

Concrete Relining and Repair Resin

MIR-970

The MIR-970 structural resin system is specifically designed for concrete relining and rehabilitation where chemical resistance, hydrolytic stability and / or long term structural performance is required. The system is simple, practical, cost-effective, can be applied rapidly with successive layers to restore concrete assets and is serviceable within 24 hours.

The materials are brushed or sprayed with industrial spray equipment up to 3mm in a single layer. Successive layers can be applied after each layer has gelled (within 15-20 minutes).

About these Products

- ◆ Include micro-fiber, glass flake and nanoparticle reinforcements that chemically bond with the resin.
- ◆ Successive layers increase the structural strength of the laminate.
- ◆ High impact, excellent abrasion resistance, high compressive strength.
- ◆ Based on an epoxy vinyl ester resin.
- ◆ Vinyl ester resins are renowned for their chemical resistance. MIR-970 is resistant to most acids and alkalis and selected organic solvents.
- ◆ Pigmented coatings deliver cosmetic finishes that overcome the need to paint restored surfaces.

Hydrolytic Stability / Water Penetration

To vastly improve the chemical resistance and hydrolytic stability of the laminate, glass flakes in the resin create a tortuous path within the resin matrix, which neither water nor oxygen can penetrate. (There are no inter-laminar boundaries within the coatings because each layer is chemically bonded to the layer below and the primer is chemically bonded to the concrete). Epoxy vinyl ester resins also have a constant, low MVTR (Moisture Vapor Transfer Rate) that does not increase with time. (Once cured, they are not affected by immersion in water because the water labile sites in the molecule are sterically hindered.)

MIR-970

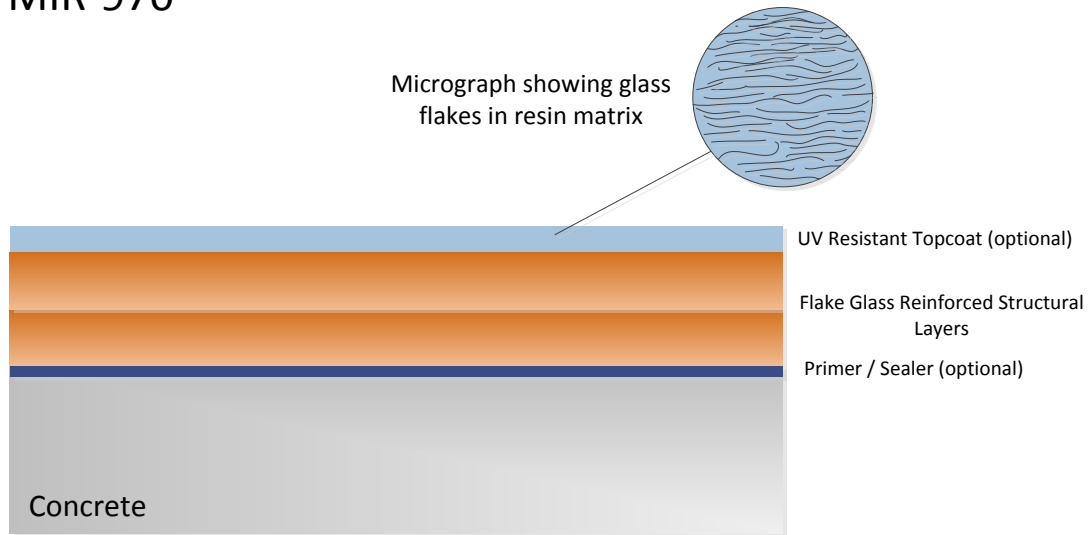


Figure 1: MIR-970 Undercoat, optional UV protected Top Coat and glass flake micrograph

Specifications

MIR-960 Wet Concrete Primer – Flexible resin primer suitable for sealing wet concrete.

MIR-970 Undercoat – Includes micro-fibers, nanoparticles and glass flakes to guarantee hydrolytic stability.

MIR-970 UV Stabilized Top Coat – Can be pigmented (available in most colors).

Features & Benefits

Features:

- Dry surfaces do not require a primer
- MIR-970 can be brushed, rolled or sprayed
- Suitable for fine and course substrates
- Tenacious bond with concrete
- Structural resin system
- Fast setting thermosetting material
- Resin matrix is elastic
- No leaching from or absorption into the resin matrix
- Can be UV stabilized if required
- Paintable / can also be pigmented
- Chemical resistance:
 - acids
 - caustic materials / alkalis
 - fats

Benefits:

- Simple, easy to use system
- Versatile material can be efficiently applied
- Improved bonding
- The material is stronger than the substrate
- Can replace or rehabilitate damaged substrates
- Structurally sound within 24 hours
- Surfaces are crack resistant
- Absolute containment prevents concrete degradation
- Suitable outdoors
- Aesthetically pleasing
- Ideal for manufacturing and production environments

Bonds to damp concrete surfaces (for wet surfaces contact Mirteq directly for appropriate resin systems)

Practical application

Excellent impact and abrasion resistance

Durability

Crack Repair

Use MIR-980 to repair all cracks prior to applying primer or sealer. MIR-980 is a low shrink, micro-fiber reinforced material that is available in different viscosities to deeply penetrate and tenaciously bond with fine or coarse concrete substrates.

Application

Surface Preparation:

- ◆ All organic matter, weak surfaces and poorly consolidated material must be removed. This is ideally carried out by water blasting • 3,000-4,000 PSI for new concrete. Surface should have some structural capacity (in excess of 20 MPa).
- ◆ Repair all cracks using MIR-980 Concrete Crack Repair.
- ◆ On wet concrete surfaces use MIR-960 Wet Concrete Primer. Allow it to dry before applying MIR-970.

Coating Application:

- ◆ Apply MIR-970 resins only when temperatures are between 68°F - 104°F and when it is not raining.
- ◆ Ensure material is stirred and not aerated as that affects the quality of the bond and the surface finish.
- ◆ Apply MIR-970 Undercoat, 2 pack resin system. Build in 1/8" layers as required for additional strengthening and reinforcement (ensure each successive layer has gelled before applying new coatings). So that the material does not overheat while curing only build up the laminate 1/2" in a continuous build before allowing it to cure for 4 hours, then repeat as required.
- ◆ Top Coat and second coats must be applied within 24 hours.
- ◆ Apply final layer of MIR-970 Top Coat. This layer includes glass micro-flakes to guarantee the hydrolytic stability. If being used in an area that is exposed to direct sunlight the top coat should also be UV stabilized. A minimum 3mm layer is required to ensure the laminate is protected.
- ◆ Can be painted, rolled or sprayed.
- ◆ Consult your spray unit supplier (maximum particle size is > 1mm).
- ◆ Enclosed areas should be well vented.

Areas of Application

Ideal for:

- Water treatment plants
- Concrete sewers and manholes
- Lining of bunds, pits, drains and effluent channels
- Concrete tanks
- Floor parking decks
- Bridge coatings
- Water parks / Theme parks
- Landscape and water containment
- Aquariums
- Joint fill
- Roof coatings
- Architectural sealing (e.g. high-rise concrete roofs)
- Mining, Chemical, Petroleum & Pharmaceutical facilities

Equipment Required

- ◆ Spray system / brushes / rollers.
- ◆ Ventilation extractor if applying resin in a confined space.
- ◆ Acetone and Dimethyl Phthalate for cleaning the equipment.

Installation Warranty

As with any coating system, the outcome is dependent on the condition of the concrete, quality of the surface preparation and quality of the remediation. Mirteq therefore warrants individual projects on a case by case basis.

Limitations

MIR-970 is not suitable for use with hydrocarbons and organic solvents.

Packaging

MIR-970 is available in 5 gallon and 555 gallon containers.

Appendix A: Physical Properties

<u>Properties at 77°F</u>	<u>Method</u>	<u>Units</u>	<u>MIR-970 With Laminate</u>	<u>MIR-970 Sprayed</u>
Flexural Strength	ASTM D790	MPa	280	135
Flexural Modulus	ASTM D790	GPa	14	6
Flexural Elongation @ Break	ASTM D790	%	4.5	4.5
Tensile Strength	ASTM D638	MPa	150	67
Tensile Modulus	ASTM D638	GPa	14	6.2
Density	ASTM D792	g/ml	1.6	1.3
Viscosity	ASTM D2196	cP	6,000	6,000
Thix Index	ASTM D2196	n/a	5.6	5.6
Barcol Hardness, Ultimate	ASTM D2583	GYZJ-935 scale	81	81
HDT	ASTM D648	°F	221	221
Glass Content		%	50	12.5
Styrene Content		%	45	45

Other

Appearance - Undercoat	Purple, opaque
- Topcoat	Grey
Specific gravity	Resin 1.25, Hardener 1.0, Mixed 1.24
Working time @ 70°F	20 minutes
Gel time @ 70°F	30 minutes
Tack free time	2 hours
Cure schedule @70°F:	4 hour cure – BARCOL 55
	8 hour cure – BARCOL 65
	24 hour cure – BARCOL 80
	7 day cure – BARCOL 81

Disclaimer

The technical data, recommendations and other information contained in this data sheet are provided in good faith and represent the best of our knowledge and experience at the time of printing. It is our users' responsibility to ensure that any of our products are used and handled correctly and in accordance with our instructions and recommendations, and only for the uses the product is intended. We also reserve the right to update any technical or user information without prior notice to users as a result of its ongoing research and development.

Country specific recommendations, depending on local standards, codes of practice, building regulations or industry guidelines, may effect specific installation recommendations.

The supply of our products and services is also subject to certain terms, warranties and exclusions, which may have already been disclosed to you in prior dealings or are otherwise available to you on request. You should make yourself familiar with them.

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