Laboratory Report

Pallet Tag Program Evaluation

Nitterhouse Masonry Products, LLC
Chambersburg, PA

Project No. **0211-13 PTP**

Prepared For:

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PROSOCO, Inc.
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Tom Yager
Steve Dean
John Bourne

SUBJECT: Nitterhouse Masonry Products, LLC.
Chambersburg, PA

DATE: January 27, 2003

PROJECT: 0211-13 PTP

SAMPLES SUBMITTED: Twelve types of concrete CMU and concrete brick in various colors.

Block	Color	Size
(4) Split-face CMU's	"J90 Limestone Blend"	15 ½" x 7 ½" x 2 ½"
(4) Split-face CMU's	"J51 Dark Brown"	15 ½" x 7 ½" x 2 ½"
(4) Split-face CMU's	"J64 Burgundy"	15 ½" x 7 ½" x 2 ½"
(4) Ground-face CMU's	"J94 Gray"	15 ½" x 7 ½" x 1"
(4) Ground-face CMU's	"J30 Green"	15 ½" x 7 ½" x 1"
(4) Ground-face CMU's	"J64 Burgundy"	15 ½" x 7 ½" x 1"
(4) Ground-face CMU's	"J81 Desert Tan"	15 ½" x 7 ½" x 1"
(4) Matte-face CMU's	"A41 Beige"	15 ½" x 7 ½" x 1"
(4) Split-face Concrete Brick	"A71 Glacier"	7 ½" x 3 ½" x 2 ½"
(4) Split-face Concrete Brick	"J94 Charcoal"	7 ½" x 3 ½" x 2 ½"
(4) Matte-face Concrete Brick	"Beige Range"	7 ½" x 3 ½" x 3"
(4) Matte-face Concrete Brick	"Charcoal Range"	7 ½" x 3 ½" x 3"

Submitted by: Colleen Foley, Nitterhouse Masonry Products, LLC.

PURPOSE OF TESTING:

Three types of integrally colored split-face CMU's, four types of integrally colored ground-face CMU's, one type of matte-face CMU, two types of integrally colored split-face concrete brick, and two types of matte-face concrete brick 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 the split-face CMU's, ground-face CMU's, matte-face CMU's, split-face concrete brick, and matte-face concrete brick. Sure Klean® Burnished Custom Masonry Cleaner was evaluated for removal of laboratory-applied mortar to the ground-face and split-face CMU's.

To simulate new construction soiling, all CMU's 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 mortar. The wet, mortar-filled cylinder is allowed to remain in contact with the CMU for 10 minutes before removal.

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.

B. Color Uniformity Testing* - Sure Klean® Custom Masonry Cleaner and Sure Klean® Burnished Custom Masonry Cleaner were evaluated at various dilutions to determine the optimal concentration of cleaner that leaves the external surface looking most like the natural through-body color of the CMU. Color uniformity was evaluated by comparing aggregate exposure and surface pigment alternation/removal of each cleaned surface compared to the natural through-body color of the CMU.

Aggregate Exposure is the visual examination comparing aggregate exposure of the interior, through-body section of CMU to surfaces cleaned with selected product(s) at given dilutions.

Surface Pigment Alteration/Removal* is the visual examination comparing the pigmentation of the interior, through-body section of the CMU to surfaces cleaned with selected product(s) at given dilutions.

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

0 – **Worst** match to through-body
1 – **Poor** match to through-body
2 – **Fair** match to through-body
3 – **Good** match to through-body
4 – **Best** match to through-body

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

Integrally colored concrete masonry units (CMU's) 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® Weather Seal Siloxane WB Concentrate and Sure Klean® Custom Masonry Sealer were evaluated for their ability to provide water repellency to the submitted samples.

PRODUCTS EVALUATED FOR CLEANING AND COLOR UNIFORMITY

Block Type	Product	Dilution
All split-face, matte-face, and ground-face CMU's submitted	Sure Klean® Custom Masonry Cleaner Sure Klean® Burnished Custom Masonry Cleaner	1:2, 1:4, 1:6 1:2, 1:3
Block Type	**Product**	**Dilution**
All split-face and matte-face concrete brick	Sure Klean® Custom Masonry Cleaner	1:2, 1:4, 1:6

WATER REPELLENT PRODUCTS EVALUATED

Block Type	Product	Dilution
All ground-face CMU's submitted	Sure Klean® Weather Seal Siloxane WB Concentrate Sure Klean® Custom Masonry Sealer	1:9, 1:14 Concentrate
Block Type	**Product**	**Dilution**
All split-face and matte-face CMU's and all concrete brick submitted	Sure Klean® Weather Seal Siloxane WB Concentrate	1:9, 1:14

SECTION A – CLEANING INTEGRALLY COLORED CMU's

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.

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. Liquid concentrate for dilution with 2-3 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 dwell time for each cleaner:
   Custom Masonry Cleaner.....3 minutes
   Burnished Custom Masonry Cleaner.....5 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

% removal

"J90 Limestone Blend" Split-face CMU				
Product	**Dilution**	**3 day**	**7 day**	**14 day**
Custom Masonry Cleaner	1:2	100%	100%	100%
Custom Masonry Cleaner	1:4	100%	100%	100%
Custom Masonry Cleaner	1:6	100%	100%	100%
Burnished Custom Masonry Cleaner	1:2	100%	100%	100%
Burnished Custom Masonry Cleaner	1:3	100%	100%	100%
"J51 Dark Brown" Split-face CMU				
Product	**Dilution**	**3 day**	**7 day**	**14 day**
Custom Masonry Cleaner	1:2	100%	100%	100%
Custom Masonry Cleaner	1:4	100%	100%	100%
Custom Masonry Cleaner	1:6	100%	100%	100%
Burnished Custom Masonry Cleaner	1:2	100%	100%	100%
Burnished Custom Masonry Cleaner	1:3	100%	100%	100%
"J64 Burgundy" Split-face CMU				
Product	**Dilution**	**3 day**	**7 day**	**14 day**
Custom Masonry Cleaner	1:2	100%	100%	100%
Custom Masonry Cleaner	1:4	100%	100%	100%
Custom Masonry Cleaner	1:6	100%	100%	100%
Burnished Custom Masonry Cleaner	1:2	100%	100%	100%
Burnished Custom Masonry Cleaner	1:3	100%	100%	100%
"J94 Gray" Ground-face CMU				
Product	**Dilution**	**3 day**	**7 day**	**14 day**
Custom Masonry Cleaner	1:2	100%	100%	100%
Custom Masonry Cleaner	1:4	100%	100%	100%
Custom Masonry Cleaner	1:6	100%	100%	100%
Burnished Custom Masonry Cleaner	1:2	100%	100%	100%
Burnished Custom Masonry Cleaner	1:3	100%	100%	100%
"J30 Green" Ground-face CMU				
Product		**3 day**	**7 day**	**14 day**
Custom Masonry Cleaner	1:2	100%	100%	100%
Custom Masonry Cleaner	1:4	100%	100%	100%
Custom Masonry Cleaner	1:6	100%	100%	100%
Burnished Custom Masonry Cleaner	1:2	100%	100%	100%
Burnished Custom Masonry Cleaner	1:3	100%	100%	100%
"J64 Burgundy" Ground-face CMU				
Product	**Dilution**	**3 day**	**7 day**	**14 day**
Custom Masonry Cleaner	1:2	100%	100%	100%
Custom Masonry Cleaner	1:4	100%	100%	100%
Custom Masonry Cleaner	1:6	100%	100%	100%
Burnished Custom Masonry Cleaner	1:2	100%	100%	100%
Burnished Custom Masonry Cleaner	1:3	100%	100%	100%

TEST RESULTS - Cleaning Continued

% removal

"J81 Desert Tan" Ground-face CMU				
Product	**Dilution**	**3 day**	**7 day**	**14 day**
Custom Masonry Cleaner	1:2	100%	100%	100%
Custom Masonry Cleaner	1:4	100%	100%	100%
Custom Masonry Cleaner	1:6	100%	100%	100%
Burnished Custom Masonry Cleaner	1:2	100%	100%	100%
Burnished Custom Masonry Cleaner	1:3	100%	100%	100%
"A41 Beige" Matte-face CMU				
Product	**Dilution**	**3 day**	**7 day**	**14 day**
Custom Masonry Cleaner	1:2	100%	100%	100%
Custom Masonry Cleaner	1:4	100%	100%	100%
Custom Masonry Cleaner	1:6	100%	100%	100%
Burnished Custom Masonry Cleaner	1:2	100%	100%	100%
Burnished Custom Masonry Cleaner	1:3	100%	100%	100%
"A71 Glacier" Split-face Concrete Brick				
Product	**Dilution**	**3 day**	**7 day**	**14 day**
Custom Masonry Cleaner	1:2	100%	100%	100%
Custom Masonry Cleaner	1:4	100%	100%	100%
Custom Masonry Cleaner	1:6	100%	100%	100%
"J94 Charcoal" Split-face Concrete Brick				
Product		**3 day**	**7 day**	**14 day**
Custom Masonry Cleaner	1:2	100%	100%	100%
Custom Masonry Cleaner	1:4	100%	100%	100%
Custom Masonry Cleaner	1:6	100%	100%	100%
"Beige Range" Matte-face Concrete Brick				
Product	**Dilution**	**3 day**	**7 day**	**14 day**
Custom Masonry Cleaner	1:2	100%	100%	100%
Custom Masonry Cleaner	1:4	100%	100%	100%
Custom Masonry Cleaner	1:6	100%	100%	100%
"Charcoal Range" Matte-face Concrete Brick				
Product	**Dilution**	**3 day**	**7 day**	**14 day**
Custom Masonry Cleaner	1:2	100%	100%	100%
Custom Masonry Cleaner	1:4	100%	100%	100%
Custom Masonry Cleaner	1:6	100%	100%	100%

CONCLUSIONS - Cleaning

Based on the test data, all of the submitted 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 and Sure Klean® Burnished Custom Masonry Cleaner tested affected the substrate in a similar manner, removing slight to 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.

RECOMMENDED PRODUCTS AND DILUTIONS - CLEANING

Recommendations for cleaning for each type of CMU submitted by Nitterhouse Masonry Products, LLC., Chambersburg, PA are provided in the chart below. Recommendations are based on the optimum dilution for complete removal of mortar.

Block	Color	New Construction Cleaning (Type S mortar, 14 day)
Split-face CMU's	"J90 Limestone Blend"	Sure Klean® Custom Masonry Cleaner (1:6) OR Sure Klean® Burnished Custom Masonry Cleaner (1:3)
	"J51 Dark Brown"	
	"J64 Burgundy"	
Ground-face CMU's	"J94 Gray"	
	"J30 Green"	
	"J64 Burgundy"	
	"J81 Desert Tan"	
Matte-face CMU's	"A41 Beige"	
Split-face Concrete Brick	"A71 Glacier"	Sure Klean® Custom Masonry Cleaner (1:6)
	"J94 Charcoal"	
Matte-face Concrete Brick	"Beige Range"	
	"Charcoal Range"	

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.

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 cleaning product and procedures for a particular project. See product literature for additional application and product information.

SECTION B – COLOR UNIFORMITY:

DESCRIPTION OF PRODUCTS EVALUATED – Color Uniformity:

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. Liquid concentrate for dilution with 2-3 parts water. Apply by brush or low-pressure spray.

TEST METHOD – Color Uniformity 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 dwell time, as specified.
   Custom Masonry Cleaner.....3 minutes
   Burnished Custom Masonry Cleaner.....5 minutes
4. Reapply the products and moderately agitate with a brush.
5. Pressure rinse thoroughly.*
6. Allow the sample to dry for at least 18 hours and visually examine.
7. Break the sample in half and compare the through-body surfaces to the cleaned surfaces for the best match.

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

TEST RESULTS – Color Uniformity

Substrate: Split-face CMU	**Pigment Color:** "J90 Limestone Blend"		
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Custom Masonry Cleaner	1:2	3	3
Custom Masonry Cleaner	1:4	3	3
Custom Masonry Cleaner	1:6	3	4
Burnished Custom Masonry Cleaner	1:2	4	4
Burnished Custom Masonry Cleaner	1:3	4	4
Substrate: Split-face CMU	**Pigment Color:** "J51 Dark Brown"		
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Custom Masonry Cleaner	1:2	2	2
Custom Masonry Cleaner	1:4	2	2
Custom Masonry Cleaner	1:6	3	3
Burnished Custom Masonry Cleaner	1:2	3	3
Burnished Custom Masonry Cleaner	1:3	4	4
Substrate: Split-face CMU	**Pigment Color:** "J64 Burgundy"		
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Custom Masonry Cleaner	1:2	2	2
Custom Masonry Cleaner	1:4	2	2
Custom Masonry Cleaner	1:6	3	3
Burnished Custom Masonry Cleaner	1:2	4	4
Burnished Custom Masonry Cleaner	1:3	4	4
Substrate: Ground-face CMU	**Pigment Color:** "J94 Gray"		
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Custom Masonry Cleaner	1:2	3	3
Custom Masonry Cleaner	1:4	3	3
Custom Masonry Cleaner	1:6	3	3
Burnished Custom Masonry Cleaner	1:2	3	3
Burnished Custom Masonry Cleaner	1:3	4	4

Scale used for reporting results of both categories

0 – **Worst** match to through-body
1 – **Poor** match to through-body
2 – **Fair** match to through-body
3 – **Good** match to through-body
4 – **Best** match to through-body

TEST RESULTS – Color Uniformity Continued

Substrate: Ground-face CMU	**Pigment Color:** "J30 Green"		
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Custom Masonry Cleaner	1:2	3	3
Custom Masonry Cleaner	1:4	4	4
Custom Masonry Cleaner	1:6	4	4
Burnished Custom Masonry Cleaner	1:2	4	4
Burnished Custom Masonry Cleaner	1:3	4	4
Substrate: Ground-face CMU	**Pigment Color:** "J64 Burgundy"		
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Custom Masonry Cleaner	1:2	3	3
Custom Masonry Cleaner	1:4	3	3
Custom Masonry Cleaner	1:6	4	4
Burnished Custom Masonry Cleaner	1:2	4	4
Burnished Custom Masonry Cleaner	1:3	4	4
Substrate: Ground-face CMU	**Pigment Color:** "J81 Desert Tan"		
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Custom Masonry Cleaner	1:2	3	3
Custom Masonry Cleaner	1:4	3	3
Custom Masonry Cleaner	1:6	3	3
Burnished Custom Masonry Cleaner	1:2	3	3
Burnished Custom Masonry Cleaner	1:3	4	4
Substrate: Matte-face CMU	**Pigment Color:** "A41 Beige"		
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Custom Masonry Cleaner	1:2	3	
Custom Masonry Cleaner	1:4	4	4
Custom Masonry Cleaner	1:6	4	4
Burnished Custom Masonry Cleaner	1:2	4	4
Burnished Custom Masonry Cleaner	1:3	4	4

Scale used for reporting results of both categories

0 – **Worst** match to through-body
1 – **Poor** match to through-body
2 – **Fair** match to through-body
3 – **Good** match to through-body
4 – **Best** match to through-body

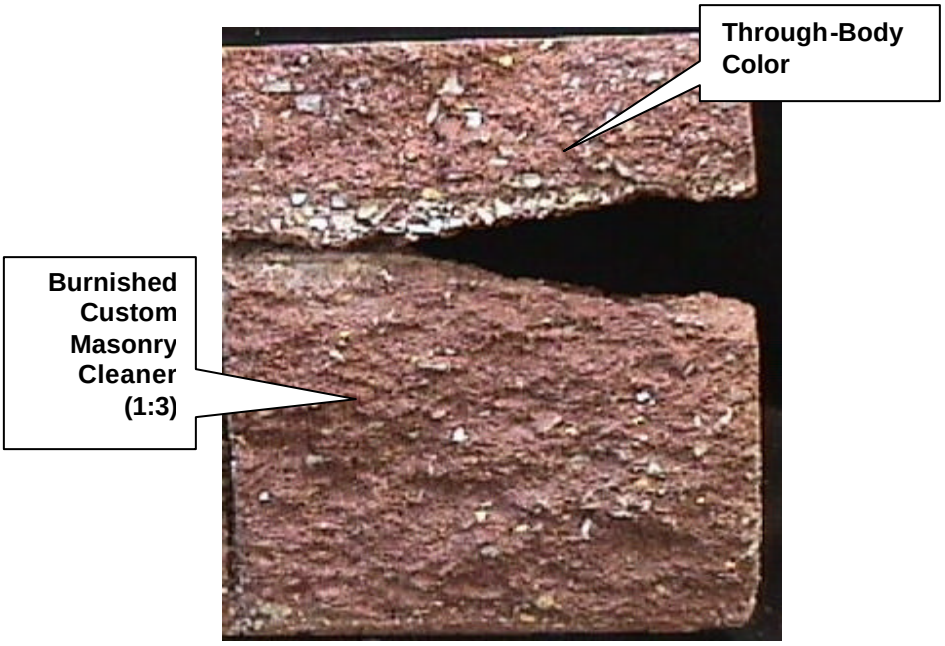
TEST RESULTS – Color Uniformity Continued

Substrate: Split-face Concrete Brick	**Pigment Color:** "A71 Glacier"		
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Custom Masonry Cleaner	1:2	3	3
Custom Masonry Cleaner	1:4	3	3
Custom Masonry Cleaner	1:6	4	4
Substrate: Split-face Concrete Brick	**Pigment Color:** "J94 Charcoal"		
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Custom Masonry Cleaner	1:2	3	3
Custom Masonry Cleaner	1:4	4	4
Custom Masonry Cleaner	1:6	4	4
Substrate: Matte-face Concrete Brick	**Pigment Color:** "Beige Range"		
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Custom Masonry Cleaner	1:2	3	3
Custom Masonry Cleaner	1:4	4	4
Custom Masonry Cleaner	1:6	4	4
Substrate: Matte-face Concrete Brick	**Pigment Color:** "Charcoal Range"		
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Custom Masonry Cleaner	1:6	3	3
Burnished Custom Masonry Cleaner	1:2	4	4
Burnished Custom Masonry Cleaner	1:3	4	4

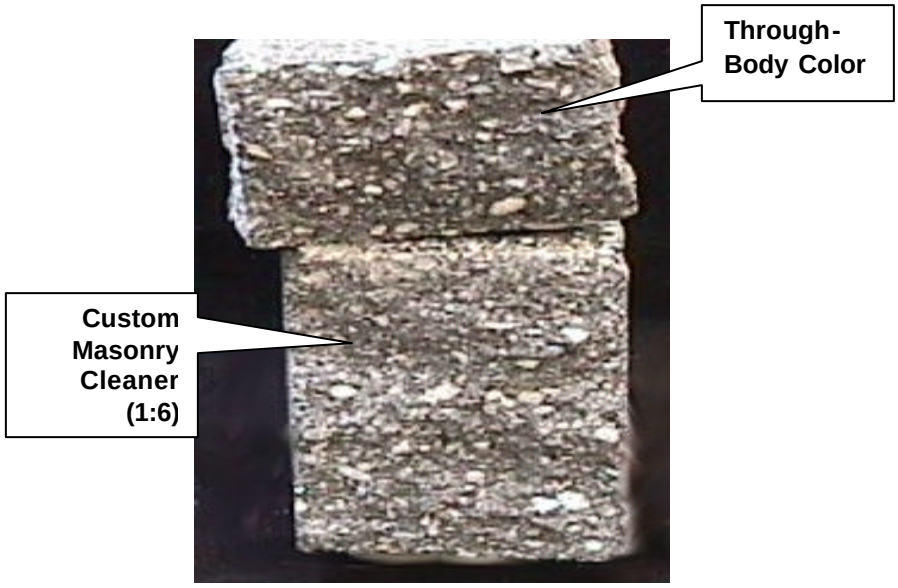
0 – **Worst** match to through-body
1 – **Poor** match to through-body
2 – **Fair** match to through-body
3 – **Good** match to through-body
4 – **Best** match to through-body

PHOTOGRAPHS – Color Uniformity

"J64 Burgundy" Split-face CMU after cleaning



"J94 Charcoal" Split-face concrete brick after cleaning



CONCLUSIONS: Color Uniformity:

All dilutions of Sure Klean® Custom Masonry Cleaner and Sure Klean® Burnished Custom Masonry Cleaner tested affected the substrate in a similar manner. Higher concentrations of cleaner removed moderate to heavy concentrations of pigmented matrix, exposing small and large aggregate. Lower concentrations of cleaner removed slight to moderate concentrations of pigmented matrix, exposing small and large aggregate. All dilutions enhanced the natural appearance of the integrally colored CMU.

RECOMMENDATIONS - COLOR UNIFORMITY

Recommendations for color uniformity for each type of CMU submitted by Nitterhouse Masonry Products, LLC, Chambersburg, PA are provided in the chart below. Recommendations are based on the optimum dilution that provides the best color uniformity and the complete removal of mortar.

Block	Color	New Construction Cleaning (Type S mortar, 14 day)
Split-face CMU's	"J90 Limestone Blend"	Sure Klean® Custom Masonry Cleaner (1:6) OR Sure Klean® Burnished Custom Masonry Cleaner (1:3)
	"J51 Dark Brown"	
	"J64 Burgundy"	
Ground-face CMU's	"J94 Gray"	
	"J30 Green"	
	"J64 Burgundy"	
	"J81 Desert Tan"	
Matte-face CMU's	"A41 Beige"	
Split-face Concrete Brick	"A71 Glacier"	Sure Klean® Custom Masonry Cleaner (1:6)
	"J94 Charcoal"	
Matte-face Concrete Brick	"Beige Range"	
	"Charcoal Range"	

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.

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 cleaning product and procedures for a particular project. See product literature for additional application and product information.

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

Sure Klean® Custom Masonry Sealer – A clear, solvent-based silicone elastomer formulated to weatherproof custom masonry units, cast stone, architectural concrete block, pre-cast concrete, wood, and porous masonry. Fills pores and penetrates to prevent water penetration through exterior walls exposed to normal weathering.

SAMPLE PREPARATION - Protective Water Repellents:

The submitted blocks and brick 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 3 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. See Technical Services TECH Note RILEM Tube Test Procedures.

TEST RESULTS - Protective Water Repellents:

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

	RESULTS
"J90 Limestone Blend" Split-face	
Untreated Control	< 40 mph
Siloxane WB Concentrate (1:9)	60 mph
Siloxane WB Concentrate (1:14)	60 mph
"J51 Dark Brown" Split-face	
Untreated Control	< 40 mph
Siloxane WB Concentrate (1:9)	58 mph
Siloxane WB Concentrate (1:14)	57 mph
"J64 Burgundy" Split-face	
Untreated Control	< 40 mph
Siloxane WB Concentrate (1:9)	60 mph
Siloxane WB Concentrate (1:14)	50 mph
"J94 Gray" Ground-face	
Untreated Control	60 mph
Custom Masonry Sealer	60 mph
Siloxane WB Concentrate (1:9)	60 mph
Siloxane WB Concentrate (1:14)	60 mph
"J30 Green" Ground-face	
Untreated Control	< 40 mph
Custom Masonry Sealer	60 mph
Siloxane WB Concentrate (1:9)	50 mph
Siloxane WB Concentrate (1:14)	49 mph

TEST RESULTS - Protective Water Repellents:

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

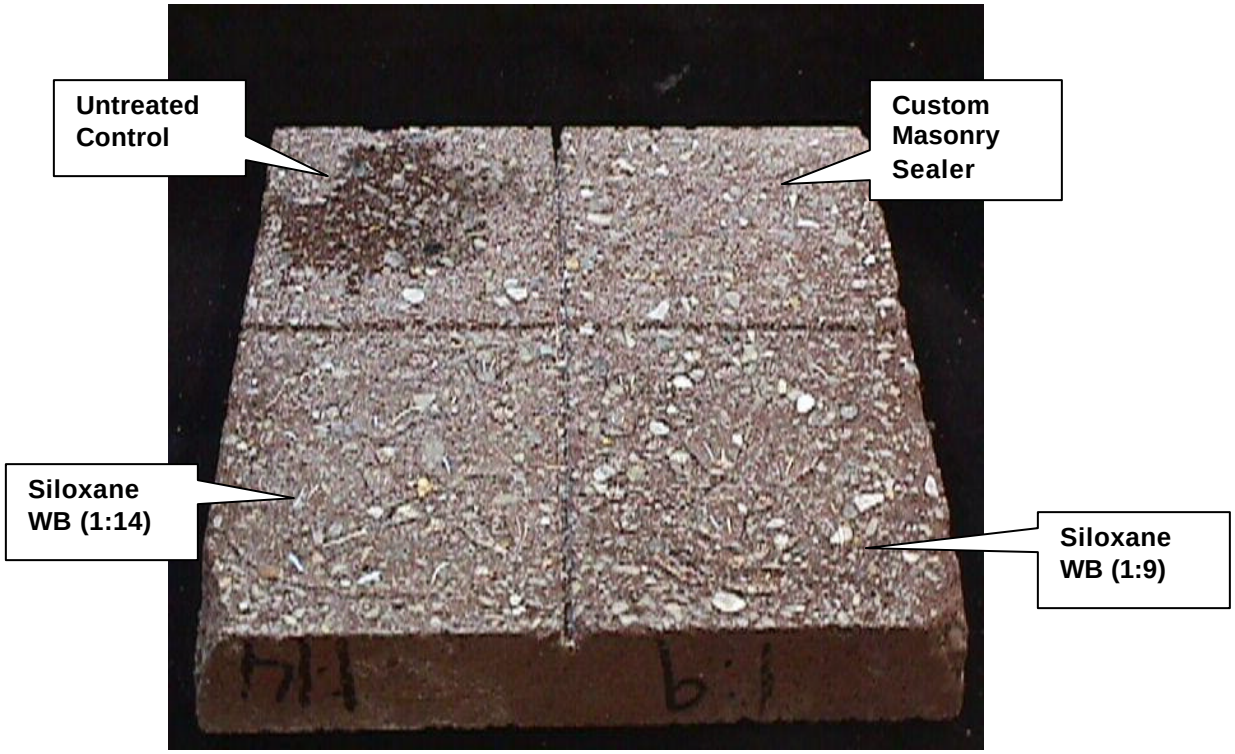
	RESULTS
"J64 Burgundy" Ground-face	
Untreated Control	< 40 mph
Custom Masonry Sealer	60 mph
Siloxane WB Concentrate (1:9)	60 mph
Siloxane WB Concentrate (1:14)	60 mph
"J81 Desert Tan" Ground-face	
Untreated Control	< 40 mph
Custom Masonry Sealer	55 mph
Siloxane WB Concentrate (1:9)	60 mph
Siloxane WB Concentrate (1:14)	59 mph
"A41 Beige" Matte-face	
Untreated Control	< 40 mph
Siloxane WB Concentrate (1:9)	60 mph
Siloxane WB Concentrate (1:14)	60 mph
"A71 Glacier" Split-face Concrete Brick	
Untreated Control	< 40 mph
Siloxane WB Concentrate (1:9)	60 mph
Siloxane WB Concentrate (1:14)	60 mph
"J94 Charcoal" Split-face Concrete Brick	
Untreated Control	< 40 mph
Siloxane WB Concentrate (1:9)	60 mph
Siloxane WB Concentrate (1:14)	58 mph

TEST RESULTS - Protective Water Repellents continued

	RESULTS
"Beige Range" Matte-face Concrete Brick	
Untreated Control	58 mph
Siloxane WB Concentrate (1:9)	60 mph
Siloxane WB Concentrate (1:14)	60 mph
"Charcoal Range" Matte-face Concrete Brick	
Untreated Control	58 mph
Siloxane WB Concentrate (1:9)	60 mph
Siloxane WB Concentrate (1:14)	60 mph

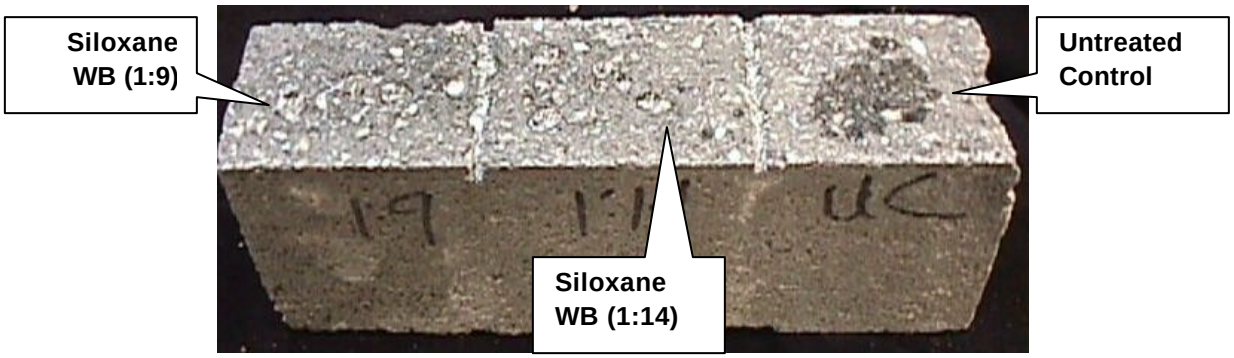
PHOTOGRAPHS – Protective Water Repellents – Surface Beading

"J64 Burgundy" Ground-face CMU after water repellency treatment



PHOTOGRAPHS – Protective Water Repellents – Surface Beading (cont.)

"A71 Glacier" Split-face brick after water repellency treatment



CONCLUSIONS - Protective Water Repellents

Based upon laboratory evaluations, Sure Klean® Weather Seal Siloxane WB Concentrate diluted with either nine or fourteen parts fresh water and/or Sure Klean® Custom Masonry Sealer provided above average water repellency to all submitted samples. Sure Klean® Custom Masonry Sealer slightly enhanced the natural appearance of the CMU's tested.

RECOMMENDATIONS - PROTECTIVE WATER REPELLENTS

Recommendations for water repellency treatment for each type of CMU submitted by Nitterhouse Masonry Products, LLC, Chambersburg, PA are provided in the chart below. Recommendations are based on the treatment that proved most effective and can provide water repellency on all types submitted.

Block Type	Water Repellents
"J90 Limestone Blend" split-face CMU	Sure Klean® Weather Seal Siloxane WB Concentrate (1:9), (1:14)
"J51 Dark Brown" split-face CMU	Sure Klean® Weather Seal Siloxane WB Concentrate (1:9), (1:14)
"J64 Burgundy" split-face CMU	Sure Klean® Weather Seal Siloxane WB Concentrate (1:9)
"J94 Gray" ground face CMU	Sure Klean® Weather Seal Siloxane WB Concentrate (1:9), (1:14) OR Sure Klean® Custom Masonry Sealer
"J30 Green" ground face CMU	Sure Klean® Custom Masonry Sealer
"J64 Burgundy" ground face CMU	Sure Klean® Weather Seal Siloxane WB Concentrate (1:9), (1:14) OR Sure Klean® Custom Masonry Sealer
"J81 Desert Tan" ground face CMU	Sure Klean® Weather Seal Siloxane WB Concentrate (1:9), (1:14) OR Sure Klean® Custom Masonry Sealer
"A41 Beige" matte face CMU	Sure Klean® Weather Seal Siloxane WB Concentrate (1:9), (1:14)
"A71 Glacier" split-face concrete brick	Sure Klean® Weather Seal Siloxane WB Concentrate (1:9), (1:14)
"J94 Charcoal" split-face concrete brick	Sure Klean® Weather Seal Siloxane WB Concentrate (1:9), (1:14)
"Beige Range" matte concrete brick	Sure Klean® Weather Seal Siloxane WB Concentrate (1:9), (1:14)
"Charcoal Range" matte concrete brick	Sure Klean® Weather Seal Siloxane WB Concentrate (1:9), (1:14)

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.

Courtney Williams
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