

# Protect UC-LM



## Self-Leveling, Medium-Duty Urethane Concrete Mortar

7875 Bliss Parkway North Ridgeville, OH 44039  
440-327-0015 440-353-0549 - FAX

**DESCRIPTION:**

**Protect UC-LM** is a self-priming, three or four (with colorpack) component, self leveling grade, Medium Duty Urethane Concrete Mortar. **Protect UC-LM** is typically installed at 1/8" to 3/16" thickness.

**USES:**

**Protect UC-LM** is formulated specifically for the food and beverage industry. It offers ideal use in "can't dry" environments, areas subject to thermal cycling, and floors that will see high impact and hot water dumping. **Protect UC-LM** provides thermal shock protection against temperatures up to 180F. **Protect UC-LM** is a semi-rigid mortar and moves with the thermally induced expansion and contraction of concrete substrates. **Protect UC-LM** maintains superior chemical resistance to strong oxidizing agents, organic acids and aromatic solvents.

**ADVANTAGES:**

- Available in a neutral base with on site colorpack tinting.
- Virtually odorless
- Formulated free of phthalate plasticizers
- High chemical resistance
- Rapid cure (hours, not days)
- Moisture vapor tolerant
- Excellent impact and abrasion resistance
- Seals concrete, protecting against dirt and spills
- Resists staining and major chemical spills of cleaning and industrial chemicals
- Complies with VOC regulations for Industrial Maintenance Coatings in the OTC and CA.
- Wide service temperature range (-100F-212F boiling water or steam)
- Cure time can be reduced by UC-Accelerator in cold application temperatures
- Can be applied to 7 to 14 day old concrete

**STORAGE:** Materials should be stored in original un-opened containers indoors between 65°F (18°C) and 90°F (32°C) and at or below 50% RH. Protect liquids from freezing.

**SHELF LIFE:** Un-opened containers 1 year from date of manufacture.

**PACKAGING KITS/ PART NUMBERS/ Coverage:**  
**Volume Mix Ratio for Neutral liquids: 1A: 1B**

**One Pint of Protect UC-CP-(color) tints 10 mixed gallons.**

**2.6 cu.ft. kit ( 251 sq ft @ 1/8") (5-2 bag mixes; 50.2 sq. ft ea)**  
UC-A/5 (5 gal)  
UC-B/5 (5 gal)  
16 fl.oz UC-CP-(color)  
UC-LM Aggregate/20 (20 lb.) – 10 bags.

**OPTIONS:**

To fill deeply spalled area, or to re-slope the concrete substrate, a suitable fast setting concrete mortar (**Protect Rapid Mortar**) can be installed prior to the **Protect UC-LM**. The repair concrete mortar will need to be shot blasted the following day prior to installing the **Protect UC-LM**. Contact Protective Industrial Polymers for other approved sources.

**Traction:** Suitable angular aggregate can broadcast into wet mortar and then lock coated with **Protect UC-FC** or approved topcoat.

It is highly recommended when applying Protect UC-LM mortar to broadcast the wet mortar with either a neutral silica sand or decorative colored quartz (**Protect DS-Quartz**) aggregate and topcoat with either a pigmented **Protect UC-FC** lock coat or a clear approved epoxy or urethane. This will render the surface more consistent in color and texture. See **Application Instructions for Protect UC-LM for further details.**

**LIMITATIONS:**

**Substrates:** **Protect UC-LM** must be applied to a properly prepared, clean concrete substrate.

**Contamination and surface defects (fisheyes):** If contaminants of oils, silicones, mold release agents and/or others are present, Protect UC-LM may fisheye or crawl away from the surface. Surface contaminants should be removed with a suitable detergent prior to application. Protect UC-LM will amber over time from UV exposure.

Do not apply material directly to metallic substrates, elastomeric membranes, FRP, or asphaltic materials without first consulting Protective Industrial Polymers.

**MATERIAL PROPERTIES\*:**

Properties	Test Method	Results
Flash Point	ASTM D3278	≥215 °F (102°C)
Volume Solids (incl. Part C)	ASTM D2369	95 %
Mixed Viscosity (resin only)	ASTM D2196	400-700 cPs
VOC-Volatile Organic Compound	ASTM D3960	0 g/l

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**CURED PROPERTIES\*:**

Properties	Test Method	Results
Abrasion Resistance Taber CS-17 mg loss/1000 cycles/1000g mass	ASTM D4060	100 mg
Coefficient of Friction-COF James Test	ASTM D2047	0.72
Tensile Strength	ASTM C307	1100 psi
Compressive Strength	ASTM C579A	7220 psi
Flexural Strength	ASTM C580	2400 psi
Adhesion to Concrete	ASTM D4541	350 psi concrete failure
Density	ASTM C 905	14.97 lbs.gal
Impact	ASTM D2794	>80 in.lbs
Thermal Coefficient of Linear Expansion	ASTM C531	9.5 x10 <sup>-5</sup> in/in/°F
Application Thickness		1/8" minimum

\*Properties and results are based on laboratory testing at 72°F (22°C) %50 RH, theoretical calculations and estimates. Typical properties, as stated, are to be considered as representative of current production and should not be treated as specifications.

Methanol	P	P
d-Limonene	E	E
Jet Fuel	E	E
Gasoline	G	F
Mineral Spirits	E	E
Xylene	E	G
Methylene Chloride	P	P
MEK	P	P
PMA	G	G
<b>MISCELLANEOUS</b>		
20% Ammonium Nitrate	E	E
Brake Fluid	E	E
Bleach	E	E
Motor Oil	E	E
Skydrol®500B	E	E
Skydrol®LD4	E	E
20% Sodium Chloride	E	E
10% TSP	E	E

\*Based on spot testing of the clear coating after 14 days of cure. Pigmented versions may see reduced chemical resistance and staining.

Legend: E- Excellent (Not Effected) - Recommended  
G-Good (Limited Negative Effect) - Short Term Exposure  
F-Fair (Moderate Negative Effect) - Not recommended  
P-Poor (Unsatisfactory) - No Resistance to Exposure

**CHEMICAL RESISTANCE\*:**

Protect UC-LM	1 Day	7 Days
<b>ACIDS, INORGANIC</b>		
10% Hydrochloric	E	E
30% Hydrochloric	F	P
10% Nitric	E	E
50% Phosphoric	G	F
37% Sulfuric	E	E
<b>ACIDS, ORGANIC</b>		
10% Acetic	G	F
10 % Citric	E	G
Oleic	E	E
<b>ALKALIES</b>		
10% Ammonium Hydroxide	E	E
50% Sodium Hydroxide	E	E
<b>SOLVENTS</b>		
Ethylene Glycol	G	G
Isopropanol	E	E

**INSPECTION AND APPLICATION:**

**Caution! Follow all precautions and instructions prior to installation.**

**CHECK THE SUBSTRATE CONCRETE:** Substrate concrete must be free of curing membrane, silicate surface hardener, paint, or sealer and be structurally sound. If you suspect the concrete has been treated or sealed, prepare substrate for complete removal of treatment.

**MOISTURE:** Moisture and moisture vapor transmission rates are dynamic in nature and may change over time. Initial testing does not guarantee future results. If the relative humidity of the concrete substrate is over 99% (using ASTM F2170), Protective Industrial Polymers must be consulted and issue a written moisture mitigation recommendation prior to product use.

**EXCLUSION:** Testing for moisture is important, however it does not guarantee against future problems. If there is no vapor barrier or the vapor barrier is damaged, this too can contribute to floor failure. Contamination to concrete from oils, chemicals, excessive salts or Alkali Silica Reaction (ASR) may also contribute to floor failure.

**CHECK THE TEMPERATURE AND HUMIDITY:** During the application and cure of the coating, the substrate temperature, material temperature and room conditions should be maintained between 65°F (18°C) and 90°F (32°C). Relative Humidity (RH) should be limited to 30-80%. DO NOT apply coatings unless the floor temperature is more than five degree over the dew point.

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### APPLICATION EQUIPMENT:

- Protective equipment and clothing as called for in the SDS (Safety Data Sheet)
- "KOL Mixal" electric powered mortar mixer (Model M-61-BM 1HP)
- Screed Rake/ Cam Rake
- Hand Trowel
- Drill motor mixer with mud mix blade
- Porcupine roller/Loop roller/ 1/4 " Mohair roller
- Surface grinders
- Vacuum equipment

### PREPARATION:

Surface dirt, grease, oil and contaminants must be removed by detergent scrubbing and rinsing with clean (clear) water. Concrete Scarification or Heavy Shot Blasting (bare concrete) is the recommended method of surface preparation.

**JOINTS:** Construction joints may need to be re-built and re-cut and then filled with semi-rigid joint filler. Isolation or expansion joints must be filled with a flexible material designed for expansion and should not be coated over. All construction/control joints in the concrete must be honored (IE: Re-cut and filled in the mortar). Control joints must be filled with a semi-rigid joint compound such as Protective Industrial Polymers JF-Epoxy.

**BARE CONCRETE APPLICATION: Protect UC-LM Mortar MUST BE APPLIED OVER** bare and well prepared concrete. Under most conditions a primer is not required or recommend.

**Existing Epoxy or UC Overlay** – It is highly recommended that the existing overlay be shot-blasted or diamond ground, primed with an epoxy primer and saturated with silica sand before applying a new layer of **Protect UC-LM**.

**MIXING:** Working time including mixing is limited to 15-20 minutes. Surface will harden and become unworkable after 20-25 minutes. Mix equipment and tools will need to be cleaned multiple times during the application to keep materials from setting up prematurely.

### Mix Instructions for Protect UC-LM

Pre-mix the Part A with a drill and jiffy mix paddle for 1 minute. Then add 16 fl. Oz. Protect UC-CP-(color) and mix for a minimum of 2 minutes and color is uniform in the pail. This will improve color uniformity and handling properties throughout the pail. After pre-mixing and tinting, pour off 1 gallon of tinted Part A, and 1 gallon of Part B. Mix these together in a separate mixing pail for 1-2 minutes with a drill and jiffy mix paddle. Immediately add mixture to mortar mixer and add 2 bags of **UC-LM** aggregate and mix for 2 minutes. It is absolutely critical to be consistent with mixing times to achieve uniform handling and flow properties. Immediately transfer mix to floor and apply with a screed rake, screed box or hand trowel. **DO NOT LEAVE ANY MORTAR IN THE MIXER AS IT WILL HARDEN!**

### Protect UC Accelerator

To hasten cure in colder temperatures or tight time schedules, and to shorten the recoat time of epoxy topcoats the addition of

Protect UC Accelerator is recommended. Please see Protect UC Accelerator Product Data Sheet for specific information on dosing requirements and cure times.

### Application Instructions for Protect UC-LM

Apply **Protect UC-LM** at a thickness of 1/8"-3/16" to the floor surface using a screed or cam rake. Smooth and de-aerate the wet mortar with either a loop or porcupine roller. Care should be taken not to over roll as material may not level after 10 minutes. Broadcast any optional top aggregate while mortar is wet. (Hint: It is recommended to wait approximately 10-15 minutes before broadcasting aggregate to reduce consumption).

**CURING (DRYING):** Allow the mortar to cure (dry) for a minimum 4-8 hours after application at 75°F (24°C) and 50% RH before sweep off excess quartz broadcast. Only open the floor to light traffic after sufficient cure, allow more time for low temperatures and higher humidity or for heavier traffic. Full coating properties may take up to 24 hour to 3 days to develop.

### TOPCOATING (Epoxy)

Application of a high solids epoxy topcoat direct to a smooth Urethane Concrete is not a recommended practice due to reasons of inferior thermal shock, adhesion, and reduced moisture vapor transmission properties. Only apply high solids epoxy topcoats atop Urethane Concrete that has been fully broadcasted with silica sand.

Within the first 24 hours of placement, Urethane concrete is still in reaction, slowly releasing water vapor and CO2 gas. These can cause bubbles to form and get trapped in an epoxy topcoat causing an unsightly bubbled surface. To reduce or eliminate these gas bubbles, the addition of a minimum of 3 oz. UC Accelerator to the UC-LM mixture greatly reduces gas and consequently bubbling. Allow the floor to cure for a minimum of 16 hours before application of epoxy topcoats. Without the accelerator, a minimum of 24 hours cure time is required.

Protect 2000S and Protect UC-FC are currently the only recommended coatings recommended for application direct to smooth Urethane Concrete. When doing so, the addition of a minimum of 3 fl. oz of UC Accelerator is required. A 24 hour cure time is required before the urethane is applied. Failure to adhere to this timeframe will likely result in color streaks and inconsistencies in the urethane top coat.

**TECHNICAL SUPPORT:** For application questions, please contact your salesman or PIP technical service at 440-327-0015.

**DISPOSAL:** Dispose in accordance with federal, state, and local regulations.

**READ SDS (SAFETY DATA SHEET) FOR SAFETY AND PRECAUTIONS. USE PRODUCT AS DIRECTED. FOR INDUSTRIAL USE ONLY. KEEP OUT OF REACH OF CHILDREN.**

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### MAINTENANCE GUIDELINES:

**Allow floor coating to cure at least one week before cleaning by mechanical means (IE: sweeper, scrubber, disc buffer).**

**CARE:** Increased life of the floor will be seen with proper maintenance and will help maintain a fresh appearance of your new Protective Industrial Polymers floor. Regularly sweep to avoid ground in dirt and grit which can quickly dull the finish, decreasing the life of the coating. Spills should be removed quickly as certain chemicals may stain and can permanently damage the finish.

Only soft nylon brushes or white pads should be used on your new floor coating. Premature loss of gloss can be caused by hard abrasive bristle Polypropylene (Tynex®) brushes.

**CAUTION:** Heavy objects dragged across the surface will scratch all floor coatings. Avoid gouging or scratching the surface.

Pointed items or heavy items dropped on the floor may cause chipping or concrete pop out damage. Plasticizer migration from rubber tires can permanently stain the floor coating. If a rubber tire is planned to set on the floor for a long period of time, place a piece of acrylic sheet between the tire and the floor to prevent tire staining. Rubber burns from quick stops and starts from lift trucks can heat the coating to its softening point causing permanent damage and marking.

**REPAIR:** Repair gouges, chip outs, and scratches as soon as possible to prevent moisture and chemical under cutting and permanent damage to the floor coating.

### WARRANTY AND CONDITIONS OF USAGE

**WARRANTY AND LIMITATION OF LIABILITY:** Protective Industrial Polymers Inc. ("PIP") warrants that its products shall conform to the manufacturer's written specifications and shall be free from defects for one (1) year from the date of purchase. PIP MAKES NO WARRANTIES, IMPLIED OR OTHERWISE, AS TO THE MERCHANTABILITY OR FITNESS FOR PARTICULAR PURPOSES OF ITS PRODUCTS AND EXCLUDES AND DISCLAIMS THE SAME, INCLUDING, WITHOUT LIMITATION, FAILURE OF THE PRODUCT DUE TO ACTS OF GOD, FLOODING, EXTREME OR ABNORMAL TEMPERATURES, HUMIDITY AND MOISTURE, STRUCTURAL CONDITIONS, SITE PREPARATION AND CONDITIONS, ACCIDENTS, DAMAGE CAUSED BY INSTALLATION OF MACHINERY, EQUIPMENT OR FIXTURES WITHOUT ADEQUATE FLOOR PROTECTION OR WITHOUT ADEQUATE TIME FOR CURING, FAILURE TO COMPLY WITH CONDITIONS OF USAGE (SPECIFIED BELOW), VANDALISM, NEGLIGENT OR INTENTIONAL ACTS OF THIRD PARTIES OR OTHER CASUALTIES. If any PIP product fails to conform to this warranty, PIP shall either replace the product at no cost to Buyer or refund the cost of the product, in PIP's sole discretion. Replacement of any product or a refund of the cost of any product shall be the sole and exclusive remedy available to buyer, and buyer shall have no claim for incidental, special or consequential damages, including, without limitation, business interruption damages. Any warranty claim must be made within one (1) year from the date of delivery of products. PIP does not authorize anyone on its behalf to make any written or oral statements which in any way alter PIP's warranty or installation and storage information or instructions in its product literature or on its packaging labels. Any installation of PIP products which fails to conform to such installation information or instructions or the "Conditions of Usage" (specified below) shall void this warranty. Product demonstrations, if any, are done for illustrative purposes only and do not constitute a warranty or warranty alteration of any kind. Buyer shall be solely responsible for determining the suitability of PIP's products for the Buyer's intended purposes.

**CONDITIONS OF USAGE:** Installation of all products purchased must be by professional installers periodically published by PIP or otherwise approved by PIP in writing. Modification to any of PIP's products voids the warranty. The installer shall maintain a written contemporaneous record of field conditions (including, without limitation, surface and atmospheric conditions, usage rates, and lot numbers of products installed). PIP reserves the right of inspection of any installed product, installation and maintenance records and records of field conditions and may conduct additional testing as is reasonably required to investigate any warranty claims. Warranty shall only apply for products or materials that have been paid for in full. Moisture Vapor Transmission (MVT) and ASR (Alkali Silica Reaction) Disclaimer and Exclusion: Although rare, some floors at or below grade level are sometimes subjected to saturation by moisture from beneath the concrete floor slab. This moisture can travel through the concrete and collect between floor toppings creating the potential for delaminating from hydrostatic pressure and or ASR. Conditions contributing to this include heavy rainfall, broken pipes, excess hydration within fresh concrete, and other factors or defective and old concrete. These factors are difficult, if not impossible to predict. PIP recommends testing for MVT and/or the presence of ASR in the concrete substrate prior to applying any polymer floor topping. The recommended test method for MVT is ASTM F 2170-11. ASR can be predicted by a higher than normal pH within the concrete. If high pH should be detected, it is recommended a lab test for ASR. If and when delamination of the floor occurs because of a moisture condition that exists beneath or in the concrete slab beyond the capacity of the individual product installed or failure of the concrete due to ASR, this Limited Warranty does not extend to such delaminating or topping failure. This writing constitutes the sole and only agreement of warranty relating to PIP products.