

### 1. Product Name

**ARMOR-HARD LV**

### 2. Manufacturer

**METZGER/MCGUIRE**

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### 3. Product Description

#### Composition

**Armor-Hard LV** is a two-component, 100% solids, extended pot life, structural epoxy system designed for the repair of surface spalls and defects in heavily trafficked industrial concrete floors. When cured, **Armor-Hard LV** is a gray, rigid restoration material with a Shore D Hardness of 86.

#### Related Products

**Armor-Hard Liquid or Kit** – early-set structural epoxy repair mortar for large surface spalls and joint edge rebuild/re-nosing in ambient buildings 50°F or higher.

**Armor-Hard Extreme Liquid or Kit** – quick-set structural epoxy repair product for large surface spalls and joint edge rebuild/re-nosing in buildings 20°F or higher.

#### Typical Use

As a liquid;

- Tilt-up patching
- Fill wider random cracks

As a mortar;

- As a topping for delaminated slabs
- Fill/repair holes, potholes, gouges, ruts, popouts

### 4. Limitations

- Should not be used in active or moving joints or cracks as restraint will occur
- For deep repairs in warmer temperatures install in maximum 1" layers to prevent exothermic shrinkage
- Designed for use in buildings with ambient temperatures of 60°F or above

### 5. Advantages

- Extended pot life for filling tilt up holes
- Superior wear and impact resistance
- Low viscosity
- Low odor; 100% solids
- User friendly mix ratio
- ASTM C881 compliant

### 6. Color

**Armor-Hard LV** is available in two colors: Limestone and Concrete Gray.

### 7. Packaging

1 gallon (U.S.) unit, composed of two one gallon cans of pre-measured epoxy liquids. 2 parts Part A Resin: 1 part Part B Hardener. Mix Ratio 2A:1B

### 8. TECHNICAL PROPERTIES

PROPERTY	RESULT	TEST METHOD
WEIGHT PER GALLON (MIXED)	9.1	
MIX RATIO BY VOLUME	2:1	
MIX RATIO BY WEIGHT	2.3:1	
MIXED VISCOSITY, cP or mPa.s	550	ASTM D 2196
WORKING TIME, min	30	
GEL TIME, min	45	
APPLICATION TEMPERATURE, °F (°C)		
Ideal	70-80 (21-27)	
Acceptable	60-90 (13-32)	
HARDNESS, Shore D	86	ASTM D 2240
ADHESION to Concrete, psi (MPa)>	800 (5.5)	
	(100% failure in concrete)	
COMPRESSIVE STRENGTH, psi (MPa)	10,800 (74.5)	ASTM D 695
COMPRESSIVE MODULUS, psi (MPa)	262,000 (1,807)	ASTM D 695
TENSILE STRENGTH, psi (MPa)	8,500 (58.6)	ASTM D 638
ELONGATION @ BREAK, %	3.8	ASTM D 638
WATER ABSORPTION, %	0.37	ASTM D 570

### 9. Availability

**Armor-Hard LV** 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.

### 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.

When using **Armor-Hard LV** in "neat" liquid consistency, material may be featheredged. Upon adequate cure, grind flat to the floor surface with a sanding disc or pad.

If using **Armor-Hard LV** in "structural mortar" consistency, a vertical perimeter edge depth of 1/2 inch is preferred (1/4 inch minimum). Upon adequate cure, grind flat to floor surface with adequate aggressive tooling.

#### Mixing

**(Caution: Read product container labels and SDS before using).**

**Armor-Hard LV** is a 2:1 ratio product. (2 parts resin, 1 part hardener). If using less than full unit, "A" and "B" ratio must be measured precisely by weight or volume.

**Installation Instructions**

Material should be stored and mixed at ambient temperature (i.e. 70°F). Warmer material temperature will lead to reduced pot life. Cooler temperatures will lead to longer working time (and slower cure time).

Pre-mix Part A (resin) to ensure proper pigment disbursement. Combine parts "A" and "B" in a plastic pail and mix for 1.5 minutes using a Jiffy-type mixer and a slow-speed drill. 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 parts A and B, 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 1-2 minutes.

**Dispensing**

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 solvent such as denatured alcohol. The final material density and appearance will reflect trowel pressure and intensity. Working time for mortar is approximately 30-45 minutes at 70°F.

**Cleanup**

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

**11. Coverage, Aggregate Loading**

**Armor-Hard LV**

One (1) gallon of **Armor-Hard LV** 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 are commonly available through tile/masonry suppliers, etc. Blending a smaller grit (#40) with a larger grit (#20) can improve trowel-ability. The surface density of your repair will depend upon aggregate size, method of troweling and aggregate loading.

As a rule, **Armor-Hard LV** will accept an aggregate loading of approximately 3 to 6 times its volume (begin with 3 parts of sand aggregate to one part of **Armor-Hard LV** liquid and work up to reasonable mixture for placement).

**Approximate Liquid Epoxy + Sand Aggregate Yields**

<b>Epoxy (gals.)</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>
<b>Sand (gals.)</b>	<b>1</b>	<b>1.5</b>	<b>2</b>	<b>2.5</b>	<b>3</b>
<b>Yield (gals.)</b>	<b>1.6</b>	<b>1.9</b>	<b>2.2</b>	<b>2.5</b>	<b>2.8</b>

**12. Shelf Life and Storage**

**Armor-Hard LV** 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.

**13. Safety**

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

**14. 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.