



PALLET CARD PROGRAM LABORATORY REPORT

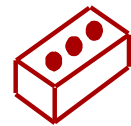


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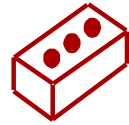
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ATTACHMENTS

- SOP TEC015-1 RILEM Tube Testing
- SOP TEC014-1 ASTM C 67 Immersion Testing
- Technical Services TECH Note RILEM Test Method No. II.4
- Product Data literature for all products evaluated
- Material Safety Data Sheets for all products evaluated



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ProSoCo, Inc.

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FOR: Steve Barnhardt
Box 549
Stanton, KY 40380

cc: Steve Dean
Sam Wade

SUBJECT: US Brick – Sipple Division
Box 549
Stanton, Kentucky 40380

DATE: September 14, 1998

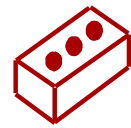
PROJECT: 9807-11 PC

SAMPLES SUBMITTED:

- Six new brown clay brick – Jackston
Size: 2 ¼" x 3 ½" x 7 ¾"
- Six new black speckled brown clay brick – Sante Fe
Size: 2 ¼" x 3 ½" x 7 ¾"
- Six new red clay brick – Country Club
Size: 2 ¼" x 3 ½" x 8"
- Six new dark brown clay brick – Brookstone
Size: 2 ¼" x 3 ½" x 8"
- Six new orange clay brick with white slurry coat – North
Pointe
Size: 2 ¼" x 3 ½" x 8"
- Six new red clay brick with white slurry coat - Kenton
Size: 2 ¼" x 3 ½" x 8"



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PURPOSE OF TESTING:

Samples of six clay brick types were submitted to ProSoCo's Testing Laboratory with a request to determine if application of the products evaluated will produce any adverse effects during new construction cleaning operations. Additionally, the effectiveness of water repellents, suitable for clay brick masonry, will be evaluated.

- A. Adverse Effects** - Sure Klean[®] 600 Detergent, Sure Klean[®] 101 Lime Solvent and Sure Klean[®] Vana Trol[®] were tested at various dilutions to determine if they would produce any adverse effects during the cleaning process. Adverse effects were evaluated visually and were based upon damage to the surface coating, discoloration or erosion/etching of the masonry unit.
- B. Protective Water Repellents** - Sure Klean[®] Weather Seal Siloxane PD and Sure Klean[®] Weather Seal Siloxane WB Concentrate were evaluated for their ability to provide water repellency to the submitted samples.

ADVERSE EFFECTS PRODUCTS EVALUATED

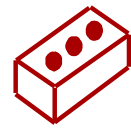
Sample	Sure Klean [®] 600 Detergent	Sure Klean [®] 101 Lime Solvent	Sure Klean [®] Vana Trol [®]
All submitted brick samples	1:6	1:4	1:6
All submitted brick samples	1:8	1:6	1:8
All submitted brick samples	1:10	1:8	1:10

WATER REPELLENT PRODUCTS EVALUATED

Sample	Siloxane PD	Siloxane WB
All submitted brick samples	Concentrate	1:9
All submitted brick samples		1:14



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SECTION A - ADVERSE EFFECTS:

DESCRIPTION OF PRODUCTS EVALUATED - Adverse Effects:

Sure Klean® 600 Detergent - A general purpose, concentrated acidic cleaner for brick, tile and concrete surfaces. Dissolves mortar smears and construction dirt quickly, leaving the masonry clean and uniform with no acid burning or streaking. Liquid concentrate for dilution with 4-12 parts water. Apply by brush or low-pressure spray.

Sure Klean® 101 Lime Solvent – A general purpose, concentrated acidic cleaner for dark colored brick, tile and concrete surfaces. 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.

Sure Klean® Vana Trol® - A concentrated acidic cleaner for new masonry surfaces that are subject to vanadium, manganese and other metallic stains. Designed for use on gray, brown, white and most light-colored brick, natural stone and 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.

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TEST METHOD - Adverse Effects:

Dilution ratios refer to mixtures of concentrated cleaner : fresh water.

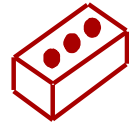
Sure Klean® 600 Detergent and Sure Klean® VanaTrol® were both evaluated at dilutions of 1:6, 1:8 and 1:10. Sure Klean® 101 Lime Solvent was evaluated at dilutions of 1:4, 1:6 and 1:8. The following procedure was used:

1. Prewet the surface with water.
2. Apply each cleaner at the appropriate dilutions.
3. Allow a 5-minute exposure time.
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 800 psi with a cold water flow rate of 2.1 gallons per minute.



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TEST RESULTS - Adverse Effects Evaluation:

Jackston

Effects

600 Detergent

1:6 dilution
1:8 dilution
1:10 dilution

no adverse effects
no adverse effects
no adverse effects

101 Lime Solvent

1:4 dilution
1:6 dilution
1:8 dilution

no adverse effects
no adverse effects
no adverse effects

Vana Trol[®]

1:6 dilution
1:8 dilution
1:10 dilution

no adverse effects
no adverse effects
no adverse effects

Sante Fe

Effects

600 Detergent

1:6 dilution
1:8 dilution
1:10 dilution

severe darkening
severe darkening
severe darkening

101 Lime Solvent

1:4 dilution
1:6 dilution
1:8 dilution

severe darkening
severe darkening
severe darkening

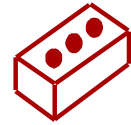
Vana Trol[®]

1:6 dilution
1:8 dilution
1:10 dilution

no adverse effects
no adverse effects
no adverse effects



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TEST RESULTS - Adverse Effects Evaluation (cont'd):

Country Club

Effects

600 Detergent

- 1:6 dilution
- 1:8 dilution
- 1:10 dilution

severe removal of slurry coat
 severe removal of slurry coat
 severe removal of slurry coat

101 Lime Solvent

- 1:4 dilution
- 1:6 dilution
- 1:8 dilution

severe removal of slurry coat
 severe removal of slurry coat
 severe removal of slurry coat

Vana Trol[®]

- 1:6 dilution
- 1:8 dilution
- 1:10 dilution

severe removal of slurry coat
 severe removal of slurry coat
 severe removal of slurry coat

Brookstone

Effects

600 Detergent

- 1:6 dilution
- 1:8 dilution
- 1:10 dilution

no adverse effects *
 no adverse effects *
 no adverse effects *

101 Lime Solvent

- 1:4 dilution
- 1:6 dilution
- 1:8 dilution

moderate removal of slurry coat
 moderate removal of slurry coat
 moderate removal of slurry coat

Vana Trol[®]

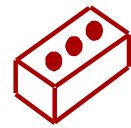
- 1:6 dilution
- 1:8 dilution
- 1:10 dilution

slight removal of slurry coat
 slight removal of slurry coat
 slight removal of slurry coat

* A slurry coat was not present on the brick utilized for the evaluation with 600 Detergent. It would be expected that slight to moderate removal of a slurry coat would have occurred if one had been present.



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TEST RESULTS - Adverse Effects Evaluation (cont'd):

North Pointe

Effects

600 Detergent

1:6 dilution
1:8 dilution
1:10 dilution

moderate removal of slurry coat
moderate removal of slurry coat
moderate removal of slurry coat

101 Lime Solvent

1:4 dilution
1:6 dilution
1:8 dilution

moderate removal of slurry coat
moderate removal of slurry coat
moderate removal of slurry coat

Vana Trol[®]

1:6 dilution
1:8 dilution
1:10 dilution

moderate removal of slurry coat
moderate removal of slurry coat
moderate removal of slurry coat

Kenton

Effects

600 Detergent

1:6 dilution
1:8 dilution
1:10 dilution

no adverse effects
no adverse effects
no adverse effects

101 Lime Solvent

1:4 dilution
1:6 dilution
1:8 dilution

no adverse effects
no adverse effects
no adverse effects

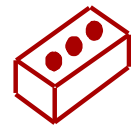
Vana Trol[®]

1:6 dilution
1:8 dilution
1:10 dilution

no adverse effects
no adverse effects
no adverse effects



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CONCLUSIONS - Adverse Effects:

Application of **600 Detergent**, **101 Lime Solvent**, **Vana Trol**[®] and at the dilutions evaluated, did not result in any adverse effects to the Jackston or Kenton brick.

On the North Pointe brick, all of the products tested, at all dilutions, produced a moderate removal of the slurry coat.

All of the products tested on the Country Club brick, at all dilutions, produced severe removal of the slurry coat.

Cleaning with **600 Detergent** and **101 Lime Solvent**, at all dilutions, resulted in severe darkening of the Sante Fe brick, whereas **Vana Trol**[®] at all dilutions, produced no adverse effects.

On the Brookstone brick, **101 Lime Solvent** (all dilutions) produced a slight removal of the slurry coat and a moderate removal of the slurry coat was observed where **Vana Trol**[®] at all dilutions had been applied. The brick cleaned with **600 Detergent** did not possess the slurry coat and displayed no adverse effects, however, slight to moderate removal of the slurry layer would be expected when using **600 Detergent** on this brick type.

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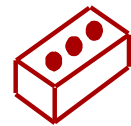
RECOMMENDATIONS - Adverse Effects:

Based on laboratory testing results, **600 Detergent**, **101 Lime Solvent**, and **Vana Trol**[®] are recommended for job site testing to remove excess mortar, grout, job dirt and related new construction soiling on the Kenton and Jackston brick. **Vana Trol**[®] is recommended for job site evaluations on the Sante Fe brick. On the Brookstone brick, **101 Lime Solvent** is recommended for job site evaluations.

None of the products evaluated can be recommended for job site evaluation on the Country Club and North Pointe brick. **Enviro Klean**[®] **Multi-Purpose Cleaner** (MPC) and **Enviro Klean**[®] **Mortar & Grout Remover** is recommended for these two brick types. **Multi-Purpose Cleaner** is a nonacidic detergent powder for general maintenance cleaning. **Multi-Purpose Cleaner** removes general job site soilings such as residues of mud, grease, oil and food staining, however, it is not designed for effective removal of cementitious soiling. Because of this property, it will not damage the slurry coatings utilized on these brick types. **Mortar & Grout Remover** mixes with water at the job site to clean most brick. **Mortar & Grout Remover** is an effective way to remove excess mortar, grout and job dirt from masonry.



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RECOMMENDATIONS - Adverse Effects: (cont'd)

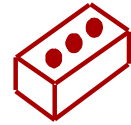
To minimize potential for surface erosion, remove excess mortar, grout or similar cementitious soiling as soon as practical. Apply all products in accordance with the manufacturer's recommendation provided on container labels and product data sheets. On-site testing should always be conducted to determine the most appropriate cleaning product and procedures for a particular project. See product literature for additional application and product information.

RECOMMENDED PRODUCTS AND DILUTIONS - CLEANING:

Sample	Sure Klean® 600 Detergent	Sure Klean® Vana Trol®	Sure Klean® 101 Lime Solvent	Enviro Klean® Mortar & Grout Remover	Enviro Klean® Multi-Purpose Cleaner
Jackston	≡1:6	= 1:6	= 1:4	---	---
Sante Fe	---	= 1:6	---	---	---
Country Club	---	---	---	1#/gal.	1#/gal.
Brookstone	---	---	= 1:4	---	---
North Pointe	---	---	---	---	---
Kenton	≡1:6	≡1:6	= 1:4	---	---



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SECTION B - PROTECTIVE WATER REPELLENTS:

DESCRIPTIONS OF PRODUCTS EVALUATED - Protective Water Repellents:

Sure Klean® Weather Seal Siloxane PD - A low odor, alkaline stable, water-based blend of silanes and oligomeric alkoxy siloxanes. Weather Seal Siloxane PD is supplied pre-diluted and is designed for use on concrete and clay masonry surfaces. Weather Seal Siloxane PD penetrates more deeply than conventional water or solvent-based 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 alkoxy siloxanes mixes easily with water to produce a penetrating water repellent which is ideal for application to either dense or porous masonry surfaces.

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SAMPLE PREPARATION - Protective Water Repellents:

The submitted brick were cut, oven dried and allowed to reabsorb atmospheric humidity for 24 hours prior to treatment. The treatment method consisted of two 10-second immersions with a 20-second absorption period between immersions to simulate a wet-on-wet application. All treatments were allowed to cure for 14 days prior to testing.

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TEST METHODS - Protective Water Repellents:

Water Absorption: ASTM C 67, Immersion

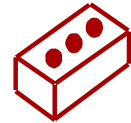
Water absorption was determined by immersing treated and untreated samples in water for 24 hours. Samples were then weighed and the capillary weight gain recorded. See SOP TEC014-1 or ASTM c 67 for additional information.

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

The water absorption tube test was also performed. This evaluation simulates 98 mile per hour wind driven rain conditions for a period of 20 minutes. See SOP TEC015-1 and RILEM II.4 Tech Note for additional information.



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TEST RESULTS - Protective Water Repellents:

Water Absorption: ASTM C 67, Immersion

Jackston

	<u>% Weight Increase</u>	<u>% Reduced Water Absorption</u>
Untreated Control	4.11	-
Weather Seal Siloxane PD	0.14	97%
Weather Seal Siloxane WB (1:9)	0.15	97%
Weather Seal Siloxane WB (1:14)	0.71	83%

Sante Fe

	<u>% Weight Increase</u>	<u>% Reduced Water Absorption</u>
Untreated Control	3.43	-
Weather Seal Siloxane PD	0.18	95%
Weather Seal Siloxane WB (1:9)	0.23	93%
Weather Seal Siloxane WB (1:14)	1.20	65%

Country Club

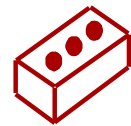
	<u>% Weight Increase</u>	<u>% Reduced Water Absorption</u>
Untreated Control	3.69	-
Weather Seal Siloxane PD	0.15	96%
Weather Seal Siloxane WB (1:9)	0.16	96%
Weather Seal Siloxane WB (1:14)	0.73	80%

Brookstone

	<u>% Weight Increase</u>	<u>% Reduced Water Absorption</u>
Untreated Control	4.19	-
Weather Seal Siloxane PD	0.20	95%
Weather Seal Siloxane WB (1:9)	0.18	96%
Weather Seal Siloxane WB (1:14)	0.66	84%



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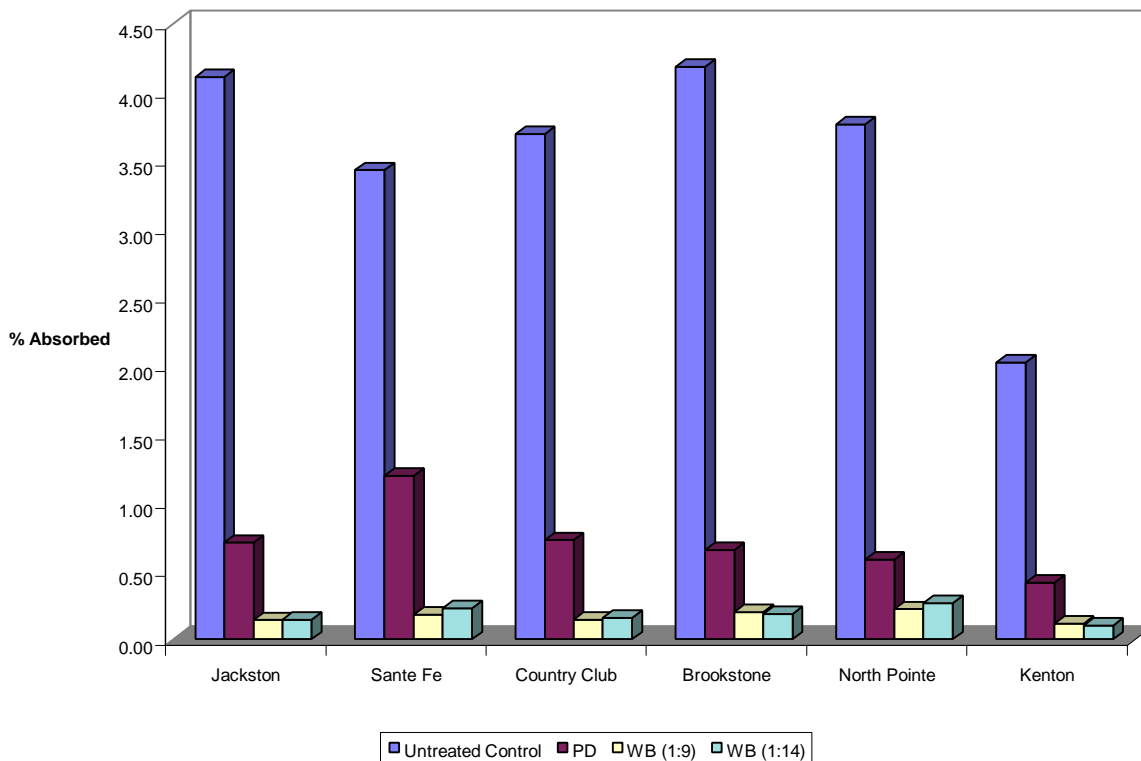
North Pointe

	<u>% Weight Increase</u>	<u>% Reduced Water Absorption</u>
Untreated Control	3.77	-
Weather Seal Siloxane PD	0.22	94%
Weather Seal Siloxane WB (1:9)	0.26	93%
Weather Seal Siloxane WB (1:14)	0.58	85%

Kenton

	<u>% Weight Increase</u>	<u>% Reduced Water Absorption</u>
Untreated Control	2.03	-
Weather Seal Siloxane PD	0.11	94%
Weather Seal Siloxane WB (1:9)	0.10	95%
Weather Seal Siloxane WB (1:14)	0.41	80%

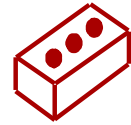
WATER ABSORPTION: ASTM C 67, Immersion



Graph 1



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TEST RESULTS - Protective Water Repellents:

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

Jackston

	<u>Results</u>
Untreated Control	0.6 milliliters
Weather Seal Siloxane PD	0.0 milliliters
Weather Seal Siloxane WB (1:9)	0.0 milliliters
Weather Seal Siloxane WB (1:14)	0.0 milliliters

Sante Fe

	<u>Results</u>
Untreated Control	2.7 milliliters
Weather Seal Siloxane PD	0.0 milliliters
Weather Seal Siloxane WB (1:9)	0.9 milliliters
Weather Seal Siloxane WB (1:14)	0.0 milliliters

Country Club

	<u>Results</u>
Untreated Control	1.3 milliliters
Weather Seal Siloxane PD	0.0 milliliters
Weather Seal Siloxane WB (1:9)	0.0 milliliters
Weather Seal Siloxane WB (1:14)	0.0 milliliters

Brookstone

	<u>Results</u>
Untreated Control	0.9 milliliters
Weather Seal Siloxane PD	0.0 milliliters
Weather Seal Siloxane WB (1:9)	0.0 milliliters
Weather Seal Siloxane WB (1:14)	0.0 milliliters

North Pointe

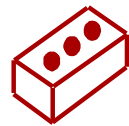
	<u>Results</u>
Untreated Control	1.7 milliliters
Weather Seal Siloxane PD	0.0 milliliters
Weather Seal Siloxane WB (1:9)	0.0 milliliters
Weather Seal Siloxane WB (1:14)	0.0 milliliters

Kenton

	<u>Results</u>
Untreated Control	0.4 milliliters
Weather Seal Siloxane PD	0.0 milliliters
Weather Seal Siloxane WB (1:9)	0.0 milliliters
Weather Seal Siloxane WB (1:14)	0.1 milliliters

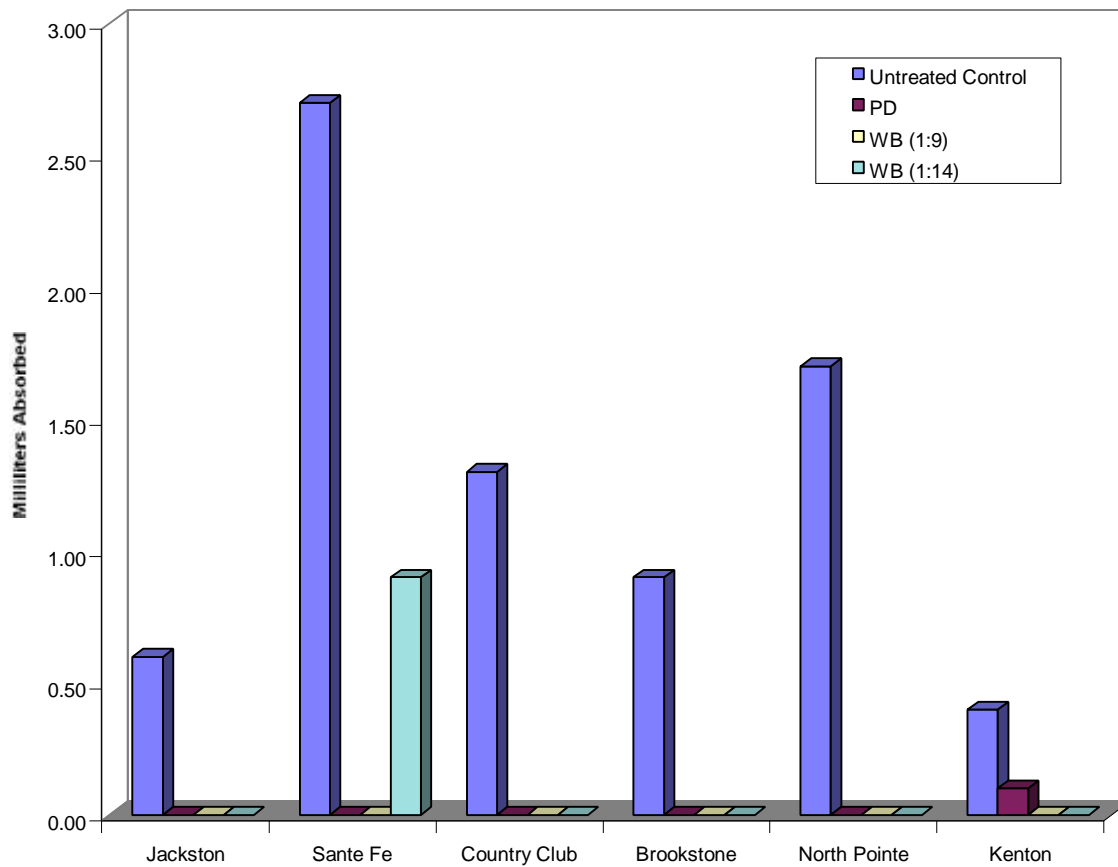


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WATER ABSORPTION TUBE TEST:

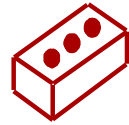
RILEM II.4, 5.0 Milliliter, 20 Minutes



Graph 2



PALLET CARD PROGRAM LABORATORY REPORT



CONCLUSIONS - Protective Water Repellents:

Based upon laboratory evaluations, all of the submitted brick exhibited above average water repellency when treated with **Weather Seal Siloxane PD** or **Weather Seal Siloxane WB**, diluted 1:9 with fresh water.

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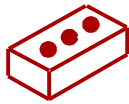
RECOMMENDATIONS - Protective Water Repellents:

Since **Weather Seal Siloxane PD** and **Weather Seal Siloxane WB**, diluted 1:9 with fresh water both provided excellent water repellent protection on all of the submitted brick type, both products are recommended for job site evaluations where these brick types are incorporated into the building's façade. 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.

Select the most appropriate product for each brick type from the following table. 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.

R. Chris Winders
Technical Services Analyst

RCW/jj



Laboratory Report

Pallet Card Evaluation

**US Brick – Sipple Division
Stanton, Kentucky**

Project No. 9807-11 PC

Prepared For:

Steve Barnhardt

Box 549

Stanton, KY 40380

Prepared By:



**ProSoCo, Inc.
September, 1998**