L&M™ EMERYTOP 400™

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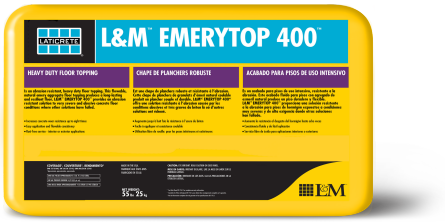
Globally Proven Construction Solutions



1. PRODUCT NAME

L&M™ EMERYTOP 400™

2. MANUFACTURER

LATICRETE International, Inc.
1 LATICRETE Park North
Bethany, CT 06524-3423 USA
Telephone: +1.203.393.0010, ext. 1235
Toll Free: 1.800.243.4788, ext. 1235
Fax: +1.203.393.1684
Website: laticrete.com

3. PRODUCT DESCRIPTION

EMERYTOP 400 is an abrasion resistant, heavy duty floor topping. This flowable, natural emery aggregate floor topping produces a long-lasting and resilient floor. EMERYTOP 400 provides an economical, abrasion resistant solution to very severe and abusive concrete floor conditions where other solutions have failed. EMERYTOP 400 uses polyhederal shaped isostructures of emery as its primary aggregate base. Our natural emery aggregate contains nature's highest content of aluminum oxide and ferric oxide for unsurpassed toughness. This unique aggregate has a hardness (Mohs scale rating) approaching that of industrial diamonds. EMERYTOP 400 produces a dense, cohesive mass that is rust-free, chemically resistant, and results in a thick floor surface for maximum abrasion and impact resistance. EMERYTOP 400 floors are also resistant to the destructive attacks of mild organic acids, alkalis and oils. EMERYTOP 400 outperforms normal concrete and high strength iron aggregate topping floors. Its unique formulation provides a substantial savings in material cost when compared to iron toppings. In addition to superior performance, EMERYTOP 400 has a flowable formulation which can be placed and finished like concrete. These superior physical properties make EMERYTOP 400 an excellent choice for heavy duty industrial service Class 6 and 7 floors, as described by ACI in its Manual of Concrete Practice standard, ACI 302.1R.

Uses

- EMERYTOP 400 reinforces concrete floors by developing a dense, long lasting, abrasion, and impact resistant floor to withstand the most severe wear conditions. Use EMERYTOP 400 in key areas subject to heavy traffic, impact, abrasion, and continuous wear such as resource recovery plants, tipping floors, roll-off areas, foundries, loading docks, truck, tractor and auto installation and repair facilities, mill scale sluiceways, smelters, machinery manufacturing plants, and generating stations. EMERYTOP 400 has a unique non-rusting formula that is ideal for outside loading docks and industrial plants using chemicals. Use EMERYTOP 400 on floors requiring optimum surface density to resist industrial chemical penetration.

Advantages

- Increases concrete wear resistance up to eight times
- Easy application and flowable consistency
- Significant cost savings over iron toppings
- Resists severe single point impacts
- High density-resists industrial contaminants
- Rust-free service - interior or exterior applications
- Fast turnaround for weekend shut downs

Suitable Substrates

- Concrete

Packaging

- 3000# SUPER SACK (1360.8KG) BAG

Approximate Coverage

Note to estimator: Estimate between 5 to 10% extra material for varied substrate textures and profiles and waste.			
Nominal Thickness	Approximate CoveragePer 55 lb. (25 kg) Bag	Approximate CoveragePer 3000 lb. (1361 kg) Bag	Yield

Note to estimator: Estimate between 5 to 10% extra material for varied substrate textures and profiles and waste.			
1" (25 mm)	4.4 ft^2 (0.41 m^2)	240 ft^2 (22.3 m^2)	55 lb (25 kg) bag is 0.4 ft3 (0.01 m3)
2" (50 mm)	2.2 ft^2 (0.20 m^2)	120 ft^2 (11.15 m^2)	4175 lbs. = 1 Cubic Yard

Limitations

- To avoid surface carbonation during cold weather application of EMERYTOP 400, do not use un-vented fossil-fuel heaters.
- Follow ACI 302 standard concrete procedures regarding temperature at the time of placement.
- Do not add accelerators or other admixtures to EMERYTOP 400
- Avoid application in extreme weather
- A pre-placement job conference is required with this product to carefully plan the installation
- Minimum depth is 1" (25 mm)
- Maximum depth is 2" (50 mm). Contact LATICRETE Technical Services for information on thicker applications.

Cautions

- Consult SDS for more safety information
- Protect finished work from traffic until fully cured
- Contains portland cement and silica sand. Causes skin and serious eye damage. Wear protective gloves/protective clothing/eye protection/face protection. In case of contact, flush thoroughly with water.
- Do not take internally. Silica sand may cause cancer, respiratory irritation or serious lung problems. Do not breathe dust. Wear a respirator in dusty areas.
- Keep out of reach of children

4. TECHNICAL DATA

Applicable Standard

- ASTM C190
- ASTM C666
- ASTM C157
- ASTM C1202
- ASTM C143

Physical Properties

Group Number	Results	Test Method & Specification
Chloride Ion Penetration	Very Low	
Permeability	Coulombs passed: 87	ASTM C 1202; AASHTO-T-277
Flexural Strength	28 days: 1380 psi (9.5 MPa)	ASTM C78
Length Change	28 days: -0.0053%	ASTM C157
Abrasion	Depth 60 min – In.0.008 (0.2 mm)	ASTM C944
Compressive Strength Note: Adding Additional Aggregate, water or other additives result in lower compressive strength and other physical properties.	1 day: 5000 psi (34.5 MPa); 2 days: 7100 psi (50 MPa); 3 days: 8200 psi (56.6 MPa); 7 days:10600 psi (73.1 MPa); 28 days: 12160 psi (86.2 MPa)	ASTM C109
Impact Resistance	7 days: no cracking; 90 days: no cracking	ACI 544 2
Hardness (emery aggregate)	9 Mohs	Mohs scale
Aggregate Type	Min 58% Al2 O3; Min 24% Fe2 O3	

Specifications subject to change without notification. Results shown are typical but reflect test procedures used. Actual field performance will depend on installation methods and site conditions.

5. INSTALLATION

Surface Preparation:

The top surface of the concrete must be scarified and left irregular, (minimum ICRI CSP 8-10) exposing the topmost surface of the coarse aggregate with a minimum amplitude of 1/4" (6 mm) between peaks and valleys. Soak base concrete with water to a saturated surface dry (SSD) condition. This is best achieved by water soaking the substrate for 12 hours and, just prior to applying the bonding slurry and placing the EMERYTOP 400, remove all surface standing water, leaving only a damp surface.

Priming With Slurry Bond Coat

Prepare the bonding slurry by mixing equal volumes of L&M EVERBOND and dry portland cement in a 1:1 ratio to a creamy, paint-like consistency. Scrub or broom the slurry into the damp surface for no more than 30 minutes before the placement of the EMERYTOP 400. Do not puddle bonding slurry onto the surface. Re-prime areas that dry before installation of EMERYTOP 400. Re-prime substrate if slurry has dried.

MIXING

EMERYTOP 400 should be mixed in a paddle-type mortar mixer or Ready Mix truck for high volume placements. First place all the water into the mixer, then add EMERYTOP 400. Mix 2.5-3.0 qts (2.4-2.8 L) water per 55 lb bag of EMERTYTOP 400. Mix a minimum of 5 minutes for high flow consistency. When a large volume of material is required, EMERYTOP 400 may be purchased in bulk bags of 3,000 lb (1361 kg) and mixed in a concrete mixer truck mix 3,000 lb (1361

kg) of EMERYTOP 400 with between 34-41 gals (129-155 L) water. Place 95% of required water into the concrete mixer truck based upon the number of Supersacks and the intended flow consistency. Maximum water provides a slump of approximately 4 to 5 inches. Suspend the bulk bag over the charging funnel of the mixer truck, and slowly load the dry material at a steady rate so that dry material mixes with water, allowing for a smooth, workable consistency. This will also help prevent the formation of large lumps (cannonballs) in the drum while the mixer truck is running at full charging speed. 95% of the water for the total number of Supersacks to be mixed must be in the Ready-Mix barrel. Begin mixing material at slow speed, adjusting the speed as the weight increases into the barrel. Once all Supersacks have been discharged into the Ready-Mix truck, the mixing speed should be elevated, allowing the material to fold over while mixing. Mix for 10 minutes at this speed. Increase mixing speed up to 50% of traditional mixing speed and mix for 5 minutes. Finally, mix material for five minutes at traditional mixing speed. Add up to 5% of remaining water to placement liking. Any added water requires an additional 5 minutes of mixing. For maximum slump, mix for a minimum of 5 minutes (minimum of 65 revolutions at 10-15 revolutions per minute), then place. At the time of placement of EMERYTOP 400, the air temperature should be between 50-90°F (10-32°C). In cold weather placement, heated mixing water may be used. The maximum water temperature should not be greater than 110°F (43°C). In hot, dry weather installations, mixing water may be chilled. Use E-CON to protect surfaces from rapid drying.

Hardened Concrete Substrate Requirements
The existing concrete base slab must be structurally sound and clean, and have a minimum compressive strength of 4,000 psi (27.6 MPa). All damaged or cracked areas that are structurally unsound must be repaired and/or replaced with new concrete as needed leaving 1 -2 inches for the EMERYTOP 400 topping slab. Cracks in the concrete substrate must be repaired before placement of the EMERYTOP 400. If they are not repaired and their causes corrected, the EMERYTOP 400 will crack in the same place and may delaminate. Refer to ACI 302.1.R for guidance on requirements for structurally sound slabs.

Placement over Hardened Concrete:
Set the strike-off level of the vibratory screed to the specified final elevation of the concrete floor. Place the EMERYTOP 400™ over the wet EVERBOND™ slurry mix immediately ahead of the vibratory screed. EMERYTOP 400 should be placed approximately 1/8" (3 mm) above the bottom of the screed. Strike off the product with a vibratory screed, which is essential for the initial consolidation of EMERYTOP 400. Use normal concrete finishing methods to finish the surface of the EMERYTOP 400 per ACI 302 10.3. Use bull float, then power float and power finish to the specified finish. During power floating pass, use a mechanical troweling machine equipped with float shoes or pans to keep topping open, allowing water evaporation and minimizing the danger of surface blisters. Power trowel to the specified finish. L&M E-CON™ can be used one or more times before, during, and after bull float, power troweling and finishing. Leave textured finish if extra non-slip performance is needed.

Joint Placement
Joints in the EMERYTOP 400 topping slab must be placed matching the location of the joints in the base slab. These saw cut joints must be cut to a depth equal to twice the thickness of the EMERYTOP 400 topping slab per ACI 302. Additional saw cut joints must be placed at a minimum of 10' X 10' in the EMERYTOP 400 topping slab. These saw cut joints must be cut through the full depth of the topping slab to the base slab. After curing 60 days or more, control joints may be filled with JOINT TITE 750™.

Curing
After finishing and initial set, continuously wet cure EMERYTOP 400 using conventional methods for 7-10 days.
The area may be opened to limited service in 48 hours, while continuing with the wet cure for 7-10 days.

MONOLITHIC PLACEMENT OVER PLASTIC CONCRETE
Substrate Concrete Requirements: The substrate concrete should be designed to develop a minimum of 4,000 psi (27.6 MPa) compressive strength. It must not contain calcium chlorides, stearates or other substances which are corrosive. The air content of the substrate concrete shall not be greater than 3% air entrapment and the slump shall not be greater than 5" (125 mm). During the placement of the substrate concrete and EMERYTOP 400 un-vented fossil-fuel heaters should not be used. Un-vented fossil fuel heaters will cause carbonation of fresh concrete and EMERYTOP 400.

Placement and Preparation of Plastic Substrate Concrete:
Place the concrete and strike off using a vibratory screed. Bull float immediately after strike off and before bleed water appears. After concrete bleed water has dissipated, darby (jitterbug) surface to produce a mortar bed approximately 1/4" (6 mm) thick, measured from the top of the coarse aggregate. Using a tining rake, lightly score the concrete surface at right angles to a depth of approximately 1/8" (3 mm). Raise the strike-off level of the vibratory screed to the specified final elevation of the concrete floor. Firmly attach the guides for the vibratory screed to the substrate and not on the plastic concrete surface. The minimum thickness of EMERYTOP 400 is 1" (25 mm). Operate the vibratory screed at 1/4 speed.
Leave an aggressive rake finish.

This type of application requires an experienced and extremely skilled contractor and crew. A bonding agent is not required when EMERYTOP 400 is being placed on plastic concrete. Place the EMERYTOP 400 on the surface of the concrete immediately ahead of the vibratory screed. Care should be taken not to exceed the screed's capacity. The EMERYTOP 400 should be approximately 1/8" (3 mm) above the bottom of the screed. Strike off the EMERYTOP 400 with vibratory screed. Measure topping depth frequently. If, during placement, coarse aggregate from the plastic concrete starts to appear through the surface of the topping, lower the vibratory screed running speed or delay further placement of EMERYTOP 400 until the concrete is less plastic. Use normal concrete finishing methods to finish the surface of the EMERYTOP 400 per ACI 302 10.3.

Finish, Curing and Joint Placement:
Follow same methods and procedures for EMERYTOP 400 as mentioned in this document for Placement over Hardened Concrete.

6. AVAILABILITY AND COST

Availability

LATICRETE materials are available worldwide.

For Distributor Information, Call:

Toll Free: 1.800.243.4788
Telephone: +1.203.393.0010

For on-line distributor information, visit LATICRETE at **laticrete.com**

Cost

Contact a LATICRETE Distributor in your area.

7. WARRANTY

See 10. FILING SYSTEM:

- LATICRETE Product Warranty

8. MAINTENANCE

The service life of EMERYTOP 400 can be extended by establishing a cleaning routine. EMERYTOP 400 should be routinely washed to remove contaminants using a hose or low pressure spraying system. Brush the surface to clear embedded debris with a push broom. The use of sacrificial rubber bumpers on power equipment is suggested to minimize wear of the EMERYTOP 400. Routinely inspect bumpers and replace when worn. Schedule annual inspections to review and repair worn or damaged areas. Clean and fill construction joints with JOINT TITE 750. Cut out and replace spalled areas with EMERYTOP 400. For general repairs such as curb knockouts use DURACRETE™.

9. TECHNICAL SERVICES

Technical Assistance

Information is available by calling the LATICRETE Technical Service Hotline:

Toll Free: 1.800.243.4788, ext. 1235
Telephone: +1.203.393.0010, ext. 1235
Fax: +1.203.393.1948

Technical and Safety Literature

To acquire technical and safety literature, please visit our website at **laticrete.com.**

10. FILING SYSTEM

Additional product information is available on our website at laticrete.com. The following is a list of related documents:

- Additional product information is available on our website at www.laticrete.com. The following is a list of related documents: DS 230.13: LATICRETE Product Warranty DS 172.9: E-CON™ DS 176.2: EVERBOND™ DS 176.1: EPOBOND™ DS 176.5: JOINT TITE 750 DS 174.4: DURACRETE™

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