PRODUCT INFORMATION

Generic Type	Fast curing ceramic modified epoxy novolac hybrid designed for mainline and field pipeline joints in high temperature service.
Description	Powercrete® R-95 is a high-build solvent free novolac epoxy coating designed for protecting new line pipes and pipeline rehabilitation projects that operates at temperatures up to 95 ˚C [203 ˚F]. Powercrete® R-95 can be used for extra protection on top of FBE mainline coatings or as a DTM (direct to metal) coating when an increased temperature-and chemical resistance is required. Powercrete® R-95 is an ideal corrosion preventative coating system for pipelines, bends, fittings, valves, girth welds, field joints, directional drilling, buried tanks and vessels, offshore risers, piles, waste water pipes, sulphur hoppers and chutes, and other steel structures in need of protection at operational temperatures up to 95°C [203°F]. **This Application Guide is specific to 4:1 ratio, 940ml spray cartirdges used with Sulzer Mixpac-Mixcoat equipment**.

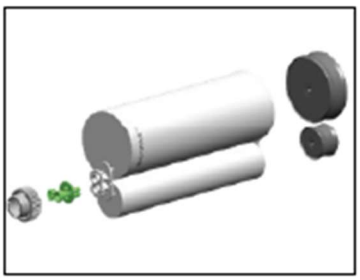
PRODUCT DETAILS

Colour	Grey and other colours MTO.
Finish	Gloss
Primer	No primer necessary on FBE, liquid epoxy and direct to metal
Dry Film Thickness	25 – 40 mils (625 - 1000 µm) for most applications in multicoat application For higher dry film thickness consult Seal For Life representative.
Solids by Volume	100 %
Theoretical Coverage Rate	64.2 ft^2 per Gallon at 25 mils (625 µm) thickness (DFT) 40.1 ft^2 per Gallon at 40 mils (500 µm) thickness (DFT)
Severe Exposures	Maximum service temperature 95 ˚ C (204 ˚F)

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.
Mixing Ratio	4:1 (A to B in volume)
Packaging	940 ml (4:1 split cartridge)

Spray Equipment and Cartridge Details

Sulzer MixPac MixCoat Spray Equipment	Cartridges & Piston Insertion Device: 940mL, 4:1 ratio
	Application Dispenser: Mixcoat DPS pneumatic spray dispenser
	Static mixers: MFQ, medium or high flow
	Number of elements: 24



Dispensing Settings	Compressed air requirements: - Flow rate: minimum 14cfm - Pressure: minimum 90psi, maximum 120psi Fluid control dial: set to maximum (Setting 8) Atomizing air control: set to maximum (Setting 5)
Cartridge Pre-Heating and Agitation	Heating method options: - Fixed temperature warming box, condition for 24 hours at 140˚F (60˚C) or - 700-1250 watt rotating Microwave oven set on high power – times may vary. Initially heat for 2 minutes turning after the first minute. Measure the cartridge temperature with an IR gun at multiple locations on the cartridge. The base side target is 130-140˚F (55-60˚C) Minimum temperature: 125˚F (50˚C) Maximum temperature: 140˚F (60˚C) After heating, manually shake the cartridge for 2-3 minutes to ensure even distribution of heated material.

	Note: Heating of POWERCRETE R-95 cartridge material by microwave oven has the risk of overheat, distortion/warpage of cartridge parts, damage individual components during an excessive heating process, etc. Short heating periods with temperature checks and agitation in between is the best approach. The applicator assumes all risks associated with that type of heating method.
Cartridge Agitation	After pre-heating step, it is recommended to agitate the cartridges in pneumatic shaker to ensure a uniform distribution of pigments and fillers. Secure the cartridge in the shaker and agitate for 2 –3 minutes or until a uniform colour is observed.
Equipment Setup	a. Install static mixer: - Hold the cartridge upright and remove the end cap - Fit the static mixer tip onto the outlet and twist clockwise to lock in place b. Slide the cartridge into the dispenser c. Connect to air supply d. Adjust air pressure, the fluid control dial and atomizing air control as noted in “2. Dispenser settings” above
Safety	Read the R-95 Product Data Sheet and Safety Data Sheet (SDS) and follow any cautionary statements. Personnel who will be exposed to R-95 product, must wear appropriate personal protection equipment (PPE). Read and follow instructions on the Sulzer equipment operation and safety literature. Follow local and national safety guidelines.

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.
Solvent Cleaning	If necessary, use Acetone, MEK or IPA and ensure that the surface is dry and clean.
Preheating Option	The surface must be at least 5˚F (3˚C) above dew point in order to prevent surface moisture. Preheating may be useful to eliminate moisture prior to abrasive blasting and accelerate curing. Preheat the area to be coated to approximately 122˚F (50˚C) prior to blasting. To accelerate curing, preheat the area to a maximum of 176˚F (80˚C).

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 mils (75 to 100 µm) when measure by ASTM D 4417 Method C (Replica Tape).
FBE	Abrasive blast surface following procedures of SSPC SP 7 (ISO Sa 1) removing all the gloss from the surface and obtaining a **dense angular** profile. The anchor profile can be evaluated following procedures of ASTM D 4417 Method C (Replica Tape) obtaining a minimum of 2.0 mils (50 µm).

APPLICATION EQUIPMENT GUIDELINES

Equipment Setup	Load and set up spray equipment as described in the Spray Equipment and Cartridge Details section above.
Masking & Adjacent Surface Protection	Mask off areas adjacent to the section to be coated and protect adjacent surfaces against overspray.
Spraying	To achieve on-ratio mixing, point the cartridge up and slowly dispense material into the static mixer by repeated short/brief triggering until mixer tube is full. Point spray nozzle into a slop bucket and dispense at least the first 6-8 inches (15-20 cm) of unmixed material into the bucket (2.0-3.5 fl oz). Repeat this process at the beginning of each new or partially-used cartridge. Set the Cartridge temperature for both components at 130 – 150 ◦F (55 – 65 ◦C). It is very important that the fluid delivery speed be set to no less than medium-fast setting. Too low of a fluid pressure setting and/or too cool cartridge material will result in improper/inadequate mixing of A and B components, poor to unacceptable spray property, and inconsistent polymerization. Using a large piece of cardboard or plastic, test spray to ensure flow and coverage is as desired. Continue immediately to the area to be coated and spray in smooth even strokes to achieve consistent coating thickness. Perform thickness checks as required.
Spray Start and Finish	Always start and finish spraying away from the surface to be coated to avoid small amounts of off ratio material being applied.
Un Used Material	If the complete cartridge has not been fully used, remove the mixer nozzle immediately and replace the end cap to avoid plugging the tip. A new nozzle will be required for the next application.
Disposal	Dispose of empty used cartridges according to local regulations.

APPLICATION CONDITIONS

	Product	Surface	Ambient	Humidity
Optimum	150˚F* (65˚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)	176˚F (80˚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 93˚C (200˚F). Prior and during the application, the temperature of the substrate must be at least 3˚C above the dew point.
*This temperature does not refer to hand application.

Curing Schedule

Gel Time	31 minutes at 25 ˚C (77 ˚F)
Dry to Touch	1.3 hours at 25 ˚C (77 ˚F)
65 Shore D Hardness	2.2 hour at 25 ˚C (77 ˚F) – Ready for Holiday Testing
75 Shore D Hardness	5.0 hours at 25 ˚C (77 ˚F) – Full Cure ready for handle
Recoat Interval	34 – 60 minutes at 21 ◦C (70 ◦F)
Note	Cure time is based on 40 mils (1000micron) DFT. Recoat interval at 21˚C (70˚F) is 26 – 83 minutes and 7-10 minutes at 65˚C (150˚F). Consult POWERCRETE® R-95 Gel, Re-Coat and Curing Time Chart for more specific information. **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
50 ˚F (10 ˚C)	Material is too viscous to handle					
60 ˚F (16 ˚C)	75 min	70 min	1.6 hrs	2.25 hrs	20 hrs	24 hrs
65 ˚F (18 ˚C)	44 min	40 min	1.3 hrs	2.15 hrs	5 hrs	9.2 hrs
70 ˚F (21 ˚C)	39 min	34 min	1 hr	1.6 hrs	4 hrs	8 hrs
80 ˚F (27 ˚C)	31 min	29 min	45 min	1.2 hrs	2.2 hrs	5 hrs
90 ˚F (32 ˚C)	21 min	17 min	35 min	56 min	1.5 hrs	2 hrs
100˚F (38 ˚C)	19 min	16 min	28 min	40 min	1 hr	1.1 hrs
110˚F (43 ˚C)	14 min	12 min	21 min	30 min	50 min	1 hr

This information refers to spray application, 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. (For more information consult the Cure-Gel Time chart for Powercrete® R-95)

INSPECTION AND REPAIR

Pipe Handling
Transport and stacking of pipe is possible after full cure of the coating and completion of Holiday testing according to NACE SP0188. This time may be reduced by increasing the curing temperature. Consult the Powercrete® product data sheet for specific information.

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 other 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 Seal For Life for specific information.

Repair	Pinholes/Holidays must be located and repaired with Powercrete® R-95, or approved material. Consult Powercrete® for specific information. Retest the repaired area. Consult the POWERCRETE® R-95 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	18-30°C (65-85˚F)
Storage	Indoors and keep dry
	Powercrete® R-95
Shipping Weight	Product dimensions and contents:
	Cartridge 940 ml
	Cartridge 400 ml
Flash Point	Mixed Material >446˚F (230 ˚C) mixed product
	Part A > 199˚F (93˚C)
	Part B > 199˚F (93˚C)

ADDITIONAL 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