

TECHNICAL INFORMATION

LAMINATE LINING CONCRETE SURFACES WITH DERAKANE* EPOXY VINYL ESTER RESINS

These procedures have been developed for our customers to use as a guideline in the development of their fiberglass laminate lining specifications.

A) General guidelines

1. Concrete to be lined shall be sound with proper foundation to eliminate flexing and shifting under service conditions.
2. All angles must have a minimum of 15 mm radius.
3. All preparation and lining shall be done by experienced workmen.

B) Surface preparation

1. Concrete shall be sandblasted to expose a rough concrete surface free of dirt and grease.
2. If the service temperature is to be in excess of 80°C an anchor pattern must be put in the concrete. A pattern of 50 mm deep by 50 mm diameter holes on two foot centers has proven successful.
3. Any irregularities, cracks, and anchor holes must be filled with any irregularities, cracks, and anchor holes must be filled with a catalyzed resin grout formulation.

C) Primer

1. Apply a primer coat (0.05-0.07 mm) of highly catalyzed DERAKANE 8084 resin completely covering the area to be laminated.
2. The primer shall be allowed to cure until dry to the touch before fiberglass laminating may be started.
3. The primed surface must be inspected before the laminate is applied.

D) Test Patch Procedure

1. Apply two layers of 150mm x 200mm, 40g chopped strand mat, to the prepared test area surface with appropriate resin, place a piece of Mylar film under one end to prevent bonding, and allow the patch to cure.



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2. Pry the test patch off. If the test patch pulls concrete from the entire prepared test area surface, then the surface preparation is satisfactory. Laminating can proceed with the appropriate surface preparation.
3. If the test patch area pulls little or no concrete, the surface of the concrete must be cleaned until it is free of dirt, grease, and other foreign material including sandblasting until clean aggregate is exposed.

E) Laminate procedure

1. All inside corners shall be filled to a minimum 15mm radius with resin putty. All pits and holes must be filled to obtain a level surface.
2. The laminate shall consist of two layers of chopped strand mat, one or two layers of surfacing veil, and one brush coat of DERAKANE MOMENTUM 411-350, DERAKANE 441-400, DERAKANE MOMENTUM 470-300, DERAKANE 510 series resin.
3. Joint (overlaps) on each layer of glass mat and surfacing veil shall be staggered so that no two joints line up.
4. The full liner thickness shall be applied to the vessel wall in one lay-up.
5. Overlaps on all joints shall be a minimum of 50 mm. All chopped strand must be covered with two layers of surfacing veil.
6. All bubbles larger than 1.5 mm diameter and any other defects shall be removed by grinding, and the area covered with 2 layers of chopped strand mat and one or two surfacing veils and resin with a minimum 50mm overlap on surrounding laminate to obtain original thickness.
7. A glossy resin coat shall be applied after the final surfacing veil. This can be applied after the laminate has cured (maximum of 72 hours at 20°C). The gel time for the resin coat shall be approximately 10 minutes.
8. Minimum thickness of laminate shall be 3 mm.
9. Two layers of surfacing veil and a clear coat of catalyzed resin shall be applied on any areas of the laminate that have been ground or sanded due to cleanup operations.
10. NOTE: If any layer is allowed to cure overnight, it must be wiped with clean rags to remove any contaminants immediately before the next layer is applied. Wiping a primary surface with a rag wetted with a solvent, such as styrene or acetone, is often the cause of poor secondary bond formation. A solvent wetting rag may contain contaminants that will act as mold release agents. If wiping with a clean rag does not remove the contaminants, then they must be removed by grinding, sandblasting, etc. Since the temperature of the resin and the type of resin in a laminate effects the rate of cure, it is a good practice to apply a TEST PATCH to check the ability of the laminate's surface to adhere to a secondary layer. The more complete the cure of a laminate, the less adhesion characteristic the laminate has without surface preparation.



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Laminate quality

1. Appearance: The fabrication shall be free from visual defects such as foreign inclusion, dry spots, air bubbles, pinholes, and delaminations.

F) Inspection

1. The lining must be inspected and approved by an approved inspector in order for the job to be accepted.
2. Poor workmanship is reason for rejection. Flaws which cannot be repaired, porosity, voids, cracks, crazing, delamination, blisters, etc., are considered to be reason for rejection.
3. Inspection and approval by the owner's representative shall not relieve the vendor from compliance with these specifications.
4. In isolated spots, such as overlapping layers, laminate thickness may be above nominal in any one place. Thickness of laminate at intersecting applications may be twice the thickness of the primary laminate.

G) Testing

1. Hardness tests shall be made on the exposed surfaces and will meet a minimum Barcol Hardness value with a #934 tester.
2. Barcol Hardness tests shall be made by taking twelve readings, rejecting the high and low readings, and averaging the remaining ten.

LAMINATE	MINIMUM HARDNESS
DERAKANEMOMENTUM 411-350 resin	30
DERAKANE 441-400 resin	30
DERKANE 510 series resin	30
DERAKANE MOMENTUM 470-300 resin	40

H) Safety

These suggested procedures do not include considerations necessary for safety. They should be put into practice only after a complete linings' safety procedure has been developed and approved by both the lining company and the manufacturing company in whose plant the work will be performed.

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