



The World's Most Amazing Cementitious Repair and Overlay Products!

Elephant Armor® DOT Industrial Grade Mortar Technical Data Sheet

DESCRIPTION

Elephant Armor® is a single component, cementitious, fiber based, medium to fast setting, zero polymer, repair and overlay engineered ductal mortar. In addition to a mechanical bond, our fiber creates a fully engaged molecular bond within our patented mortar matrix, providing extremely high tensile and flexural strength. It can be placed with a textured roller (*preferred method*) or traditional placement tools.

FEATURES / BENEFITS:

- Fiber reinforced: Superior flexural and tensile strength as thin as ¼".
- High ductility, allowing the overlay or repair to **FLEX without Failure**.
- Resists de-icing salts, freeze/thaw.
- Superior tensile strain capacity over other cement based products for improved crack resistance.
- Superior bond strength to that of other fiber and acrylic based mortars.
- Ideal as a structural underlayment.
- Prevents the propagation of existing cracks through the surface.
- Highly impermeable and abrasion resistant.
- Unparalleled as a stampable overlay.

SHELF LIFE

2 years in original unopened package if stored in a humidity controlled environment. Cannot be exposed to moisture.

PACKAGING

- 10 lb (4.5 kg) plastic pails
- 50 lb (22.7 kg) plastic lined bags

COVERAGE/YIELD

A 50 lb (22.7kg) bag of **Elephant Armor® Mortar** will yield approximately 0.5 ft³ (0.014 m³) of material.

Applied at the following thicknesses, one 50 lb (22.7 kg) bag of **Elephant Armor® Mortar** will cover:

- ¼" (6.3mm) – 18.75 ft² (2 m²)
- ½" (12.7mm) – 9.3 ft² (1 m²)

Note: Coverage rates are approximate

PRIMARY APPLICATIONS

Walkways, curbs, ramps, slabs, spalls, cracks, bridges, ICF walls, parking structures, tunnels, dams, industrial plants or anywhere a high strength concrete repair mortar is required.

Structural monolithic underlayment or overlay for interior and exterior applications.

TECHNICAL INFORMATION – Material Properties @ 75°F (24°C)

Compressive Strength psi ASTM C109

4 hrs	4,130 (28.45 MPa)	1 day	5,890 (40.58 MPa)
7 days	7,080 (48.78 MPa)	28 days	7,380 (50.84 MPa)

Split Tensile Strength psi ASTM C 496

7 days	735 (5.1 MPa)
28 days	875 (6 MPa)

Flexural Strength psi ASTM C 947

7 days	1439 (9.9 MPa)
28 days	1544 (10.6 MPa)

Modulus of Elasticity, ksi ASTM C469

(ASTM C39 for compressive strength)

7 days	2,550 ave. comp. strength = 4,700 psi (32.4 MPa)
28 days	2,650 ave. comp. strength = 6,110 psi (42.1 MPa)

Shrinkage ASTM C 928/ASTM C157

28 days stored in water %	0.018
28 days stored in air %	0.017

Electrical Indication of Concrete's Ability to Resist Chloride Ion Penetration ASTM C 1202

665 Charge Passed (coulombs)
Very Low Chloride Ion Penetrability

Set Times ASTM C 266

Initial set	approx. 30 to 45 min
Final set	approx. 1 to 2 hr

Bond Strength psi. ASTM C 882

1 day avg.	2269 (15.63 MPa)
7 days avg.	2787 (19.20 MPa)



DIRECTIONS FOR USE

Surface Preparation: Repair surfaces must be clean, sound, and free from contaminants that can act as a bond breaker (such as oil, curing compounds, acids, and dirt).

Mechanical preparation options:

1. Fastest method for vertical and overhead preparation: Pressure washing, hydro blasting or sand blast to remove the cream of the concrete, paints or other contaminants. If pressure washing, hydro blasting or sand blasting does not remove contaminants go to step #2.

2. Fastest method for horizontal preparation: Mechanical grind the concrete surface using metal bonded tooling (16 grit or 35 grit) using walk behind grinders with vacuum systems. Hand held grinders with shrouds, vacuum and metal coarse wheel.

Priming – For best practices refer to **Primer Application Guidelines** on our website.

A Slurry/Bond Coat is a blend of **Elephant Armor**® with enough undiluted **Elephant Armor**® **Acrylic Primer** to make a paint-like consistency. If there is any exposed steel or rebar, first apply a rust inhibitor. Work slurry into the repair area or substrate with a stiff masonry brush coating the entire area. Pay special attention to the corners, sides and any exposed rebar. Place **Elephant Armor**® prior to the slurry coat becoming tack-free. **Elephant Armor**® **Acrylic Primer** can also be used in a **NEAT** application. This application conforms to the structural bonding requirements of ASTM C 1059-13, Type II.

Elephant Armor® **Overlay Primer** is a ready to use, rewettable polyvinyl acetate bonding agent, which bonds **Elephant Armor**® mortars to properly prepared concrete and also between **Elephant Armor**® lifts. **The Elephant Armor**® **Overlay Primer** must be completely dry and tack free (1-3 hours) prior to placing the **Elephant Armor**®.

Recommended for interior and exterior use that is not subjected to constant moisture, hydrostatic pressure or continuous water saturation.

Elephant Armor® **Overlay Primer** meets requirements of ASTM C 1059-13, Latex Agents for Bonding Fresh to Hardened Concrete Type I.

Mixing:

Mix the dry contents prior to adding water. Add approximately 5.5 - 6.5 US quarts (5.2 - 6.2 liters) of water (depending on desired slump) and thoroughly mix with a dual shaft power mixer. (example: ColloMix Xo 55 Duo)

Please review our mixing video on our website Video Gallery at: www.gstinternational.com/.

Due to our unique product design, this type of mixer is required to ensure sufficient shear capacity needed to properly provide a homogeneous mix. Do not use a dry wall paddle blade. While mixing, ensure there is no unhydrated **Elephant Armor**® on the sides or bottom of the bucket, as this will alter the water/cement ratio. Continue mixing until the mixture is lump free and has achieved the desired consistency (slump) for your application. When mixing our ten pound buckets or a small amount of **Elephant Armor**®, a ½" drill or larger, using an egg beater, mortar or Jiffy Bit can be used. Actual mixing time will depend on mixer speed, shear capacity, and desired consistency or flow required.

Application:

- Can be placed with a textured roller (*preferred method*) or traditional placement tools.
- ¼" and ½" gauges are available to be attached to the textured rollers for a more even finish.
- Do not over trowel. Wait for initial set before applying final trowelling or a smooth roller finish. Initial set has begun as soon as the 'bleed water' begins to dissipate. Set times will vary with weather conditions.
- Will accept trowelled, broomed, decorative roller or stamped finish.
- Will accept integral powder or liquid colors, acid stain and water based or acrylic stains.
- **Elephant Armor**® **Delay** added to the mixing water will allow additional working time. (*Please refer to package instructions*)
- When placing **Elephant Armor**® **Mortars**, all repairs should be water-cured for approximately one hour after the mortar has achieved final set.

Note: After **Elephant Armor**® is fully cured, it is strongly recommended that you apply **Ecobeton**®-USA **Vetrofluid**® Anti-Deterioration Product. For more information, please visit www.ecobeton-usa.com

Clean-Up:

All tools and mixing equipment shall be immediately cleaned with water.

PRECAUTIONS / LIMITATIONS:

- Use required Safety Equipment and Best Practices.
- A feathered edge is not acceptable.
- Do not add more water than recommended.
- Do not over work or over trowel the spall repair or overlay.
- Follow ACI Hot Weather Concreting 305R-99 procedures.
- Do not apply **Elephant Armor**® **Mortar** to frozen surfaces, at temperatures below 40° F (4° C).
- Consult the Safety Data Sheet in all cases before use. Available at www.gstinternational.com

KEEP THIS PRODUCT OUT OF THE REACH OF CHILDREN

This product is made from the finest raw materials available and manufactured to proven formulation under strict quality control for its intended use. However, results obtained with the use of this product under a variety of conditions may depend on circumstances beyond our control. GST International, Inc. and the seller therefore disclaim any responsibility for damage of any kind. The only warranty extended, expressed or implied, is for defective material.

GST International shall not be liable for any incidental, consequential or damages arising directly or indirectly from the use of **Elephant Armor**®.

For Elephant Armor® **SDS and installation videos, please visit www.gstinternational.com**

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