



PROSOCO, Inc.

Table of Contents	
Submitted Information	1
Purpose of Testing	2
Products Evaluated	
New Construction Cleaning Description of Products Evaluated – New Construction Cleaning Test Method – New Construction Cleaning Test Results – New Construction Cleaning	
Test Results – Limiting Surface Alterations. Photographs – New Construction Cleaning Photographs – Limiting Surface Alterations Conclusions – New Construction Cleaning Recommendations – New Construction Cleaning	
Protective Water Repellents Description of Products Evaluated – Protective Water Repellents Sample Preparation – Protective Water Repellents Test Methods – Protective Water Repellents Test Results – Protective Water Repellents Photographs – Protective Water Repellents Conclusions – Protective Water Repellents Recommendations – Protective Water Repellents	10 10 10 11 11 12 13 14 14
Graffiti Control Description of Products Evaluated – Graffiti Control Sample Preparation – Graffiti Control Test Method – Graffiti Control Test Results – Graffiti Control Photographs – Graffiti Control Conclusions – Graffiti Control Recommendations – Graffiti Control	15 15 16 16 16 17 17 18 19 19

Attachments

Technical Services TECH Note RILEM Tube Test Procedures Product Data literature for all products evaluated





Submitted Information

For: cc:	Mike Dickey Matt Henderson Paul Tessier Rick Olson, Endicott Clay Products
Subject:	Endicott Clay Products Fairbury, NE 68352
Date:	

Project: 0509-02 PTP

Samples Submitted: 5 types of glazed clay brick

Name	Finish	Color/Coating	Size
"Blue"	Glazed	Blue	7 ¾" x 2 ¼" x 3¾"
"Cabernet"	Glazed	Dark Red	7 ¾" x 2 ¼" x 3¾"
"Cypress"	Glazed	Green	7 ¾" x 2 ¼" x 3¾"
"Onyx"	Glazed	Black	7 ¾" x 2 ¼" x 3¾"
"Palm"	Glazed	Blue/Green	7 ¾" x 2 ¼" x 3¾"

Submitted by: Mike Dickey





Purpose of Testing

Five types of glazed clay brick were submitted to PROSOCO, Inc.'s Testing Laboratory with a request to determine the optimal concentration of cleaner for complete removal of mortar while limiting any potential surface alterations during new construction cleaning operations. Additionally, the effectiveness of water repellents and graffiti control products suitable for glazed clay brick were evaluated.

New Construction Cleaning –Sure Klean[®] Vana Trol[®] and Enviro Klean[®] 2010 All Surface Cleaner were tested at various dilutions to determine the optimal cleaning/cure time combination to most efficiently remove Type S mortar from the submitted glazed clay brick while limiting surface alterations to the decorative finish. The surface alteration evaluation was visually determined based upon perceived discoloration or erosion/etching of the glazed clay brick.

To simulate new construction soiling, all samples were placed on a bench with finished surface facing upward. Hollow cylinders measuring 50 mm in diameter and 75 mm tall were positioned on top of each brick and filled with a wet mixture of Type S cementitious mortar. The wet mortar-filled cylinder was allowed to remain in contact with the brick for 10 minutes before removal. Soiled brick were allowed to dry before test cleaning.

Heavy deposits of mortar were removed with dry scraping after 24 hours. Prepared cleaning solutions were then evaluated for their effectiveness in removing any residual Type S mortar after 3, 7, and 14 days of curing. A visual examination was also made to determine if the tested cleaners caused any surface alterations to the submitted clay brick based on the following:

<u>Surface Finish Removal</u> is the visual examination of the brick comparing the surface finish of the untreated control surface to the surface finish cleaned with selected product(s) at given dilutions.

<u>Substrate Deterioration</u> is the visual examination of the brick comparing the surface of the untreated control to surfaces cleaned with selected product(s) at given dilutions looking for any potential erosion/digestion of the brick.

<u>Color Change</u> is the visual examination comparing the color of the untreated control surface to color of surfaces cleaned with selected products at given dilutions.

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

Water Repellent Evaluation – Sure Klean[®] Weather Seal Siloxane PD and Sure Klean[®] Weather Seal T-1598 Silane Water Repellent were evaluated on the submitted samples for their ability to provide water repellency.

Graffiti Control Evaluation – Defacer Eraser[®] Graffiti Wipe was evaluated for its ability to remove graffiti.





Products Evaluated

Products Evaluated for New Construction Cleaning

Sample	Treatment	Dilution
All Submitted	Sure Klean [®] Vana Trol [®]	1:6, 1:8
Glazed Clay Brick	Enviro Klean [®] 2010 All Surface Cleaner	1:10

Protective Water Repellent Products Evaluated

Sample	Treatment	Dilution
All Submitted	Sure Klean [®] Weather Seal Siloxane PD	Concentrate
Glazed Clay Brick	Sure Klean [®] Weather Seal T-1598 Silane Water Repellent	Concentrate

Graffiti Repellents Evaluated

Sample	Treatment	Dilution
All Submitted Glazed Clay Brick	Defacer Eraser [®] Graffiti Wipe	Concentrate





New Construction Cleaning

These cleaning trials were conducted to determine the optimal cleaning/cure time combination to most efficiently remove Type S mortar from the submitted glazed clay brick while limiting any potential surface alterations to the decorative finish.

Type S mortar was prepared in compliance with the manufacturer's instructions, applied to the brick surface and allowed to cure for 3, 7 and 14 days. Mortar removal was accomplished using chemical assistance and a high-pressure water rinse with pressure rinsing equipment. The removal of Type S masonry mortar was visually evaluated after 3, 7 and 14 days of curing. A visual examination was also made to determine if the tested cleaners caused any surface alterations to the submitted glazed clay brick.

Description of Products Evaluated – New Construction Cleaning

Sure Klean[®] **Vana Trol**[®] – A concentrated acidic cleaner for new masonry surfaces that are subject to vanadium, manganese and other metallic stains. Use on: gray, brown, white, and most light-colored brick; natural stone; cast stone. Dissolves mortar smears and construction dirt quickly, leaving the masonry clean and uniform with no acid burning or streaking. Liquid concentrate for dilution with 4-10 parts water. Apply by brush or low-pressure spray.

Enviro Klean[®] 2010 All Surface Cleaner – A "next-generation" product for cleaning and degreasing light-toheavily soiled stone, tile, masonry and much more. Powerful enough for industrial use, flexible enough for jobs around the home, space-saving EK 2010 replaces a host of individual cleaning agents. It is suitable for homeuse on windows, bathroom tub and tile, counter tops and more when diluted with water. It's concentrated enough for the toughest industrial cleaning jobs on concrete, metal and many other plant and warehouse surfaces. EK 2010 also removes Sure Klean[®] Weather Seal Siloxane PD overspray from windows.

Test Method – New Construction Cleaning

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

- 1. Pre-wet the surface with water.
- 2. Apply the cleaner.

3.	Allow the appropriate dwell time, as specified.	
	Sure Klean [®] Vana Trol [®]	3-5 minutes
	Enviro Klean [®] 2010 All Surface Cleaner	1-10 minutes
4.	Pressure rinse thoroughly.*	

***Pressure Rinsing Equipment** – Masonry washing equipment generating approximately 700-800 psi with a water flow rate of 8 gallons per minute delivered through a 45 degree fan spray tip was used for rinsing.





Test Results – New Construction Cleaning

<u>% removal</u>

"Blue"						
Product	Dilution	3 day	7 day	14 day		
Sure Klean [®] Vana Trol [®]	1:6	100%	100%	100%		
Sure Klean [®] Vana Trol [®]	1:8	100%	100%	100%		
Enviro Klean [®] 2010 All Surface Cleaner	1:10	100%	100%	100%		
"	Cabernet"					
Product	Dilution	3 day	7 day	14 day		
Sure Klean [®] Vana Trol [®]	1:6	100%	100%	100%		
Sure Klean [®] Vana Trol [®]	1:8	100%	100%	100%		
Enviro Klean [®] 2010 All Surface Cleaner	1:10	100%	100%	100%		
"Cypress"						
Product	Dilution	3 day	7 day	14 day		
Sure Klean [®] Vana Trol [®]	1:6	100%	100%	100%		
Sure Klean [®] Vana Trol [®]	1:8	100%	100%	100%		
Enviro Klean [®] 2010 All Surface Cleaner	1:10	100%	100%	100%		
"Onyx"						
Product	Dilution	3 day	7 day	14 day		
Sure Klean [®] Vana Trol [®]	1:6	100%	100%	100%		
Sure Klean [®] Vana Trol [®]	1:8	100%	100%	100%		
Enviro Klean [®] 2010 All Surface Cleaner	1:10	100%	100%	100%		
"Palm"						
Product	Dilution	3 day	7 day	14 day		
Sure Klean [®] Vana Trol [®]	1:6	100%	100%	100%		
Sure Klean [®] Vana Trol [®]	1:8	100%	100%	100%		
Enviro Klean [®] 2010 All Surface Cleaner	1:10	100%	100%	100%		





Test Results – Limiting Surface Alterations

Substrate: Glazed Clay Brick	Pigment	Color: "Blue"			
Product	Dilution	Surface Finish Removal	Substrate Deterioration	Color Change	Staining
Sure Klean [®] Vana Trol [®]	1:6	0	0	0	0
Sure Klean [®] Vana Trol [®]	1:8	0	0	0	0
Enviro Klean [®] 2010 All Surface Cleaner	1:10	0	0	0	0
Substrate: Glazed Clay Brick	Pigment	Color: "Cabern	et"		
Product	Dilution	Surface Finish Removal	Substrate Deterioration	Color Change	Staining
Sure Klean [®] Vana Trol [®]	1:6	0	0	0	0
Sure Klean [®] Vana Trol [®]	1:8	0	0	0	0
Enviro Klean [®] 2010 All Surface Cleaner	1:10	0	0	0	0
Substrate: Glazed Clay Brick	Pigment Color: "Cypress"				
Product	Dilution	Surface Finish Removal	Substrate Deterioration	Color Change	Staining
Sure Klean [®] Vana Trol [®]	1:6	0	0	0	0
Sure Klean [®] Vana Trol [®]	1:8	0	0	0	0
Enviro Klean [®] 2010 All Surface Cleaner	1:10	0	0	0	0
Substrate: Glazed Clay Brick	Pigment	Color: "Onyx"			
Product	Dilution	Surface Finish Removal	Substrate Deterioration	Color Change	Staining
Sure Klean [®] Vana Trol [®]	1:6	0	0	0	0
Sure Klean [®] Vana Trol [®]	1:8	0	0	0	0
Enviro Klean [®] 2010 All Surface Cleaner	1:10	0	0	0	0
Substrate: Glazed Clay Brick	Pigment Color: "Palm"				
Product	Dilution	Surface Finish Removal	Substrate Deterioration	Color Change	Staining
Sure Klean [®] Vana Trol [®]	1:6	0	0	0	0
Sure Klean [®] Vana Trol [®]	1:8	0	0	0	0
Enviro Klean [®] 2010 All Surface Cleaner	1:10	0	0	0	0

0 – No change

3 - change - heavy

4 - change - excessive

1 – change – slight 2 – change – moderate





Photographs – New Construction Cleaning

"Blue" Glazed Clay Brick; 3 Day Cleaning



"Blue" Glazed Clay Brick; 7 Day Cleaning



"Blue" Glazed Clay Brick; 14 Day Cleaning







Photographs – Limiting Surface Alterations

"Blue" Glazed Clay Brick; Limiting Surface Alterations







Conclusions – New Construction Cleaning

Based on the test results, both Sure Klean[®] Vana Trol[®] and Enviro Klean[®] 2010 All Surface Cleaner performed well in removing excess mortar from the submitted clay brick even after allowing the mortar to remain on the surface of the brick for 14 days. In addition, test results indicate that none of the evaluated cleaners caused any noticeable surface alterations to any of the submitted samples.

It is recommended that the selected cleaners always be used in the lowest possible concentration. They should be rinsed with the lowest pressure of water as practical to minimize removal of the decorative finish. Excessive pressure and water volume may combine to damage or remove decorative finishes. To facilitate easier removal of excess mortar while minimizing any potential surface alterations to the decorative finish, clean within 7 days of construction.

Recommendations – New Construction Cleaning

Recommendations for cleaning for each type of clay brick submitted by Endicott Clay Products, Fairbury, NE are provided in the charts below. Recommendations are based on the optimum dilution for complete removal of mortar while limiting surface alterations.

Sample	New Construction Cleaning (Type S mortar, 14 day cleaning)
All Submitted Clay Brick	Sure Klean [®] Vana Trol [®] (1:8) OR Enviro Klean [®] 2010 All Surface Cleaner (1:10)

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





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

Description of Products Evaluated – Protective Water Repellents

Sure Klean[®] Weather Seal Siloxane PD – A ready-to-use, water-based silane/siloxane water repellent for concrete, GFRC, and most masonry and stucco surfaces. Siloxane PD penetrates more deeply than conventional water repellents. It helps masonry resist cracking, spalling, staining and other damage related to water intrusion. Low odor and alkaline stable, Siloxane PD is ideal for field and in-plant application.

Sure Klean[®] Weather Seal T-1598 Silane Water Repellent – A clear, penetrating, "neat" silane that offers invisible protection and low volatility. T-1598 Silane protects concrete and masonry surfaces against water and waterborne contaminants and acts as a primer for subsequent coatings. The small molecular structure of T-1598 allows for maximum penetration at coverage rates 2 to 4 times that of conventional silanes. Depth of penetration is controlled by the application rate (loading rate). This makes T-1598 ideal for protecting GFRC and even dense, color-sensitive surfaces. In addition, T-1598 forms an effective chloride screen that reduces surface erosion and corrosion of rebar in reinforced concrete caused by water and water-carried salts.

Sample Preparation – Protective Water Repellents

The submitted brick were cut and allowed to dry for at least 24 hours prior to treatment. All treatments were applied by brush in accordance with the current PROSOCO, Inc. Product Data Sheet application instructions. Both treatments were allowed to cure for at least 72 hours prior to testing.





Test Methods – Protective Water Repellents

Water Absorption Tube Test: Vertical RILEM II.4, 5.0 milliliters, 20 minutes

The water absorption tube test simulating wind driven and wind blown rain conditions was performed. Tests were run with 5.0-milliliter head pressures. Filled to 5 milliliters, a water absorption tube produces a 98 mph dynamic wind pressure. See RILEM II.4 Tech Note for additional information.

The ranking system used to evaluate the effectiveness of the products applied to each submitted sample is as follows:

AA = "Above Average" correlates to less than or equal to 20% of the maximum untreated absorption.

 \underline{A} = "Average" correlates to less than or equal to 50% of the maximum untreated absorption.

<u>BA</u> = "Below Average" correlates to greater than 50% of the maximum untreated absorption.

EXAMPLE: If RILEM tubes applied to an untreated sample result in loss of 5 ml of water or more, then:

A rating of **AA** Above Average water repellent performance would require loss of no more than:

A rating of <u>A</u> Average water repellent performance would require loss of no more than:

A rating of **<u>BA</u>** *Below Average* water repellent performance would be reported for treatments which result in a loss of more than:

50% X 5ml = 2.5ml+





Test Results - Protective Water Repellents

|--|

<u>AA</u> = Above Average	<u>A</u> = Average	<u>BA</u> = Below Average
---------------------------	--------------------	---------------------------

"Blue"	Results in mL loss	Ranking
Untreated Control	-0.0	
Sure Klean [®] Weather Seal Siloxane PD	-0.0	AA
Sure Klean [®] Weather Seal T-1598 Silane Water Repellent	-0.0	AA
"Cabernet"	Results in mL loss	Ranking
Untreated Control	-0.0	
Sure Klean [®] Weather Seal Siloxane PD	-0.0	AA
Sure Klean [®] Weather Seal T-1598 Silane Water Repellent	-0.0	AA
"Cypress"	Results in mL loss	Ranking
Untreated Control	-0.0	
Sure Klean [®] Weather Seal Siloxane PD	-0.0	<u>AA</u>
Sure Klean [®] Weather Seal T-1598 Silane Water Repellent	-0.0	AA
"Onyx"	Results in mL loss	Ranking
Untreated Control	-0.0	
Sure Klean [®] Weather Seal Siloxane PD	-0.0	AA
Sure Klean [®] Weather Seal T-1598 Silane Water Repellent	-0.0	AA
"Palm"	Results in mL loss	Ranking
Untreated Control	-0.0	
Sure Klean [®] Weather Seal Siloxane PD	-0.0	AA
Sure Klean [®] Weather Seal T-1598 Silane Water Repellent	-0.0	AA





Photographs - Protective Water Repellents



"Cypress"; RILEM Testing (Vertical RILEM II.4, 5.0 milliliters)





Conclusions – Protective Water Repellents

Test results indicate that all of the treatments evaluated exhibited above average water repellency on all submitted glazed clay brick. Neither Sure Klean[®] Weather Seal Siloxane PD nor Sure Klean[®] Weather Seal T-1598 Silane Water Repellent altered the appearance of any of the submitted glazed clay brick in any way.

<u>Recommendations</u> – Protective Water Repellents

Recommendations for water repellent treatments for each type of clay brick submitted by Endicott Clay Products, Fairbury, NE are provided in the chart below. Recommendations are based on the treatments that proved most effective and can provide water repellency on all types submitted.

Sample	Water Repellents
All Submitted Glazed Clay Brick	Sure Klean [®] Weather Seal Siloxane PD OR Sure Klean [®] Weather Seal T-1598 Silane Water Repellent

It must be pointed out that in any installation; the brick are a single component of the masonry facade. The ability of a water repellent treatment to prevent the ingress of water is affected by a variety of other factors. Therefore, on-site testing should be carried out for all installations with the recommended systems to ensure job site workmanship yields equivalent results.

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.





Graffiti Control

These trials were conducted to determine the optimal cleaner to remove graffiti staining from the submitted glazed clay brick samples.

Description of Products Evaluated – Graffiti Control

Products Evaluated for Graffiti Removal

Defacer Eraser[®] Graffiti Wipe – An easy-to-use graffiti remover that does not contain methanol, methylene chloride or other halogenated solvents prohibited on many projects. Graffiti Wipe removes a variety of graffiti stains from most smooth masonry, split-face concrete block, wood and metal surfaces.

Graffiti Agents

Interior/Exterior Spray Paint (Red) Permanent Marker (Green) Permanent Marker (Red) Permanent Marker (Black)





Sample Preparation – Graffiti Control

This evaluation compares the effectiveness of the selected cleaners in removing staining created by enamel spray paint and permanent markers from the submitted samples.

Spray paint and markers were applied as graffiti agents to the untreated surfaces. Removal of the graffiti agents was attempted 24 hours after application of the graffiti agents using Defacer Eraser[®] Graffiti Wipe.

Test Method – Graffiti Control

Chemical cleaners were evaluated using the following procedure:

- 1. Apply the product to a dry surface, soiled with graffiti.
- 3. Pressure rinse thoroughly until water runs clear.*
- 4. Allow the surface to dry thoroughly and visually examine to determine effectiveness.

***Pressure Rinsing Equipment** – Masonry washing equipment generating approximately 700-800 psi with a water flow rate of 8 gallons per minute delivered through a 45 degree fan spray tip was used for rinsing.





Test Results – Graffiti Control

"Blue"					
Untreated Control	Red Paint	Black Marker	Green Marker	Red Marker	% Avg. Removal
Graffiti Wipe	100%	100%	100%	100%	100%
"Cabernet"					
Untreated Control	Red Paint	Black Marker	Green Marker	Red Marker	% Avg. Removal
Graffiti Wipe	100%	100%	100%	100%	100%
"Cypress"					
Untreated Control	Red Paint	Black Marker	Green Marker	Red Marker	% Avg. Removal
Graffiti Wipe	100%	100%	100%	100%	100%
"Onyx"					
Untreated Control	Red Paint	Black Marker	Green Marker	Red Marker	% Avg. Removal
Graffiti Wipe	100%	100%	100%	100%	100%
"Palm"					
Untreated Control	Red Paint	Black Marker	Green Marker	Red Marker	% Avg. Removal
Graffiti Wipe	100%	100%	100%	100%	100%





Photographs – Graffiti Control

"Palm"; Graffiti Applied

"Palm"; Graffiti Removed



Defacer Eraser[®] Graffiti Wipe

Untreated Control





Conclusions – Graffiti Control

Based upon laboratory evaluations, Defacer Eraser[®] Graffiti Wipe was successful in removing the graffiti from the submitted samples.

Recommendations – Graffiti Control

Recommendations for graffiti control for each type of glazed clay brick submitted by Endicott Clay Products, Fairbury, NE are provided in the chart below. Recommendations are based on the product that was most effective at removing the graffiti on all types of glazed clay brick submitted.

Sample	Graffiti Removers
All Submitted Clay Brick	Defacer Eraser [®] Graffiti Wipe

Apply all products in accordance with the manufacturer's recommendation provided on container labels and product data sheets. Because the severity of graffiti varies from location to location, on-site testing should be conducted to determine the most appropriate graffiti control product and procedure for a particular project. See product literature for additional application and product information.

Christopher A. Moore Project Testing Laboratory Technician CAM



Laboratory Report

Pallet Tag Program Evaluation

Endicott Clay Products Fairbury, NE

Project No. 0509-02 PTP

Prepared For:

Endicott Clay Products P.O. BOX 17 Fairbury, NE 68352

Prepared By:

PROSOCO, Inc. October 2005