

310 Wayto Road | Schenectady, NY 12303 ● TEL: 800-283-3888 | FAX: 518-357-9636
EMAIL: moreinfo@sandellmfg.com | www.diedrichtechnologies.com

303-S SILOXSEAL SILOXANE WATER REPELLENT

1. PRODUCT DATA

Date of Preparation: March 1, 2015

Product Name: 303-S Siloxseal Siloxane Water Repellent

Producer: Diedrich Technologies, A Hohmann & Barnard Company, 310 Wayto Road, Schenectady, NY 12303

Company Contact: Ken Eglin

Telephone: 800-283-3888 **Fax:** 518-357-9636

Email: KenE@h-b.com **Web:** www.diedrichtechnologies.com

This product is manufactured for Commercial/Industrial use. Not recommended for: Household use.

2. PRODUCT DESCRIPTION

Diedrich 303S Siloxseal Series Products are alkygroup alkoxy siloxane formulations that react chemically with silica in the substrate resulting in hydrophobic reaction. Diedrich 303S Series Products are formulated for low pressure spray application to masonry, concrete, stucco, sandstone, limestone, etc. They protect against the intrusion of moisture causing efflorescence, leaching, mildew, atmospheric staining and freeze/thaw spalling. Diedrich 303S Series Products have excellent resistance to the detrimental effects of acid rain and carbon buildups.

Diedrich 303S Series Products reduce the migration of chloride ions through cement. The corrosion and deterioration of rebars in reinforced concrete caused by moisture and waterborne salts are reduced. This makes 303S Series Products ideal for application to concrete flatwork, parking ramps, stadiums and vertical concrete surfaces.

303S Series Products will not alter the appearance of masonry surfaces. When properly applied, there should not be any darkening, texture change or surface buildup. In order to render effective water repellency, 303S formulations exhibit the following properties:

- Low molecular weight – results in high penetration
- Contains long alkali groups – well suited for use on high alkaline materials like concrete masonry, mortar, etc.
- Vapor permeability and ability to dry are not affected. Surface life of application is extended and damage caused by moisture trapped in masonry is prevented.
- Penetrates fully into the surface but will not alter appearance.
- Cures quickly, becoming resistant to driving rain.

Diedrich 303S chemically bonds with natural materials in masonry when they react with the surface. The siloxane compound that results, because of the similarity to the substrate, will not alter the natural permeability of the surface. Damage caused by trapped moisture is eliminated as the internal moisture is allowed to dissipate. Diedrich 303S Series products are highly effective when applied to highly alkaline surfaces such as mortars and cement rich materials because they are not affected by alkalinity.

3. TECHNICAL DATA:

Type: Oilgmeric siloxane with long alkyl groups

Flash Point: 112° F (44°C)

Solvent: Mineral Spirits

Total Solids: 7%, 10%, 15%

WT./GAL: 6.6lbs

Specific Gravity: 0.792

Appearance: Slightly opalescent liquid

5. LIMITATIONS:

Since Diedrich 303S Series Products may not be suited for application to all surfaces, i.e. gypsum plaster or synthetic resin paints, test patches must always be conducted.

Diedrich 303S Series Products must never be applied when air and surface temperatures are below 20°F or higher than 100°F. Products are to be stored in sealed containers and kept away from extreme heat.

6. APPLICATION:

Precautions: Diedrich 303S Series Products formulations incorporate blended solvent and must be handled as such. Good ventilation must be provided to prevent accumulation of fumes and never used near extreme heat, open flame or fire. If product is to be used on interior surfaces, workers must wear the appropriate cartridge type respirators and be provided good cross ventilation. If application is to the exterior of an occupied building close and cover all exterior air conditioning vents during application. Clothing contaminated with 303S products must be removed as soon as possible.

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Preperatory Work: A test application must be conducted to determine compatibility, application rate and required water proofing. Application must be done using the same equipment as would be used during full scale application. Application can be either by a low pressure (40-50 psi) airless **DIEDRICH ACID EXPRESS APPLICATOR PUMP** or by plastic pump-up sprayers. Inspection of the test areas should occur after the surface has thoroughly dried. The test patch should be available for inspection and approved by the architect then remain as the standard for the project.

Adjacent Areas: Adjacent vegetation should be protected, by covering, to protect in the event of overspray and/or excessive runoff. Adjoining glass, metal, painted surfaces, asphalt floor tiles, or shingles should be covered and protected. Accidental splashes and/or overspray should be removed using mineral spirits before the solution dries on the surface. Masonry surfaces should be clean, sound and free of carbon, dust, dirt, oil and grease. Remove loose and/or deteriorated mortar and repoint; cracks and voids larger than 1/16" should be patched and allowed to dry 72 hours before application. After caulking, allow 6-12 hours for curing (or unit material is set). If efflorescence or alkali deposits are present, they must be removed and neutralized with the appropriate Diedrich Masonry Cleaner (**200, 202, 202V, 101WN**) before applying.

Methods: Diedrich 303S should be applied as packaged, do not alter or dilute the product. Surface and air temperature must be above 20°F when being applied. To insure uniformity and even solids distribution the product must be thoroughly mixed before applications.

Diedrich 303S application requires methods different than standard materials. Ideally, low volume (50 psi Diedrich Acid Express) airless spray equipment should be used for application. **A flood coat of 6" to 8" run-down**, working bottom to top, should be employed. The material requires **two, "wet on wet," applications** to achieve the best results on porous surfaces. On very dense, mirror or polished surfaces, a single saturating application should be applied.

If a brush or roller is used for the application, extra care should be taken to assure sufficient material to saturate the surface thoroughly. Heavy runs or drips should be brushed out if they do not penetrate.

When application is to horizontal surfaces, Diedrich 303S is to be applied in a single saturating application. Care must be taken to insure sufficient material is applied so the

surface stays wet for a few minutes prior to penetration of the concrete. If pooling or puddles occur they should be broomed out until they thoroughly penetrate into the surface.

Final Washdown: If application is to very dense materials, such glazed brick, ceramic tile, exposed aggregate concrete, etc., that the water absorbent joints must be made water-repellent, the surface should be given a final rinse with a solvent 20 to 30 minutes after application of 303S have been applied. This will stop the formation of a nonabsorbent surface film causing a graying effect. Adjacent surfaces such as windows, frames, etc., must be cleaned of overspray, runs and splashes immediately with mineral spirits or cleaning problems will be encountered later.

APPLICATION TECHNIQUE:

*There is a human tendency to use quick arm movements while spraying a mist to the point of darkening the substrate. This is not sufficient enough to achieve optimum product performance. The best method is a "wet on wet" application. This involves a mist application, using slow arm movements to break surface tension resulting in a darkening of the surface. Followed by spraying material using slow arm movements for a **floodcoat (6" – 8") run-down** on a vertical surface and on a horizontal surface with a saturation spray so the surface stays wet for a few minutes allowing penetration.*

7. COVERAGE:

Varying porosity and texture of masonry surfaces will dictate the amount of material required for effective treatment. The following is only a guide for estimating the amount of product necessary for the various surfaces. A test patch **MUST** be conducted to determine accurate rates of application.

CEMENT BRICK

80-120 sq.ft./gal.

CONCRETE BLOCK

60-80 sq.ft./gal.

SMOOTH CONCRETE (STEEL TROWELED)

150-200 sq.ft./gal.

STUCCO; NATURAL STONE (SMOOTH CUT);

SMOOTH CONCRETE* (PRECAST)

125-175 sq.ft./gal.

EXPOSED AGGREGATE (NATURAL STONE);

NATURAL STONE (ROCK FACE); CLAY BRICK

100-150 sq.ft./gal.

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*Integral waterproofing agents and admixes used in some precast concrete can result in extremely dense surfaces. In these instances the absorption rates of the 303S Series Products will be very low. Rates of 300-400 sq.ft./gal. may be sufficient.

Paint Adhesion: While not recommended, Diedrich 303S Series Products can be painted over using silicone or most acrylic emulsion paints. TESTS MUST BE CONDUCTED TO ASSURE PROPER ADHESION ACHIEVED.

Mineral and cementitious coatings and cement plasters should be treated with 303S Series Products after application and curing of the surface coating.

8. TESTING

WATER PERMEANCE OF MASONRY WALLS COATED WITH DIEDRICH 303S WATER REPELLENT COATING THE ASTM E-514 TEST

1. Three test walls were constructed in compliance with Section 5 of ASTM-514. The panels were approximately 19 square feet in size.
2. Workmanship (by two experienced journeyman masons), construction methods and materials were controlled precisely to minimize variables and to net optimum wall performance. Workmanship was deemed "excellent".

3. Walls were cured for 28 days before testing
4. Test conditions were equivalent to 51/2 inches of rain per hour accompanied by constant 62 mph winds for a period of 72 hours.
5. RESULTS – Diedrich 303S eliminated water penetration. 303S achieved a Class E rating (Highest Point)

TEST RESULTS

The elimination of leakage	Brick Walls	
The Near-Hurricane Force Test	Average Max.Rate of Leakage	Percentage Reduction Leakage
<i>PHASE 1</i>		
Uncoated	16 ml/hr	-
1 Coat @ 100 sq/ft	0 ml/hr	98.9%
<i>PHASE 2</i>		
Uncoated	16 ml/hr	-
1 Coat @ 100 sq/ft	0 ml/hr	99.5%

Test conducted by:

Robert L. Nelson & Assoc., Inc.
 Construction Materials Consultants.

Complete test results are available upon request.

WARRANTY: ALWAYS USE A TEST SAMPLE TO DETERMINE DESIRED RESULTS. PRODUCT FREEZES BELOW 32°F, AND MAY BE ADVERSELY AFFECTED BY COLD WEATHER.

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Hohmann & Barnard, Inc.
 30 Rasons Court | Hauppauge, NY 11788
 TEL: 800-645-0616 | FAX: 631-234-0683
 EMAIL: weanchor@h-b.com | www.h-b.com