

CrownShield[®] Semi-Rigid MV Epoxy Mortar Binder

TECHNICAL DATA SHEET Product Number: 8521

Multi-Functional Semi-Rigid Medium Viscosity Epoxy Mortar Binder, Meets ASTM C881, Type III, Grade I

DESCRIPTION

CrownShield No. 8521 is a multi-functional, medium viscosity, semi-rigid, 100% solids, moisture tolerant 2-component epoxy mortar binder. It meets ASTM C881 Type III, Grade 1, Class B and Class C and AASHTO M235 Type III, Grade 1, Class B and Class C. It is medium viscosity, low odor, 100% solids thermosetting epoxy designed especially for a mortar binder. It is easy to mix, 1:1 mix ration by volume. It is self-priming, meaning it can be installed direct to properly prepared Portland cement concrete.

Crown Polymers offers a number of up-grade top coats and finish coats, if they are required. Aggregate Load:

- Trowel Mortar Aggregate by Volume: 6 to 7 parts tri-blend aggregate and 1 part Epoxy Mortar Binder.
- Self Leveling Aggregate (Crown Polymers No. SP603 Slurry Sand) 3 gal mix epoxy to 1 bag aggregate.
- Liquid placed at 30 - 40 mils. Broadcast Aggregate Load (30 Mesh), uniform in size, washed dried and bagged 0.70 to .075 pounds per square foot per lift.

TYPICAL USES FOR A MORTAR BINDER

(BINDERS PROPERLY BLENDED WITH SELECT AGGREGATES)

- DOT Broadcast Aggregate System for Friction Coarse
- Epoxy Underlayment Binder
- Joint Nosing and Joint Nosing Repair
- Maintenance Facilities
- Manufacturing and Warehouse Floors
- Mechanical Equipment Room Floors
- Ramps, Slopes and Fill
- Repair of Cracks and Voids

BENEFITS

- Complies with USDA, FDA, Food Safety Modernization Act. See **Crown Polymers Technical Bulletin: No. 3 Food and Beverage Compliance.**
- Slip Resistance (ADA). See **Crown Polymers Technical Bulletin: No. 4 Coefficient of Friction.**
- LEED[®] and Green Seal[®] requirements. See **Crown Polymers Technical Bulletin: No. 5 LEED and Green Seal Information.**
- VOC and EPA Compliant all states and provinces in North America. Cures to an inert finish. See **Crown Polymers Technical Bulletin: No. 2 VOC Compliance**
- Strong and Tough Floor
- Designed for new floors and for resurfacing old floors

LIMITATIONS

- This product is best suited for applications in temperatures between 60°F to 90°F (16°C to 32°C). Do not apply when Relative Humidity exceeds 80%. See **Crown Polymers Technical Bulletin: No. 7 Temperature and Relative Humidity Limits**

- Scratches in certain colors may appear white, such as blue pigmented product.
- Higher temperatures will result in shortened working time and fast drying time.
- Color may vary due to batch to batch variation, always “box” different batches to avoid it.

COLORS

Clear, 15 Standard Colors* and Custom Colors. Available in factory pigmentation or CrownPigment[™] Epoxy No. 6300 PigmentPack[™] *See **Crown Polymers Standard Color Guide Acrylics, Epoxies, Polyaspartics, Polyurethanes (PigmentPack).**

COVERAGE RATE PER GALLON

- Primer: 160 to 200 sq. ft. (14.9 to 18.9 sq. m.) 8 to 10 mils (WFT)
- Coating: 100 to 160 sq. ft. (9.3 to 14.9 sq. m.) 10 to 16 mils (WFT)
- Broadcast and Trowel: Varies Depending on thickness of system selected. 1/16 inch to ¼ inch and more.

HANDLING AND SAFETY

Warning! Eye and skin irritant. May cause dermatitis and sensitization. Always read and follow the product SDS. Avoid contact with eyes, skin and clothing. Avoid breathing vapors, mist and spray. Use with good ventilation.

CONCRETE

Concrete must be structurally sound and free of curing agents, coatings, sealers, densifiers and other bond breakers.

New Concrete:

- Place concrete per ACI 302.2R Guide for Concrete Slabs that Receive Moisture-Sensitive Floor Materials.
- Water Cement Ratio 0.4 to 0.5, and an approximate 4,000 psi (28 MPa) strength level.
- Requiring a positive side moisture barrier in direct contact with the concrete meeting ASTM E1745 Standard Specification for Plastic Water Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
- The moisture barrier needs to be placed per ASTM E1643 Standard Practice for Selection, Design, Installation of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs, Class A 15 mils (0.38mm)

Existing Concrete:

If field tests or laboratory analysis reveals concrete flooring slabs contain contaminants from previously applied unreacted silicate materials, such as, sodium silicates, potassium silicates or lithium silicates that will interfere with the bond, use CrownPrime WBC Primer No. 8201. See **Crown Polymers Technical Bulletin: No. 20 Selecting a Primer**

No. 20 Selecting a Primer

- Contaminants include, but are not limited to organic hydrocarbon materials, calcium chlorides and aluminum stearates.
- Concrete flooring slabs can lose their structural strength over time, caused by conditions beyond the control of the flooring manufacturer or the installation contractor.
- If the concrete substrate deteriorates sufficiently, it will no longer support the bond of the remediation floor system.

Such conditions are detailed in ACI 201.2R “Guide to Durable Concrete” published by the American Concrete Institute. See **Crown Polymers Technical Bulletin: No. 1 Concrete Surface Preparation.**

CHEMICAL RESISTANCE DATA

See **Crown Polymers Technical Bulletin: No. 9 Chemical Resistance Guidelines and Chart.**

CHECK CONCRETE MOISTURE

Concrete must be dry before application of this floor coating material. Concrete moisture tests are required, either ASTM F1869 (calcium chloride) or ASTM F2170 (in situ RH probe). Refer to appropriate Technical Data Sheet limits and **Crown Polymers Technical Bulletin: No. 6 Moisture Mitigation Negative Side Moisture Barrier.**

CHECK TEMPERATURE AND HUMIDITY

Floor and material temperature must be at or above the published Technical Data Sheet. Dew Point must be 5°F (3°F) or more below the surface temperature. Do not apply if humidity is at or above 85%. See **Crown Polymers Technical Bulletin: No. 7 Temperature and Relative Humidity Limits.**

SURFACE PREPARATION

Surface preparation in accordance with: ICRI Guideline No. 310.2R Selecting and Specifying Concrete Surface Preparation for Sealers, Coatings, Polymer Overlays, and Concrete Repair. The pH of the concrete substrate should be at 9 or above. All bond-breaking material must be removed. See **Crown Polymers Technical Bulletin: No. 1 Concrete Surface Preparation.**

APPLICATION EQUIPMENT

Depending on system applied: Disposable 3” brush for cutting in, variable low speed drill (450 rpm) with Jiffy® type impeller mixing paddle, 3/8 inch nap non-shedding phenolic core roller and frame, 3/8 inch nap non-shedding V-notched rubber squeegee.

OPTIONAL ANTIMICROBIAL

The antimicrobial additive Silver® (sodium hydrogen zirconium phosphate) is a non-heavy metal biocide that can be added during the manufacturing process. (EPA Regulation Number 11631.2. and US Patent Number US 9,247,736 B2). The antimicrobial agent can be added to the top coat only for an economical application or it can be added to each step of the application, primer, body coat and top coat, which is recommended for abusive environments. See **Crown Polymers Technical Bulletin: No. 11 Understanding Silver® the Optional Antimicrobial Additive.**

MIXING

For ease of mixing and placement, the temperature of the “A” and “B” components should be between 70°F to 80°F (21°C to 27°C). Pre-mix the “A” and “B” component to ensure all raw material and pigments are dispersed uniformly. Box pigmented products if using different batch numbers for uniformity of color. See **Crown Polymers Technical Bulletin: No. 10 Mixing Guidelines.**

APPLICATION

After mixing all contents as instructed, immediately pour all liquid material on to the properly prepared concrete substrate or next epoxy lift in ribbons and squeegee the material out evenly. Back-roll and cross rolling of material is critical. Check for desired wet film thickness with a WFT Gauge. If broadcasting aggregate, broadcast into the wet material. Place trowel mortar mix within installation sequence. Lock coat, grout coat or top coat. Place all steps per **Crown Polymer Installation Instruction.**

Physical Properties at 77°F (25°C), 7 Day Cure (unless stated differently)			
VOC (Volatile Organic Compounds), (VOC Calculated Per ASTM D3960)	0 gr./lt.		
Standard Viscosity Clear, Mixed Epoxy and Hardener	2,000 cps		
Standard Viscosity Clear, Mixed Epoxy and Hardener, at 50°F (10°C)	3,200 cps		
Primer No. 8521 CrownShield Semi-Rigid LV Epoxy Mortar Binder Dilute 10% Acetone	50°F (10°C) 800 cps	77°F (25°C) 500 cps	90°F (32°C) 350 cps
Mix Density Clear, Mixed Epoxy and Hardener	9.4 lb./gal		
Pot Life, 1 gallon (3.79 liters) Mass, Pot Life is Reduced by Increases in Mass & Temperature	20 Minutes		
Mix Ratio, by Volume	1:1		
Dry to Touch 40°F to 90°F (4°C to 32°C)	4 to 6 Hours		
Recoat Time 40°F to 90°F (4°C to 32°C)	12 to 72 Hours		
Light Traffic 40°F to 90°F (4°C to 32°C)	24 Hour Minimum		
Full Cure 40°F to 90°F (4°C to 32°C)	7 to 14 Days		
Shelf Life (shipped and stored) at 40°F to 100°F (4.4°C to 38°C)	1.5 Years		
Packaging 4, 10, 110 gal. (15.1, 37.9 and 416.4 liters)			

Mechanical Properties at 77°F (25°C), 7 Day Cure (Unless stated differently)

Surface Preparation ICRI Guideline No. 310.2R Concrete Surface Profile (CSP 2 and above) Depending on System to be Installed and Condition of Concrete.			
Cured and Tested at	50°F (10°C)	77°F (25°C)	90°F (32°C)
Compressive Strength, ASTM D579, 8 Hours (6 to 7 to 1, Aggregate to Epoxy Binder)	200 psi	400 psi	2,300 psi
Compressive Strength, ASTM D579, 1 Day (6 to 7 to 1, Aggregate to Epoxy Binder)	2,000 psi	5,400 psi	5,600 psi
Compressive Strength, ASTM D579, 7 Days (6 to 7 to 1, Aggregate to Epoxy Binder)	6,100 psi	6,400 psi	6,500 psi
Compressive Strength, ASTM D695, neat	7,200 psi	7,000 psi	6,900 psi
Compressive Modulus, ASTM D579 (6 to 7 to 1, Aggregate to Epoxy Binder)	6.5x10 ⁵ psi		
Tensile Strength, ASTM D638	8,000 psi	7,500 psi	7,000 psi
Tensile Elongation, ASTM D638	2%	5%	6%
Flexural Strength, ASTM D790	10,500 psi	10,000 psi	9,500 psi
Flexural Modulus, ASTM D790	4.5X10 ⁵ psi		
Slant Shear, ASTM C882	1,900 psi	1,900 psi	1,850 psi
Adhesion, ASTM D7234, Concrete Failure	>400 psi	>400 psi	>400 psi
Hardness (Shore D) ASTM D2240	80 - 85	75 - 85	70 - 80
Water Absorption, ASTM C431 Resin, Hardener and Aggregate (6 to 7 to 1, Aggregate to Epoxy Binder)	0.25%		
Flame Test, ASTM E648	Class 1		
Flammability, ASTM D635	Self-Extinguishing Bonded to Concrete		
Abrasion Resistance, ASTM C501 Resin, Hardener and Aggregate 1,000 cycles, Wheel No. H-22, 1000 gr. Load (6 to 7 to 1, Aggregate to Epoxy Binder)	1.0 gr.		
Coefficient of Thermal Expansion (-22°F to 86°F), ASTM C884 (6 to 7 to 1, Aggregate to Epoxy Binder)	2.8 X 10 ⁻⁵ in./in. °F		
Microbial (fungi) Resistance, ASTM G21 (Without the Anti-Microbial Agent)	Pass #1		
Indentation (Load MIL-D-3134, Para. 4.7.4.2.1), EPC, 7 Day Cure, Method: 1 in. diameter steel ram steadily applies a load of 2,000 lbs. for 30 min. on the test specimen that is placed on concrete.	0.004 in. indentation		
Indentation (Impact MIL-D-3134, Para. 4.7.3 EPC, 7 Day Cure, Method 2 lb. steel ball is dropped twice from a 8 ft. height.	0.012 in. indentation		
Dynamic Coefficient of Friction, ASNI 326.3. Depends on texture of system selected, ranging from smooth to aggressively. BOT 3000E	>0.45(inclines) >0.42(level)		
Moisture Vapor Emission Rate, ASTM F1869*	3 lbs.		
Moisture Relative Humidity, ASTM F2170*	80% RH		

*If moisture or relative humidity exceeds the limits consult the Crown Polymers representative and refer to **Crown Polymers Technical Bulletin: No. 6 Moisture Mitigation Negative Side Moisture Barrier**

Although testing is critical, it is not a guarantee against future problems. This is especially true if there is no vapor barrier or it is not functioning properly and/or concrete is contamination from oils, chemical spills, densifiers, excessive salts or other bond breakers.

SKID-RESISTANCE

Skid-Resistance – Field (in situ) Wet Dynamic Coefficient of Friction (DCOF), ANSI A326.3. See **Crown Polymers Technical Bulletin: No. 12 Wet Dynamic Coefficient of Friction.**

CLEAN-UP

Clean-up mixing station, tools and equipment as required. Use acetone, a VOC exempt solvent, for cleaning up. Observe all legal, and health and safety precautions when handling or storing solvents and materials, particularly in confined spaces. Make sure the working areas are well ventilated at all times during placement and curing time.

DISPOSAL

Dispose of empty packaging and other waste in accordance with federal, state, provinces and local regulations.

MAINTENANCE

Inspect the installed floor by spot cleaning and spot repairing the damaged or cracked areas. To prolong life of the flooring system, a daily maintenance program is highly recommended to ensure the floor is safe for its intended purposes. See **Crown Polymers Technical Bulletin: No. 8 Care and Maintenance.**

TECHNICAL SUPPORT

For questions, contact a Crown Polymers' representative.

DISCLAIMER

All guidelines, recommendations, statements, and technical data contained herein are based on information and tests. The accuracy and completeness of such tests are not guaranteed and are not to be construed as a warranty, expressed or implied. It is the responsibility of the user to document information and tests to determine the intent of the product for ones' own use. The application, job conditions and user assumes all risks and liability resulting from use of the product. We do not suggest or guarantee any hazards listed herein are the only ones, which may exist. Neither seller nor manufacturer shall be liable to the buyer or any third person for any injury, loss or damage directly or indirectly resulting from use of, or inability to use the product. Recommendations or statements, whether in written or verbal, other than those contained herein shall not be binding upon the manufacturer, unless in writing and signed by a corporate officer of the manufacturer. Technical and application information is provided for the purpose of establishing a general profile of the material and proper application procedures. Test performance results were obtained in a controlled environment and Crown Polymers makes no claim that these tests or any other tests accurately represent all environments. Not responsible for any typographical errors.

LIMITED WARRANTY

Crown Polymers warrants its products to be free of manufacturing defects and meets all Crown Polymers current published physical properties. Crown Polymers' sole responsibility shall be to replace the portion of any product proved to be defective. There are no other warranties by Crown Polymers of any nature whatsoever expressed or implied, including any warranty of merchantability or fitness for a particular purpose in connection with this product. Crown Polymers shall not be liable for damages of any sort, including remote or consequential damages resulting from any claimed breach of any warranty whether expressed or implied. Crown Polymers shall not be responsible for the use of this product in a manner to infringe on any patent held by others. In addition, no warranty or guarantee pertaining to appearance, color, fading, chalking, staining, shrinkage, peeling, normal wear and tear or improper application by the applicator will be issued. Damage caused by abuse, neglect and lack of proper maintenance, acts of nature and/or physical movement of the substrate or structural defects are also excluded from the limited warranty. Crown Polymers reserves the right to conduct performance tests on any material claimed to be defective prior to any repairs by owner, general contractor, or applicator.



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