REMR Material Data Sheet CM-PC-1.30

CONCRETE PATCHING MATERIAL: WearGuard-Fine Abrasion-Resistant Compound XMH-8507

1. NAME

WearGuard-Fine Abrasion-Resistant Compound XMH-8507

2. MANUFACTURER

CIBA-GEIGY Corporation
31601 Research Park Drive
Madison Heights, MI 48071
Telephone: 800-672-1027

3. DESCRIPTION

WearGuard-Fine is a two-part abrasion-resistant compound used to protect new or worn surfaces that are subjected to sliding abrasion. Fine ceramic beads that range up to 0.025 in. in diameter, give WearGuard-Fine its good abrasion resistance. It is easy to mix, apply, and clean up, and it cures fast.

4. USES & LIMITATIONS

Uses: WearGuard-Fine is typically used to protect surfaces that interface with abrasives. It is particularly suited to slurry applications that involve both an abrasive and corrosive environment. It conforms easily to any shape and cures to form a tough, abrasion- and corrosion-resistant barrier.

Typical concrete repair uses include stilling basins, tunnels, conduits, and other hydraulic structures to help resist abrasion and/or cavitation. Typical metal uses include rebuilding pumps, shafts, and valve seats, wear linings in conduits and pipes, fans, blowers, vibrating screen frames, chutes and tanks.

Limitations: WearGuard Epoxy is temperature sensitive. For cold weather application (when material and ambient temperatures are 50 °F (10 °C) or lower), follow these precautions:

a. Preheat the resin to 90 to 100°F (32 to 38°C) by suspending the can containing the resin in hot water. (Note: Do not preheat the hardener.)

b. Preheat the substrate to be lined or repaired to 70 to 100° F (21 to 38° C).

c. After application, post cure at 150 °F (66 °C) for 4 hr.

5. MANUFACTURER'S TECHNICAL DATA

Property	Test Method	Value
Compressive strength	ASTM D 695	7,000 psi
Cured density		2.1
Hardness (Shore D)		85
Adhesive tensile strength	Cold-rolled steel	2,000 psi
Flexural strength	ASTM D 790	3,600 psi
Tensile strength	ASTM D 638	2,400

Property	Test Method	Value
Gardener impact		>60 ft lb/in.
Mixed sag resistance @ 77 °F (25 °C)		3/4-in.
Pot life @ 77 °F 25 °C		50 min
Color:		
Resin		White
Hardener		Black
Mixed		Dark gray
Resin/Hardener ratio: (by volume)		100/100
Coverage (per case):		15 sq ft @ 1/4" thickness

6. MANUFACTURER'S GUIDANCE FOR APPLICATION

Mixing and curing: Prior to being mixed, the resin and hardener should be stored at room temperature for 24 hr. On a clean surface, mix equal amounts of resin and hardener until a uniform gray color with no white or black streaks is achieved.

Components lined with WearGuard-Fine can usually be handled after 4 hr. However, before being put into service under load, they should be allowed to cure 24 hr at room temperature (77 °F).

Alternate procedure: Post-curing by application of heat allows components to be put into service within 4 hr. Heat temperature for post-curing should not exceed 150 °F. If an open flame is used, make sure not to burn the surface.

For cold weather application: When materials and ambient temperatures are 50 °F or lower, the following additional precautions should be followed:

a. Preheat the resin to 90 to 100 °F by suspending the can containing the resin in hot water.

Note: Do not preheat the hardener.

b. Preheat the substrate to be lined to 70 to 100 °F.

c. After application, post-cure @ 150 °F for 4 hr.

Application instructions: Highly filled epoxy compounds require a technique called "wetting in" to achieve maximum bond strengths. "Wetting in" is accomplished by applying a small amount of product in a thin film to ensure the substrate is covered by resin. Use of a 2" × 5" mason's trowel, or a triangular mason's trowel is recommended. After "wetting in," a thick layer of WearGuard-Fine may be applied and spread out. Care should be taken to completely fill all voids and cavities (small holes, or pitted areas can more easily be filled with WearCoat).

Alternate procedure: Gently preheating the substrate prior to applying WearGuard-Fine liquefies enough resin to ensure proper adhesion.

If the application thickness is to exceed 1/4", it is better to build up to the desired thickness in 1/4" layers. Subsequent layers should be applied while the base layer is still tacky (prior to 4 hr @ 77 °F). Build-up in this fashion will give the best density and compaction of beads for the maximum wear resistance. The minimum recommended thickness of WearGuard-Fine is 1/8".

After the desired thickness and contour is built up, dipping a trowel or rubber-gloved hand in water and working the surface allows a smooth finish to be attained, if desired.

Alternate procedure: Coating the surface with WearCoat gives a smooth, glossy finish and ensures no pinholes. Coating should be done within 8 hr after application of WearGuard-Fine.

After application, all tools, hands, and clothing can be cleaned with soap and water before WearGuard-Fine has cured.

The extreme hardness of WearGuard-Fine makes cutting or grinding very difficult, so make sure any tolerances are held before curing. In areas where tolerances are critical, it is better to under build and then use Ceramic-Filled Paste to bring up to tolerance. With proper procedures, Ceramic-Filled Paste may be machined (see CFP/AA 3.88 manufacturer's technical bulletin for details).

Vertical and overhead application: With proper "wetting in," and an application thickness less than 1/2", no further preparation is usually necessary. To eliminate or aid in "wetting in," WearCoat may be applied.

For overhead thicknesses greater than 1/2", build up in 1/4" layers, allowing each layer to become tack-free before applying another layer.

Handling/Safety precautions: Warning! WearGuard-Fine causes irritation. It may cause allergic skin reaction. Avoid contact with eyes or skin. Avoid breathing vapor. Use with good ventilation. Wash after handling. Store in cool, dry area in closed containers. Consult manufacturer's Material Safety Data Sheet for further information.

First Aid: In case of contact with eyes; immediately flush with water for at least 15 min; with skin; promptly wash thoroughly with mild soap and water. If inhaled, remove to fresh air. Give oxygen if breathing is difficult. If ingested and conscious, give plenty of water. Call a physician.

Important: CIBA-GEIGY makes no warranty, whether expressed or implied, including warranties of merchantability or of fitness for a particular purpose. Under no circumstances shall CIBA-GEIGY be liable for incidental, consequential or other damages, alleged negligence, breach of warranty, strict liability, tort, contract, or any other theory, arising out of the use or handling of this product.

7. CORPS OF ENGINEERS' EVALUATION

Mixture design data: WES used WearGuard-Fine XMH-8507 as a repair material for cavitation resistance testing. It was used as received and was mixed 1 part resin to 1 part hardener by volume.

Technical data: A Venturi-type cavitation facility at WES was used to evaluate cavitation resistance. This facility operates at a velocity of about 120 ft/sec through the Venturi and causes a moderate to moderate-severe cavitation. The surface area of the test specimen exposed to cavitation was 12.4 by 11.2 cm. Results of these tests are compared to those for conventional concrete in Figure 1.

Compressive strength ASTM D 695	6,970 psi
Density (cured)	2.20

8. CORPS OF ENGINEERS' GUIDANCE FOR APPLICATION

Use ACI and manufacturer's recommendation for surface preparation of concrete. Manufacturer's Application Procedures and ACI are recommended for use of WearGuard-Fine XMH-8507.

9. ENVIRONMENTAL CONSIDERATIONS

Reasonable caution should guide the preparation, repair, and cleanup phases of activities involving potentially hazardous and toxic chemical substances. Manufacturer's recommendations to protect occupational health and environmental quality should be carefully followed. Material safety data sheets must be obtained from the manufacturers of such materials. In cases where the effects of a chemical substance on occupational health or environmental quality are unknown, chemical substances should be treated as potentially hazardous toxic materials.

10. AVAILABILITY AND COST

Availability: The material is available from local distributors throughout the U.S. Call the main office for the latest list of distributors.

Packaging: WearGuard-Fine is available in a case of 6 kits. Each kit contains 1 qt resin and 1 qt hardener.

Cost: Price per case is $565.

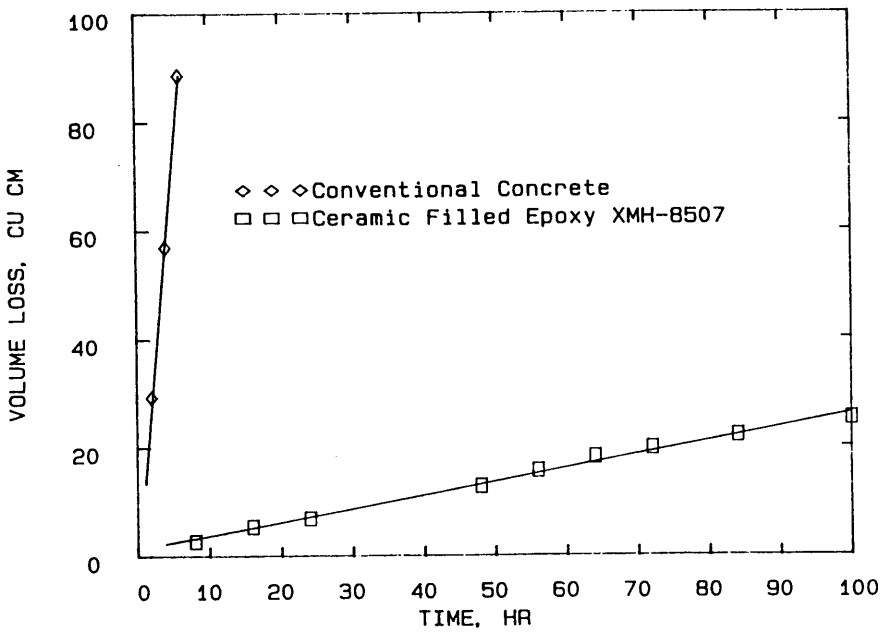

Figure 1. Cavitation test results.