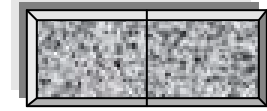




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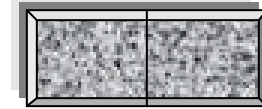
ATTACHMENTS

Technical Services TECH Note RILEM Test Method No. II.4

Product Data literature for all products evaluated



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FOR: Paul Grahovac
cc: Kevin Gwinn
Perry Surber
John Bourne

SUBJECT: GLS Industries, Inc.

DATE: March 8, 2002

PROJECT: 0201-17 BP

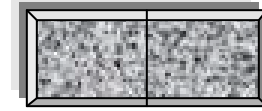
SAMPLES SUBMITTED: 9 different CMU types in 5 different colors

<u>Block</u>	<u>Color</u>	<u>Size</u>
Rockwood split-face CMU	Gray	18" x 6" x 4"
Rockwood split-face CMU	H. Tan	18" x 6" x 4"
Rockwood split-face CMU	Brown	18" x 6" x 4"
Rockwood split-face CMU	Charcoal	18" x 6" x 4"
Rockwood split-face CMU	Sandstone	18" x 6" x 4"
Stoneskirt split-face CMU	Sandstone	23½ " x 8" x 2"
Stoneskirt split-face CMU	Charcoal	23½ " x 8" x 2"
Stoneskirt split-face CMU	Brown	23½ " x 8" x 2"
Stoneskirt split-face CMU	Gray	23½ " x 8" x 2"

Submitted by : John Fischer
Rockwood Retaining Walls
7200 NO. HWY 63
Rochester, MN 55906



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PURPOSE OF TESTING:

Nine integrally colored split-face CMUs with large, small and fine aggregate were submitted for testing using PROSOCO's new construction cleaning and water repellent products.

A. Cleaning* & Surface Alteration Testing - Sure Klean® Custom Masonry Cleaner and Sure Klean® Burnished Custom Masonry Cleaner were tested at various dilutions to determine if a cleaning program implemented to remove new construction soiling would otherwise alter the appearance of cleaned surfaces. Surface Alteration was evaluated visually based upon perceived discoloration or erosion/etching of the masonry unit.

Aggregate Exposure is the visual examination of the CMU comparing aggregate exposure of the untreated control surface to surfaces cleaned with selected product(s) at given dilutions.

Surface Pigment Alteration/Removal* is the visual examination of the CMU comparing the surface pigmentation of the untreated control to surfaces cleaned with selected product(s) at given dilutions.

Matrix Erosion is the visual examination comparing the untreated control surface to surfaces cleaned with selected products at given dilutions looking for any potential erosion/digestion of the cementitious matrix of the CMU.

Staining is the visual examination for changes that are the result of a chemical reaction that leaves a staining precipitate.

The following is the scale used for reporting results of all categories:

0 – no change	3 – heavy
1 – slight	4 – excessive
2 – moderate	

*** NOTE: When cleaning integrally colored CMU.**

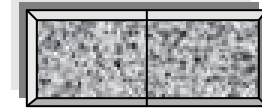
Integrally colored concrete masonry units (CMUs) frequently have high amounts of pigments concentrated on the surface of the cured concrete unit. Variation of surface pigment concentrations from one CMU to the next creates a blotchy appearance in the completed wall. Allowed to remain on the surface of the CMU, the weakly bound pigment will weather and streak, further detracting from the appearance of the completed CMU wall.

In addition to removing excess mortar and construction related soiling, the goal of any cleaning operation undertaken on integrally colored CMU should include removal of unnaturally high concentrations of surface pigment. By revealing the natural through-body color on the integrally colored unit, the overall color uniformity and weathering resistance of the completed CMU wall is improved.

B. Protective Water Repellents - Sure Klean® Custom Masonry Sealer and Sure Klean® Weather Seal Siloxane WB Concentrate were evaluated for their ability to provide water repellency to the submitted samples.



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CLEANING & SURFACE ALTERATION PRODUCTS EVALUATED

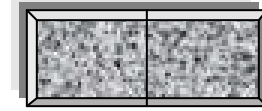
BLOCK TYPE	Sure Klean [®] Custom Masonry Cleaner	Sure Klean [®] Burnished Custom Masonry Cleaner
All Colors of Rockwood and Stoneskirt Split-face CMUs	1:2	1:2
	1:4	
	1:6	1:3

WATER REPELLENT PRODUCTS EVALUATED

BLOCK TYPE	Product	Dilution
All Colors of Rockwood and Stoneskirt Split-face CMUs	Sure Klean [®] Custom Masonry Sealer	Concentrate
	Sure Klean [®] Weather Seal Siloxane WB Concentrate	1:9



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SECTION A – CLEANING INTEGRALLY COLORED CMUs & SURFACE ALTERATION TESTING

DESCRIPTION OF PRODUCTS EVALUATED

Sure Klean® Custom Masonry Cleaner – A general purpose, concentrated acidic cleaner for most custom masonry and colored concrete. Removes concrete splashes, excess mortar, mud, heavy efflorescence and surface soiling, leaving the masonry clean and uniform with no acid burning or streaking. Liquid concentrate for dilution with 2-6 parts water. Apply by brush or low-pressure spray.

Sure Klean® Burnished Custom Masonry Cleaner – A General-purpose, non-etching acidic cleaner removes rust, mud, oil, atmospheric dirt, mortar smears and other stains without altering the surface texture. Burnished Custom Masonry adds depth to colors, brightens white matrices and exposed aggregate.

TEST METHOD – Cleaning & Surface Alteration Testing

Dilution ratios refer to mixtures of parts concentrated cleaner : parts fresh water. Chemical cleaners were evaluated using the following procedure:

Sure Klean® Custom Masonry Cleaner evaluated at dilution 1:2, 1:4, and 1:6 and Sure Klean® Burnished Custom Masonry Cleaner evaluated at dilution 1:2 and 1:3. The following procedure was used:

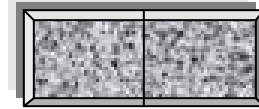
1. Prewet the surface with water.
2. Apply each cleaner at the appropriate dilutions.

Custom Masonry Cleaner	3 minutes
Burnished Custom Masonry Cleaner	5 minutes
3. Reapply the products and moderately agitate with a brush.
4. Pressure rinse thoroughly.*
5. Allow the surface to dry for at least 18 hours and visually examine.

* Pressure rinsing was conducted at approximately 1300 psi with a warm water flow rate of 1.9 gallons per minute.



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TEST RESULTS – Cleaning & Surface Alterations:

Surface Alteration Results:

Substrate: Rockwood CMU		Pigment Color: Gray			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	2	2	2	0
Custom Masonry Cleaner	1:4	1	0	1	0
Custom Masonry Cleaner	1:6	1	0	1	0
Burnished Custom Masonry Cleaner	1:2	0	0	0	0
Burnished Custom Masonry Cleaner	1:3	0	0	0	0
Substrate: Stoneskirt CMU		Pigment Color: Gray			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	2	2	2	0
Custom Masonry Cleaner	1:4	1	0	1	0
Custom Masonry Cleaner	1:6	1	0	1	0
Burnished Custom Masonry Cleaner	1:2	1	0	1	0
Burnished Custom Masonry Cleaner	1:3	1	0	0	0
Substrate: Rockwood CMU		Pigment Color: Sandstone			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	1	0	1	0
Custom Masonry Cleaner	1:4	1	0	1	0
Custom Masonry Cleaner	1:6	0	0	0	0
Burnished Custom Masonry Cleaner	1:2	0	0	0	0
Burnished Custom Masonry Cleaner	1:3	0	0	0	0
Substrate: Stoneskirt CMU		Pigment Color: Sandstone			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	1	0	1	0
Custom Masonry Cleaner	1:4	1	0	1	0
Custom Masonry Cleaner	1:6	1	0	1	0
Burnished Custom Masonry Cleaner	1:2	0	0	0	0
Burnished Custom Masonry Cleaner	1:3	0	0	0	0

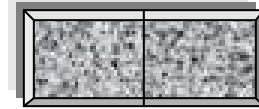
Scale used for reporting results of all categories

0 – no change
 1 – slight
 2 – moderate

3 – heavy
 4 – excessive



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TEST RESULTS - Cleaning

Surface Alteration Results:

Substrate: Rockwood CMU		Pigment Color: Charcoal			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	2	1	2	0
Custom Masonry Cleaner	1:4	1	0	1	0
Custom Masonry Cleaner	1:6	1	0	1	0
Burnished Custom Masonry Cleaner	1:2	0	0	0	0
Burnished Custom Masonry Cleaner	1:3	0	0	0	0
Substrate: Stoneskirt CMU		Pigment Color: Charcoal			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	2	2	2	0
Custom Masonry Cleaner	1:4	2	1	2	0
Custom Masonry Cleaner	1:6	1	0	1	0
Burnished Custom Masonry Cleaner	1:2	1	0	1	0
Burnished Custom Masonry Cleaner	1:3	1	0	1	0
Substrate: Rockwood CMU		Pigment Color: Brown			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	2	0	2	0
Custom Masonry Cleaner	1:4	2	0	2	0
Custom Masonry Cleaner	1:6	1	0	1	0
Burnished Custom Masonry Cleaner	1:2	0	0	0	0
Burnished Custom Masonry Cleaner	1:3	0	0	0	0
Substrate: Stoneskirt CMU		Pigment Color: Brown			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	2	0	2	0
Custom Masonry Cleaner	1:4	2	0	2	0
Custom Masonry Cleaner	1:6	1	0	1	0
Burnished Custom Masonry Cleaner	1:2	1	0	1	0
Burnished Custom Masonry Cleaner	1:3	0	0	0	0

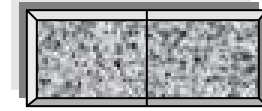
Scale used for reporting results of all categories

0 – no change
1 – slight
2 – moderate

3 – heavy
4 – excessive



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TEST RESULTS - Cleaning

Surface Alteration Results:

Substrate: Rockwood CMU		Pigment Color: H. Tan			
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal	Matrix Erosion	Staining
Custom Masonry Cleaner	1:2	2	0	2	0
Custom Masonry Cleaner	1:4	2	0	2	0
Custom Masonry Cleaner	1:6	1	0	1	0
Burnished Custom Masonry Cleaner	1:2	1	0	1	0
Burnished Custom Masonry Cleaner	1:3	1	0	1	0

Scale used for reporting results of all categories

0 – no change
 1 – slight
 2 – moderate

3 – heavy
 4 – excessive

CONCLUSIONS - Cleaning:

Based on the test data, all of the submitted block samples were efficiently cleaned with each dilution of the selected PROSOCO Inc.'s cleaning products. Use higher concentrations and surface agitation to maximize aggregate exposure. Use low concentration and surface agitation to minimize aggregate exposure.

All dilutions of Sure Klean® Custom Masonry Cleaner tested affected the substrate in a similar manner, removing slight to moderate concentrations of pigmented matrix from the split-face CMUs, exposing small and large aggregate, and enhancing the natural appearance of the integrally colored concrete masonry unit.

All dilutions of Sure Klean® Burnished Custom Masonry Cleaner tested affected the substrate in a similar manner, removing slight concentrations of pigmented matrix from the split-face CMUs, exposing small and large aggregate, and enhancing the natural appearance of the integrally colored concrete masonry unit.

See photographs of Surface Alterations results on pages 9-10.

RECOMMENDED PRODUCTS AND DILUTIONS - CLEANING:

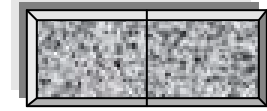
Based on these evaluations, all of the dilutions of Sure Klean® Custom Masonry Cleaner and Sure Klean® Burnished Custom Masonry Cleaner tested can be recommended for job-site testing on the Rockwood and Stoneskirt CMUs submitted by GLS Industries, Inc., Rochester, MN.

They all are effective in removing excess mortar, and they all assist in improving the color and uniformity of these concrete masonry units. The most appropriate cleaner and dilution should be determined on the specific job-site, and will be dependent primarily on the nature and severity of soiling present at that location.

Note: To remove excess mortar while minimizing aggregate exposure and color enhancement, clean within 7 days of completion using Custom Masonry Cleaner or Burnished Custom Masonry Cleaner.



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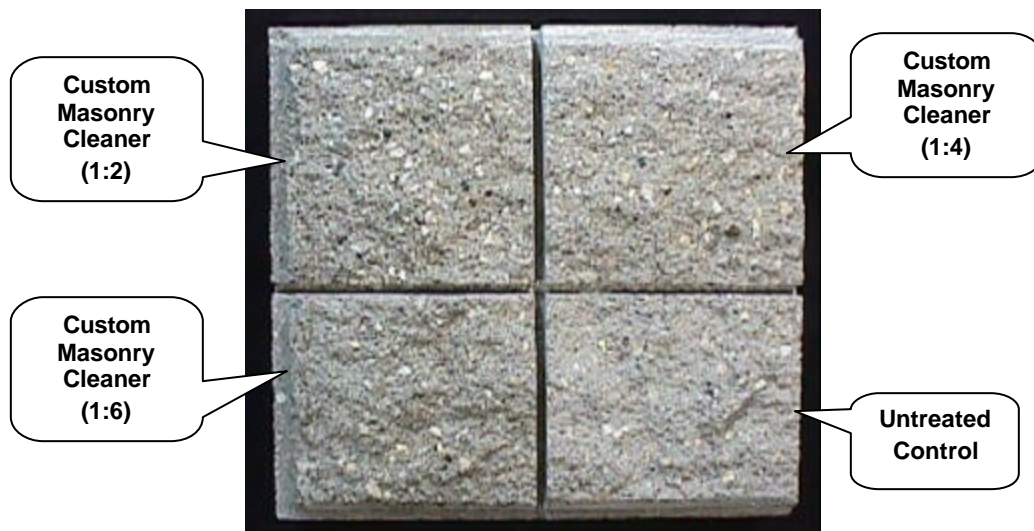
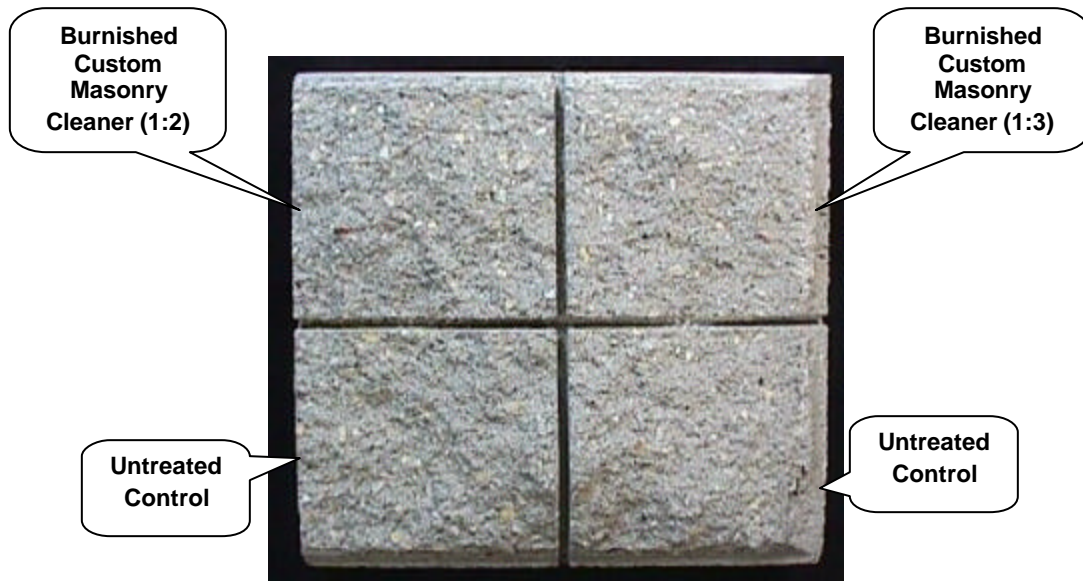


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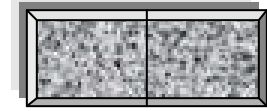
Photograph of Surface Alterations

“Stoneskirt Gray CMU”





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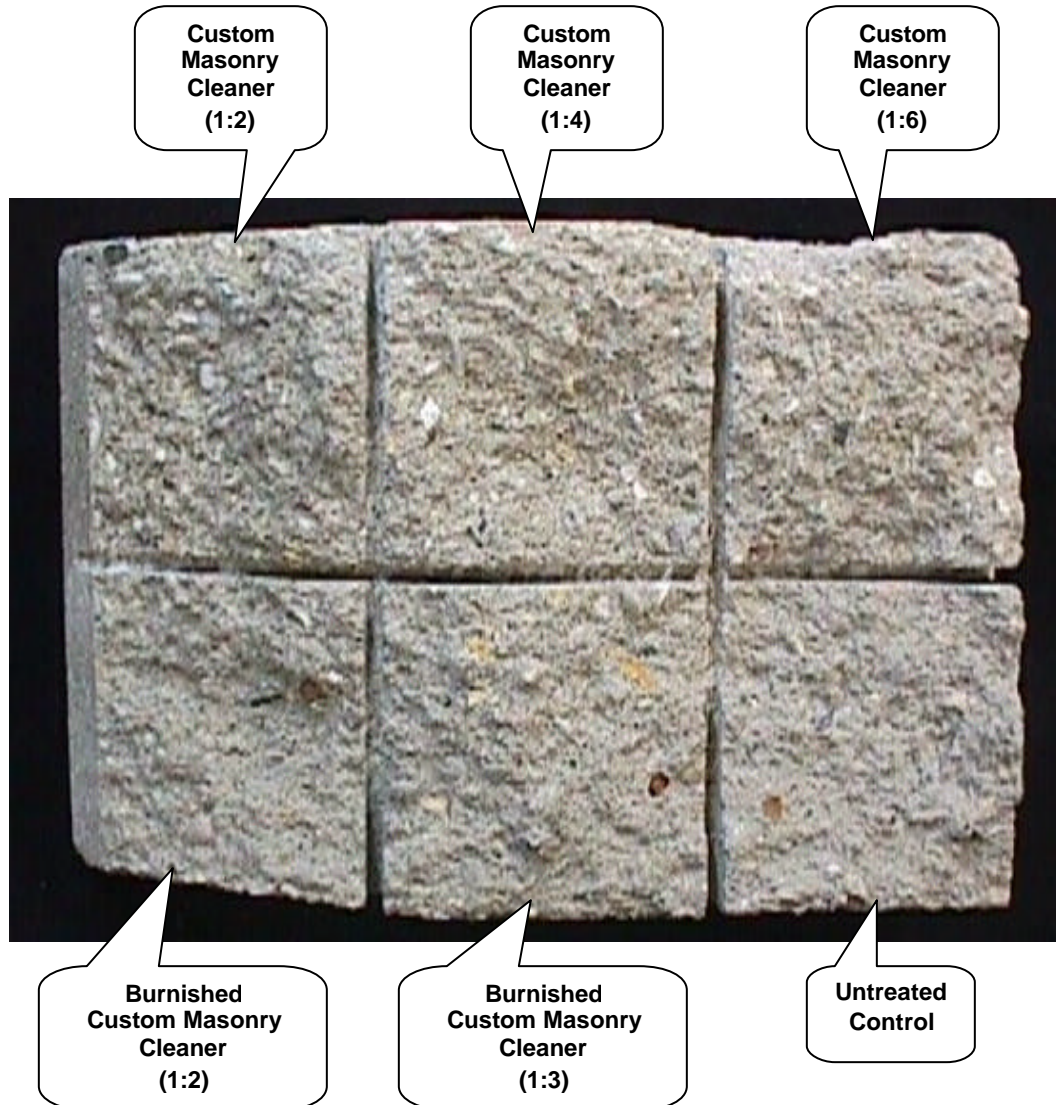


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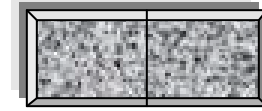
Photographs of Surface Alterations

“Rockwood Gray CMU”





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SECTION B - PROTECTIVE WATER REPELLENTS:

The testing described below evaluates the suitability of water repellent treatments.

The surface treatments evaluated were selected for their suitability for application based on the following selection criteria:

1. Weatherproofing properties
2. Color change
3. Ease of application

DESCRIPTIONS OF PRODUCTS EVALUATED - Protective Water Repellents:

Sure Klean® Custom Masonry Sealer - A clear, solvent-based silicone elastomer formulated to weatherproof custom masonry units, cast stone, and concrete block without altering the natural appearance. Custom Masonry Sealer penetrates and fills pores to prevent water penetration through exterior walls exposed to normal weathering as well as long-lasting protection against many types of graffiti.

Sure Klean® Weather Seal Siloxane WB Concentrate – A self-emulsifying water repellent concentrate designed for dilution with fresh water at the jobsite. This solvent-free blend of silanes and oligomeric alkoxy siloxanes mixes easily with water to produce a penetrating water repellent ideal for application to dense or porous masonry surfaces.

SAMPLE PREPARATION - Protective Water Repellents:

The submitted blocks were scored, allowed to dry, and to reabsorb atmospheric humidity for 24 hours prior to treatment. The treatment method consisted of a wet-on-wet brush application. All treatments were allowed to cure at least 14 days prior to testing.

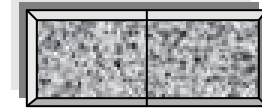
TEST METHODS - Protective Water Repellents:

Water Absorption Tube Test: RILEM II.4, 60 mph, 20 Minutes

The water absorption tube test simulating wind driven rain conditions was performed. This test simulates 60 mile per hour wind driven rain conditions for a period of 20 minutes.



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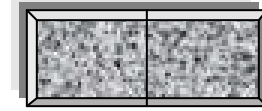
TEST RESULTS - Protective Water Repellents:

Water Absorption Tube Test: RILEM II.4, 60 mph, 20 Minutes

	RESULTS
“Rockwood Gray”	
Untreated Control	<40 mph
Custom Masonry Sealer	58 mph
Siloxane WB (1:9)	56 mph
“Stoneskirt Gray”	
Untreated Control	<40 mph
Custom Masonry Sealer	58 mph
Siloxane WB (1:9)	50 mph
“Rockwood Brown”	
Untreated Control	<40 mph
Custom Masonry Sealer	58 mph
Siloxane WB (1:9)	56 mph
“Stoneskirt Brown”	
Untreated Control	<40 mph
Custom Masonry Sealer	58 mph
Siloxane WB (1:9)	55 mph
“Rockwood H. Tan”	
Untreated Control	<40 mph
Custom Masonry Sealer	59 mph
Siloxane WB (1:9)	56 mph



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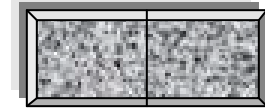
TEST RESULTS - Protective Water Repellents:

Water Absorption Tube Test: RILEM II.4, 60 mph, 20 Minutes

	RESULTS
“Rockwood Charcoal”	
Untreated Control	<40 mph
Custom Masonry Sealer	60 mph
Siloxane WB (1:9)	50 mph
“Stoneskirt Charcoal”	
Untreated Control	<40 mph
Custom Masonry Sealer	60 mph
Siloxane WB (1:9)	60 mph
“Rockwood Sandstone”	
Untreated Control	<40 mph
Custom Masonry Sealer	60 mph
Siloxane WB (1:9)	60 mph
“Stoneskirt Sandstone”	
Untreated Control	<40 mph
Custom Masonry Sealer	60 mph
Siloxane WB (1:9)	60 mph



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CONCLUSIONS - Protective Water Repellents:

Based upon laboratory evaluations, Sure Klean[®] Custom Masonry Sealer and Sure Klean[®] Weather Seal Siloxane WB Concentrate diluted with 9 parts fresh water were able to provide adequate water repellency to all colors of Rockwood and Stoneskirt CMUs submitted.

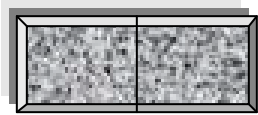
RECOMMENDATIONS - Protective Water Repellents:

Based on evaluations, Sure Klean[®] Custom Masonry Sealer and Sure Klean[®] Weather Seal Siloxane WB Concentrate diluted with 9 parts fresh water can be recommended for job-site testing on all Rockwood and Stoneskirt CMUs submitted by GLS Industries, Inc., Rochester, MN.

Apply all products in accordance with the manufacturer's recommendation provided on container labels and product data sheets. On-site testing should be conducted to determine the most appropriate water repellent product and procedures for a particular project. See product literature for additional application and product information.

Carmen M. Niven
Project Testing Coordinator

CMN/csm



Laboratory Report

Block Program Evaluation

**GLS Industries, Inc
Rochester, MN**

Project No. 0201-17 BP

Prepared For:

**John Fisher
Rockwood Retaining Walls
7200 NO. Hwy 63
Rochester, MN 55906**

Prepared By:



***PROSOCO, Inc.
March 2002***