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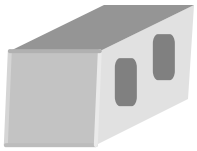
BLOCK PROGRAM
LABORATORY REPORT



PROSOCO, Inc.

FOR: Rich Kearney
cc: Steve Dean
Paul Tessier

SUBJECT: Johnson Concrete Products
P.O. Box 188
Willow Springs, NC 27592

DATE: November 13, 2001

PROJECT: 0109-10 BP

SAMPLES SUBMITTED:

Block	Color	Size
(4) Split-Face Block – face only	"JC-42 Charcoal Gray"	8" x 8" x 16"
(4) Split-Face Block – face only	"JC-63 Chocolate Brown"	8" x 8" x 16"
(4) Split-Face Block – face only	"JC-231 Walnut"	8" x 8" x 16"
(4) Split-Face Block – face only	"JC-281 Plum"	8" x 8" x16"

Submitted by: Rich Kearney

PURPOSE OF TESTING:

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

A. Cleaning Concrete Masonry Units: Sure Klean® Custom Masonry Cleaner was evaluated for removal of laboratory applied mortar.

To simulate new construction soiling, all CMUs are placed on a bench with finished surface facing upward. Hollow cylinders measuring 50 mm in diameter and 75 mm tall are positioned on top of each CMU and filled with a wet mixture of Ash Grove® Type S cementitious mortar. The wet, mortar-filled cylinder is allowed to remain in contact with the CMU for 10 minutes before removal.

Soiled CMUs are allowed to dry before test cleaning.

Heavy deposits of mortar are removed with dry scraping after 24 hours. Prepared cleaning solutions are then evaluated for their effectiveness in removing residual Ash Grove® Type S mortar staining after 3 days, 7 days, and 14 days of curing.

Refer to "*Note: When cleaning integrally colored CMU" in the following section, "Surface Alteration Testing."

B. Surface Alteration Testing - Sure Klean® Custom Masonry Cleaner was tested at various dilutions to determine if a cleaning program implemented to remove excess mortar and related 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
1 – slight
2 – moderate
3 – heavy
4 – excessive

*** 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.

C. Protective Water Repellents - Sure Klean® Custom Masonry Sealer was evaluated for its ability to provide water repellency to the submitted samples. All samples were evaluated for water repellency by using RILEM method II.4.

CLEANING PRODUCTS EVALUATED

SAMPLE	PRODUCT	DILUTION
All Colors of Split-face CMUs	Sure Klean® Custom Masonry Cleaner	1:2
		1:4
		1:6

SURFACE ALTERATION PRODUCTS EVALUATED

SAMPLE	PRODUCT	DILUTION
All Colors of Split-face CMUs	Sure Klean® Custom Masonry Cleaner	1:2
		1:4
		1:6

WATER REPELLENT PRODUCTS EVALUATED

SAMPLE	PRODUCT
All Colors of Split-face CMUs	Sure Klean® Custom Masonry Sealer

SECTION A – CLEANING INTEGRALLY COLORED CMUs

DESCRIPTION OF PRODUCTS EVALUATED

These cleaning trials were conducted to determine the optimal cleaning/cure time combination.

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.

TEST METHOD – Cleaning

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

1. Prewet the surface with water.
2. Apply each cleaner at the appropriate dilutions.
3. Allow appropriate exposure time:
   Custom Masonry Cleaner..... 3 minutes
4. Reapply the products and moderately agitate with a brush.
5. Pressure rinse thoroughly.*****
6. 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.

Test Results - Cleaning

Block Type	Cleaner	Dilution	Cure	% Effectiveness
All Colors of Split-face CMUs	Custom Masonry Cleaner	1:2	3 day	100%
		1:4		100%
		1:6		100%
		1:2	7 day	100%
		1:4		100%
		1:6		100%
		1:2	14 day	100%
		1:4		100%
		1:6		100%

CONCLUSIONS - Cleaning:

Based on the test data, all of the submitted CMUs were efficiently cleaned with each dilution of the selected PROSOCO Inc.'s cleaning products. Sure Klean® Custom Masonry Cleaner in all dilutions was able to remove 100% of the applied mortar.

All dilutions of Sure Klean® Custom Masonry Cleaner tested affected the substrate in a similar manner, removing heavy concentrations of pigmented matrix from the rough and smooth block faces, exposing small and large aggregate, and enhancing the natural appearance of the integrally colored concrete masonry unit. . Use higher concentrations and surface agitation to maximize aggregate exposure. Use low concentration and surface agitation to minimize aggregate exposure.

RECOMMENDED PRODUCTS AND DILUTIONS - CLEANING:

Based on these evaluations, all of the dilutions of Sure Klean® Custom Masonry Cleaner tested can be recommended for job-site testing on CMUs submitted by Johnson Concrete Products, Willow Springs, NC. They all are effective in removing excess mortar, and they all assist in improving the color and uniformity of these concrete blocks. 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 Sure Klean® Custom Masonry Cleaner diluted with 6 parts fresh water.

SECTION B – Surface Alterations:

DESCRIPTION OF PRODUCTS EVALUATED – Surface Alterations:

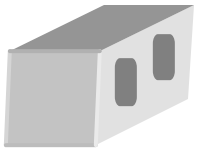
Sure Klean® Custom Masonry Cleaner – A general purpose, concentrated acidic cleaner for most custom masonry and colored concrete. Removes concrete splashes, excess mortar, mud, heavy efflorescence and surface soiling, leaving the masonry clean and uniform with no acid burning or streaking. Liquid concentrate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

TEST METHOD – Surface Alteration Testing:

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

1. Prewet the surface with water.
2. Apply each cleaner at the appropriate dilutions.
3. Allow appropriate exposure time:
   Custom Masonry Cleaner..... 3 minutes
4. Reapply the products and moderately agitate with a brush.
5. Pressure rinse thoroughly.*****
6. 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.



Surface Alteration Results:

Substrate: Split-face CMU	**Pigment Color:** "Charcoal 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	1	1	0
Custom Masonry Cleaner	1:6	1	1	1	0
Substrate: Split-face CMU	**Pigment Color:** "Chocolate Brown"				
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	1	1	0
Custom Masonry Cleaner	1:6	1	1	1	0
Substrate: Split-face CMU	**Pigment Color:** "Walnut"				
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	1	1	0
Custom Masonry Cleaner	1:6	1	1	1	0
Substrate: Split-face CMU	**Pigment Color:** "Plum"				
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	1	1	0
Custom Masonry Cleaner	1:6	1	1	1	0

Scale used for reporting results of all categories

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

CONCLUSIONS – Surface Alterations:

All dilutions of Sure Klean® Custom Masonry Cleaner tested effected the concrete blocks in a similar manner, removing heavy concentrations of pigmented matrix, exposing small and large aggregate, and enhancing the natural appearance of the integrally colored concrete masonry unit.

NOTE: Refer to Attachment # 1 “PHOTO A” and Attachment # 1 “PHOTO B” for visual surface alterations.

RECOMMENDATIONS – Surface Alterations:

Based upon laboratory evaluations, Sure Klean® Custom Masonry Cleaner in all dilutions is recommended for job-site testing on all of the samples submitted by Johnson Concrete Products, Willow Springs, NC.

SECTION C - 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.

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 72 hours 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.

TEST RESULTS - Protective Water Repellents:

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

	RESULTS
"Chocolate Brown"	
Untreated Control	< 40 mph
Custom Masonry Sealer	59 mph
"Walnut"	
Untreated Control	< 40 mph
Custom Masonry Sealer	57 mph
"Plum"	
Untreated Control	< 40 mph
Custom Masonry Sealer	57 mph
"Charcoal Gray"	
Untreated Control	< 40 mph
Custom Masonry Sealer	58 mph

CONCLUSIONS - Protective Water Repellents:

Based upon laboratory evaluations, Sure Klean® Custom Masonry Sealer provided above average water repellency protection to all types of submitted split-face CMUs. Sure Klean® Custom Masonry Sealer slightly enhanced the natural color of all submitted split-face CMUs

NOTE: Refer to Attachment # 2 "PHOTO C" and Attachment # 2 "PHOTO D" for visual color enhancement.

RECOMMENDATIONS - Protective Water Repellents:

Based upon laboratory evaluations, Sure Klean® Custom Masonry Sealer can be recommended for job-site testing on all colors of split-face CMUs submitted by Johnson Concrete Products, Willow Springs, NC.

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.

Lisa Toburen
Assistant Laboratory Technician

Attachment # 1

PHOTO A - “CHARCOAL GRAY” CMU cleaned with Custom Masonry Cleaner

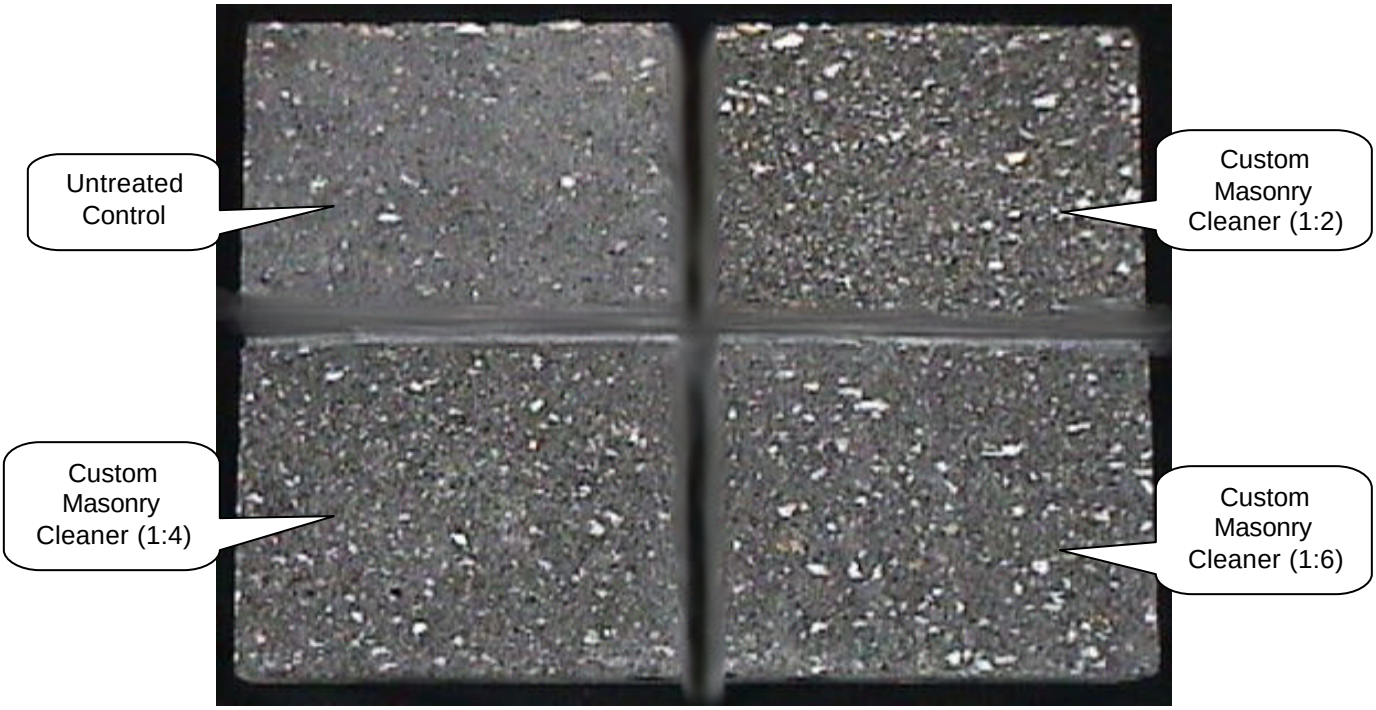
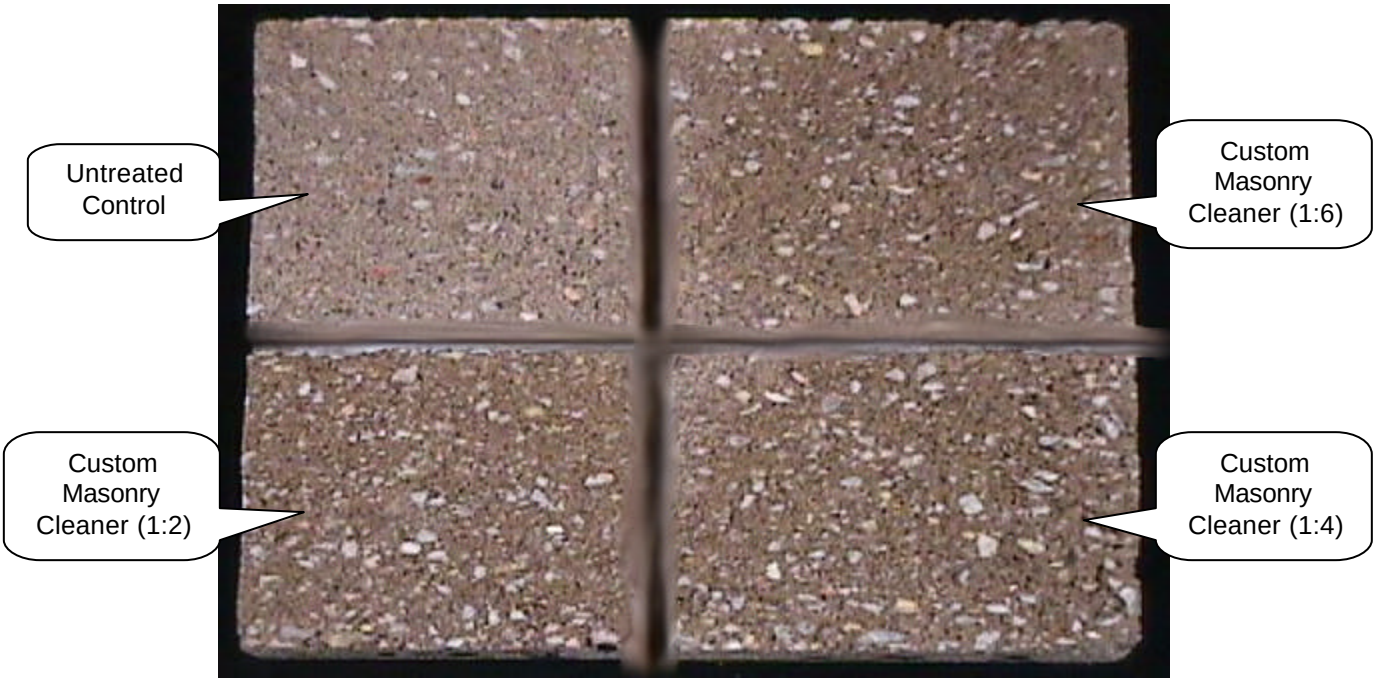


PHOTO B - “WALNUT” CMU cleaned with Custom Masonry Cleaner



Attachment # 2

PHOTO C – “CHARCOAL GRAY” CMU treated with Custom Masonry Sealer

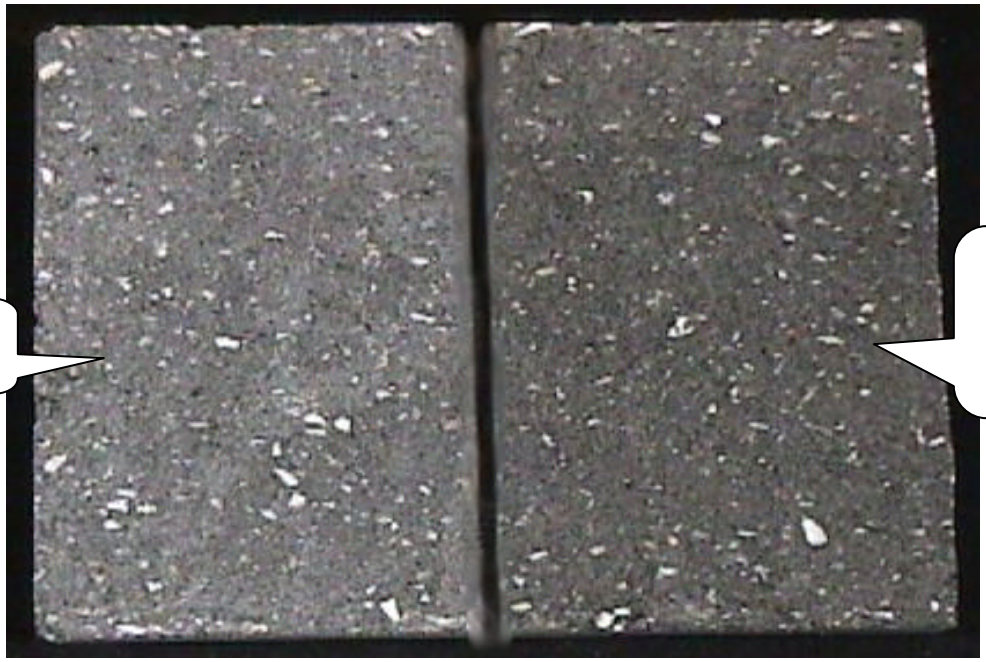


PHOTO D “WALNUT” CMU treated with Custom Masonry Sealer

Laboratory Report

Block Program Evaluation

Johnson Concrete Products
Willow Springs, NC

Project No. **0109-10 BP**

Prepared For:

Rich Kearney
Johnson Concrete Products
P.O. Box 188
Willow Springs, NC 27592

Prepared By:

PROSOCO, Inc.
November 2001