

Product Data Sheet and Application Guide

DESCRIPTION: CEM's Polyure WBU-400 is a 2-Component, High Solids Waterborne Polyester Polyurethane sealer used as a hard, durable protective or maintenance wear surface over decorative concrete, pavers, concrete stains, etc. with heavy foot traffic exposure. Developed for interior or exterior wear surfaces in residential & commercial installations to protect against long-term chalking in high U.V. exposure environments & for greater film thickness capabilities, better gloss retention, better chemical & stain resistance versus traditional 2-Component water-based Polyurethanes. Available in Semi-Gloss & Low Sheen finishes.

CEM's Polyure WBU-400 achieves a wet-look to boost color & depth of stains. Yields an easy to clean, hard film finish with good Ultra Violet Light Stability, Abrasion Stain & Hot Tire Pick-up Resistance, Adhesion, Gloss Retention, easy to clean, as well as less odor versus traditional solvent-based Polyurethane sealers.

RECOMMENDED AS A FINAL TOPCOAT FOR:

- Commercial & Residential:
 - Decorative & Stamped Concrete
 - Concrete Countertops
 - Terrazzo
 - Garage Floor Coatings
 - Mechanical Rooms
 - Sealer for Vinyl Chip resinous coating systems
 - Clean Rooms
 - Pavers

HIGHLIGHTS:

- Good Pot-life – 2 hours at 75°F / 50% Humidity
- U.V. Stable
- Stain & Chemical Resistant
- More Durable than traditional solvent based Acrylic Sealers
- Easy to Clean & Maintain
- Wet Look – Enhances Colors
- Hot Tire Pickup Resistant
- Low VOC's – Meets Source Specific Standards Rule 1113 established by AQMD in California

STORAGE:

Indoors between 50°F (10°C) to 100°F (38°C)

INSTALLATION TEMPERATURE RANGE:

55°F (12.7°C) to 100°F (38°C) with up 80% Humidity

SHELF LIFE:

24 Months (original, unopened containers); 30 days (once opened)

AVAILABLE KIT SIZES:

Gloss:

- 1.5 Gallon kit
- 15 Gallon kit

Low Sheen:

- 1.5 Gallon kit
- 15 Gallon kit

COLOR:

Clear; *For Solid Colors – Tint with CEM Color Packs (Sold Separately)

POT-LIFE & TRAFFIC TIMES:

*Cure time is affected by temperature & humidity

	Polyure WBU-400	Polyure WBU-400 Low Sheen
Pot-Life	2 hours (72°F / 50% RH) 45 to 50 min. (95°F / 50% RH)	
Working Time	50 to 60 minutes	
Recoat Window	3 to 24 hrs (72°F / 50% RH) 2 to 20 hrs (95°F / 50% RH)	7 to 24 hrs (72°F / 50% RH) 5 to 20 hrs (95°F / 50% RH)
Light Foot Traffic	16 to 18 hrs (72°F / 50% RH) 14 to 16 hrs (95°F / 50% RH)	30 to 36 hrs (72°F / 50% RH) 28 to 32 hrs (95°F / 50% RH)
Heavy Foot Traffic	24 hrs (72°F / 50% RH) 22 hrs (95°F / 50% RH)	40 hrs (72°F / 50% RH) 36 hrs (95°F / 50% RH)
Vehicle Traffic	48 hrs (72°F / 50% RH) 40 hrs (95°F / 50% RH)	72 hrs (72°F / 50% RH) 66 hrs (95°F / 50% RH)
Full Chemical Resistance	7 days (72°F / 50% RH)	

*High Temperatures and/or humidity at the time of application will lessen working time & recoat window. Lower temperatures will extend the cure time beyond above stated times

CURED COATING PROPERTIES (DRY FILM):

PROPERTY	TEST METHOD	RESULTS
Abrasion Resistance mg/loss *Taber Abraser	ASTM D4060	40 mg 38 mg LS
Flexibility 1/8" Cylindrical Mandrel	ASTM 522	Pass
Hardness (Pencil)	ASTM D2370	H 2H LS
Adhesion to Concrete	ASTM D4541	Concrete Fails
VOC's (Mixed)	ASTM D3960	72 g/L 57 g/L LS
Gloss (60°)**	ASTM 1455	±55 to 85 ±25 to 45 LS
Viscosity (Mixed) – @ 77°F	ASTM 2196	106 cP 83 cP LS
Flammability	ASTM D635	Self-Extinguishing
Flash Point		169°F (76°C)
Volume Solids	ASTM D2196	±53% ±50% LS
Mix Ratio by Volume		2A to 1B

*CS-17 Taber Abrasion Wheel, 1,000 gram load, 1,000 revolutions Results are based on conditions at 77°F (25°C), 50% relative humidity

**Gloss will vary depending on the profile / texture of the surface prior to topcoating as well as thickness of the topcoat once cured. (i.e. thinner films will yield less gloss / sheen)

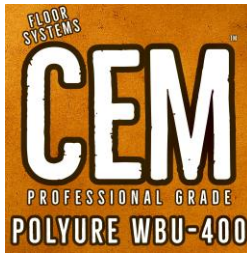
APPROXIMATE COVERAGE (DRY FILM):

Varies depending on application thickness, floor profile & substrate absorbency.

Dry Film Thickness Coverage Equation: $1604 \div \text{milage} \times 0.53 = \text{DFT}$

Mil Thickness DFT (WFT)	Approximate Coverage per mixed gallon
3.14 mils DFT (5.9 mils WFT)	270 sq.ft./gal
4.24 mils DFT (8 mils WFT)	200 sq.ft./gal

Typical Chemical & Stain Resistance



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Covered Spot Test - 3 mil film at 7 day cure:

E - Excellent; G - Good (slight sign of exposure/stains, coating recovers);

D = Permanent Discoloration; NR - Not Recommended (Permanent Damage)

24 hour Exposure

ACIDS	WBU-400	WBU-400 LS
Acetic Acid 25% (Vinegar)	E	E
Citric Acid 10%	E	E
Lactic Acid (Milk)	NR	G
Phosphoric Acid 85%	G	E
Sulfuric Acid 25% (Battery Acid)	G	E
Sulfuric Acid 98%	NR	NR
Hydrochloric Acid 32% (Muriatic)	E	E
Nitric Acid 50%	D	G
BASES		
Ammonium Hydroxide 10%	E	E
EBGE	E	E
Sodium Chloride 20%	E	E
Sodium Hydroxide 50%	E	E
Sodium Hypochlorite (Bleach)	E	E
Trisodium Phosphate 10%	E	E
ALCOHOLS		
Ethylene Glycol (Antifreeze)	E	E
Hand Sanitizer	E	E
Isopropyl Alcohol 91%	E	E
Methanol	E	E
SOLVENTS		
Acetone	E	E
d-Limonene	E	E
MEK	E	E
Methylene Chloride	E	E
Mineral Spirits	E	E
PGMEA	G	E
HYDROCARBONS		
Brake Fluid	E	G
Transmission Fluid	E	E
Motor Oil	E	E
Gasoline	E	E
Kerosene	E	E
Hydraulic Fluid	E	G
Skydrol® - LD-4	D	D
MISCELLANEOUS		
Coffee	E	D
Coke®	E	E
Dish Detergent (Dawn®)	E	E
Hydrogen Peroxide 3%	G	G
Ketchup	E	E
Monster Energy® Drink	E	E
Mustard	D	D
Povidone-iodine (Betadine®)	D	D
Tide® 1%	E	E
Windex® (Ammonia Based)	E	E
Wine - Red	E	E

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NECESSARY TOOLS and EQUIPMENT:

- Paint Mixing Paddle attached to a low speed drill (≤450 RPM)
- Premium, Non-Shed Paint Roller Covers (nap size varies)
- Painters Tape
- Chip Paint Brushes
- Paint Roller Frames with Extension Pole
- Cleaning Solvent (Use soap/water while wet; Xylene or MEK if freshly cured)

LIMITATIONS:

- PRIMING IS REQUIRED for adhesion to bare concrete. (See page 3)

- AVOID applying CEM's Polyure WBU-400 while:
 - Humidity is greater than 90%
 - Dew Point is within ±5° of the temperature
- HEAVY TEXTURE SURFACES - Use a ¾" nap roller cover when applying over heavy texture surfaces, such as knockdown overlays or heavy stamped patterns, while ensuring no puddling remains
- DO NOT PUDDLE – Maximum single layer thickness wet should not exceed 200 sq.ft. per gallon (8 mils WFT) to avoid solvent entrapment
- DO NOT EXPOSE to water or any other liquids for 3 to 5 days after installation. CEM's Polyure WBU-400 must be allowed to cure for no less than one week before using any mechanical cleaning equipment to include auto-scrubbers, swing buffers, sweepers, etc. Only dust and wet mopping may occur the first week
- DO NOT COVER with protective fabrics, plastics, walk-off mats, potted plants, etc. for a minimum of 72 hours at 72°F to avoid damaging the surface

INSPECT THE SUBSTRATE: Ensure the substrate is structurally sound and solid as well as free of any contaminants that may act as a bond breaker, such as oil, paint, densifier/sealers, curing compounds, wax, silicone, etc.

TEMPERATURE and HUMIDITY: Substrate temperature & materials must be maintained between 50°F (10°C) & 100°F (38°C) with less than 80% Humidity for 24 hours prior to and 24 hours after installation. *Do not install when the Dew point is within 5° of the temperature.*

CHECK FOR MOISTURE: Exterior concrete must be dry at time of sealing without a damp looking appearance as well as cured enough to be prepared appropriately. (See page 3 of this document)

Interior Concrete - Testing of moisture vapor transmission is required via Calcium Chloride (ASTM F1869) or In-situ Relative Humidity (ASTM F2170) methods to determine the Moisture Vapor Emission Rate (ASTM F1869) or the available Moisture Content (ASTM F2170) at the time of testing. Follow testing manufacturer's instructions precisely or visit www.astm.org, see ASTM F1869 or F2170, to purchase test methods. Testing MUST occur within an acclimated, interior environment for valid/conclusive results. Follow the underlying resinous system/layer requirements regarding moisture vapor transmission.

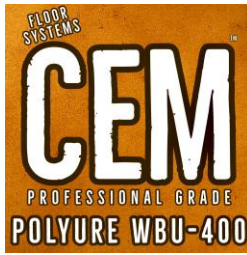
CEM Coatings, Group, Inc. is strictly a product manufacturer and does NOT offer any testing or analysis but may be able to offer guidance to an appropriate testing lab or third party inspector. When in doubt, hire a qualified third party testing firm.

CONTAMINATION OF SUBSTRATE: Concrete is porous and can become contaminated with oils, chemical from spills, etc. which act as a bond breaker. Determine if a potential bond breaker exists and a proper course of remediation. Contact CEM Coatings Group, Inc. for remedial recommendations while following local regulations regarding contaminant and disposal.

OIL CONTAMINATION: CEM's Oil Stop may be used to remove oils, such as petroleum, synthetic and food oils, from the surface of the concrete prior to mechanical preparation. Wood substrates contaminated with oil may require removal and replacement of the oil contaminated area with new wood to ensure proper adhesion.

SUBSTRATE PREPARATION

NOTE: Methyl Methacrylate (MMA) is NOT compatible with CEM's Polyure WBU-400.



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Surface preparation should be viewed as the most important step in a successful application. Proper floor preparation results in the product's longevity, minimizes potential failures and creates the best environment for an aesthetically pleasing work of art. In short, the more detail and time allotted to this phase of the project will dramatically affect appearance and durability of the finished floor.

SUBSTRATE CLEANING: Detergent scrub with mild detergent, and rinse with clean, potable water to remove surface dirt, light surface grease/oil and contaminants prior to mechanical preparation. Heavy grease and oil should be removed using *CEM's Oil Stop*. If a densifier or dissipative curing compound is believed to have been present, use biodegradable etching gel after mechanical preparation methods.

SEALING OVER A NEW COATING SYSTEM

Ensure the previous layer has cured enough to receive another layer, shows no indication of blushing and has NOT exceeded the recoat window. Correct any surface imperfections in the previous layer prior to topcoating. It is highly recommended to degloss the surface of epoxy and other prior layers to remove surface imperfections and to achieve ideal intercoat adhesion between layers, especially in wheeled traffic environments or if the previous layer has cured beyond the recoat window.

TOPCOAT EXISTING SEALER or STAINED CONCRETE

Adhesion to any existing sealer is only as good as the adhesion the existing sealer has to its substrate. Always test to determine the suitability of an existing substrate and mock-ups are highly encouraged. Allow the mock-up to cure for no less than 1 week before performing adhesion testing, such as a tape test or using an Elcometer.

The existing sealer must be thoroughly deglossed/scuffed and clean prior to topcoating.

TOPCOATING EXISTING RESINOUS COATING SURFACES

Mechanical abrasion is very highly recommended for properly adhere to an underlying resinous layer. To degloss an existing resinous coating surface, mechanically abraded using 100 to 120 grit sand paper or screens (but not coarser) or use AB brushes or wire brush heads for heavily textured surfaces such as stamped concrete which have been previously coated with a high solids sealer such as Smith's Polyaspartic. Use an orbital floor machine to a uniformly dull surface with no remaining shiny areas then cleaned to remove all dust/debris prior to receiving a topcoat of CEM's Polyure WBU-400. Coarser grit sandpaper or screens are less effective at deglossing and achieving a fine scratch pattern. Then tack rag the surface with a solvent (*i.e. Acetone*) and a white, clean cloth.

NEW STAINED CONCRETE

PRIMER REQUIRED - NOT RECOMMENDED TO DIRECTLY SEAL BARE or DYED CONCRETE (See Priming Section on second column of this page).

CEM's Polyure WBU-400 can used to seal directly over stain which has been applied to a properly prepared substrate.

Follow preparation method for the product used to prime bare concrete prior to topcoating with. After allowing a full cure* (*minimum 12 hours*) time for remove all loose particulate utilizing a leaf blower. Remove standing water with cloth or squeegee allowing the substrate to dry before application of CEM's Polyure WBU-400.

JOINTS, CRACKS & PATCHING: Honor expansion joints at the finish floor elevation. Follow ACI 224.R-07: Joints in Concrete Construction guidelines for proper filling of construction and control joints. Clean out all joints and moving cracks open with a Diamond cutting blade prior to filling or patching as necessary. Honor joints at the surface after the coating is applied then fill will

an appropriate joint filler to lessen joint telegraphing. Smith's CEM's Polyure WBU-400 may be applied as a topcoat over semi-rigid epoxy joint fillers and is NOT recommended over caulk, Polyurea, silicone, urethane or flexible joint fillers.

ACI recommends allowing a concrete slab to cure for a minimum of 60-90 days or longer to allowing the slab to shrink and acclimate to the intended joint width thus reducing the risk of joint wall separation from the joint filler. Cooler climate applications such as freezer and coolers must be brought up to and held at a minimum of 45°F substrate temperature for no less than 10 days prior to as well as 7-10 days after filling with an appropriate semi-rigid joint filler, ideally longer if possible.

Patching of chips, gouges, etc. may be repaired with a variety of different, compatible coating materials, to include:

PRIMING:

Primer options for Interior Resinous Floor Coating systems:

- EPIX CR-100
- EPIX QCWB-60
- SPAR FC-100
- SPAR RC-200

Primer options for Direct-to-Concrete applications:

Ask for Recommendation

Primer options for Exterior Heavy Commercial Traffic:

- CEM SPAR FC-100
- CEM SPAR RC-200

Primer options for Stains, Dyes, etc.:

- Over Interior Dyes/Stains
 - Residential – CEM's URECEM Gloss
 - Commercial / Retail – EPIX QCWB-60 or CEM's SPAR FC-100 / CEM's SPAR RC-200

MIXTURE: Premix the Part A for approximately 1 minute using a clean, paint mixing paddle on a low RPM drill (<450 RPM). If part mixing, measure 2 Part A to 1 Part B by volume and mix in a clean 5 gallon plastic pail using a paint mixing paddle attached to a slow speed drill (<450 RPM) for 1-2 minute.

NOTE: *DO NOT TURN THE MIXING VESSEL UPSIDE DOWN ON THE SUBSTRATE TO ALLOW THE RESIDUAL PRODUCT TO DRAIN ONTO THE FLOOR TO AVOID THE RISK OF ANY UNMIXED OR NON-THOROUGHLY CATALYZED PRODUCT FROM THE SIDES AND BOTTOM OF THE MIXING VESSEL FROM REACHING THE FINISHED FLOOR.*

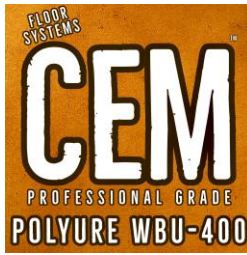
Best practice is to pour the mixed contents into a paint tray then dip & roll onto the substrate or spray apply & back roll out the puddles.

APPLICATION:

Thinning: Material is supplied as a 2-component "ready-to-use" sealer. Applicator may add up to 10% water during application to lower viscosity (*make sealer thinner*). The addition of water must be introduced after Part A and Part B have been mechanically mixed.

Application Method: CEM's Polyure WBU-400 may be applied via brush or roller. Application rate must be kept above 200 square feet per gallon to avoid bubbles created from off gassing (resulting from thicker application). **NOTE:** *DO NOT APPLY material if humidity is over 90% and ventilation is poor. Improper cure will result.*

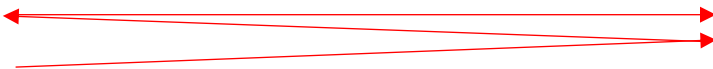
Roller Application: Use a 3/4 inch (heavy texture) or 3/8 inch non-shed roller cover. CEM's Polyure WBU-400 can be roller applied onto substrate, with stain applied, via the dip & roll method out of a paint tray. **DO NOT OVER-APPLY or ALLOW EXCESS**



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PUDDLING of CEM's Polyure WBU-400 as whitening and/or bubbles may occur.

Best practice is to pour the mixed contents into a tall paint tray, such as a Wooster® Wide Boy™ 5 gallon paint tray then dip the paint roller into the mixture coat the roller head then roll off any excess into the paint tray avoiding liquid build-up on the sides of the roller caps and/or the frame. Then roll out evenly onto the surface in a V-shaped pattern working across the area while overlaying one side of the roller to connect and evenly place CEM's Polyure WBU-400 ensuring a uniform film thickness.



Finish by extending the roller out to the furthest point of this area and pull back across the surface with light pressure in a straight line to remove roller marks and overlap each pass by 1/2" continuing across the entire section.



Continue until the entire area desired is topcoated & allow to cure.

If the appearance is less than unsatisfactory, repeat the finish roll process again until a satisfactory appearance is achieved.

Brush Application: Utilize traditional bristle paint brush application for corners, control joints and other hard to reach places.

Recoating: CEM's Polyure WBU-400 may be recoated after a minimal cure time of 12 hours, but no longer than 24 hours. After a cure time of 24 hours, abrade the CEM's Polyure WBU-400 film with a green floor buffing pad or a 150 grit sanding screen before recoating.

COVERAGE:

GLOSS - CEM's Polyure WBU-400 Gloss may be applied between 200-365 sq.ft. per gallon (2.5 to 8 mils WFT only) per coat, with 2 coats recommended for optimal aesthetics and performance.

LOW SHEEN - CEM's Polyure WBU-400 Low Sheen must be applied thin as the final wear surface and requires a primer (*See Page 3). When applying CEM's Polyure WBU-400 Low Sheen, **DO NOT APPLY heavier than 320 sq.ft. per mixed gallon in a single layer to avoid fogging or a blotchy appearance in the film.**

SLIP RESISTANCE: CEM Coatings Group, Inc. recommends the use of angular slip-resistant aggregate in all coatings that may be exposed to wet, oily or greasy conditions as well as any condition where increased traction may be necessary. It is the contractor and end users' responsibility to determine the appropriate traction needs and footwear necessary for the conditions as well as setting performance parameters prior to beginning the application, testing to determine parameters have been met upon completion to achieve the end users documented safety standards.

Mock-ups are highly recommended as part of the evaluation process to determine the appropriate amount of slip-coefficient necessary for the environment.

MAINTENANCE: *The coating system must be allowed to cure for no less than one week before using any mechanical cleaning equipment on the surface and no less than 3 days before neutral cleaner. This includes auto-scrubbers, swing buffers, sweepers, etc. Only dust and wet mopping may occur the first week.*

Dust mopping, removal of debris and regular cleaning is crucial to maintaining the aesthetics of the coating and obtaining the maximum life span of the floor coating system. Cleaning cannot occur too often and inefficient cleaning will cause the floor to

wear out prematurely and possibly stain or discolor depending on what comes in contact with the floor. Spills should be removed quickly. Avoid the use of Polypropylene or abrasive bristle (Tyrex®) brushes as these brushes will cause the development of scratch patterns and lessen the sheen.

To maximum your investment with proper floor care and maintenance, remove all particles that may scratch and/or dull the floor coating using the least aggressive method necessary to clean the floor.

Daily = Sweep and dust mop or water only mopping/auto-scrubbing; spot clean spills & oils
Weekly or Monthly = Scrubbed once per week or month depending on the amount & type of soils present.

DETERGENT: Always use the least aggressive detergent necessary to remove the residue. A *Neutral Detergent*, or similar, may be used for general purpose cleaning. Use *CEM's Oil Stop*, or similar degreaser, for more degreasing and heavy duty weekly or monthly cleaning.

Caution: Do not drag or drop heavy objects across any floor, including coatings as scratching, gouging or chipping may occur to the concrete or the coating itself. This includes the tip of the forks on a forklift, nails protruding from a pallets, etc.

Avoid spinning tires on a coated floor surface as the heat created from the friction of a spinning tire will quickly soften the coating causing permanent damage.

Should a gouge, chip or scratch occur, touch-up the damaged areas immediately to avoid chemical or water intrusion to the concrete which could create additional damage, a thin layer of clear nail polish to the damaged area will provide some minimal protection until the area can be properly repaired.

Rubber tires are prone to plasticizer migration, especially aviation tires and high performance car tires. Plasticizer will stain coating and commercial flooring leaving an amber, yellow-like stain that can be permanent. This can be more noticeable where aircraft or vehicles are stationary for longer period of time, more so in non-climate controlled environments such as aircraft hangar with lighter colored floors. To avoid plasticizer staining, use a piece of Plexiglas® or LEXAN® panels, cut a few inches in diameter larger than the tires that will rest on the panels, between the floor and the contact point of the tire when storing rubber tired vehicles on any floor, including floor coating systems. Some tire stains can be removed is cleaned before a set-in stain occurs using a d-Limonene based degreaser and some mild agitation using an orbital, low speed floor machine.

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