Toll Free: (888) 732-1270 • Tel: 847.659.0300 • Fax: 847.659.0310
info@crownpolymers.com • www.crownpolymers.com

CrownShield® Economical Thru-Product™

TECHNICAL DATA SHEET Product Number: 301

Economical Clear Epoxy Thru-Product™ - Primer, Body Coat, Binder and Top Coat Systems

DESCRIPTION

CrownShield 301 is a two-component general purpose clear epoxy primer, coating and flooring mortar binder for broadcast and hand troweled or power troweled systems. It is an economical, low viscosity, low odor, 100% solids thermosetting epoxy. It's a general-purpose epoxy requiring upgraded top coats and finish coats for superior chemical and abrasion resistance, such as, CrownShield® No. 8320 Superior All-n-One Epoxy Thru-Product™ or CrownSeal™ CRU No. 8110 for industrial kitchens, commercial laboratories and wine and spirit processing facilities subjected to heavy foot traffic, fork lift traffic and chemical exposure. It can be applied directly over Crown Polymers CrownShield MVB (moisture mitigation primer).

TYPICAL USES

- Automotive Show Room and Repair Floors
- Commercial Bakery and Kitchen Floors
- Hospital and Health Care Facility Floors
- Laboratory and Research Floors
- Manufacturing and Warehouse Floors
- Pharmaceutical Floors

Note: Use appropriate Top Coat and Finish Coat

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.**
- 100% Solids, Zero VOC and EPA Compliant, and low odor during installation. Cures to an inert finish. See **Crown Polymers Technical Bulletin: No. 2 VOC Compliance.**
- Strong and Tough Floor
- Excellent Chemical and Abrasion Resistance
- 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).
- Scratches in certain colors may appear white, such as blue pigmented product.
- Higher temperatures will result in shortened working time and faster drying time.
- Color may vary due to batch to batch variation, always "box" different batches to avoid it.
- Do not use as a primer when concrete slab exceeds 3 lbs. or 80% RH.

COLORS

Only available in Clear. The clear product can be field pigmented with Epoxy PigmentPack™ 6300 Series (15 Standard Colors). It is not available in factory pigmented colors. 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.) WFT 8 to 10 mils (0.20 to 0.25 mm)
- Coating: 100 to 160 sq. ft. (9.3 to 14.9 sq. m.) WFT 10 to 16 mils (0.25 to 0.41 mm)
- Broadcast and Trowel: Varies depending on thickness of system selected
  1/16 to 1/4 inch (1.59 to 6.35 mm) and more

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 interior concrete flooring slabs containing contaminants from previously applied unreacted silicate materials that will interfere with the bond, use CrownPrime WBC No. 8201. **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 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 requirements. 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: 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 V-notched rubber squeegee for spreading neat epoxy and gauge rake or trowels for thicker applications.

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 (20°C to 26°C). Pre-mix the "A" and "B" component to ensure all raw material and pigments are dispersed uniformly. See **Crown Polymers Technical Bulleting: 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 for receiving coat, lock coat, grout coat, top coat and finish coat. 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. Place all steps per **Crown Polymer Installation Guidelines.**

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.**

Physical Properties at 77°F (25°C)			
VOC (Volatile Organic Compounds), (VOC Calculated Per ASTM D3960)	0 gr./lt.		
Viscosity, Mixed Epoxy and Hardener	550 to 750 cps		
Primer CrownShield No. 301 (Clear Only) Optional - Dilute with 10% Acetone will lower viscosity	**50°F (10°C)** 350 cps	**77°F (25°C)** 140 cps	**90°F (32°C)** 70 cps
Mix Density, Mixed Epoxy and Hardener	9.2 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	2:1		
Minimum Application Surface Temperature	50°F		
Dry to Touch 50°F to 90°F (10°C to 32°C)	5 to 12 Hours		
Recoat Time 50°F to 90°F (10°C to 32°C)	12 to 24 Hours		
Light Traffic 50°F to 90°F (10°C to 32°C)	44 Hour Minimum		
Full Cure 50°F to 90°F (10°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 1.5, 3, 15 and 150 gal. (5.7, 11.4, 56.8 and 567.8 liters)			

Mechanical Properties at 77°F (25°C) 7 Day Cure (Unless stated otherwise)			
Surface Preparation ICRI Guideline No. 310.2R Concrete Surface Profile (CSP 2 and above) Depending on System to be Installed and Condition of Concrete.			
Substrate Temperate	50°F (10°C)	77°F (25°C)	90°F (32°C)
Compressive Strength, ASTM D695, 8 Hours	3,700 psi	6,300 psi	9,000 psi
Compressive Strength, ASTM D695, 1 Day	8,000 psi	8,500 psi	9,000 psi
Compressive Strength, ASTM D695, 7 Days	9,500 psi	9,500 psi	9,250 psi
Compressive Strength, ASTM C579, with aggregate	11,000 psi	10,750 psi	10,500 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	9,500 psi	9,500 psi	9,200 psi
Slant Shear, ASTM C882	4,200 psi	4,000 psi	4,000 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 D570 Resin & Hardener	0.15%		
Flame Test, ASTM E648	Class 1		
Flammability, ASTM D635	Self-Extinguishing Bonded to Concrete		
Abrasion Resistance, ASTM D4060 Resin & Hardener 1,000 cycles, Wheel No. CS17, 1000 gr. Load	0.051 gr.		
Coefficient of Thermal Expansion (-22°F to 86°F)	1.8 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 aggressive. 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			

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 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.

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