REMR Material Data Sheet CM-PC-1.29

Concrete Patching Material: WearGuard Abrasion-Resistant Compound XMH-8506

1. NAME

WearGuard Abrasion-Resistant Compound XMH-8506

2. MANUFACTURER

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

3. DESCRIPTION

WearGuard abrasion-resistant compound is a two-part system designed for severe abrasion and impact areas. Ceramic beads to size 0.095-in. are used to give the system excellent abrasive properties. It is particularly suited to slurry applications which involve both abrasive and corrosive environment. It is trowellable, nonsag with excellent building properties for use on worn areas or as a protective lining.

4. USES & LIMITATIONS

Uses: WearGuard is used to repair concrete in stilling basins, tunnels, conduits, and other hydraulic structures and to help resist abrasion and/or cavitation. It is used to protect surfaces that interface with abrasives. Recommended uses include lining slurry pumps, cyclones, centrifuges, pipe elbows and transitions, manifolds, chutes and dryers.

Limitations: WearGuard epoxy is temperature sensitive. For cold weather application (when material and ambient temperatures are 10 °C (50 °F) or lower), the following precautions should be followed:

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

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

c. After application, post-cure at 66 °C (150 °F) for 4 hr. Minimum thickness of application is 1/4 in. (6.4 mm).

5. MANUFACTURER'S TECHNICAL DATA

Property	Test Method	Value
Compressive strength	ASTM D 695	6,900 psi
Cured density		2.4 g/cc
Hardness (Shore D)	ASTM D 2240	85
Adhesive Tensile Shear Cold-Rolled Steel		2,000 psi
Gardener impact		>60 ft lb/in.
Izod impact		2 ft lb/in.

Property	Test Method	Value
Flexural strength	ASTM D-790	3,500 psi
Tensile strength	ASTM D-638	2,000 psi
Mixed sag resistance @ 25 °F (77 °F)		Pass 3/4 in.
Pot life, 1-lb mass at 25 °C (77 °F)		50 min
Color:		
Resin		White
Hardener		Black
Mixed		Dark gray

Storage: Stores in a cool, dry place.

Resin/Hardener ratio, (by volume): 100/100

Coverage (per case): 15 sq ft @ 1/4" thickness

7. MANUFACTURER'S GUIDANCE FOR APPLICATION

Mixing and curing: Prior to mixing, the resin and hardener should be stored at room temperature for 24 hr.

On a clean surface mix equal amounts of resin and hardener. Mix until a uniform gray color is achieved with no white or black streaks.

Components lined with WearGuard can usually be handled after 4 hr.

Allow to cure 24 hr at room temperature (77 °F) before putting into service under load.

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:

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

Note: Do not preheat the hardener.

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

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" rectangular mason's trowel or a triangular mason's trowel is recommended. After "wetting in" a thick layer of WearGuard 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 will liquefy 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 gives the best density and compaction of beads for the maximum wear resistance.

The minimum recommended thickness for WearGuard is 1/4".

After the desired thickness and contour is built up, dip a trowel or rubber-gloved hand in water and work the surface to attain a smooth finish, 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.

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

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

For vertical and overhead applications: 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 causes irritation and 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, move 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 from the use or handling of this product.

7. CORPS OF ENGINEERS' EVALUATION

Mixture design data: WES used WearGuard XMH-8506 as a repair material for cavitation resistance testing as received. The material 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	8,170 psi
Density (cured)	2.42 g/cc

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 XMH-8506.

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.

Packaging: WearGuard is available by the case. Each case holds 6 kits containing 1 quart resin and 1 quart hardener each.

Cost: Price per case is about $535.

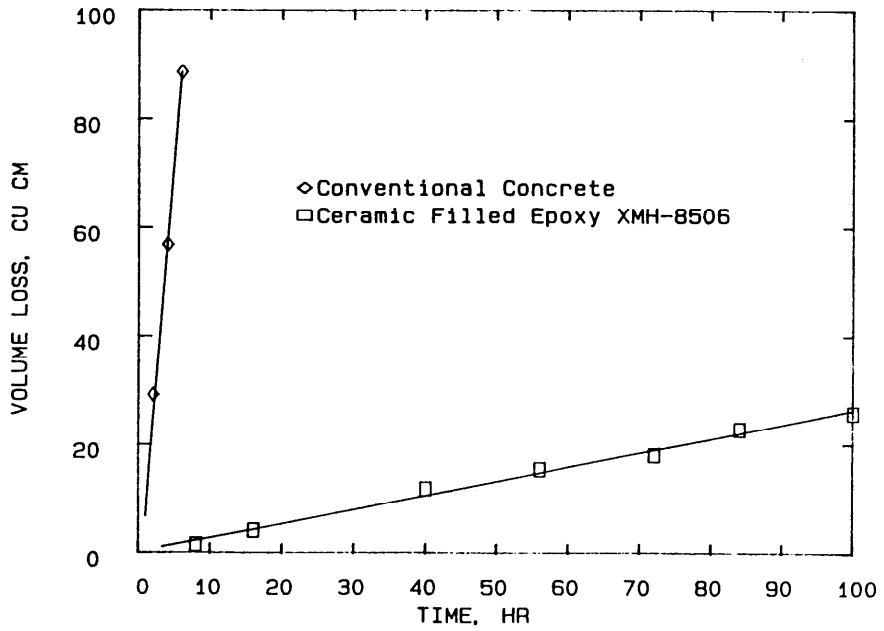

Figure 1. Cavitation test results.