

8521 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 2

DESCRIPTION

8521 CrownShield is a multi-functional, medium viscosity, semi-rigid, 100% solids, moisture tolerant 2-component epoxy mortar binder. It meets ASTM C881 Type III, Grade 2, Class B, and Class C and AASHTO M235 Type III, Grade 2, 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 ratio by volume. It is self-priming, meaning it can be installed directly to properly prepared Portland cement concrete. Crown Polymers offers several upgrade topcoats 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 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.

It is VOC Compliant in all states and provinces in North America.

TYPICAL USES

(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: 3 Food and Beverage Compliance.**
- Slip Resistance (ADA) **See Crown Polymers Technical Bulletin: 4 Coefficient of Friction.**
- LEED[®] and Green Seal[®] requirements. **See Crown Polymers Technical Bulletin: 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: 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: 7 Temperature and Relative Humidity Limits.**
- Scratches in certain colors may appear white, such as blue pigmented products.

- Higher temperatures will result in shortened working times and faster 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 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 (0.20 mm to 0.25 mm) WFT
- Coating: 100 to 160 sq. ft. (9.3 to 14.9 sq. m.)
10 to 16 mils (0.25 mm to 0.40 mm) WFT
- Broadcast and Trowel: Varies Depending on the thickness of the system selected 1/16 inch to 1/4 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 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 inferior concrete flooring slabs containing contaminants from previously applied unreacted silicate materials that will interfere with the bond, use 8201 CrownPrime WBC. **See Crown Polymers Technical Bulletin: 20 Selecting a Primer.**

- Contaminants include, but are not limited to organic hydrocarbon materials, calcium chlorides, and aluminum stearates.
- Concrete flooring slab 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: 1 Concrete Surface Preparation.**

CHEMICAL RESISTANCE DATA

See Crown Polymers Technical Bulletin: 9 Chemical Resistance Guidelines and Chart.

CHECK CONCRETE MOISTURE

The 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: 6 Moisture Mitigation Negative Side Moisture Barrier.**

CHECK TEMPERATURE & HUMIDITY

Floor and material temperature must be at or above the published Technical Data Sheet. Dew Point must be 5°F (3°C) or more below the surface temperature. Do not apply if humidity is at or above 85%. **See Crown Polymers Technical Bulletin: 7 Temperature and Relative Humidity Limits.**

SURFACE PREPARATION

Surface preparation per: 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: 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 is a non-heavy metal biocide that can be added during the manufacturing process. The antimicrobial agent can be added to the topcoat only for an economical application or it can be added to each step of the application, primer, body coat, and topcoat, which is recommended for abusive environments. **See Crown Polymers Technical Bulletin: 11 Understanding 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” components to ensure all raw material and pigments are dispersed uniformly. Box pigmented products if using different numbers for uniformity of color. **See Crown Polymers Technical Bulletin: 10 Mixing Guidelines.**

APPLICATION

After mixing all contents as instructed, immediately pour all liquid material onto the properly prepared concrete substrate, or next epoxy lift in ribbons and squeegee the material out evenly. Back-roll and cross-rolling of material are 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 topcoat. Place all steps per Crown Polymer Installation Instruction.

SKID-RESISTANCE

Skid-Resistance – Field (in situ) Wet Dynamic Coefficient of Friction (DCOF), ANSI A326.3. **See Crown Polymers Technical Bulletin: 4 Coefficient of Friction.**

SHIPPING and STORAGE

Ship and store material between 40°F to 90°F (4°C to 32°C). Store in a dry environment and out of direct sunlight.

SHELF LIFE

Shelf life is 1 year from the date of manufacturer, provide the containers are unopened.

| 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 8521 CrownShield Semi-Rigid MV Epoxy Mortar Binder Dilute 10% Acetone | 50°F (10°C) | 79°F (26°C) | 90°F (32°C) |
| | 800 cps | 500 cps | 350 cps |
| Mix Density Clear, Mixed Epoxy, and Hardener | 9.4 lbs./gal | | |
| Pot Life, 1gallon (3.79 liters) Mass, Pot Life is Reduced by Increases in Mass and Temperature | 20 Minutes | | |
| Mix Ratio, by Volume | 1:1 | | |
| Dry to Touch 40°F to 90°F (4°C to 32°F) | 4 to 6 Hours | | |
| Recoat Time 40°F to 90°F (4°C to 32°F) | 12 to 72 Hours | | |
| Light Traffic 40°F to 90°F (4°C to 32°F) | 24 Hour Minimum | | |
| Full Cure 40°F to 90°F (4°C to 32°F) | 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 gals. (15.1, 37.9, and 416.4 liters) | | | |

| Mechanical Properties at 77°F (25°C), 7 Day Cure (unless stated differently) | | | |
|--|-----------------------------------|-------------|-------------|
| Surface Preparation ICRI 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) | 79°F (26°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 C579 (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% | | |
| Abrasion Resistance, ASTM C501 Resin, Hardener, and Aggregate 500 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 | | |
| Dynamic Coefficient of Friction, ASNI 326.3. Depends on the texture of the system selected, ranging from smooth to aggressive. BOT 3000E | >0.45(inclines) >0.42(level) | | |
| Moisture Vapor Emission Rate, ASTM F1869* | 3 lbs. | | |
| Moisture Relative Humidity, ASTM F2170* | 80% RH | | |

Note: Although testing is critical, it is not a guarantee against future problems. This is especially true if there is not a positive side vapor barrier or it is not functioning properly and/or concrete has contamination from oils, chemical spills, densifiers, excessive salts, or other bond breakers.

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 per federal, state, province, and local regulations.

MAINTENANCE

Inspect the installed floor by spot cleaning and spot repairing the damaged or cracked areas. To prolong the 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: 8 Care and Maintenance.

TECHNICAL SUPPORT

For questions, contact a Crown Polymers Representative. Additional Support Documents are available from Crown Polymers, including brochures, application guidelines, videos and more. Visit Crownpolymers.com or contact Crown for additional resources.

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.



Crown Polymers Corp. • Tel: 847.659.0300 • Fax: 847.659.0310
info@crownpolymers.com • www.crownpolymers.com
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