOXY GROUT/MORTAR**

Yield Per Gallon

Epoxy	Aggregate	Mortar/Grout
1gal. (3.8 ltr.) +	1 gal. (3.8 ltr.) =	1.6 gal. (6 liter.)
1gal. (3.8 ltr.) +	2 gal. (7.6 ltr.) =	2.2 gal. (8.4 liter)
1gal. (3.8 ltr.) +	3 gal. (11.4 ltr.) =	2.8gal. (10.8 liter)

1 gallon (3.8 ltr.) of LAMBERT EMAG or SILICA SAND weighs 10 to 12 pounds (4.5 - 5.4 kg).

**GROUT COVERAGE & THICKNESS**

Binder & Aggregate	Square Feet	Thickness
1gal. (3.8 ltr.) +	12.8 (1.2m <sup>2</sup> )	1/8 (3.2 mm)
1gal. (3.8 ltr.) +	8.6 (0.8m <sup>2</sup> )	3/16 (4.8 mm)
1gal. (3.8 ltr.) +	6.4 (0.6m <sup>2</sup> )	1/4 (6.4 mm)
1gal. (3.8 ltr.) +	4.3 (0.4m <sup>2</sup> )	3/8 (9.6 mm)

**Clean-Up & First Aid****Clean-Up**

Clean all tools and equipment immediately after use with lacquer thinner. Do not allow epoxy to harden on tools or equipment. Soap and hot water may be used in some cases.

**First Aid**

Avoid breathing possible fumes, mists and vapors which can cause severe respiratory damage. Use of NIOSH approved breathing apparatus is required for more than minimal exposure. Always work in areas with adequate ventilation to allow dissipation of amines and other chemical fumes, and where applicable, solvent fumes. Use of goggles, protective garments, rubber gloves, protective creams is required. If material gets into eyes, flush thoroughly with clean water for 20 minutes; then seek medical treatment. Avoid skin contact. Material can cause contact dermatitis. Always wash exposed areas immediately, using warm water and soap, followed by rinsing with clean water. Observe all safety precautions. It is important when using solvent based materials or solvents to keep away from open flame or ignition source.

**KEEP OUT OF REACH OF CHILDREN.  
 FOR INDUSTRIAL USE ONLY.**