



# ARMOR-HARD

## Early Set, Structural Epoxy Mortar Kit for Repairing Concrete Floors

### TECHNICAL DATA

### AH-1

#### 1. Product Name **ARMOR-HARD**

#### 2. Manufacturer **METZGER/MCGUIRE**

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#### 3. Product Description

##### Composition

**Armor-Hard** is a two-component, 100% solids epoxy system with early set properties. **Armor-Hard** was developed specifically for the repair of industrial concrete floors subject to hard-wheeled traffic. **Armor-Hard's** primary use is in combination with sand aggregate to create a trowelable mortar. It can also be used in its liquid form for certain repairs. Color of the blended epoxy is translucent/clear, but mortar color will be the color of the aggregate used.

##### Typical Use

As a mortar;

- Spall repair/rebuilding of joint shoulders
- As a topping for delaminated slabs
- Fill in holes, gouges, ruts, popouts
- Repair broken slab panel corners

As a liquid;

- Fill wider random cracks
- Bond concrete to concrete

#### 4. Limitations

- Should not be used in joints or cracks that move
- For deep repairs install in maximum 1" (25 mm) deep layers to avoid shrinkage due to exotherm
- Not for use as a surface coating
- Should be installed at 50°F (10°C) or higher

#### 5. Advantages

- Early set allows for:
  - Pedestrian/construction traffic in 3-4 hours
  - Grinding/sanding in 3-4 hours
  - Hard-wheeled traffic in 8 hours or less (at 70°F)
- Requires no separate primer
- USDA/FDA acceptable
- Superior impact, abrasion and chemical resistance
- Very low odor

#### TECHNICAL INFORMATION

The following properties are for the installed mortar using Metzger/McGuire's custom blended aggregate. Results may vary when using other aggregates.

Compressive Strength .....	10,500 psi
Tensile Strength .....	1,400 psi
Flexural Strength .....	3,700 psi
Adhesive Strength .....	Concrete breaks
Shore Hardness (D) .....	D86+
Solids Content .....	100%
Working Time (as mortar).....	30-40 mins. @ 70°F
Initial Set.....	3-4 hrs. @ 70°F
Grindable Time.....	3-5 hrs. @ 70°F
Foot Traffic Ready .....	3-5 hrs. @ 70°F
Heavy-Duty Traffic .....	4-8 hrs. @ 70°F
Color, Mixed, Of Liquid.....	Translucent/clear*
Mix Ratio, By Volume .....	4A:1B

*\*Mortar color will be aggregate color*

#### 6. Packaging

Standard unit size is one (1) U.S. gallon composed of two cans of pre-measured epoxy liquid (A & B=1 gallon). **Armor-Hard** is also available as part of a pre-measured liquid and aggregate concrete floor repair kit called **Armor-Hard KIT** (see **Armor-Hard KIT** Technical Data Sheet AHK-1 for more information).

#### 7. Color

Standard liquid color is a translucent/clear. If blended with aggregate, mortar color will become aggregate color. The following properties are for the installed mortar using Metzger/McGuire's custom blended aggregate. Results may vary when using other aggregates.

#### 8. CHEMICAL RESISTANCE

##### Excellent

Motor Oil  
Gasoline  
Jet Fuel  
Methanol  
10% Lactic Acid  
10% Nitric Acid  
30% Citric Acid  
10% Acetic Acid  
50% Sulfuric Acid  
75% Phosphoric Acid  
50% Sodium Hydroxide

##### Good

1,1,1- Trichloroethane  
Toluene  
70% Sulfuric Acid  
36% Hydrochloric Acid  
30% Nitric Acid  
  
Not Recommended  
MEK  
50% Acetic Acid  
50% Nitric Acid  
Methylene Chloride



Customer Service - (800) 223-MM80 - Technical Assistance

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## 9. Availability

**Armor-Hard** is available through quality construction supply distributors in most major U.S. cities and through distributors/representatives in certain foreign markets and through our New Hampshire headquarters. Source listings can be found at [www.metzgermcguire.com](http://www.metzgermcguire.com) or via e-mail ([info@metzgermcguire.com](mailto:info@metzgermcguire.com)) or phone (800-223-MM80).

## 10. Installation Instructions

### Surface Preparation

All surfaces must be clean, dry, structurally sound and free of grease, oil, coatings, sealers, paint, etc. Surface preparation may be accomplished by grinding, sawing, chipping, sandblasting, etc. Prevent featheredging by creating a vertical edge (1/2" minimum, 3/4" preferred) at outer point of defect to be repaired. See *Metzger/McGuire's Guide to Basic Floor Repair* and related information on repair procedures for recommendations. New concrete should have minimum cure of 30 days.

### Mixing

(Read product container labels and SDS before using)

Caution—Due to 4:1 ratio, the entire contents of both epoxy parts should be used. If using less than full unit, "A" and "B" ratio must be measured precisely by volumetric comparison.

Ambient temperature should be at least 50°F (10°C). Combine parts "A" and "B" in a plastic pail and mix for 2-3 minutes using a Jiffy-type mixer and a variable speed drill. Keep drill speed below 800 rpm to avoid air entrapment. If using as a liquid, dispense promptly. If using as a mortar, application of mixed liquid as a primer coat (brush) will enhance mortar adhesion.

Mortar mixing is best achieved using a 1/2" heavy-duty drill with a mortar mixing paddle or a rotating pail mixer. Thoroughly mix epoxy liquid, then gradually add aggregate. Continue to add aggregate until mixture appears slightly dry, but all aggregate is "wetted" with the epoxy. Mix for an additional 2-3 minutes after optimum aggregate loading.

### Dispensing

Promptly install mortar into defect, spread evenly using clean steel trowel. Finish installing each unit before mixing the next. Trowel mortar to desired density and finish texture. If mortar starts to stiffen and creates trowel drag, wipe trowel with denatured alcohol or acetone. The final surface density and appearance will reflect trowel pressure and intensity. Working time for mortar is approximately 30-40 minutes at 70°F.

### Clean-Up

Spills of unmixed components can be cleaned up with solvent (Toluol, Xylol, MEK, denatured alcohol, etc). Clean tools and spills before epoxy or mortar has set using solvent or warm soapy water.

## 11. Coverage, Aggregate Loading

One (1) gallon of **Armor-Hard** liquid contains approximately 232 cubic inches of liquid. When combining with aggregate use a dry, bagged type of even consistency/gradation. Grit sizes of #20 to #40-44 are commonly available through tile/masonry suppliers, etc. Blending a smaller grit (#40) with a larger grit (#20) can improve trowelability. The surface density of your repair will depend upon aggregate type/size, method of troweling and aggregate-to-liquid loading.

As a rule, **Armor-Hard** will accept an aggregate loading of approximately 3 to 6 times its volume (begin with 3 gallons of sand aggregate to each gallon of **Armor-Hard** and work up to reasonable mixture for placement and troweling).

When calculating mortar yield, recognize that 1 gallon liquid plus 1 gallon aggregate does not produce 2 gallons of mortar since much of the epoxy liquid is absorbed by the aggregate. For example, 1 gallon of epoxy liquid plus 2 gallons aggregate will usually yield approximately 2 gallons of blended mortar.

If you are concerned about selecting the proper aggregate, or achieving the proper aggregate loading, consider the **Armor-Hard** KIT. This "kit" comes with just under 1/2 gallon of **Armor-Hard** epoxy liquid and a pre-measured amount of blended aggregate developed to yield a dense, easily troweled mortar.

## 12. Shelf Life and Storage

**Armor-Hard** has a guaranteed shelf life of 12 months if containers remain unopened. Store in dry, cool areas away from excessive heat, freeze/thaw and sunlight. See complete installation instructions for information.

## 13. Safety

This product is for industrial use only. Use only in well ventilated areas. Practice all normal jobsite safety precautions (clear work area, etc). Thoroughly read and understand SDS and installation instructions for additional information prior to using material.

## 14. Food Related Facilities

USDA prohibits the use of any chemicals in areas where existing food or food packaging can be contaminated. Contact *Metzger/McGuire* for further details if food products are present.

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**WARRANTY:** Metzger/McGuire Co. solely and expressly warrants that its product shall be free from defects in material and workmanship for 12 months from the date of purchase. Unless authorized in writing by an officer of Metzger/McGuire, no other representations or statements made by Metzger/McGuire or its representatives, in writing or orally, shall alter this warranty. Metzger/McGuire makes no warranties, implied or otherwise, as to the merchantability or fitness for ordinary or particular purposes of its products and excludes the same. If any Metzger/McGuire product fails to conform with this warrant, Metzger/McGuire will replace the product at no cost to the purchaser. Purchaser's sole remedy in any case shall be limited to the purchase price or replacement cost of product and specifically excludes labor and the cost of labor, lost wages and opportunity costs, and all other possible incidental, consequential or special damages resulting from any claim of breach of warranty, breach of contract, negligence or any legal theory. Any warranty claim must be made within one (1) year from the date of material purchase. Metzger/McGuire does not authorize anyone on its behalf to make any written or oral statements which in any way alter the installation procedures or written installation instructions published in its product literature or on its packaging labels. Any installation of Metzger/McGuire products which fails to conform with such installation information or instructions shall void this warranty. Purchaser shall be solely responsible for determining the suitability of Metzger/McGuire's products for the purchaser's intended purpose.