



Product Description

EPIWELD® 9-N-11 is a specially formulated, rapid setting epoxy adhesive and binder system for general concrete construction usage and for special concrete repairs, rehabilitation, and preservation. EPIWELD® 9-N-11 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. The non-sag consistency makes it ideal as a bonding agent and grouting material for vertical and overhead patching. When used as an epoxy mortar, EPIWELD® 9-N-11 will accept good aggregate loading without appreciable strength reductions.

EPIWELD® 9-N-11 can be used for the following tasks:

- Anchoring bolts, dowels, pins, and rods in concrete.
- Mixes with aggregates to make epoxy patching mortars or grouts.
- Bonding fresh concrete to other rigid materials.
- Bonding other materials to hardened concrete.
- Coating rebar or other metals for corrosion protection.
- Binder for skidproofing materials such as EMAG and sand.

Installation

Before using this product, refer to the material Safety Data Sheet for additional information. The conditions of use, handling, and application of this product are beyond Lambert Corporation's control. Conduct testing to determine satisfaction and suitability for intended use, health, safety and environmental issues. Follow best industry practices. Unforeseeable variables and/or developed successful installer practices may cause variation in methods and/or results.

Surface Preparation-Concrete

Surface must be clean and structurally sound. Concrete surfaces to be bonded coated or repaired should be dry for best results; however a damp, surface-dry condition is acceptable. Mechanical scarifying to remove laitance and expose sound, coarse aggregate, will result in optimum bond. Nonporous, dense or glassy type concrete surfaces must be roughened by sand blasting or be etched with a solution of muriatic acid and neutralized. New Concrete must be permitted to age before an epoxy is applied. Adequate aging or curing time is generally 28 days or more.

Surface Preparation-Steel

Exposed rebar and anchor bolts must be free of rust, paint, oil, and dirt. Metal surfaces should be sanded, sandblasted to a commercial blast finish, or chemically cleaned using a 10% solution of muriatic acid followed by a water rinse and neutralization. A lightly abraded surface is desirable.

Cautions

Test apply under the same conditions as the full-scale work.

Mixing

Thoroughly stir the individual components of EPIWELD® 9-N-11 prior to mixing together. Mix (1-part resin (A) to 1-part (B) by volume) for 3 to 5 minutes into a homogenous and uniformly tan colored material. Use a slow speed drill (600-RPM max.) and paint paddle or a "jiffy" mixer for mixing. Hand mixing with paint paddle is also acceptable but a uniform tan color must be achieved. EPIWELD® 9-N-11 can be used both neat and as a grout or mortar. Generally, for grout proportion 2 to 3 parts aggregate to 1 part mixed EPIWELD® 9-N-11.

Caution

Use only oven-dried aggregate that has been pre-conditioned to 60 – 70°F (15.6°C – 21.1°C) to avoid encapsulation of moisture. Epoxies stored below 60°F (15.6°C) will thicken substantially making it difficult to obtain a proper blend of the resin and hardener. Pot life of mixed EPIWELD® 9-N-11 at 70°F (21.1°C) is about 30 minutes. Pot life is dependent upon material temperature and quantity catalyzed. Higher temperatures decrease pot life; lower temperatures and the addition of aggregate lengthen pot life. Substrate temperature will have a similar affect on pot life.

Application

EPIWELD® 9-N-11 can be applied by brush, trowel, or roller.

Bonding Fresh Concrete to Hardened Concrete

Apply EPIWELD® 9-N-11 to the surface, thoroughly coating voids and crevices. Cover only the area to receive repair or topping during the "open" time of the epoxy. It is mandatory that epoxy be tacky when fresh concrete is poured. Remove, re-apply or re-coat epoxy that sets before fresh concrete is placed. Minimum thickness of repair or topping is limited by internal strength of repair or topping.

Bonding Precast Concrete to Existing Concrete

Brush coat each surface with EPIWELD® 9-N-11. Allow 10 minutes for penetration. It is important that the EPIWELD® 9-N-11 be tacky when surfaces mated. Bonded parts should be left undisturbed for at least 24 hours. Support pressure may be required during cure time.

Epoxy Grout / Mortar

Add clean, dry silica sand to mixed EPIWELD® 9-N-11 epoxy. Pre-conditioned ingredients to a temperature range of 50 – 90°F (10 – 32.2°C) for best results. Sand-epoxy mixing proportions vary depending on desired consistency. A 3-to-1 (sand-to-epoxy) mix ratio is the generally acceptable proportion but sand portion can range from one to five parts for each part of epoxy (by volume). For placement in formed spaces, force grout/mortar material into space from one side only (to avoid air entrapment).

Packaging:

Two-Component Mix
Part A – 2-gal (7.6L)
Part B – 1-gal (3.8L)

EPOXY PRODUCTS

EPIWELD® 9-N-11

MASTER FORMAT:



Used as neat epoxy. For efficient transfer of stress, the hole should be no greater than 1/4-inch (6.4mm) larger than the bolt diameter, rebar, dowel pin to be embedded. Depth of embedment is 10 to 15 times the bolt, rebar, etc. diameter. Where possible, EPIWELD® 9-N-11 prevents migration of water from the new slab into the old concrete thus producing a stronger concrete. EPIWELD® 9-N-11 also becomes a moisture barrier preventing sub surface water coming through the concrete. EPIWELD® 9-N-11 could be mixed with fine dry silica sand (40/140 or 20/30 gradation) at a 1 to 1 ratio for further economy and to increase the modulus of elasticity.

Hole Preparation

Drill holes with air or water-flushed rotary percussive drilling equipment. Holes should be brushed with a nylon or wire brush to dislodge drilling debris. Use compressed air to clean debris out of the hole. Diamond drilled holes are not recommended as they do not provide a rough hole profile which establishes the epoxy anchorage.

Bolt Placement

After placing EPIWELD® 9-N-11 in the hole, insert the bolt or rebar with a twist action for maximum contact between epoxy and hardware and expulsion of any air voids. Position hardware with wedges or jigs until initial cure.

Patching Compound

After mixing parts A & B together, thoroughly blend the selected aggregate into the mixture. For patches greater than 3/4-inch (19.1mm) 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 1-inch (25.4mm) layers; applied after the preceding layer 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® 9-N-11 should only be used at temperatures of 40°F (4.4°C) and rising at time of application but less than 100°F (37.8°C). Substrate temperature must not be below 50°F (10°C) during application. New concrete or other materials being bonded should be placed while EPIWELD® 9-N-11 is still tacky. If it dries, a fresh coat must be applied. When used as a bonding medium for non-slip surfaces, apply EPIWELD® 9-N-11 to a dry or slightly damp substrate and use dry aggregates. Do not thin EPIWELD® 9-N-11.

Technical Data

Applicable Standards – Florida Department of Transportation Spec-Epoxy Compounds Type A & B

Properties		Bond Strength ASTM C-882 hardened to hardened Concrete	
Mixing Properties	1-part A to 1-part B (by volume)	2 Day (air cure) minimum	2390 PSI (16.5 MPa)
Color	Part A Resin Pearl White Part B Hardener Tan	12 day (moist cure) minimum	2580 PSI (17.8 MPa)
Mixed color-light straw brown, concrete gray available on special order only		Water Absorption ASTM D-570	
Viscosity	Net Epoxy Gel	24 Hours Immersed	0.15% max
Pot Life	Net Epoxy 30 – 60 Minutes	2 Hours boiling water immersed	0.83%
Tack Free Time (thin film)	45°F (7.2°C) 14 – 16 Hours 75°F (23.9°C) 6 – 8 Hours 90°F (32.2°C) 1 – 2 Hours	Compressive Strength Neat Epoxy @ 72°F (22.2°C)	ASTM D-695

(Epoxy Mortar 2 to 1 ratio by volume of aggregate to neat epoxy @ 72°F (22.2°C))		Tensile Properties ASTM D-638		Pull Out Test (Neat Epoxy)			
24 Hours	5370 PSI (37 MPa)	14 Days Tensile Strength	5670 PSI (39.1 MPa)	Cure Time	Rebar Size	Type Failure	Maximum Load
3 Days	8510 PSI (58.7 MPa)	Elongation at Break	1.85%	72 Hrs	#4	Rebar	13,318 lbs (6041 kg)
7 Days	8640 PSI (59.6 MPa)	Modulus of Elasticity	4.0 x 105 PSI (0.7 MPa)	72 Hrs	#6	Rebar	38,733 lbs (17569 kg)
14 Days	12160 PSI (83.8 MPa)			72 Hrs	#8	Concrete	63,100 lbs (28622 kg)

Coverage

- Estimated Concrete Coverage
- Smooth Surface – 100 sq. ft. per gallon (2.5 m²/litre)/(16mils)
 - Rough Surface – 60-80 sq. ft. per gallon (1.5-m²/litre)/(16mils)

Epoxy +	Aggregate =	Mortar / Grout
1-gal (3.8L)	1-gal (3.8L)	1.6-gal (6.1L)
1-gal (3.8L)	2-gal (7.6L)	2.2-gal (8.3L)
1-gal (3.8L)	3-gal (11.4L)	2.8-gal (10.6L)

Binder & Aggregate	Square Feet	Thickness
1-gal (3.8L)	12.8 (1.2m ²)	1/8" (3.2mm)
1-gal (3.8L)	8.6 (0.8m ²)	3/16" (4.8mm)
1-gal (3.8L)	6.4 (0.6m ²)	1/4" (6.4mm)
1-gal (3.8L)	4.3 (0.4m ²)	3/8" (9.5mm)
1-gal (3.8L)	3.2 (0.3m ²)	1/2" (12.7mm)
1-gal (3.8L)	1.6 (0.15m ²)	~1" (25.4mm)

*1 gallon (3.8L) of Lambert emery aggregate or silica sand weighs approximately 10 to 12 pounds (4.5 to 5.4kg). All above figures will vary slightly according to aggregate mesh size and air.

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 that 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 polyamine 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.