



CPR-HD

HEAVY DUTY, TROWEL GRADE, CEMENTITIOUS POLYURETHANE MORTAR

CPR-HD-PDS-101118

DESCRIPTION:

Smith's CPR-HD is a 3-component, trowel applied Cementitious Polyurethane Mortar used to resurface and protect floors susceptible to thermal shock and water erosion in heavy castor, forklift and pallet jack traffic environments. CPR-HD works well in damp conditions and on floors with slightly elevated moisture emission levels up to 85% Relative Humidity and up to 10 lbs.

RECOMMENDED USES:

- Resurface eroded concrete floors at 1/4" (6 mm) to 3/8" (9 mm) per lift
- Food Related areas to include:
 - Bakery Proofers
 - Breweries and Distilleries
 - Chillers/Freezers *(Once cured)
 - Dairy Processing
 - Meat Processing
 - Commercial Kitchens and Restaurants
 - Grocery and Foodservice
- Pharmaceutical Plants
- Morgues
- Automotive Service Bays
- Vivarium's
- Wet areas
 - Car Washes
 - Wash down bays

HIGHLIGHTS:

- CPR-HD offers a greater ROI with easier maintenance vs. Tile
- Heavy Duty Traffic to include castor and forklift traffic
- Trowel Consistency – Ideal for sloping to drains
- Non-Tainting for areas at risk of food flavor contamination or sensitive to solvent odors
- VOC Compliant in all regions
 - California 01350 Air Quality Compliant
- LEED Compliant – Contains Rapidly Renewable Raw Materials
- Thermal Shock Resistant – For exposure temperatures between -330°F (Liquid Nitrogen) to 250°F (Steam)
- May be applied to new concrete after 7-10 day cure*
- Does Not Harbor Bacteria Growth
- Interior and Exterior Applications
- Chemical Resistant
- Phthalate (BPA) Free

STORAGE:

Indoors between 40°F - 85°F

INSTALLATION TEMPERATURE RANGE:

50°F (10°C) to 85°F (29°C) with less than 80% Relative Humidity (air)

SHELF LIFE:

1 Year in original, unopened containers

OPTIONS:

- 8 Color Packs available – See CPR Color Chart
- 8 ISC Color Packs – See CPR Color Chart
- 13 Color Quartz Blends

POTLIFE & CURE TIMES (72°F / 50% Relative Humidity):

Pot Life	17-20 min.
Tack Free	3-4 hours
Foot Traffic	12 hours
Full Cure	7 days

Working Time	15 min.
Recoat	12-24 hours
Heavy Traffic	24-36 hours

CURED COATING PROPERTIES (DRY FILM):

Property	Test Method	Results
Abrasion Resistance, mg/loss* Taber Abraser	ASTM D4060	100 mg (0.1 g) loss
Compressive Strength	ASTM C579	7,250 psi (50 MPa)
Flexural Strength	ASTM D790	1,500 psi (10.3 MPa)
Tensile Strength	ASTM 307	700 psi (4.8 MPa)
Adhesion to Concrete	ASTM D7234	450 psi (3.1 MPa) concrete failure
Flammability	ASTM D635	Self-Extinguishing
Percent Elongation	ASTM D2370	6%
Shore D Hardness	ASTM D2240	85
Volatile Organic Compound	ASTM D3960	2 g/L mixed
Microbial Resistance -Fungi -Mold	ASTM G21 ASTM 3273	Rated 1 (Pass) Rated 10 (Highest)
Water Absorption, 24 hour immersion	ASTM C413	<0.1%
Thermal Stability / Heat Resistance -Tested on concrete block	MIL-D-3134J Section 4.6.3	No slip, flow, no softening or change in appearance
Thermal Compatibility with Concrete	ASTM C884	Pass
Softening Point/ Service Temp (Constant)	ASTM C905	266°F (130°C) Min. -330°F (-201°C) Max. 250°F (121°C)
Impact Resistance -Tested on concrete block	ASTM D3134 ASTM D2794	Pass 160 in.lbs.-no delamination/chipping

*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.

APPROXIMATE COVERAGE:

Varies depending on application thickness, floor profile and absorbency of the concrete:

Mil Thickness (inches)	Coverage per mixed kit
1/4" (250 mils)	21 sq.ft.
3/8" (374 mils)	15.75 sq.ft.





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Typical Chemical & Stain Resistance

Covered Spot Test - ASTM D1308 Test Method 3.1.1 spot test, covered. Results are based on 24 hour covered exposure after coating has cured for 2 weeks prior to testing.

E - Excellent; G - Good (Stains/Slight sign of exposure, Coating Recovers);

NR - Not Recommended (Permanent Damage)

Acids	24 hour Exposure
Acetic Acid 25% (Vinegar)	G
Citric Acid 10%	G
Lactic Acid (Milk)	G
Phosphoric Acid 85%	G
Sulfuric Acid 25% (Battery Acid)	G
Sulfuric Acid 98%	NR
Hydrochloric Acid 32% (Muriatic)	G
Nitric Acid 50%	G
Bases	
Ammonium Hydroxide 10%	E
EBGE	E
Sodium Chloride 20%	E
Sodium Hydroxide 50%	E
Sodium Hypochlorite (Bleach)	G
Trisodium Phosphate 10%	E
Alcohols	
Ethylene Glycol (Antifreeze)	E
Hand Sanitizer	G
Isopropyl Alcohol 91%	G
Methanol	G
Solvents	
Acetone	NR
d-Limonene	E
MEK	NR
Methylene Chloride	NR
Mineral Spirits	E
PGMEA	E
Hydrocarbons	
Brake Fluid	G
Castor Oil	G
Gasoline	G
Hydraulic Fluid	G
Kerosene	G
Motor Oil	G
Transmission Fluid	G
Skydrol - LD-4	G
MISCELLANEOUS	
Coffee	G
Coke	G
Hydrogen Peroxide 3%	G
Ketchup	G
Monster Energy Drink	G
Mustard	G
Tide 1%	G
Windex (Ammonia Based)	G
Wine - Red	G

CHECK FOR MOISTURE: Testing concrete moisture via both Calcium Chloride (ASTM F1869) and In-situ Relative Humidity testing (ASTM F2170) is recommended.

Acceptable Readings:

- Calcium Chloride testing (ASTM F1869) <10 pounds and between 8.5 to 11.5 pH
- Relative Humidity (ASTM F2170) <85%

Testing which occurs in non-acclimated interior environments will void the results. Follow the testing manufacturer's instructions precisely or visit www.astm.org, see ASTM F1869 or F2170, to purchase the test methods.

Should moisture vapor emissions exceed the above thresholds, an appropriate moisture vapor remediation primer, such as Smith's Epoxy MAC100 Regular Cure, Smith's Epoxy MAC125 Fast Cure or similar epoxy based moisture remediation primer with a full broadcast of sand. Silicate based "moisture vapor remediation" products cannot be proven to lower the vapor permeability nor can testing determine whether an acceptable permeability has been achieved after treatment. Therefore, silicate based products are NOT recommended for use prior to Smith's CPR.

The absence of an effective moisture vapor barrier may create an environment for moisture vapor transmission as well as high levels of alkalinity in concrete slabs (generally, but not limited to interiors). Smith Paint Products is not responsible for failures due to the presence of moisture vapor emissions and/or high levels of alkalinity.

CONTAMINATION OF SUBSTRATE: Concrete, Tile, Terrazzo and other porous substrates 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.

OIL CONTAMINATION: [Smith's Oil Clean](#) 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.

CHEMICAL CONTAMINATION: Chemical contamination should be determined and may require additional testing. Once the type of contaminant is determined, contact Smith Paint Products for recommendations while following local regulations regarding contaminant and disposal.

TEMPERATURE and HUMIDITY: Substrate temperature and materials must be maintained between 50°F (10°C) and 85°F (29°C) with less than 80% Ambient Humidity for 48 hours prior to an 24 hours after installation. Do not install coatings when the Dew point is within 5° of the temperature.

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INSPECT THE SUBSTRATE: Ensure the concrete is free of contaminants or bond breakers, such as curing compounds, silicone, oil/grease, paint, densifiers/sealer, wax etc., and is structurally sound and solid. The concrete's compressive strength must be >3,500 psi (24 MPa) at 28 days and >217 psi (1.5 MPa) in-situ tensile bond strength at the time of application.





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WARNING: Only contractors experienced with Cementitious Polyurethane Mortars should attempt to install this product due to the skill level, manpower, equipment, etc. necessary to achieve desired results. Applications in humid/moist application conditions (such as food plants) and/or higher than 80°F (26.6°C) situations will further complicate the installation. Smith Paint Products will not be responsible for poor workmanship.

NECESSARY TOOLS and EQUIPMENT:

- Plastic Sheeting to cover floor for mix station
- 3-Blade or Bird Cage flat ring bottom style mixing paddle
- Low speed ½" drill (Variable Speed 650 rpm or less)
- Extension cords
- Mortar Box
- Mixing Buckets or Portable Mix Stations
- Paint Roller Frame with Extension Pole
- Spiked Porcupine Roller with Extension Pole
- Spiked shoes or Cleats
- Cleaning Solvent (Acetone, MEK, Xylene)
- Rounded edge (Pool) Trowel for finishing
- Margin Trowel
- Short Finishing Trowel for tight areas

NOTE: The Mix station and all application equipment should be ready for immediate use prior to mixing any product due to the epoxy pot life once mixed. Only mix enough CPR-HD to be placed within 10 minutes allowing for proceeding batches to tie into the wet edge for an additional 10 minutes at 72°F. Higher temperatures and humidity will shorten pot life.

SUBSTRATE PREPARATION:

SUBSTRATE CLEANING: Detergent scrub with [Smith's Neutral Detergent](#), or similar, 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 [Smith's Oil Clean](#). If a densifier or dissipative curing compound is believed to have been present, use [Smith's Green Clean Pro](#) after mechanical preparation methods. [Smith's Green Clean Pro](#) requires the use of water as a rinse and therefore will require a minimum of 90 minutes with forced air movement or overnight prior to installation of Smith's CPR-HD to dry. Damp substrates may accelerate the cure of CPR-HD.

MECHANICAL PREPARATION: Achieve a CSP 3 to 6 (Concrete Surface Profile in accordance with ICRI Guideline 310.2R2013, as published by the International Concrete Repair Institute) yielding a surface texture similar to 80 grit sand paper or more course in order to maintain long term adhesion to the substrate.

Planetary Diamond Grinding is NOT an acceptable preparation method for CPR products.

Recommended preparation methods:

- **SCARIFY**
- **HYDROBLAST**
- **STEEL SHOT BLAST** (Shot size S-230 to S-330 grit recommended)

Using a 7" vacuumized shroud angle grinder, edge diamond grind around all tight areas, columns, around equipment, etc. Key in all termination points using a diamond cutting blade prior to any above preparation method. Score cutting with a diamond cutting blade on an angle grinder every 6 to 10 feet both North/South and East/West is recommended in areas prone to thermal shock exposure.

Should verification of proper adhesion be desired, follow ASTM D4541 using an Elcometer to determine a direct tensile pull-off strength greater than 250 psi (1.7 MPa) to pass the test.

JOINTS: Honoring of existing joints through the surface after the resurfacing layer is applied then filling with an appropriate joint filler can lessen joint telegraphing. Cut all joints open with a Diamond cutting blade and fill with an appropriate joint filler. Moving (non-static) joints and cracks with telegraph through CPR and is not an indication of delaminating/disbonding from the substrate. Please contact Smith Paints for recommendations for crack repairs, joint wall rebuilding, etc.

PRIMING: Although priming is not typically necessary, some conditions may make priming necessary, such as:

- Highly absorbent concrete may cause blisters in the finish of the CPR-HD
- When Moisture Vapor Transmission exceeds the maximum allowable rate (*see page 2*)
- Application over existing coating systems (*contact Smith Paint Products for recommendations or install a test area to check for proper adhesion prior to proceeding with any application over existing coating*)
- Non-porous substrates, especially smooth surfaces (*contact Smith Paint Products for recommendations regarding substrates other than porous concrete or acid tile/brick*)

When priming, use either of the following options:

- *Where Solvent Odor/Food Flavor Tainting is a concern:*
Smith's Epoxy U100 or Epoxy FC125 at 7-10 mils immediately broadcasting Quartz sand over the fresh epoxy primer surface while the epoxy is still wet then allow to cure at 72°F:
 - Epoxy U100 5 hours or overnight
 - Epoxy FC125 2 – 3 hoursOnce cured enough to walk, remove any loose sand from the primer. The sand broadcast ensures the CPR-HD will not slide across the primer during application and troweling.
- *Priming areas where Solvent Odor/Food Flavor Tainting is NOT a concern:*
Smith's Polyaspartic 1000 Fast Cure at 7 to 10 mils immediately broadcasting Quartz sand over the fresh primer while still wet then allow to dry for a minimum of 90 minutes and until you are able to twist your feet on the sanded primer surface without dislodging the sand from the primer before proceeding with the CPR-HD application.
- *High moisture vapor readings, please consult with an appropriate epoxy moisture vapor remediation primer (See Page 2) with a sand broadcast into the fresh epoxy surface to ensure the CPR-HD does not slide across the primer during the application. Silicate based moisture vapor remediation products cannot be proven to lower the vapor permeability nor can testing determine whether an acceptable permeability has been achieved after treatment.*





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MIXING: DO NOT PART MIX – MIX ENTIRE KIT

In a 6 gallon or larger mixing vessel, combine Part's A and B as well as optional color packs mixing with a low speed drill for approximately 30-45 seconds. While continuing to mix at slowly add in the Part C (Cement) mixing for an additional 1-2 minutes to yield a lump free consistency. Ensure no unmixed powder pockets remains at the bottom of the mixing vessel before pouring out onto the substrate. It is recommended to start with smaller batches initially due to a short pot life. If a larger batch is desired, use a larger batch mixing station, such as a:

- [Mega Hippo model PMH 80X-RL](#) with a TW225D Mixing Paddle (15" Tall blade paddle) on an Ebinstock mixer (less than 450 RPM) or similar
- [Makinex Mixing Station MS-100](#) with a [Collomix Power mixer Xo 6](#) using an [MK 160 HF or KR 160 HF mixing paddle](#)

HOT WEATHER THINNING: CPR may be reduced in warmer application temperatures by adding up to 8 ounces of Mineral Spirits to an entire kit to improve workability. **DO NOT REDUCE THE PART C QUANTITY** as a means of increasing fluidity.

APPLICATION: Once mixed, immediately pour the CPR-HD into the screed box in the area to be resurfaced (Mortar Box should have been set to 1/16" greater depth than the desired finish thickness). Place the CPR-HD and begin finishing with a rounded edge pool trowel then back roll with a looped roller to finish. Continue placing fresh material against the wet edge of the previously spread batch and finish while walking in the mixture with spiked/cleated shoes as necessary. Larger projects with multiple batches being mixed concurrently will require more laborers. NOTE: DO NOT mix more CPR-HD than can be mixed, placed, finished and tied into with the next batches within a 10-15 minute window at 72°F and 50% Humidity. Higher temperatures and humidity will reduce this time frame.

Freshly troweled CPR-HD will accept a Quartz/sand broadcast. After broadcasting into the fresh surface, CPR-HD must cure for at least 12 hours before scraping and removing loose aggregates from the surface.

COVERAGE: *See chart on page 1 of this document

OPTIONAL LAYERS or TOPCOATS:

Broadcast Systems: If topcoating or additional layers are desired over a broadcast surface, Smith's CPR-HD does not require sanding of the surface (for adhesion).

Over raw, trowel finished systems (without a broadcast): Abrade the surface using 80 grit metal screens or sandpaper using an orbital low speed floor buffer or 150 grit metal bond diamonds using an appropriate diamond grinder to abrade the surface. Sanding may occur as soon as the surface is not able to be damaged by the desired method, typically after curing for about 12 hours. More aggressive grit screens or sandpaper may create scratches, swirls and grooves in the finish, especially within 12-14 hours after the initial application that subsequent thin layers may not hide. Hard to reach areas or any depressions should be made uniformly dull using an orbital palm sander with 60 to 100 grit sandpaper. The surface should be uniformly dull with no easily identified scratches.

Once uniformly dull and properly abraded, vacuum the entire surface followed by either a thorough Acetone solvent tack rag wipe or use an auto-scrubber with white, soft nylon bristle brushes and a very mild neutral detergent, such as Smith's Neutral Detergent, or dish detergent (**DO NOT USE SIMPLE GREEN**) and then a clean water rinse. Once dry, check the surface to ensure all dust has been removed before proceeding with the next layer. As an alternative, use a 100 grit resin bond Malish Diamabrush disk brush head on an auto scrubber or orbital floor buffer with Smith's Neutral Detergent and immediately rinse with potable water. **DO NOT ALLOW DETERGENT TO DRY ON THE SURFACE of CPR-HD.**

MAINTENANCE:

- **Unsealed (raw finished) CPR-HD must cure for no less than 24 hours with no exposure to water, neutral detergents or cleaning equipment**
- **Smith's Polyaspartic's as the final wear surface wait a minimum of 3 days before using mechanical cleaning equipment and 48 hours prior to water exposure and neutral cleaning. Only dust or damp (water dampened only) mop for the first few days.**
- **All other finishes, the coating system must be allowed to cure for no less than one week (7 days) before using any mechanical cleaning equipment on the surface and no less than 24 hours before neutral cleaner or water exposure. Only dust and wet mop the first week. This includes auto-scrubbers, swing buffers, sweepers, etc.**
- **Regardless of the finish, DO NOT EXPOSE to steam or freezing temperatures for at least 1 week to ensure proper curing and chemical resistance development.**

Regular cleaning, to include dust mopping, is crucial to maintain the appearance and to achieve the appropriate longevity of any floor coating system. Cleaning cannot occur too often. Spills should be removed quickly. Avoid the use of Polypropylene or abrasive bristle (Tynex®) brushes as these are known to create scratch patterns, lessen the floor coating longevity and lower the sheen of the finish.

Proper maintenance will help to maximize your investment by removing particles that scratch and dull the appearance of a floor coating. The floor should be swept daily and scrubbed once per week or per month depending on the amount and type of soils present. Environments with oils or regulated by health departments will need a more strict cleaning regiment.

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 pallets, etc.

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DETERGENT: Always use the least aggressive detergent necessary to remove the residue. Typically, coated floors may only need a detergent scrub on a weekly or monthly basis depending on the environment. Daily dust mopping or water only mopping/scrubbing is highly recommended. Environments with exposure to foods, oils, chemicals, ink, etc. should be detergent scrubbed daily, possibly after every shift.

Rubber tires are prone to plasticizer migration, especially aviation tires and high performance car tires. Plasticizer will stain coatings 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 periods of time, more so in non-climate controlled environments such as aircraft hangars 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.

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

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.

SLIP RESISTANCE: Smith Paint Products 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.

LIMITED LIABILITY: Liability is limited to replacement of defectively manufactured product of the same type and cost of the originally purchased product upon presentation of a valid, fully paid invoice at the time of a claim. No warranty shall be granted for outstanding invoices or for accounts with unpaid balances until paid in full. No damages, whether consequential, liquidated or other, shall be provided under this Limitation of Liability and Limited Warranty. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY SMITH PAINT PRODUCTS, EXPRESSED OR IMPLIED, STATUTORY, BY OPERATION OF LAW, OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE. SHOULD YOU NOT AGREE WITH ANY OF THE ABOVE TERMS, DO NOT PURCHASE THE PRODUCT(S). Should a product defect be suspected at the time of application, cease use of the product immediately and notify Smith Paint Products for investigation as you will be responsible for the cost to repair or replace any work performed with product(s) suspected of defect. Record batch codes and save all products you purchased in order for any warranty to occur allow with the invoice that matches said quantity. Defects determined after installation must be reported to Smith Paint Products within 10 business days of discovery.

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