



DIEDRICH 303S SILOXSEAL SPECIFICATION AND DATA

MASONRY DETERIORATION PROBLEMS CAUSED BY MOISTURE, WEATHERING, AND OTHER ELEMENTS THAT REQUIRE 303S



Old red brick with spalling decay due to moisture absorption and efflorescence.



Heavily eroded brick resulting from sandblast abrasion.



Due to excess moisture the white crystals of efflorescence salts deface the surface of a new brick wall and can cause future problems.

303S IS ACCEPTABLE FOR USE WITHIN "EPA-VOC EXCEEDANCE GUIDELINES".

1. PRODUCT NAME:

DIEDRICH 303S SILOXSEAL SERIES
WATER-REPELLENT COATINGS
(Year-Around Application)

303S-7 - 7% Siloxane Solids
303S-10 - 10% Siloxane Solids
303S-15 - 15% Siloxane Solids

2. MANUFACTURER:

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3. PRODUCT DESCRIPTION:

Diedrich 303S Silox Seal Series Products are alkyl-group alkoxy siloxane formulations that react chemically with silica in the substrate resulting in a 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 acids and alkalis and are resistant 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.

The natural appearance of surfaces the 303S Series Products have been applied to will not be altered. When properly applied, there should not be any darkening, texture change or surface buildup.

In order to render effective water repellency, 303S Series Products formulations exhibit the following properties.

- Low molecular weight - results in high penetration of the treated surfaces.
- Contains long alkyl groups - well suited for use on highly alkaline materials like concrete masonry, mortar, limestone etc.
- Vapor permeability is not affected nor ability to dry. Surface life of application extended, damage caused by moisture trapped in masonry prevented.
- Total penetration of the masonry surface, natural appearance of the masonry will not be altered.

- Rapid formation of surface repellency, resistance to driving rain occurs quickly.

Diedrich 303S Series Products chemically bond with natural materials in masonry when they react with the surface. The siloxane compound that results, because of its 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.

4. TECHNICAL DATA:

TYPE: Oligomeric siloxane with long alkyl groups.

FLASHPOINT: 112°F (44°C)

SOLVENT: Mineral Spirits

TOTAL SOLIDS: 7% 10% 15%

WT./GAL.: 6.6 lbs.

SPECIFIC GRAVITY: 0.792

APPEARANCE: Slightly opalescent liquid.

5. LIMITATIONS:

Since Diedrich 303S Series Products may not be suited for application to all surfaces, ie., 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 application is to be to 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.

PREPARATORY 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. Individual surface types must be tested. 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 until 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 Series Products 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.



Typical pollution dirt crust showing stone surface flaking.



The erosion effects of rain and pollution weathering on soft sandstone.



New concrete block wall showing water retention after a rainstorm.



Diedrich Technologies, Inc.
May 1993

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WATER REPELLENTS
Fluid Applied

Diedrich 303S Series Products 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 Series Products are 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 as 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 Series Products have been applied. This will stop the formation of a non-absorbent surface film causing a greying 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.

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 material necessary for the various surfaces. A test patch **MUST** be conducted to determine accurate rates of application.

- Clay Brick 100-150 sq.ft./gal.
- Cement Brick 80-120 sq.ft./gal.
- Concrete Block 60- 80 sq.ft./gal.
- Smooth Concrete *
(precast) 125-175 sq.ft./gal.
- Smooth Concrete
(steel troweled) 150-200 sq. ft./gal.
- Stucco 125-175 sq.ft./gal.
- Exposed Aggregate 100-150 sq. ft./gal.
- Natural Stone
(rock face) 100-150 sq.ft./gal.
- Natural Stone
(smooth cut) 125-175 sq.ft./gal.

* 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 IS ACHIEVED.**

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



*Shorewood Village Hall
Architect: Kahler, Slater, Trophy, Engberg, Inc.
Contractor: Double T Painting Co.
Specifications included paint stripping, cleaning and waterproofing with Diedrich Chemicals*



*St. Peters Retirement Apartments
Milwaukee HUD project
Architect: Shepherd, Legan, Aldrian Ltd.
Contractor: Jen-Chris Building Restoration*



*Milwaukee Area Technical College
Architect: Staff
Contractor: Wisconsin Restoration-Garon Contractors
Specifications included brick cleaning and waterproofing with Diedrich Chemicals*



*Michigan Veterans Facility — Grand Rapids, MI
Architect: G.S.A.
Contractor: Mercury Caulking*

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 material required to achieve optimum product performance. The best method is a wet on wet application. This involves a mist applications, 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.

WARRANTY:

A written waterproofing warranty of up to 10 years is available on an individual project basis. For information contact Diedrich Technologies Inc., 7373 S. 6th St., Oak Creek, WI 53154. **DIEDRICH TECHNOLOGIES INC., warrants that the product will conform to the description and specifications set forth on the product label and will be free from defects in material and workmanship. The exclusive remedy of the Buyer in the event that the product does not so conform shall be the replacement of the product. This warranty is expressly made in lieu of any and all other warranties expressed or implied including the warranties of merchantability and fitness, and Diedrich Technologies Inc., shall not be liable for any loss or damage, directly or indirectly arising from the use of such merchandise or for consequential or incidental damages.**

While Diedrich Technologies Inc. believes that the data contained herein is accurate and the information is based on test and data believed to be reliable, it is the user's responsibility to determine the safety, toxicity and suitability for his own use of the product described herein. Manufacturer shall not be responsible for any contamination, or related testing or removal costs resulting from use of this lead-free product on any material containing lead or toxic or environmentally hazardous substances. Since the actual use, by other, is beyond our control, no guarantee, expressed or implied, is made by Diedrich Technologies Inc., as to the effects of such use, the results to be obtained, or the safety, toxicity of the product referred to herein. Nor is the information herein to be construed as absolutely complete since additional information may be necessary or desirable when particular conditions or circumstances exist, or because of applicable laws or governmental regulations.

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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 E-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 Possible).

THE RESULTS

The elimination of leakage BRICK WALLS

The Near-Hurricane Force Test	AVERAGE MAX.RATE OF LEAKAGE	PERCENTAGE REDUCTION LEAKAGE
PHASE 1 Uncoated	16 ml/hr	—
1 Coat @ 100 sq/ft	0 ml/hr	98.9%
PHASE 2 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.