Technical Data Sheet

Protect UC-FC

Urethane Concrete Mortar Finish Coat

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

DESCRIPTION:

Protect UC-FC is a cementicious urethane modified finish coat. **Protect UC-FC** is typically installed at 15 to 25 mils atop a Protect UC urethane concrete broadcasted with silica sand aggregate.

USES:

Protect UC-FC in used in conjunction with Protect UC mortars are 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-FC** provides thermal shock protection to temperatures that mimic the Protect UC Basecoat or underlayment. **Protect UC-FC** maintains superior chemical resistance to strong oxidizing agents, organic acids and aromatic solvents.

ADVANTAGES:

- Available in a neutral base with on site colorpack tinting.
- Formulated free of phthalate plasticizers
- Virtually odorless
- High chemical resistance
- Rapid cure (hours, not days)
- Moisture vapor tolerant
- Seals concrete, protecting against dirt and spills
- Resists staining and major chemical spills of cleaning and industrial chemicals
- Can be applied to 7 to 14 day old concrete

PACKAGING KITS/ PART NUMBERS/ Coverage:
Volume Mix Ratio for liquids: 1A: 1B: 3 fl. Oz UC-CP-Color and 0.75 Fl Oz UC Accelerator)

2.53 gal (0.34 cu.ft.) kit (204 sq ft @ 20 mils)
UC-A/1 (1 gal):
UC-B/1 (1 gal):
3 fl. oz. UC-CP-color:
UC-FC Aggregate/10* (10 lb.) – 1 bag.
UC-Accelerator 0.75 fl. Oz.

The addition of 0.75 fl. oz. of UC- Accelerator must be added for the mix to render a proper cure. Failure to add the accelerator may render a sticky surface which may last for up to 3 days.

12.69 gallon (1.70 cu.ft.) kit (1020 sq ft @ 20 mils)
UC-A/5 (5 gal)
UC-B/5 (5 gal):
16 fl. oz. UC-CP-Color:
UC-FC Aggregate/10* (10 lb.) – 5 bags.
UC-Accelerator 3.Fl. Oz.

The addition of 3 Fl. Oz. of UC- Accelerator must be added for the above mix to render a proper cure. Failure to add the accelerator may render a sticky surface which may last for up to 3 days.

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.

LIMITATIONS:

Contamination and surface defects (fisheyes*):* If contaminates of oils, silicones, mold release agents and/or others are present, Protect UC-FC may fisheye or crawl away from the surface. Surface contaminates should be removed with a suitable detergent prior to application. Protect UC-FC 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	91 %
Mixed Viscosity (resin only)	ASTM D2196	400-700 cPs
VOC-Volatile Organic Compound	ASTM D3960	0 g/l

CURED PROPERTIES*:

Properties	Test Method	Results
Abrasion Resistance Taber CS-17 mg loss/1000 cycles/1000g mass	ASTM D4060	100 mg
Coefficient if Friction-COF James Test	ASTM D2047	0.65
Tensile Strength	ASTM C307	1650 psi
Hardness	ASTM 2240	80 Shore D
Flexural Strength	ASTM C580	3650 psi
Adhesion to Concrete	ASTM D4541	350 psi concrete failure
Density	ASTM C 905	11.75 lbs.gal
Thermal Coefficient of Linear Expansion	ASTM C531	$1.0x10^{-5}$ in/in/°F
Application Thickness		15 mils 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.

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CHEMICAL RESISTANCE*:

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

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%.

APPLICATION EQUIPMENT:

- **Protective equipment and clothing as called for in the SDS (Safety Data Sheet)**
- **Flat Blade rubber squeegee/Screed Rake/ Cam Rake**
- **Drill motor mixer with mud mix blade**
- **Loop roller or 1/4 "-3/8" Mohair roller**
- **Surface grinders**
- **Vacuum equipment**

PREPARATION:
Surface dirt, grease, oil and contaminates must be removed by detergent scrubbing and rinsing with clean (clear) water.
Concrete Scarification or Heavy Shot Blasting (bare concrete): Is the preferred method of surface preparation to receive a Protect UC urethane concrete Mortar.

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 **JF-Epoxy.**

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 urethane mortar and **Protect UC-FC**.

MIXING: Working time including mixing is limited to 10 minutes. Surface will harden and become unworkable after 15 minutes. Mix equipment and tools will need to be cleaned multiple times

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during the application to keep materials from setting up prematurely.

Mix Instructions for Protect UC-FC

Pre-mix the 5 gallons of Part A with a drill and jiffy mix paddle for 1 minute. Then add 16 fl. Oz. Protect UC-CP-(color) and 3 Fl. Oz. UC-Accelerator to the 5 gallons of Part A 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 1 bag of **UC-FC** 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 spread with a flat bladed rubber squeegee followed by a back-roll with a ¼'-3/8" roller. **DO NOT LEAVE ANY COATING IN THE MIXER AS IT WILL HARDEN!**

Application Instructions for Protect UC-FC

Apply **Protect UC-FC** at a thickness of 15-25 MILS to the floor surface using a flat bladed rubber squeegee followed by a back-roll with a ¼'-3/8" roller. Care should be taken not to over roll as material may not level after 10 minutes.

CURING (DRYING): Allow the coating to cure (dry) for a minimum 12 hours after application at 75°F (24°C) and 50% RH. 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 36 hours to develop.

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.

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.