PRODUCT INFORMATION

Generic Type	Ceramic Modified Epoxy for Directional Drill and High Abrasion Applications.
Description	The Powercrete® DD 410 is a new generation solvent-free epoxy ARO polymer concrete coating that provides high-performance protection to the FBE coated pipe for directional drilling, thrust (slick) bore and pull-through applications. It is specifically designed to be applied directly on the FBE mainline coating of a pipeline to withstand rough terrain conditions. This product has exceptional abrasion, strength, hardness, impact resistance, and adhesion properties, making it the ideal choice for directional drilling projects. DD 410 comes from the Powercrete® brand, trusted for over 20 years and the number one abrasion-resistant overlay (ARO) successfully installed in many projects across the globe.
Features	• New even ratio easy to apply fast curing technology • Ultimate directional drill ARO Coating • Fast curing and high hangability formulation • For oil and gas pipeline is the ultimate ARO coating on FBE. • 100% Solids Epoxy with even mix ratio 4:1 • No content of VOC • Excellent adhesion to FBE • Excellent mechanical properties • Superior abrasion resistance • Widely used in directional drill and thrust bore applications. • Suitable for pipeline operating temperatures to 55°C (130°F) • Can be sprayed and hand applied up to 2000 micron (80 mils) in one multi-pass layer
Colour	Tan and Blue available and other colours on order
Finish	Gloss
Primer	No primer necessary on FBE and direct to metal
Dry Film Thickness	20 – 80 mils (500 - 2000 µm) for most applications For higher dry film thickness consult Seal For Life representative. Coating builds to 20 mils in vertical per coat, on rollers the coating could be built at 40 mils in a single pass depending on rotation speed.
Solids by Volume	100 %
Theoretical Coverage Rate	81.5 ft^2 per Gallon at 20 mils (500 µm) thickness (DFT) 40.1 ft^2 per Gallon at 40 mils (1000 µm) thickness (DFT) 26.7 ft^2 per Gallon at 60 mils (1500 µm) thickness (DFT) 20.0 ft^2 per Gallon at 80 mils (2000 µm) thickness (DFT)

VOC Values	0 g/l (No recordable VOC values)
Limitations	Epoxies lose gloss, discolor and eventually chalk in sunlight exposure. If the coating is going to be exposed more than 6 months a polyurethane or acrylic top-coat is recommended. Consult Seal for Life Representative. For Oil and Gas pipeline is recommended to apply it on FBE.

SUBSTRATE AND SURFACE PREPARATION

General	**The area to be coated must be clean, dry, and free from oil, grease, and dust. All contamination that could interfere with the adhesion of the coating has to be removed according to SSPC-SP1.**
Preventing Condensation	Prior and during the surface preparation, the temperature of the substrate(s) must be at least 5˚F (3˚C) above the dew point.
Steel	Abrasive blast to SSPC SP 10 (ISO Sa 2½ a minimum cleanliness level. The anchor profile shall be angular with a range of 3 – 4.5 mils (75 to 112 µm) when measure by ASTM D 4417 Method C (Replica Tape).
FBE	Abrasive blast surface following procedures of SSPC SP 7 (ISO Sa 1) obtaining a **dense angular** profile with a range of 2.5 to 4.0 mils (62 – 100 µm) when measure by ASTM D 4417 Method C (Replica Tape) all gloss removed.

MIXING AND THINNING

Application Safety	Read the Product Data Sheet and follow the caution statements on the Safety Data Sheet (SDS). Personnel exposed to the product shall wear appropriate protection equipment. Follow best painting practices and safety guidelines.
Mixing Ratio	4:1 (A to B in volume) 100:14.1 (A to B by weight)
Mix each Component	Power mix part A and part B separately until uniform for plural airless spray application. Do not incorporate air by mixing too fast, warm material will be easier to mix. Hand apply is possible in plant application only for small repair and patch work.

Thinning	No thinning is necessary
Pot Life	12 minutes at 25 °C (77 °F)

APPLICATION EQUIPMENT GUIDELINES

Spray Application

Listed below are general equipment guidelines for the application of this product. Job site conditions may require modifications to these guidelines to achieve the desired results.

Use only heated plural component Airless equipment capable to maintain a 4:1 ratio in volume and 1.25 Gallon/4,73 Liter per minute output, with heated drums, insulated (heated) hoses and solvent flush system (Recommended Solvent MEK, Acetone, or similar). The recommended machine is a fixed ratio XP50/XP70 Heated Graco plural component pump or larger. Consult SEAL FOR LIFE for specific information.

- Transfer pumps (Part A: Graco 10:1, Part B: Graco 5:1- minimum)
- Agitation (expandable blade mixer) for both sides.
- Heated drums for A and B (Part A heated 120 – 140 °F, Part B 110 to 120 °F)
- Heated hose bundle (A hose = 1/2”, B hose = 3/8”) I.D to the remote manifold
- Manifold equipped with restrictor on the Part B side.
- Static mixers set of 2 x 10/11" static mixer 3/8” NPT as minimum.
- Whip hose 3/8” max length at 20 ft
- High pressure fluid heater and temperature control (5400 watts per side)
- Spray Temperature (Part A 130 – 160 F and Part B 120 - 130 F)
- Pump Ratio minimum 50:1 and 1.25 Gallons per minute output.
- Recirculation system from the manifold back in the drums to ensure temperature in hose is even.
- Pressure ratio monitor set to 300 psi warning and 500 psi alarm.
- Volume Output: 4.73 l or 1.25 Gallons per minute as minimum
- Tip Size: (0.025-0.031”)
- Pressure: Part A 2500 - 4000 psi (170 - 276 Bar); Part B 2500 - 4000 Psi (170 – 276 Bar)
- Airless Spray Gun: Graco XRT or similar high pressure airless gun.

Temperature During Application

At the mixing point Part A must be heated up and maintained to a temperature of 55 - 82˚C (130 – 160 ˚F) and Part B must be heated up and maintained at 49 -55 ˚C (120 - 130˚F).

Brush and Roller Application	POWERCRETE DD 410 can be applied with brush or roller. For small repairs and hand application. Follow hand application instructions. Pour onto surface while spreading the coating to desired thickness using applicator blade, stiff-brush, or roller.
Certification	POWERCRETE DD 410 should be only installed by applicators trained by our Technical Service Specialist.

APPLICATION CONDITIONS

	Product	Surface	Ambient	Humidity
Optimum	140˚F (60˚C)	70-90˚F (21-32˚C)	70-90˚F (21-32˚C)	25-50%
Minimum	130˚F (55˚C)	50˚F (10˚C)*	35˚F (2˚C)	0%
Maximum	160˚F (70˚C)	180˚F (82˚C)	120˚F (49˚C)	85%

* If the surface to be coated is below 10˚C (50˚F), preheating of the substrate is recommended. Preheat temperatures should not exceed 82˚C (180˚F). Prior and during the application, the temperature of the substrate must be at least 3˚C above the dew point. Note: For best results pre-heating is done before abrasive blasting.

CURING SCHEDULE

Gel Time	30 minutes at 25 ˚C (77 ˚F) thin film
Dry to Touch	90 minutes at 25 ˚C (77 ˚F) thin film
65 Shore D Hardness	3 Hours at 25 ˚C (77 ˚F) – Ready for Holiday Testing
75 Shore D Hardness	4 Hours at 25 ˚C (77 ˚F) – Full Cure ready for handle
Note	Cure time is based on 40 mils (1000micron) DFT. Recoat interval at 21˚C (70˚F) is 15 to 60 minutes and 5 - 7 minutes at 65˚C (150˚F). **Warning: Under 4 ◦C (40 ◦F) coating mixture is frozen, and no chemical reaction will occur**.

Temperature	Gel Time	Min. Recoat Time	Max. Recoat Time	Dry to Touch	Time to 65 Shore D	Time to 75 Shore D
77 ˚F (23 ˚C)	30 min	40 min	1.5 hrs	1.5 hrs	3.5 hrs	4.0 hrs
115˚F (45 ˚C)	7 min	8 min	15 min	13 min	50 min	1 hrs

The cure rate accelerates as temperature and dry film thickness increase. Touch-up of holidays can occur then as well or any time the coating is firm enough to resist damage from the procedure. Full cure will take place according to the table above. Over-coating after the maximum recoat time requires that the surface be abraded prior to application. Use a medium grit, 60 to 80 grit paper or sweep blast to roughen the surface. Clean abraded area of dust before re-coat or repair. Note: This time information is based on 40 mils (1000 DFT).

INSPECTION AND REPAIR

Inspection	The finished coating must be visually inspected for any defects, such as runs and sags, fisheyes, blistering, pinholes, missed spots and possible contaminants. Pinhole/Holiday detection must generate according to NACE SP0188 High Voltage Modality or specified standard.
Coating Thickness	The coating thickness (DFT) must be within the specified DFT range. Use calibrated equipment and measure according to SSPC-PA 2 or another specified standard.
Cure to Handling	Transport and stacking is possible after full cure of the coating and generating a Holiday test (NACE SP0188). This time can be reduced by increasing the curing temperature. Consult Powercrete® for specific information.
Repair	Pinholes/Holidays must be located and repaired with POWERCRETE DD 410, POWERCRETE R65F1 or approved material. Consult Powercrete® for specific information. Retest the repaired area. Consult the POWERCRETE DD 410 Repair Instructions.

CLEAN UP AND SAFETY

Cleaning	Use MEK, Acetone or Xylene/MEK mixtures. In case of spillage, absorb and dispose of in accordance with local applicable regulations.
Safety	Read and follow all caution statements on this product data sheet and on the SDS for this product. Employ normal workmanlike safety precautions. Hypersensitive persons should wear protective clothing, gloves and use protective cream on face, hands and all exposed areas.
Ventilation	When use cleaning solvent in enclosed areas, thorough air circulation must be used. The ventilation system should be capable of preventing the solvent vapor concentration from reaching the lower explosion limit for the solvents used. User should test and monitor exposure levels to in sure all personnel are below guidelines.

PACKAGING, HANDLING AND STORAGE

Shelf Life	Store indoor, clean and dry, away from direct sunlight in a cool place. Keep from freezing. Shelf life 24 months in the original unopened containers.
Storage Temperature and Humidity	18-35°C (65-95˚F)
Storage	Indoors and keep dry
Shipping Weight	Powercrete® DD 410. Product dimensions and contents:

Drum		
Part A	40.7 gal/154 l	(628 lb/285.4 kg)
Part B	50.26 gal/190 l	(418 lb/190 kg)
Pail		
Part A	4.8 gal/18 l	(84 lb/38.2 kg)
Part B	4.8 gal/18 l	(40 lb/18.1 kg)

Flash Point	Mixed Material >199˚F (93˚C) mixed product Part A > 199˚F (93˚C) Part B > 199˚F (93˚C)

ADD 410ITIONAL INFORMATION

Documentation	Application instructions and other documentation can be obtained by contacting our head office, from our local distributor or by sending email to info@sealforlife.com
Certified staff	Application of the described coating system should be carried out and inspected by certified personnel.

DISCLAIMER

Seal For Life Industries warrants that the product(s) represented within conform(s) to its/their chemical and physical description and is appropriate for the use as stated on the respective technical data sheet when used in compliance with Seal For Life Industries written instructions. Since many installation factors are beyond the control of Seal For Life Industries, the user is obligated to determine the suitability of the products for the intended use and assume all risks and liabilities in connection herewith. Seal For Life Industries liability is stated in the standard terms and conditions of sale. Seal For Life Industries makes no other warranty either expressed or implied. All information contained in the respective technical data sheet(s) should be used as a guide and is subject to change without notice. This document supersedes all previous revisions. Please see revision date on the left. Powercrete® is a registered trademark of Seal For Life Industries.