

CONCRETE HARDENER

DuraTite® Concrete Hardener is an bio-based concrete hardener that employs sodium silicate waterproofing agent, which is enzymatically modified to chemically bond and penetrate into concrete to increase density, hardness, and strength of the surface of the concrete while maintaining its breathability. Once the product reacts with the concrete it begins improving the abrasion resistance and durability of the concrete. The product can also serve as a concrete polishing aid by producing better initial surface hardness that reduces polishing time and yields a smother and denser burnished or polished surface.

DuraTite Concrete Hardener is environmentally friendly, no VOC's, non-flammable and has no odor, which makes it safe for indoor use.



PRODUCT PROPERTIES

- Colorless, clear to slightly opaque, odorless, soapy feel
- Non-toxic & Biodegradable
- Percent non volatile solids 26.55%
- Specific gravity at 77°F (25°C) : 1.2
- Flash point - no true flash - boils at 214°F (101°C)
- Auto-ignition temperature - N/A Non-explosive
- Viscosity - 14.3 centipoise or 0.1172 Stokes
- Hazardous chemicals - Sodium Silicate (modified)
- pH 11.51

PERFORMANCE CHARACTERISTICS

- Safe for potable (drinking) water.
- Reduction of chloride diffusion coefficient by 89% to 3.5 (10-12m²/s).
- Increases surface hardness from 6 to 8 on Moh's scale.
- Allows 84.1% moisture vapor permeability.

RECOMMENDED USAGE

DuraTite Concrete Hardener can be used on a cementitious material to improve the hardness and density of the material. The product is ideal for use on concrete floors where burnishing or polishing is desired. The product is compatible with most glues, mastics and topical coatings and causes no problems with adhesion to the surface.

PERFORMANCE TIMELINE

The DuraTite Concrete Hardener utilizes a bio-based modified sodium silicate. Sodium Silicate is often referred to as "liquid glass" and is a silicon-oxygen polymer containing ionic sodium (Na⁺) components. Sodium silicate is similar to carbon-based plastics since silicon-oxygen-silicon bonds between each monomer are covalent. The modified sodium silicate penetrates into and bonds with the concrete to harden and strengthen the concrete. The chemical reaction that creates this is catalytic in nature and **may require 3-5 days to reach full hardness and strength.**

CONCRETE HARDENER

APPLICATION

SURFACE CLEANING & PREP

DuraTite Concrete Hardener must be applied to a clean, dry, dust-free concrete surface, at least 14 days after the placement of new concrete. If the concrete is older existing concrete and needs to be cleaned, then use any of the following products to clean and prepare the surface.

ACR Concrete Masonry Cleaner - Use this product to remove dirt and environmental debris. This product is sprayed on the surface and in most cases will require some agitation. Once the dirt and debris has been removed rinse with water. Coverage rate for this product will vary depending surface condition, but when used as directed the coverage rate is approximately 400-500 square feet per gallon. This product should be used at full strength.



ACR Concrete Masonry Etch - This product should be used when the surface of the concrete does not allow the proper penetration of the water based products. It is an environmentally and human safe substitute for muriatic acid. Apply by spraying over the entire surface of the masonry. Once the product is no longer reacting with the concrete, it may either be; 1) allowed to dry in place and once dry remove loose material with a broom or vacuum; 2) remove by rinsing with water. Coverage rate for this product will vary depending on the application, but when used as directed the coverage rate is approximately 400-500 square feet per gallon. This product should be used at full strength.



ACR Emulsifying Cleaner - Use this product to remove grease and oil that has penetrated into the concrete. This is a solvent-based product that will break down the oil and grease and allow it to rise to the surface. Once used, clean with ACR Concrete Masonry Cleaner and rinse with clean water. Coverage rate for this product will vary depending on the amount of oil and grease that needs to be removed, but when used as directed the coverage rate is approximately 200-300 square feet per gallon. This product should be used at full strength.

ACR Paint Remover - Use this product to remove paint from the surface of the concrete. This is an environmentally safe product; and will remove paint quickly and effectively. NOTE: Once used, clean with ACR Concrete Masonry Cleaner and rinse with clean water. If not properly removed this product will continue to work until removed. Coverage rate for this product will vary depending on the amount of paint that needs to be removed, but when used as directed the coverage rate is approximately 200-300 square feet per gallon. This product should be used at full strength.

Check the Alchemco website (www.alchemco.com) for technical data sheets on each of these products or for help.

NOTE: On some projects it may make more financial sense to utilize shot blasting or grinding to prepare the surface for the application of the system and related products, this is acceptable in lieu of chemical cleaning.

CONCRETE HARDENER

HARDENER APPLICATION

- 1. Important** - If the DuraTite Concrete Hardener is to be applied to newly poured concrete, then the application must not begin for at least 14 days after the pour is completed. If the system is being applied to older, existing concrete then the application can begin once the surface is clean.
- 2. NOTE:** Products should only be applied when the ambient temperature is 40°F (+4°C) and rising or 100°F (+38°C) and falling.
- DuraTite Concrete Hardener should be applied using a low-pressure pump style sprayer, backpack sprayer or a drum style sprayer. A fan or cone style sprayer tip is best for the application of the product.
- Once all surfaces have been sprayed, allow the product to dry to touch (if you touch the surface and no wet product comes off on your hand). In direct sunlight this process may take as little as 1 hour, in some cases longer.
- Once the product has completely dried to the touch or no later than the 5 hour point, begin washing the surface. Washing is to remove any excess material sitting on the surface. Washing should be done with clean, clear water. Washing should continue until there is no “white foaming” occurring, which is evidence of the presence of the material.
- For a more polished appearance on burnished or polished surfaces, apply using a floor scrubber, (black pad) or high speed polisher and then buff with a white pad after 12 hours. Clean with warm water.

IMPORTANT! If all excess material have not been removed from the surface, once it dries there will be white streaks left on the surface. These white streaks do not effect the performance of the concrete hardener, but it can effect the aesthetic appearance of the finished surface. If white streaking occurs once all surfaces are dry, power washing (less than 4000 psi) may be required to remove the white streaks.

RATES OF APPLICATION

DuraTite Concrete Hardener the application rates will vary, but under most conditions it will require 1-gallon for every 180-220 square feet of concrete surface (1 liter to 5 square meters).



SHELF LIFE & STORAGE

TechCrete Waterproofing Agent has no known limit to shelf life. Keep container sealed and avoid prolonged exposure to direct sunlight. Always agitate drum or container before use.



LIMITATIONS

DuraTite Concrete Hardener is designed to work only on cured troweled and smooth concrete surfaces and is not intended for asphalt. This product may etch glass and coated metals. Not to be used as a waterproofing product or for sealing cracks in the concrete.



TESTING STANDARDS

- | | |
|---------------|----------------------------------|
| • ASTM E514 | Water penetration |
| • ASTM C952 | Bond Strength |
| • ASTM C672 | Scaling Resistance |
| • ASHTO T-259 | Chloride Ion Penetration |
| • ASHTO T-260 | Chloride Ion Content |
| • ASTM D1644 | Non volatile Content |
| • ASTM C1202 | Chloride Ion Resistance |
| • ASTM C39 | Compressive Strength |
| • TAS 112 | Permeability |
| • ASTM D93 | Ignition temp |
| • ASTM E108 | Non combustible Surface |
| • ASTM C-42 | Compressive and Flexure Strength |
| • ASTM-C-666 | Freeze/Thaw |
| • ASTM D-3960 | Zero VOC's |
| • ASHTO T-38 | Moisture Vapor Transmission |

PACKAGING

The following products are required to be used in this system and are available in the following sizes.

DuraTite Concrete Hardener

- 5 gal pail
- 55 gallon drum



WARNINGS



DANGER! TOXIC IF SWALLOWED

This product contains Sodium Silicate and may be harmful if swallowed. Wash hands, face and any exposed skin thoroughly after handling. Keep container tightly closed. Do not eat, drink or smoke when using this product.

IF SWALLOWED: Immediately call a POISON CONTROL CENTER, doctor/physician. Rinse mouth.

See Safety Data Sheet for further details regarding safe use of this product. Safety Data Sheets for any Alchemco product may be obtained by contacting Alchemco, 3532 Mayland Court, Henrico, VA 23233. 800-610-2895 or emailing technical@alchemco.com or calling

**CHEMTREC 800-424-9300 (US)
703-741-5970 (International).**



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