

## ENDURABLE CONCRETE HARDENER

Endurable Concrete Hardener is nearly 100% pure silica at an extremely small particle size. The proprietary solution in which it is suspended, provides low surface tension, resulting in excellent penetration of the silica into the concrete.

### ADVANTAGES

- Does not leave discoloring salt deposits
- Compatible with ENDURABLE dyes and stains
- Works well with overlay products typically low in lime
- Lower pH than silicates
- Low VOC content
- Fast reaction times -- typically under 1 hour
- No overnight curing process
- Concentrated to lower shipping costs
- May be applied to new concrete 2 - 3 days after pour
- Tiny particle size
- Product is able to bond to silica present in concrete
- Product has the ability to bond to itself, unlike silicates
- Increases abrasion resistance
- Increases moisture resistance
- Enables polishing process
- Reduces dusting
- Reduces efflorescence
- Water-based
- Zero VOC content
- Non-toxic
- Safe to handle
- Does not require agitation
- Does not require hazardous disposal
- Improves performance of concrete
- Extends life of concrete
- Increases surface hardness
- Increases compressive strength

### WHERE TO USE

Use on concrete and cementitious surfaces.

### PACKAGING

1-gallon concentrate that makes 4 gallons

5-gallon concentrate that makes 20 gallons

### TEST AREA

Performing a test area is advisable to make sure the product is suitable for the surface.

### COVERAGE RATES

#### INTERIOR SURFACES

300 - 700 square feet per gallon depending on porosity of the concrete. High porosity concrete will be on the lower end and polished or low porosity concrete will be on the higher end.

#### EXTERIOR SURFACES

200 - 600 square feet per gallon depending on porosity of the concrete. High porosity concrete will be on the lower end and polished or low porosity concrete will be on the higher end.

### PRODUCT AVAILABILITY

Product is available at retail distributors around the world. Visit the Endurable website to find the nearest distributor.

### REGULATORY INFORMATION

**VOC CONTENT - 0 g/L**

### LEED

At 0 g/L of VOC content, product may contribute towards LEED certification.

## UNDERSTANDING THE CHEMISTRY

The reaction of the silica with the remaining unreacted calcium hydroxide in the concrete, forms calcium silica hydrate. When concrete is poured, calcium silica hydrate is formed as the concrete cures. This process only continues while the concrete remains wet. After the concrete is dry, no additional calcium silica hydrate is formed and the top surface of the concrete is usually left with unreacted calcium hydroxide, also known as lime.

Obviously, the first part of the concrete to dry is the surface, therefore leaving a substantial amount of unreacted calcium hydroxide. This unreacted calcium hydroxide is akin to an epoxy with only the first component used. The hardener acts like the second component of the epoxy to actually create the chemical reaction, leaving the concrete harder and more abrasion-resistant. This proprietary silica is distinctive in its ability to bond to the silica already present in concrete and it can also bond to itself. This allows for a much greater density than can be found with any silicates. The families of silicates include sodiums, potassiums, and lithiums. None of these products can match the abilities of this silica to bond with the silica in the concrete, nor can they bond to themselves.

Now that the superiority of this silica over the silicate families has been established, one last question remains: What is the difference between silicas? The size of particle should be considered. The smaller the particle size, the better the results as there are more reaction points and the product can travel farther into the concrete at the smaller size.

## PREPARATION

Before application, be sure that concrete is clean and structurally sound. It must be free of any sealers, curing membranes, oils, dust, etc.

It is advisable to remove all existing sealers with Endurable Power or Vertical Stripper. Follow instructions and videos about how to remove existing sealers on the Endurable website. Product must be able to achieve full contact with the concrete to be fully effective. Clean surface with Endurable Surface Cleaner. Follow the mixing instructions on the Endurable website.

### **DO NOT USE ACIDIC CLEANERS.**

When using product in conjunction with polishing, refer to the polishing specification on the Endurable website.

## MIXING INSTRUCTIONS

This product is concentrated and should be mixed 3-parts water to 1-part product. Shake product before mixing with water. Stir the concentrate and water together for 30 seconds with a mixing drill and paddle. It may also be shaken for 1 minute.

## APPLICATION

Use a low-pressure pump sprayer with a conical tip that sprays .05 to .15 gallons per minute. Spray with the tip 1 to 2 feet above the surface and use a circular motion to achieve an even application. Spray enough product to achieve an even look of saturation. Keep the surface wet for a minimum of 15 minutes, applying additional product when necessary to keep the surface wet. Allow surface to dry completely. This usually takes less than one hour. It is recommended to repeat this process for a minimum of two applications to achieve optimum formation of calcium silica hydrate.

### WHEN APPLYING COLOR

Color should be applied prior to the application of hardener. A second application of color may be used to achieve a richer color in the concrete after the Endurable Concrete Hardener has been applied and is completely dry.

### MOISTURE MITIGATION

Performing a moisture test is recommended to determine if the substrate is suitable for application of Endurable sealers, coatings, dyes, stains, etc. A Calcium Chloride test or an RH meter may help determine the moisture drive/content of the concrete. A piece 2 mil plastic may also be taped to the surface for approximately 24 hours if no testing equipment is available. A combination of two or more of these tests is recommended for comprehensive analysis.

A Calcium Chloride reading above 5 lbs can yield less than desirable results.

A reading of 75% on an RH meter can yield less than desirable results. Coring meters are much more reliable than surface RH meters.

Tape a piece of 2 mil plastic on all sides to the surface for 24 hours. If moisture is present after 24 hours, the concrete may have a moisture problem.

If it appears the concrete has a moisture issue, then the problem must be mitigated before the application of Endurable sealers, coatings, dyes, stains, etc. Follow the application procedures a minimum of 3 times. Wait 24 hours and repeat moisture testing. If problem still exists, repeat process.

## TEST DATA

**ABRASION RESISTANCE (ASTM C779)** 33% increase at 30 minutes

**COMPRESSIVE STRENGTH (ASTM C39)** 40% increase at full concrete cure

**IMPACT RESISTANCE (ASTM C805)** 14% increase at full concrete cure

## LIMITATIONS

Product should not be cleaned with citric or abrasive cleaners. Endurable Surface Cleaner should be used for long-term maintenance. This product is not a “sealer” and will not prevent staining. Use an Endurable sealer or coating if you wish to seal and protect from staining.

## WARRANTY

Evaluate whether this product is suitable for your intended application. Conditions of product use are outside of our control and vary widely, the following is made in lieu of all express or implied warranties of merchantability: Our only obligation and your only remedy are replacement of product, at the option of HDIP INC. In no case will HDIP INC be liable for any direct, indirect, special, incidental, or consequential damages including lost profits, goodwill, or business opportunity.

## TECHNICAL ASSISTANCE

For technical questions or support, call 800-910-3120 ext. 1 between the hours of 8:30 am to 4:30 pm PST.

## STORAGE AND SHELF LIFE

Product has a shelf life of a minimum of 1 year in original containers. Store product between 40 and 80 degrees Fahrenheit. Keep product free from excessive heat, moisture, and freezing.

## SAFETY

Use with proper ventilation. May cause eye and skin irritation. If you experience headaches, dizziness, or watery eyes, you may wear a NIOSH TC-84 respirator during application. Use extreme caution when walking on wet product, as the product is slippery when wet.