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Attachments

 Technical Services TECH Note RILEM Tube Test Procedures

 Product Data literature for all products evaluated

Submitted Information

For: Matt Henderson
cc: Paul Tessier
Subject: Borgert Products
St. Joseph, MN
Date: April 21, 2006
Project: 0512-12 PTP

Samples Submitted: 6 types of concrete pavers

Sample	Color	Size
"Autumn Blend"	Tan/Orange	6 ¼" x 4 ¾" x 2 ¼"
"Charcoal"	Charcoal	6 ¼" x 4 ¾" x 2 ¼"
"Golden Brown"	Brown/Tan	6 ¼" x 4 ¾" x 2 ¼"
"Limestone"	Gray/Beige	6 ¾" x 8 ¼" x 2 ¾"
"Millstream"	Red/Charcoal	6 ¼" x 4 ¾" x 2 ¼"
"Red/Charcoal"	Red/Charcoal	6 ¼" x 4 ¾" x 2 ¼"

Submitted by: Matt Henderson

Purpose of Testing

Six types of concrete pavers were submitted to PROSOCO, Inc.'s Testing Laboratory with a request to determine the optimal concentration of cleaner that leaves the external surface looking most like the natural through-body color of the concrete paver during new construction operations. Additionally, the effectiveness of water repellents, stain repellents and color and sheen enhancement products suitable for concrete pavers was evaluated.

Color Uniformity – Paver Kare® Cleaner/Brightener and Enviro Klean® Safety Klean were evaluated for their ability to provide the best match for color uniformity when compared to the through-body color of the concrete paver.

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 concrete paver.

Aggregate Exposure is the visual examination comparing aggregate exposure of the interior, through-body section of concrete paver 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 concrete paver 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 | 3 – Good match to through-body |
| 1 – Poor match to through-body | 4 – Best match to through-body |
| 2 – Fair match to through-body | |

Protective Water Repellents – Paver Kare® Paver Enhancer, Paver Kare® Penetrating Water Repellent and Stand Off® SLX100 Water & Oil Repellent were evaluated on the submitted samples for their ability to provide water repellency to the submitted samples.

Stain Repellency – Stand Off® Stone, Tile & Masonry Protector (STMP) and Stand Off® SLX100 Water & Oil Repellent were evaluated for their ability to repel stains on the submitted samples.

Color and Sheen Enhancement – Paver Kare® Paver Enhancer, Paver Kare® Deep Sheen WB and Paver Kare® Sand Joint Stabilizer were evaluated for their ability to provide color and sheen enhancement to the submitted samples.

Products Evaluated**Color Uniformity Products Evaluated**

Sample	Product	Dilution
All Submitted Concrete Pavers	Paver Kare® Cleaner/Brightener	1:2, 1:3
	Enviro Klean® Safety Klean	1:2, 1:3

Protective Water Repellent Products Evaluated

Sample	Product	Dilution
All Submitted Concrete Pavers	Paver Kare® Paver Enhancer	Concentrate
	Paver Kare® Penetrating Water Repellent	Concentrate
	Stand Off® SLX100 Water & Oil Repellent	Concentrate

Stain Repellency Products Evaluated

Sample	Product	Dilution
All Submitted Concrete Pavers	Stand Off® Stone, Tile & Masonry Protector (STMP)	Concentrate
	Stand Off® SLX100 Water & Oil Repellent	Concentrate

Color and Sheen Enhancement Products Evaluated

Sample	Product	Dilution
All Submitted Concrete Pavers	Paver Kare® Paver Enhancer	Concentrate
	Paver Kare® Deep Sheen WB	Concentrate
	Paver Kare® Sand Joint Stabilizer	Concentrate

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

Color Uniformity

These cleaning trials were conducted to determine the optimal dilution of the selected cleaners to provide the best color uniformity when compared with the through-body.

At least 24 hours after cleaning, the samples were then broken in half and a visual evaluation of the through-body color compared to the cleaned surfaces was made.

Description of Products Evaluated – Color Uniformity

Paver Kare® Cleaner/Brightener – Reveals natural color depth and improves color uniformity while cleaning tough construction stains and soiling off new paver installations. Effective for remedial and maintenance cleaning, non-etching Cleaner/Brightener removes mud and rust stains, efflorescence, hard-water scaling and more. Also improves penetration and bond of water- and stain-repellent treatments.

Enviro Klean® Safety Klean – An effective, safe, alternative to acidic compounds for cleaning brick, tile, and concrete surfaces. Safety Klean rids new masonry construction of excess mortar, dirt and other common job site soiling. It's ideal for projects where traditional acidic cleaners are not allowed. Non-fuming Safety Klean contains no hydrochloric or other traditional inorganic acids and is safe for use on and around most metal surfaces. Always test. Additionally, it is up to 70 percent more effective than citric and glycolic acids and 50 percent more effective than phosphoric acid.

Test Method – Color Uniformity

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.

Paver Kare® Cleaner/Brightener	3-5 minutes
Enviro Klean® Safety Klean	3-5 minutes
4. Pressure rinse thoroughly.*
5. Allow the sample to dry for at least 18 hours.
6. Break the sample in half and compare the through-body surfaces to the cleaned surfaces for the best match.

***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 – Color Uniformity

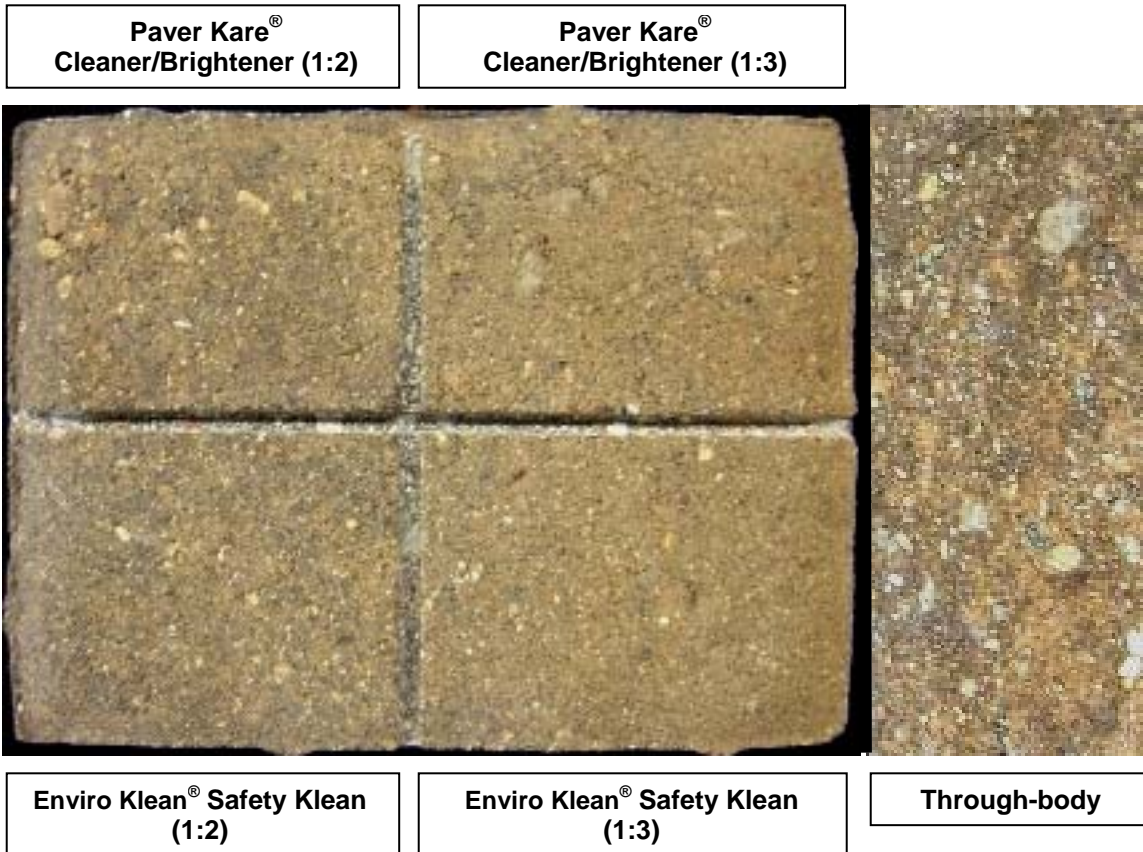
Substrate: Concrete Paver		Pigment Color: “Autumn Blend”	
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Paver Kare® Cleaner/Brightener	1:2	4	4
Paver Kare® Cleaner/Brightener	1:3	4	4
Enviro Klean® Safety Klean	1:2	3	3
Enviro Klean® Safety Klean	1:3	4	4
Substrate: Concrete Paver		Pigment Color: “Charcoal”	
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Paver Kare® Cleaner/Brightener	1:2	4	4
Paver Kare® Cleaner/Brightener	1:3	4	4
Enviro Klean® Safety Klean	1:2	3	3
Enviro Klean® Safety Klean	1:3	4	4
Substrate: Concrete Paver		Pigment Color: “Golden Brown”	
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Paver Kare® Cleaner/Brightener	1:2	4	4
Paver Kare® Cleaner/Brightener	1:3	4	4
Enviro Klean® Safety Klean	1:2	3	3
Enviro Klean® Safety Klean	1:3	4	4
Substrate: Concrete Paver		Pigment Color: “Limestone”	
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Paver Kare® Cleaner/Brightener	1:2	4	4
Paver Kare® Cleaner/Brightener	1:3	4	4
Enviro Klean® Safety Klean	1:2	3	3
Enviro Klean® Safety Klean	1:3	3	3
Substrate: Concrete Paver		Pigment Color: “Millstream”	
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Paver Kare® Cleaner/Brightener	1:2	4	4
Paver Kare® Cleaner/Brightener	1:3	4	4
Enviro Klean® Safety Klean	1:2	3	3
Enviro Klean® Safety Klean	1:3	4	4
Substrate: Concrete Paver		Pigment Color: “Red/Charcoal”	
Product	Dilution	Aggregate Exposure	Surface Pigment Alteration/Removal
Paver Kare® Cleaner/Brightener	1:2	4	4
Paver Kare® Cleaner/Brightener	1:3	4	4
Enviro Klean® Safety Klean	1:2	3	3
Enviro Klean® Safety Klean	1:3	3	3

Scale used for reporting results of both categories:

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

Photographs – Color Uniformity

“Golden Brown”; Through-body



Conclusions – Color Uniformity

Based on the test results, both Paver Kare® Cleaner/Brightener diluted with two and three parts water and Enviro Klean® Safety Klean diluted with three parts water provided the best match for color uniformity when compared with the through-body color of all of the submitted concrete pavers except for the “Limestone” and “Red/Charcoal” samples. For the submitted “Limestone” and “Red/Charcoal” concrete pavers, Paver Kare® Cleaner/Brightener diluted with both two and three parts water provided the best match for color uniformity when compared with the through-body color. Use higher concentrations and surface agitation to maximize aggregate exposure. Use low concentration and surface agitation to minimize aggregate exposure.

Recommendations – Color Uniformity

Recommendations for color uniformity for the concrete pavers submitted by Borgert Products, Inc., St. Joseph, MN are provided in the chart below. Recommendations are based on the optimum dilution for providing the best match for color uniformity when compared to the through-body color of the concrete pavers.

Sample	Color Uniformity
“Autumn Blend” “Charcoal” “Golden Brown” “Millstream”	Paver Kare® Cleaner/Brightener (1:3) OR Enviro Klean® Safety Klean (1:3)
“Limestone” “Red/Charcoal”	Paver Kare® Cleaner/Brightener (1:3)

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

Paver Kare® Paver Enhancer – A solvent-based blend of high-quality siloxanes modified to provide excellent water repellency and color enhancement to interlocking concrete, fired clay, porous tile and many types of natural stone surfaces. Paver Enhancer penetrates and reacts with the surface to form a chemical bond, providing long-term durability, alkali resistance and superior breatheability.

Paver Kare® Penetrating Water Repellent – Penetrates deeply to keep destructive water, salt and dirt out of paver surfaces for 7 to 10 years. This VOC-compliant protective treatment is perfect for concrete, clay and most stone pavers. An environmentally friendly silane/siloxane liquid water-repellent and “chloride screen,” Penetrating Water Repellent penetrates more deeply than conventional water- or solvent-based water repellents. It helps keep pavers safe from cracking and spalling by preventing repeated wet/dry and freeze/thaw cycles caused by penetration of water and water-carried salts

Stand Off® SLX100 Water & Oil Repellent – Combines water and oil repellency on most substrates to prevent staining by waterborne and oily substances. This modified “neat” silane system offers invisible protection and low volatility. The small molecular structure of SLX100 allows for maximum penetration at coverage rates higher than that of conventional silanes. Depth of penetration is controlled by the application rate (loading rate). This makes SLX100 ideal for protecting granite and other dense, color-sensitive surfaces.

Sample Preparation – Protective Water Repellents

The submitted pavers were scored and allowed to dry for at least 24 hours prior to treatment. All products were applied by brush in accordance with the recommendations in the current PROSOCO, Inc. Product Data Sheets. All treatments were allowed to cure for 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. 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**

“Autumn Blend”	
Untreated Control	<40 mph
Paver Kare® Paver Enhancer	60 mph
Paver Kare® Penetrating Water Repellent	59 mph
Stand Off® SLX100 Water & Oil Repellent	60 mph
“Charcoal”	
Untreated Control	<40 mph
Paver Kare® Paver Enhancer	60 mph
Paver Kare® Penetrating Water Repellent	58 mph
Stand Off® SLX100 Water & Oil Repellent	60 mph
“Golden Brown”	
Untreated Control	<40 mph
Paver Kare® Paver Enhancer	60 mph
Paver Kare® Penetrating Water Repellent	56 mph
Stand Off® SLX100 Water & Oil Repellent	60 mph
“Limestone”	
Untreated Control	<40 mph
Paver Kare® Paver Enhancer	60 mph
Paver Kare® Penetrating Water Repellent	60 mph
Stand Off® SLX100 Water & Oil Repellent	60 mph
“Millstream”	
Untreated Control	<40 mph
Paver Kare® Paver Enhancer	60 mph
Paver Kare® Penetrating Water Repellent	57 mph
Stand Off® SLX100 Water & Oil Repellent	60 mph
“Red/Charcoal”	
Untreated Control	<40 mph
Paver Kare® Paver Enhancer	60 mph
Paver Kare® Penetrating Water Repellent	58 mph
Stand Off® SLX100 Water & Oil Repellent	60 mph

Photographs – Protective Water Repellents

“Millstream”; RILEM Testing



**Paver Kare®
Penetrating Water
Repellent**

**Paver Kare® Paver
Enhancer**

**Stand Off® SLX100
Water & Oil
Repellent**

Untreated Control

Conclusions – Protective Water Repellents

Based upon laboratory evaluations, all of the treatments tested provided excellent water repellency to each of the submitted samples. Paver Kare® Paver Enhancer provided a significant color enhancement to the submitted samples. Paver Kare® Penetrating Water Repellent and Stand Off® SLX100 Water & Oil Repellent did not alter the appearance of the samples in any way.

Recommendations – Protective Water Repellents

Recommendations for water repellency treatment for each type of concrete paver submitted by Borgert Products, Inc., St. Joseph, MN 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.

Sample	Protective Water Repellents
All Submitted Concrete Pavers	*Paver Kare® Paver Enhancer OR Paver Kare® Penetrating Water Repellent OR Stand Off® SLX100 Water & Oil Repellent

***NOTE:** Paver Kare® Paver Enhancer is manufactured and marketed in compliance with USEPA AIM VOC regulations (40 CFR 59.403). This product may not be suitable for sale in states and districts with more restrictive AIM VOC regulations.

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.

Stain Repellency

These trials were conducted to determine the effectiveness of treatments in preventing food, oil, and miscellaneous staining on the submitted samples.

Description of Products Evaluated – Stain Repellency

Stain Repellent Treatments

Stand Off® SLX100 Water & Oil Repellent – Combines water and oil repellency on most substrates to prevent staining by waterborne and oily substances. This modified “neat” silane system offers invisible protection and low volatility. The small molecular structure of SLX100 allows for maximum penetration at coverage rates higher than that of conventional silanes. Depth of penetration is controlled by the application rate (loading rate). This makes SLX100 ideal for protecting granite and other dense, color-sensitive surfaces.

Stand Off® Stone, Tile & Masonry Protector (STMP) – A penetrating oil and stain repellent that is an easy-to-use, low-VOC, low-odor protective treatment improves the stain resistance and simplifies maintenance cleaning of interior and exterior stone, quarry tile, concrete and masonry surfaces.

Maintenance Cleaner

Enviro Klean® 2010 All Surface Cleaner – A “next-generation” product for cleaning and degreasing light-to-heavily 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 home-use 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.

Staining Agents Evaluated

<u>Products</u>	<u>Temperature</u>
Coca Cola	ambient (~70°F)
Ketchup	ambient (~70°F)
Mustard	ambient (~70°F)
Red wine	ambient (~70°F)
Balsamic Vinegar	ambient (~70°F)
Soy Sauce	ambient (~70°F)
Olive Oil	ambient (~70°F)
Vegetable Oil	(~250°F)
Coffee	(~120°F)

Sample Preparation – Stain Repellency

Samples were cleaned with Enviro Klean® 2010 All Surface Cleaner diluted with 10 parts water, allowed to dry and absorb atmospheric moisture for 24 hours prior to treatment. The method of application for protective treatments consisted of a brush application in accordance with the current PROSOCO, Inc. Product Data Sheets application instructions.

Test Method – Stain Repellency

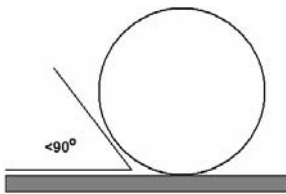
Surface Beading Evaluation

The food and oil products were applied to the test areas by using a dropper creating a bead 0.5 – 1.0 cm in diameter. The beading properties of the oils and liquids were visually evaluated within two minutes after application. The results are reported as a rating based on the angle of contact between the base of the droplet and the substrate. A rating of “1 or 2” indicated the smallest angle of contact ($<90^\circ$) which correlates to “above average” repellency. A rating of “3 or 4” indicates “average” repellency. A rating of “5 or greater” indicated that the oil quickly absorbed into the substrate and correlates to “below average” repellency.

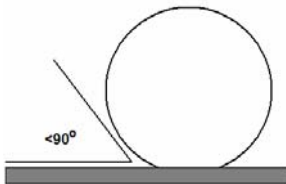
Note: Non-free flowing staining agents such as ketchup and mustard are applied in a globular fashion and therefore are not evaluated for their beading properties.

Rating System (1-5)

1. No wetting of contact area (no darkening); angle less than 90° .



2. Wetting contained to the contact area (slight darkening); angle is less than 90° .



3. Wetting contained to the contact area (slight darkening); angle is greater than 90° , but less than 135° .



4. Wetting beyond the contact area (darkening); angle is greater than 135° .



5. Wetting beyond the contact area (darkening); angle is flat.



Stain Removal Evaluation

The soiling agents were allowed to dwell on the treated and untreated substrates for times of 24 hours, 4 hours, 1 hour, and 10 minutes. The test areas were then cleaned with Enviro Klean[®] 2010 All Surface Cleaner diluted 1 part concentrate to 10 parts fresh water and scrubbed under a stream of running water from a faucet. Samples were allowed to dry for 24 hours. Evaluation consisted of a visual examination of the tested areas to determine the percentage of staining removal.

Test Results – Surface Beading

“Autumn Blend”									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
Untreated Control	5	-	-	5	5	5	5	5	5
STMP	4	-	-	4	4	4	3	3	4
SLX100	2	-	-	2	2	2	3	3	3
“Charcoal”									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
Untreated Control	5	-	-	5	4	4	5	5	5
STMP	4	-	-	4	4	4	3	3	4
SLX100	2	-	-	2	2	2	3	3	3
“Golden Brown”									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
Untreated Control	5	-	-	5	5	5	5	5	5
STMP	4	-	-	4	4	4	3	3	4
SLX100	2	-	-	2	2	2	3	3	2
“Limestone”									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
Untreated Control	4	-	-	4	4	4	5	5	4
STMP	2	-	-	2	2	2	2	2	2
SLX100	1	-	-	1	1	1	2	2	2
“Millstream”									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
Untreated Control	5	-	-	5	5	5	5	5	5
STMP	4	-	-	4	4	4	3	3	4
SLX100	2	-	-	2	2	2	3	3	2
“Red/Charcoal”									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
Untreated Control	5	-	-	5	5	5	5	5	5
STMP	4	-	-	4	4	4	3	3	4
SLX100	2	-	-	2	2	2	3	3	2

Test Results – Stain Repellency

“Autumn Blend”									
Untreated Control									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%*	90%*	80%	60%*	100%	<1%	<1%	100%
4 hour	100%	100%*	90%*	80%	60%*	100%	<1%	<1%	100%
1 hour	100%	100%*	100%*	100%	100%*	100%	<1%	<1%	100%
10 min.	100%	100%*	100%*	100%	100%*	100%	<1%	<1%	100%
Stand Off® Stone, Tile & Masonry Protector (STMP)									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%*	100%*	90%	100%*	100%	100%	100%	100%
4 hour	100%	100%*	100%*	90%	100%*	100%	100%	100%	100%
1 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
10 min.	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
Stand Off® SLX100 Water & Oil Repellent									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
4 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
1 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
10 min.	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
“Charcoal”									
Untreated Control									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%*	90%*	80%*	90%*	100%	<1%	<1%	100%
4 hour	100%	100%*	95%*	80%*	90%*	100%	<1%	<1%	100%
1 hour	100%	100%*	100%*	90%*	100%*	100%	<1%	<1%	100%
10 min.	100%	100%*	100%*	90%*	100%*	100%	<1%	<1%	100%
Stand Off® Stone, Tile & Masonry Protector (STMP)									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%*	90%*	100%	100%*	100%	90%	100%	100%
4 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
1 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
10 min.	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
Stand Off® SLX100 Water & Oil Repellent									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
4 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
1 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
10 min.	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%

Test Results – Stain Repellency

“Golden Brown”									
Untreated Control									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%*	80%*	100%	100%*	100%	<1%	<1%	100%
4 hour	100%	100%*	90%*	100%	100%*	100%	<1%	<1%	100%
1 hour	100%	100%*	100%*	100%	100%*	100%	<1%	<1%	100%
10 min.	100%	100%*	100%*	100%	100%*	100%	<1%	<1%	100%
Stand Off® Stone, Tile & Masonry Protector (STMP)									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%*	100%*	100%	100%*	100%	80%	80%	100%
4 hour	100%	100%*	100%*	100%	100%*	100%	80%	80%	100%
1 hour	100%	100%*	100%*	100%	100%*	100%	80%	80%	100%
10 min.	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
Stand Off® SLX100 Water & Oil Repellent									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%*	100%*	100%	100%*	100%	95%	95%	100%
4 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
1 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
10 min.	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
“Limestone”									
Untreated Control									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%	100%	100%	100%	100%	<1%	<1%	100%
4 hour	100%	100%	100%	100%	100%	100%	<1%	<1%	100%
1 hour	100%	100%	100%	100%	100%	100%	<1%	<1%	100%
10 min.	100%	100%	100%	100%	100%	100%	<1%	<1%	100%
Stand Off® Stone, Tile & Masonry Protector (STMP)									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%	100%	100%	100%	100%	90%	90%	100%
4 hour	100%	100%	100%	100%	100%	100%	90%	90%	100%
1 hour	100%	100%	100%	100%	100%	100%	100%	100%	100%
10 min.	100%	100%	100%	100%	100%	100%	100%	100%	100%
Stand Off® SLX100 Water & Oil Repellent									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%	100%	100%	100%	100%	90%	90%	100%
4 hour	100%	100%	100%	100%	100%	100%	90%	90%	100%
1 hour	100%	100%	100%	100%	100%	100%	100%	100%	100%
10 min.	100%	100%	100%	100%	100%	100%	100%	100%	100%

Test Results – Stain Repellency

“Millstream”									
Untreated Control									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%*	95%*	100%	100%*	100%	<1%	<1%	100%
4 hour	100%	100%*	95%*	100%	100%*	100%	<1%	<1%	100%
1 hour	100%	100%*	100%*	100%	100%*	100%	<1%	<1%	100%
10 min.	100%	100%*	100%*	100%	100%*	100%	<1%	<1%	100%
Stand Off® Stone, Tile & Masonry Protector (STMP)									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%*	100%*	100%	100%*	100%	80%	80%	100%
4 hour	100%	100%*	100%*	100%	100%*	100%	90%	90%	100%
1 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
10 min.	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
Stand Off® SLX100 Water & Oil Repellent									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%*	100%*	100%	100%*	100%	80%	80%	100%
4 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
1 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
10 min.	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
“Red/Charcoal”									
Untreated Control									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%*	80%*	100%	100%*	100%	<1%	<1%	100%
4 hour	100%	100%*	90%*	100%	100%*	100%	<1%	<1%	100%
1 hour	100%	100%*	100%*	100%	100%*	100%	<1%	<1%	100%
10 min.	100%	100%*	100%*	100%	100%*	100%	<1%	<1%	100%
Stand Off® Stone, Tile & Masonry Protector (STMP)									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
4 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
1 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
10 min.	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
Stand Off® SLX100 Water & Oil Repellent									
	Coco-Cola	Ketchup	Mustard	Red Wine	Balsamic Vinegar	Soy Sauce	Olive Oil	Vegetable Oil	Coffee
24 hr	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
4 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
1 hour	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%
10 min.	100%	100%*	100%*	100%	100%*	100%	100%	100%	100%

Photographs – Stain Repellency

“Limestone”; Stains Applied



Stand Off® SLX100 Water & Oil Repellent

Stand Off® Stone, Tile & Masonry Protector (STMP)

Untreated Control

“Limestone”; Stains Removed



Stand Off® SLX100 Water & Oil Repellent

Stand Off® Stone, Tile & Masonry Protector (STMP)

Untreated Control

Conclusions – Stain Repellency

Based upon laboratory evaluations, both Stand Off® SLX100 Water & Oil Repellent and Stand Off® Stone, Tile & Masonry Protector (STMP) improved the surface beading of the samples. In addition, both treatments were effective in repelling the staining agents from the samples. Neither of the treatments altered the appearance of the submitted samples in any way.

Recommendations – Stain Repellency

Recommendations for stain resistance treatment for the concrete pavers submitted by Borgert Products, Inc., St. Joseph, MN are provided in the chart below. Recommendations are based on the treatments that proved most effective for providing stain repellency on the submitted concrete pavers.

Sample	Stain Repellent	Maintenance Cleaner
All Submitted Concrete Pavers	Stand Off® SLX100 Water & Oil Repellent OR Stand Off® Stone, Tile & Masonry Protector (STMP)	Enviro Klean® 2010 All Surface Cleaner (1:10)

The ability of a stain repellent treatment to prevent staining is affected by a variety of 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 stain repellent product and procedures for a particular project. See product literature for additional application and product information.

Color and Sheen Enhancement

This evaluation compares the effectiveness of the evaluated products in providing color and sheen enhancement to the submitted samples.

Description of Products Evaluated – Color and Sheen Enhancement

Paver Kare® Paver Enhancer – A solvent-based blend of high-quality siloxanes modified to provide excellent water repellency and color enhancement to interlocking concrete, fired clay, porous tile and many types of natural stone surfaces. Paver Enhancer penetrates and reacts with the surface to form a chemical bond, providing long-term durability, alkali resistance and superior breatheability.

Paver Kare® Deep Sheen WB – Perfect for concrete, clay or stone pavers, inside or out, this durable, water-borne protective treatment weather- and stain-proofs new or newly cleaned pavers, giving them a premium, vibrant gloss and shine. This water-borne treatment complies with all known AIM VOC regulations nationwide. Deep Sheen WB's glossy finish guards pavers against etching and staining from acidic and alkaline contaminants, including food, drinks, cleaning chemicals and more. Fast-drying, non-blushing and non-yellowing, Deep Sheen WB is ideal for paver installations of any size – new or old.

Paver Kare® Sand Joint Stabilizer – Controls erosion of loose sand joints commonly employed with interlocking concrete pavers, clay pavers, natural stone or decorative concrete paving. This durable, blended polymer consolidates loose sand joints and protects treated paving from water penetration and related staining. Dry-laid paved surfaces treated with Sand Joint Stabilizer resist weed growth and are easier to maintain. Sand Joint Stabilizer's water-based formula offers several improvements on similar solvent-based products. No solvent odor, easy soap-and-water cleanup, and reduced fire-hazard make the treatment safe and easy to use, as well as effective. In addition, Sand Joint Stabilizer complies with all known regulations limiting Volatile Organic Compound (VOC) content.

Sample Preparation – Color and Sheen Enhancement

Samples were cleaned with Enviro Klean® 2010 All Surface Cleaner diluted with 10 parts water and allowed to dry for at least 24 hours prior to treatment.

Test Method – Color and Sheen Enhancement

All treatments evaluated were applied by brush in accordance with the current PROSOCO, Inc. Product Data Sheet application instructions. After 24 hours, a visual evaluation was made comparing the untreated surface to the treated surfaces.

Test Results – Color and Sheen Enhancement

“Autumn Blend”		
Treatment	Color Enhancement	Sheen Enhancement
Paver Kare® Paver Enhancer	3	0
Paver Kare® Deep Sheen WB	3	3
Paver Kare® Sand Joint Stabilizer	2	1
“Charcoal”		
Treatment	Color Enhancement	Sheen Enhancement
Paver Kare® Paver Enhancer	3	0
Paver Kare® Deep Sheen WB	3	3
Paver Kare® Sand Joint Stabilizer	3	2
“Golden Brown”		
Treatment	Color Enhancement	Sheen Enhancement
Paver Kare® Paver Enhancer	3	0
Paver Kare® Deep Sheen WB	3	3
Paver Kare® Sand Joint Stabilizer	3	1
“Limestone”		
Treatment	Color Enhancement	Sheen Enhancement
Paver Kare® Paver Enhancer	3	0
Paver Kare® Deep Sheen WB	2	3
Paver Kare® Sand Joint Stabilizer	2	2
“Millstream”		
Treatment	Color Enhancement	Sheen Enhancement
Paver Kare® Paver Enhancer	3	0
Paver Kare® Deep Sheen WB	3	3
Paver Kare® Sand Joint Stabilizer	3	2
“Red/Charcoal”		
Treatment	Color Enhancement	Sheen Enhancement
Paver Kare® Paver Enhancer	3	0
Paver Kare® Deep Sheen WB	3	3
Paver Kare® Sand Joint Stabilizer	3	2

Scale: 0- No Enhancement; Dull

1- Slight Enhancement

2- Moderate Enhancement

3- Significant Enhancement

Photographs – Color and Sheen Enhancement

“Charcoal”; Color Enhancement Products Applied



Recommendations – Color and Sheen Enhancement

Recommendations for color and sheen enhancement for the concrete pavers submitted by Borgert Products, Inc., St. Joseph, MN are provided in the chart below. Recommendations are based on the treatment that proved most effective in providing color and/or sheen enhancement to the submitted samples.

Sample	Color Enhancement	Sheen Enhancement
"Charcoal" "Limestone" "Millstream" "Red/Charcoal"	*Paver Kare® Paver Enhancer OR Paver Kare® Deep Sheen WB OR Paver Kare® Sand Joint Stabilizer	Paver Kare® Deep Sheen WB OR Paver Kare® Sand Joint Stabilizer
"Autumn Blend" "Golden Brown"	*Paver Kare® Paver Enhancer OR Paver Kare® Deep Sheen WB OR Paver Kare® Sand Joint Stabilizer	Paver Kare® Deep Sheen WB

***NOTE:** Paver Kare® Paver Enhancer is manufactured and marketed in compliance with USEPA AIM VOC regulations (40 CFR 59.403). This product may not be suitable for sale in states and districts with more restrictive AIM VOC regulations.

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

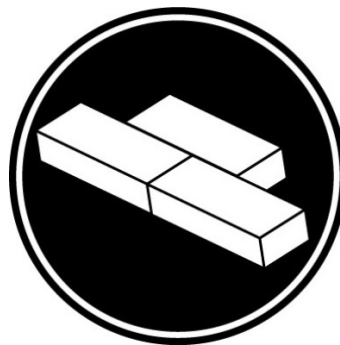


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 Project Testing Laboratory Technician
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PALLET TAG PROGRAM
Laboratory Report

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Project No. 0512-12 PTP

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