



ENGINEERED POLYMER
SYSTEMS, LLC

Brute-Top EMP Mortar System (EMP-MS)

Brute-Top EMP-MS is a chemical resistant, filled with silica sand at a ratio of 7.4 parts sand to 1 part liquids epoxy mortar. The higher silica aggregate to epoxy / amine blend allows the mortar system to handle higher temperatures and higher levels of moisture transmission. This mortar system has a lower coefficient of thermal expansion allowing it to handled temperatures of 140-150°F and increased resistance to moisture transmission with a maximum of 9 pounds per gallon per 1,000 square feet.

EMP-MS is typically installed with a screed box and then power-troweled to compact the epoxy-sand mixture. The resurfacer when cured provides a chemical resistant surface that can then be coated with a thixed epoxy topcoat with an option for a urethane topcoat. EMP-MS is typically ready for top coating in 8 to 10 hours and tow motor traffic in 14 to 16 hours. This accelerated cure rate cuts down on expensive downtime.

EMP-MS is used in areas that have deteriorated over time from use and need to be brought back to like-new appearance. The EMP-MS is tinted to match the topcoat color.

Brute-Coat EMP liquids are used as the primer for the EMP-MS resurfacer. The liquids are specifically formulated to offer very good chemical resistance and tolerance to moisture.

TYPICAL PROPERTIES

Components	<u>Resin</u>	<u>Activator</u>
Viscosity (70°F)	900-1000 cps	60-90 cps
Flash Point	>300°F	>255°F
Weight per gallon (pounds / gallon)	9.3	8.1

Mixed Components

	50°F	70°F	90°F
Pot life (minutes)	50 - 60	40 - 50	30 - 40
VOC	42 g/l		
Drying time (hours)			
Set to touch	10-12	6 - 8	2 - 4
Maximum recoat	- Floor must be ground prior to coating - no maximum recoat time		
Foot traffic	12-14	8-10	4 - 6
Floor installation temperature limits	50°F - 90°F (minimum to maximum)		
	Consult EPS for other temperatures.		

Physical Properties

Compressive strength ASTM C-579	Resin/hardener	Silica filled
1 day	6,900 psi	4,000 psi
3 days		
7 days	12,115 psi	10,500 psi
Tensile strength ASTM C-307	2,000 psi	
Flexural strength ASTM C-580	3,800 psi	
Water absorption ASTM C-413	<0.1 %	
Flammability ASTM D-635	-self extinguishing	
Effective shrinkage ASTM C-883	passes test	
Thermal compatibility ASTM C-884	pass test	
Adhesion to concrete	>400 psi	

PACKAGING

EMP-MS is supplied in kit form. The epoxy liquids are either packaged in 5 gallon pails or 55 gallon drums. The amine curing agent is either packaged in 5 gallon pails or 55 gallon drums. The mix ratio for liquids is 2.0:1 (resin: activator) by volume.

Each mix consists of 2 gallons of epoxy resin, 1 gallon of amine curing agent, one pint of colorant and two – 50 pound bags of PP Blend Silica sand and two – 50 pound bags of blended silica sand.

Each mix of primer consists of 2.0 gallons of epoxy resin and 1.0 gallon of amine curing agent. One pint to one quart of xylene can be added to the primer to enhance penetration into the concrete. When the primer has been applied a sparse broadcast of the PP Blend sand should be immediately broadcast into the wet primer. This helps hinder the resurfacer from tearing when it is applied if the primer has cured and it also provides a mechanical lock for adhesion of the resurfacer to the primer.

ESTIMATING MATERIALS

EMP-MS is typically installed with a screed box or hand troweled. The minimum application thickness is 1/8 inch. The mortar is typically applied with a screed box at 3/8 inch and then power troweled to 3/16 inch or with a hand trowel at 3/16 inch. The theoretical coverage of one unit of resurfacer as indicated above is 130 square feet at 3/16 inch.

Coverage will vary according to thickness. If there are holes or excessively worn areas these should be filled prior to applying EMP-MS. Contact Engineered Polymer Systems for recommendations.

The theoretical coverage for 3.0 mixed gallons of primer applied at 8 mils will be 600 square feet. The coverage will vary depending on thickness applied as well as porosity of the concrete.

APPLICATION INSTRUCTIONS

Concrete should be tested for moisture transmission prior to installing any materials. Contact Engineered Polymer Systems for specific testing methods and ranges prior to installing these materials.

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Surface Preparation – Shot blasting is the preferred method on concrete. The concrete should be blasted to a 10 to 20 grit sand paper finish.

Any oils or contaminants must be removed prior to installation. The perimeter of the area to be resurfaced should be keyed to eliminate any edges.

Mixing – The materials are packaged either in drum kits or prepackaged units. Contact Engineered Polymer Systems for detailed instructions on how to pour off drums. The prepackaged units should be mixed as follows:

- Pour the resin, hardener and colorant into a mortar mixer and mix for approximately 2 – 3 minutes.
- Add the two – 50 pound bags of PP aggregate and two – 50 pound bags of blended sand individually and mix for 2-3 minutes or until completely wet out.
- Temperature affects the pot life and working time of the materials. The higher the temperature the shorter the working time. Do not mix more materials than can be installed with-in the pot life period.

Placement of Materials

- Immediately pour the mixed material into a wheel barrow and then into a screed box. The material must be applied to the floor within 5-6 minutes of the completion of the mixing process. Any materials left in the wheel barrow or mixer will begin to set-up after the 5-6 minutes has passed and may not be workable.
- Typically a knock down power trowel is used to pre-level the resurfacer and then a finish power trowel is used to level, finish and close the floor. Over power troweling may cause blisters and tear marks. Consult Engineered Polymer Systems if any questions arise.

Clean-up

Any mixing and application equipment should be cleaned up immediately upon completion

of the job. Typically xylene is used to clean all the equipment.

Surface preparation prior to coating

The cured surface of the EMP-MS must be ground prior to applying any topcoats. This is typically done with 2-headed terrazzo grinders or larger diamond grinders. Care should be taken to only grind the surface smooth eliminating any high spots or bumps do not over grind tearing the surface.

Expansion Joints

All expansion joints should be cut and filled with a material that is compatible with the topcoats being applied. Typically the joints are filled with a fast setting polyurea joint material and then razor cut to provide a smooth surface. If any high spots remain the joints should be buffed or sanded.

Humidity and Dew Point

Condensation can occur on the surface of concrete or epoxy when the substrate is below the dew point. This condensation can cause a film of moisture to form on the substrate interfering with adhesion or causing a blush. Check dew point temperatures prior to applying any materials. Any hazing of the film or greasy feeling may indicate a blush contact Engineered Polymer Systems prior to proceeding.

Disposal

All materials should be disposed of in accordance with all Federal, State or Local regulations. Consult with EPA for regulations in your area.

STORAGE / SHELF LIFE

All materials should be stored in original – unopened containers in an enclosed building out of direct sunlight. Ideally the materials should be between 60 – 80°F for 24 hours prior to installation. Installation of materials at temperatures outside of this range may make them difficult to install. The shelf life in unopened containers is a minimum of one year and typically much longer. Consult Engineered Polymer Systems if you have any

concerns about materials.

SAFETY

CAUTION – READ MATERIAL SAFETY DATA SHEETS BEFORE USING ALL PRODUCTS.

Follow recommendations for ventilation. Avoid contact with eyes or skin. Contact with skin requires washing with soap and water, eye contact requires immediately flushing / consult physician. If clothes become contaminated remove and wash prior to wearing.

These materials are for industrial use only.

WARRANTY / DISCLAIMER

All statements and recommendations are based on experience we believe to be reliable. The use or application of these products is beyond the control of Engineered Polymer Systems and therefore Engineered Polymer Systems does not make any warranty expressed or implied, as to results or hazards from its use. The suitability, risk and liability whatsoever of a product for any intended use shall be solely up to the user.

Liability if any, shall be to supply replacement materials. The modification of any materials not outlined in this technical bulletin nullifies the warranty unless prior written permission is given.