



# LABORATORY REPORT

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**FOR:** Reza Tabarrok, Operation Executive, ARTO Brick  
**cc:** Dane Olson  
Nick Savage  
Jake Boyer  
Mike Davis  
Al Morris

**SUBJECT:** ARTO Brick  
Gardena, CA  
Visual Color Change, Taber Abrasion, Water Repellency, and Stain Resistance Evaluation

**DATE:** February 27, 2018  
**PROJECT:** 1801-07 CCV TAB RIL SR

**SAMPLES SUBMITTED:**

<u>Sample</u>	<u>Size</u>
(24) samples of "Rice" buff concrete pavers	4" x 4" x 5/8"
(24) samples of "Early Gray" light gray concrete pavers	

Submitted by: Reza Tabarrok  
Operation Executive  
ARTO Brick and California Pavers  
15209 South Broadway Street  
Gardena, CA 90248

**PURPOSE OF TEST:**

- To determine the effectiveness of Consolideck® LS/CS® and Consolideck® LS® in increasing the abrasion resistance of the submitted concrete pavers.
- To determine the effectiveness of appropriate PROSOCO, Inc. treatments in providing water repellency to the submitted pavers.
- To determine if the treatments cause any visual color or sheen enhancement to the submitted pavers.
- To determine the effectiveness of appropriate PROSOCO, Inc. products in preventing food and oil staining on the submitted pavers.



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## **SAMPLE PREPARATION:**

### **Abrasion Resistance**

Consolideck® LS/CS® and Consolideck® LS® were each applied to both types of submitted pavers with a microfiber pad in accordance with the PROSOCO, Inc. product data sheet instructions. No buffing or polishing was done on the submitted samples. Taber abrasion testing was conducted approximately 7 days after application of the LS/CS® and LS®.

### **Water Repellency / Stain Resistance / Visual Color or Sheen Enhancement**

The stain and water repellent treatments were applied over the areas treated with LS/CS® one day after application. Each stain and water repellent treatment was applied in two applications per the product data sheet instructions. The stain and water repellent treatments were then allowed to cure for at least 3 days prior to testing.

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## **TEST METHODS: Taber Abrasion (ASTM C1803 Standard Guide for Abrasion Resistance of Mortar Surfaces Using a Rotary Platform Abraser)**

This test method consists of mounting the test specimen onto a Taber Industries 5135 Abraser and subjecting the specimen to 200 revolutions under H-22 Calibrade abrasive wheels loaded with 1000 gram weights.

The test specimens were weighed to the nearest 0.01 gram before and after the test to determine the weight loss due to abrasion. The weight loss of the treated samples was then compared to the untreated samples to determine if there was any improvement in abrasion resistance imparted by the treatments. The test was performed in laboratory conditions that were approximately 72° F and 34% humidity.

The test was performed on five untreated samples and five treated samples to obtain an average.

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**TEST RESULTS: Taber Abrasion (ASTM C1803)****Submitted "Rice" Paver**

<b>Sample</b>	<b>Average Grams Lost</b>	<b>% Improvement</b>
Untreated Control	-0.86 g	---
Consolideck® LS/CS®	-0.49 g	44%
Consolideck® LS®	-0.57 g	34%

**Submitted "Early Gray" Paver**

<b>Sample</b>	<b>Average Grams Lost</b>	<b>% Improvement</b>
Untreated Control	-0.94 g	---
Consolideck® LS/CS®	-0.77 g	19%
Consolideck® LS®	-0.57 g	39%

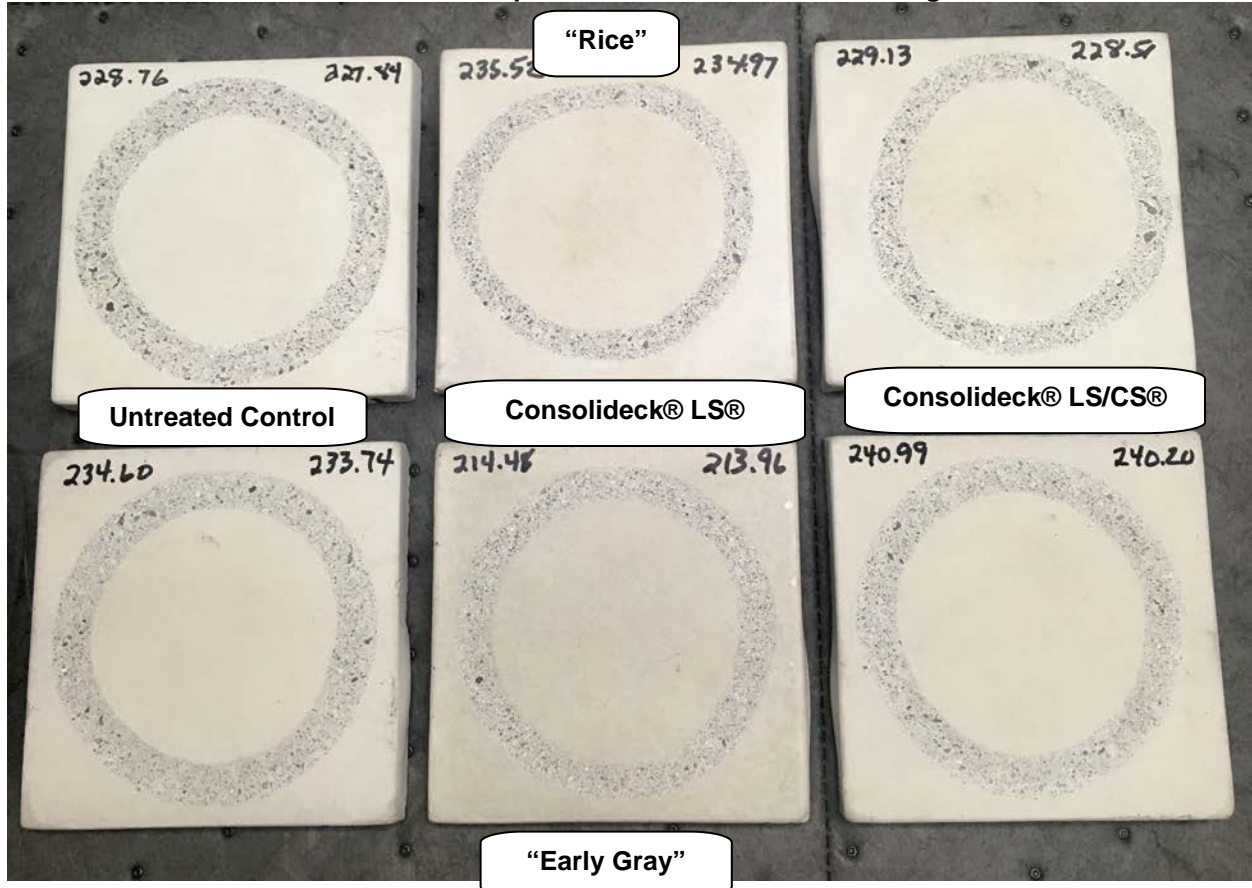
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**TEST CONCLUSIONS: Taber Abrasion (ASTM C1803)**

The laboratory test results showed that both LS/CS® and LS® improved the abrasion resistance of both types of submitted concrete pavers.

PHOTOGRAPH: Taber Abrasion (ASTM C1803)

Submitted Samples After Taber Abrasion Testing





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**TEST METHODS: Color / Sheen Enhancement Evaluation**

24 hours after application of the treatments, a visual evaluation was made comparing the untreated surfaces to the treated surfaces. The following scale was used to determine the level of color and sheen enhancement the treatments provided:

- Scale:** 0 – No Enhancement; Dull  
1 – Slight Enhancement  
2 – Moderate Enhancement  
3 – Significant Enhancement

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**TEST RESULTS: Color / Sheen Enhancement Evaluation**

**Submitted “Rice” Paver**

<b>Treatment</b>	<b>Color Enhancement</b>	<b>Sheen Enhancement</b>
Consolideck® LS/CS® alone	0	0
Consolideck® LS/CS® followed by Consolideck® Concrete Protector WB	0	0
Consolideck® LS/CS® followed by Consolideck® Concrete Protector SB	0	0
Consolideck® LS/CS® followed by Consolideck® GuardEXT	1	2
Consolideck® LS/CS® followed by Consolideck® PolishGuard	0	1
Consolideck® LS/CS® followed by PROSOCO® SLX100® Water & Oil Repellent	0	0
Consolideck® LS/CS® followed by Paver Kare® Deep Sheen WB	1	2
Consolideck® LS/CS® followed by Sure Klean® Weather Seal Gloss 'N Guard WB	0	3

**TEST RESULTS: Color / Sheen Enhancement Evaluation (cont.)**

**Submitted "Early Gray" Paver**

<b>Treatment</b>	<b>Color Enhancement</b>	<b>Sheen Enhancement</b>
Consolideck® LS/CS® alone	0	0
Consolideck® LS/CS® followed by Consolideck® Concrete Protector WB	0	0
Consolideck® LS/CS® followed by Consolideck® Concrete Protector SB	0	0
Consolideck® LS/CS® followed by Consolideck® GuardEXT	1	2
Consolideck® LS/CS® followed by Consolideck® PolishGuard	0	1
Consolideck® LS/CS® followed by PROSOCO® SLX100® Water & Oil Repellent	0	0
Consolideck® LS/CS® followed by Paver Kare® Deep Sheen WB	1	2
Consolideck® LS/CS® followed by Sure Klean® Weather Seal Gloss 'N Guard WB	0	3

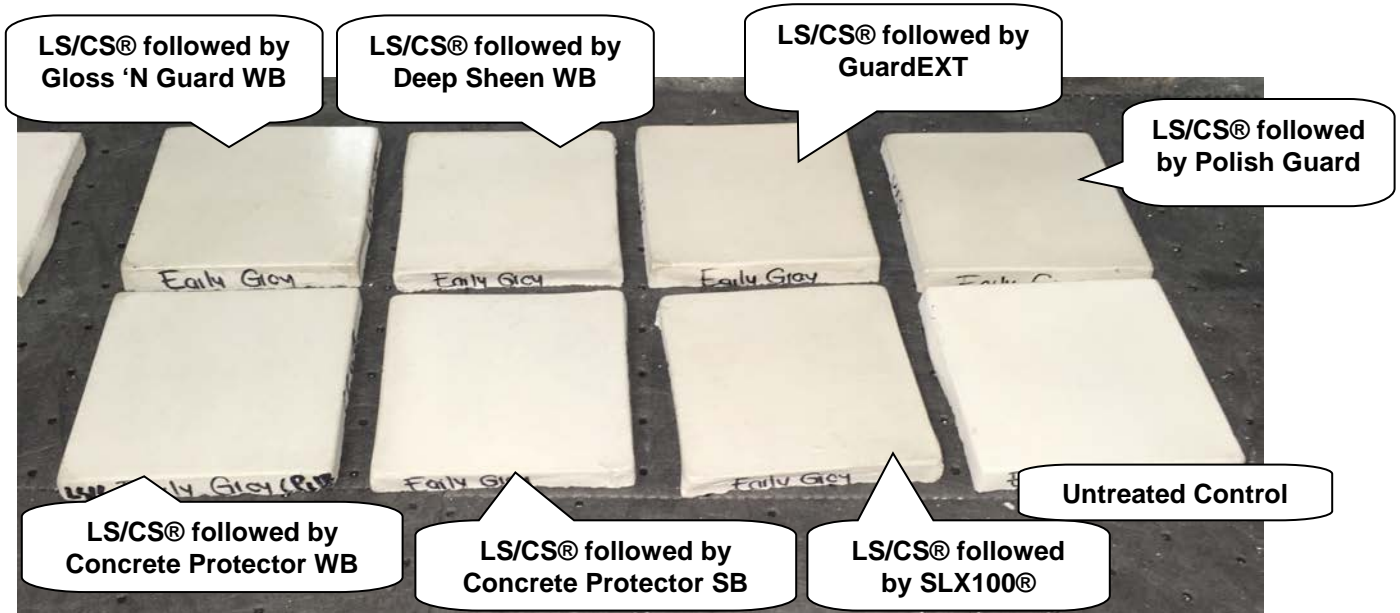
**CONCLUSIONS: Color / Sheen Enhancement Evaluation**

Based on the laboratory tests conducted, Sure Klean® Weather Seal Gloss 'N Guard WB provided the best overall sheen enhancement to both types of submitted pavers.

The following treatments did not cause any change to the appearance of the concrete: Consolideck® LS/CS® or LS® alone, Consolideck® Concrete Protector WB, Consolideck® Concrete Protector SB, and PROSOCO® SLX100® Water & Oil Repellent.

**PHOTOGRAPH: Color / Sheen Enhancement Evaluation**

**Submitted "Early Gray" Pavers**





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## Test Methods: Water Repellency

### Water Absorption Tube Test: Horizontal 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 5.0 milliliters, a water absorption tube produces a 104 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.

**A** = "Average" correlates to less than or equal to 50% of the maximum untreated absorption.

**BA** = "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 5.0 ml of water or more, then:

A rating of **AA** *Above Average* water repellent performance would be reported for treatments which result in a loss of no more than:

$$5.0 \text{ mL} \times 20\% = \mathbf{1.0 \text{ mL}}$$

A rating of **A** *Average* water repellent performance would be reported for treatments which result in a loss of no more than:

$$5.0 \text{ mL} \times 50\% = \mathbf{2.5 \text{ mL}}$$

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

$$5.0 \text{ mL} \times 50\% = \mathbf{2.5 \text{ mL}}$$

**TEST RESULTS: Water Repellency**

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

**AA = Above Average**

**A = Average**

**BA = Below Average**

**Submitted "Rice" Paver**

<b>Treatment</b>	<b>Results in mL loss</b>	<b>Ranking</b>
Untreated Control	-0.5	--
Consolideck® LS/CS® followed by Consolideck® Concrete Protector WB	-0.1	<b><u>AA</u></b>
Consolideck® LS/CS® followed by Consolideck® Concrete Protector SB	-0.1	<b><u>AA</u></b>
Consolideck® LS/CS® followed by Consolideck® GuardEXT	-0.1	<b><u>AA</u></b>
Consolideck® LS/CS® followed by Consolideck® PolishGuard	-0.1	<b><u>AA</u></b>
Consolideck® LS/CS® followed by PROSOCO® SLX100® Water & Oil Repellent	-0.0	<b><u>AA</u></b>
Consolideck® LS/CS® followed by Paver Kare® Deep Sheen WB	-0.0	<b><u>AA</u></b>
Consolideck® LS/CS® followed by Sure Klean® Weather Seal Gloss 'N Guard WB	-0.0	<b><u>AA</u></b>

**TEST RESULTS: Water Repellency (cont.)**

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

**AA** = Above Average

**A** = Average

**BA** = Below Average

**Submitted "Early Gray" Paver**

<b>Treatment</b>	<b>Results in mL loss</b>	<b>Ranking</b>
Untreated Control	-0.4	--
Consolideck® LS/CS® followed by Consolideck® Concrete Protector WB	-0.0	<b><u>AA</u></b>
Consolideck® LS/CS® followed by Consolideck® Concrete Protector SB	-0.0	<b><u>AA</u></b>
Consolideck® LS/CS® followed by Consolideck® GuardEXT	-0.1	<b><u>AA</u></b>
Consolideck® LS/CS® followed by Consolideck® PolishGuard	-0.0	<b><u>AA</u></b>
Consolideck® LS/CS® followed by PROSOCO® SLX100® Water & Oil Repellent	-0.0	<b><u>AA</u></b>
Consolideck® LS/CS® followed by Paver Kare® Deep Sheen WB	-0.0	<b><u>AA</u></b>
Consolideck® LS/CS® followed by Sure Klean® Weather Seal Gloss 'N Guard WB	-0.0	<b><u>AA</u></b>

**CONCLUSIONS: Water Repellency**

Based on the laboratory tests conducted, all of the treatments provided above average water repellent protection.

## TEST METHODS: 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 blob and not evaluated for their beading properties.

### Rating System (1-5)

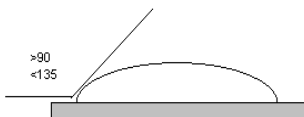
1. No wetting of contact area (no darkening); angle less than  $90^\circ$



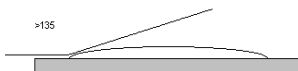
2. Wetting contained to the contact area (slight darkening); angle is less than  $90^\circ$



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



4. Wetting beyond the contact area (darkening); angle is greater than  $135^\circ$



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



**TEST RESULTS: Surface Beading Evaluation**

**Submitted "Rice" Paver**

	<b>Untreated</b>	<b>LS/CS® followed by Concrete Protector WB</b>	<b>LS/CS® followed by Concrete Protector SB</b>	<b>LS/CS® followed by SLX100®</b>
<b>Coca Cola</b>	5	2	2	1
<b>Ketchup</b>	N/A	N/A	N/A	N/A
<b>Mustard</b>	N/A	N/A	N/A	N/A
<b>Red Wine</b>	5		3	3
<b>Balsamic Vinegar</b>	5	3	3	2
<b>Soy Sauce</b>	5	3	2	2
<b>Olive Oil</b>	5	3	3	2
<b>Wesson Oil</b>	5	3	3	2
<b>Hot Coffee</b>	5	3	2	2

	<b>LS/CS® followed by Deep Sheen WB</b>	<b>LS/CS® followed by Polish Guard</b>	<b>LS/CS® followed by GuardEXT</b>	<b>LS/CS® followed by Gloss 'N Guard WB</b>
<b>Coca Cola</b>	3	3	3	3
<b>Ketchup</b>	N/A	N/A	N/A	N/A
<b>Mustard</b>	N/A	N/A	N/A	N/A
<b>Red Wine</b>	4	4	4	4
<b>Balsamic Vinegar</b>	3	3	4	3
<b>Soy Sauce</b>	3	3	3	3
<b>Olive Oil</b>	3	4	4	3
<b>Wesson Oil</b>	4	4	4	4
<b>Hot Coffee</b>	3	3	4	3

N/A – non-free flowing staining agent

**TEST RESULTS: Surface Beading Evaluation (cont.)**

**Submitted "Early Gray" Paver**

	Untreated	LS/CS® followed by Concrete Protector WB	LS/CS® followed by Concrete Protector SB	LS/CS® followed by SLX100®
<b>Coca Cola</b>	5	2	2	1
<b>Ketchup</b>	N/A	N/A	N/A	N/A
<b>Mustard</b>	N/A	N/A	N/A	N/A
<b>Red Wine</b>	5		3	2
<b>Balsamic Vinegar</b>	5	3	2	2
<b>Soy Sauce</b>	5	2	2	1
<b>Olive Oil</b>	5	3	3	2
<b>Wesson Oil</b>	5	3	3	2
<b>Hot Coffee</b>	5	2	2	2

	LS/CS® followed by Deep Sheen WB	LS/CS® followed by Polish Guard	LS/CS® followed by GuardEXT	LS/CS® followed by Gloss 'N Guard WB
<b>Coca Cola</b>	3	3	3	3
<b>Ketchup</b>	N/A	N/A	N/A	N/A
<b>Mustard</b>	N/A	N/A	N/A	N/A
<b>Red Wine</b>	4	4	4	4
<b>Balsamic Vinegar</b>	3	4	4	3
<b>Soy Sauce</b>	3	3	3	3
<b>Olive Oil</b>	4	4	4	4
<b>Wesson Oil</b>	4	4	4	4
<b>Hot Coffee</b>	3	3	3	3

N/A – non-free flowing staining agent

**TEST METHODS: Stain Resistance Evaluation**

The soiling agents were allowed to dwell on the treated and untreated substrate 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 with ten parts water and scrubbed under a stream of running water. The 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: Stain Resistance Evaluation**

**Submitted "Rice" Paver**

% Removal

<b>Untreated Control</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive Oil</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	60%	95%	90%	50%	50%	50%	<1%	<1%	50%
<b>4 hour</b>	80%	95%	90%	40%	50%	50%	<1%	<1%	50%
<b>1 hour</b>	80%	95%	90%	40%	40%	50%	<1%	<1%	50%
<b>10 min.</b>	80%	95%	90%	40%	50%	50%	<1%	<1%	50%
<b>LS/CS® followed by Concrete Protector WB</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive O.</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	99%	100%*	100%*	30%	80%	100%	<1%	<1%	50%
<b>4 hour</b>	99%	100%*	100%*	30%	85%	100%	10%	10%	50%
<b>1 hour</b>	99%	100%*	100%*	20%	90%	100%	10%	10%	40%
<b>10 min.</b>	100%	100%	100%*	30%	95%	100%	10%	10%	50%
<b>LS/CS® followed by Concrete Protector SB</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive O.</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	100%	100%*	98%*	30%	90%*	100%	80%	80%	60%
<b>4 hour</b>	100%	100%*	99%*	30%	98%*	100%	80%	80%	70%
<b>1 hour</b>	100%	100%*	100%*	30%	100%*	100%	90%	90%	70%
<b>10 min.</b>	100%	100%*	100%*	40%	100%*	100%	90%	90%	80%
<b>LS/CS® followed by SLX100® Water &amp; Oil Repellent</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive O.</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	95%	100%*	80%*	90%	95%	100%	<1%	<1%	70%
<b>4 hour</b>	95%	100%*	90%	60%	95%	100%	10%	10%	70%
<b>1 hour</b>	90%	100%*	90%	30%	85%	100%	10%	10%	70%
<b>10 min.</b>	90%	100%*	95%	30%	85%	100%	10%	10%	80%

% Removal of stain following maintenance cleaning.

\* Indicates etching of surface treatment due to the acidic nature of the staining agent.

**TEST RESULTS: Stain Resistance Evaluation (cont.)**

**Submitted "Rice" Paver**

% Removal

<b>LS/CS® followed by Deep Sheen WB</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive Oil</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	100%	100%	85%	98%	98%	100%	100%	100%	98%
<b>4 hour</b>	100%	100%	100%	99%	100%	100%	100%	100%	98%
<b>1 hour</b>	100%	100%	100%	99%	100%	100%	100%	100%	99%
<b>10 min.</b>	100%	100%	100%	99%	100%	100%	100%	100%	99%
<b>LS/CS® followed by Polish Guard</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive O.</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	100%	95%	80%	60%	80%	100%	80%	80%	70%
<b>4 hour</b>	100%	98%	100%	60%	85%	100%	100%	100%	50%
<b>1 hour</b>	100%	100%	100%	60%	90%	100%	100%	100%	60%
<b>10 min.</b>	100%	100%	100%	60%	95%	100%	100%	100%	60%
<b>LS/CS® followed by GuardEXT</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive O.</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	100%	100%	90%	98%	100%	100%	100%	100%	99%
<b>4 hour</b>	100%	100%	98%	100%	100%	100%	100%	100%	99%
<b>1 hour</b>	100%	100%	99%	100%	100%	100%	100%	100%	99%
<b>10 min.</b>	100%	100%	100%	100%	100%	100%	100%	100%	99%
<b>LS/CS® followed by Gloss 'N Guard WB</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive O.</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	100%	100%	95%	100%	100%	100%	100%	100%	100%
<b>4 hour</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>1 hour</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>10 min.</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%

% Removal of stain following maintenance cleaning.

\* Indicates etching of surface treatment due to the acidic nature of the staining agent.



**TEST RESULTS: Stain Resistance Evaluation (cont.)**

**Submitted "Early Gray" Paver**

% Removal

<b>Untreated Control</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive Oil</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	100%	95%	80%	40%	30%	70%	<1%	<1%	90%
<b>4 hour</b>	100%	95%	80%	40%	30%	60%	<1%	<1%	95%
<b>1 hour</b>	99%	98%	98%	50%	40%	60%	<1%	<1%	90%
<b>10 min.</b>	99%	98%	98%	50%	40%	60%	<1%	<1%	90%
<b>LS/CS® followed by Concrete Protector WB</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive O.</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	98%	100%*	98%*	50%	90%	100%	<1%	<1%	60%
<b>4 hour</b>	99%	100%*	100%*	50%	90%	100%	10%	10%	50%
<b>1 hour</b>	100%	100%*	100%*	50%	90%	100%	10%	10%	40%
<b>10 min.</b>	100%	100%*	100%*	50%	90%	100%	10%	10%	50%
<b>LS/CS® followed by Concrete Protector SB</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive O.</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	100%	98%*	99%*	30%	90%*	100%	80%	70%	70%
<b>4 hour</b>	100%	100%*	99%*	30%	95%*	100%	90%	90%	70%
<b>1 hour</b>	100%	100%*	100%*	30%	98%*	100%	95%	95%	70%
<b>10 min.</b>	100%	100%*	100%*	40%	99%*	100%	100%	100%	80%
<b>LS/CS® followed by SLX100® Water &amp; Oil Repellent</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive O.</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	98%	100%*	80%*	30%	90%	100%	10%	10%	70%
<b>4 hour</b>	100%	100%	100%*	30%	90%	100%	10%	10%	70%
<b>1 hour</b>	100%	100%	100%*	20%	85%	100%	10%	10%	70%
<b>10 min.</b>	100%	100%	100%*	20%	85%	100%	10%	10%	80%

% Removal of stain following maintenance cleaning.

\* Indicates etching of surface treatment due to the acidic nature of the staining agent.

**TEST RESULTS: Stain Resistance Evaluation (cont.)**

**Submitted "Early Gray" Paver**

% Removal

<b>LS/CS® followed by Deep Sheen WB</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive Oil</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	100%	100%	85%	100%	100%	100%	100%	100%	100%
<b>4 hour</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>1 hour</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>10 min.</b>	100%	100%	100%	99%	100%	100%	100%	100%	100%
<b>LS/CS® followed by Polish Guard</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive O.</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	100%	98%	85%	80%	100%	100%	80%	80%	70%
<b>4 hour</b>	100%	100%	100%	80%	100%	100%	90%	90%	60%
<b>1 hour</b>	100%	100%	100%	80%	100%	100%	95%	95%	60%
<b>10 min.</b>	100%	100%	100%	90%	100%	100%	100%	100%	60%
<b>LS/CS® followed by GuardEXT</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive O.</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	100%	100%	90%	100%	100%	100%	100%	100%	98%
<b>4 hour</b>	100%	100%	98%	100%	100%	100%	100%	100%	99%
<b>1 hour</b>	100%	100%	100%	100%	100%	100%	100%	100%	99%
<b>10 min.</b>	100%	100%	100%	100%	100%	100%	100%	100%	99%
<b>LS/CS® followed by Gloss 'N Guard WB</b>									
	<b>Cola</b>	<b>Ketch.</b>	<b>Must.</b>	<b>Red Wine</b>	<b>Bals. Vin.</b>	<b>Soy Sauce</b>	<b>Olive O.</b>	<b>Wess. Oil</b>	<b>Coffee</b>
<b>24 hour</b>	100%	100%	95%	100%	100%	100%	100%	100%	100%
<b>4 hour</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>1 hour</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%
<b>10 min.</b>	100%	100%	100%	100%	100%	100%	100%	100%	100%

% Removal of stain following maintenance cleaning.

\* Indicates etching of surface treatment due to the acidic nature of the staining agent.

**CONCLUSIONS: Stain Resistance**

In the laboratory tests conducted, all of the treatments improved the stain resistance of the pavers to the applied stains. LS/CS® followed by Deep Sheen WB and LS/CS® followed by Gloss 'N Guard WB provided the best stain resistance of all the treatments evaluated.

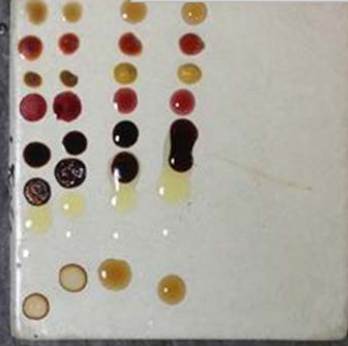
**PHOTOGRAPHS: Stain Resistance**

**Pavers With Stains**

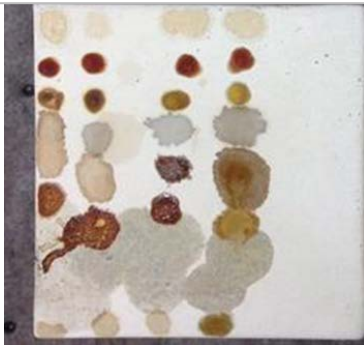
“Early Gray” Untreated Control



“Early Gray” Gloss ‘N Guard WB



“Rice” Untreated Control



“Rice” Gloss ‘N Guard WB



“Early Gray” Untreated Control

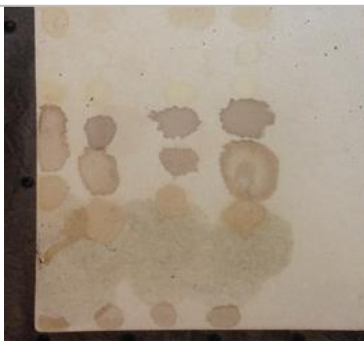


**Pavers After Stain Testing**

“Early Gray” Gloss ‘N Guard WB



“Rice” Untreated Control



“Rice” Gloss ‘N Guard WB



## **RECOMMENDATIONS:**

Based on the laboratory tests conducted, either Consolideck® LS/CS® or Consolideck® LS® can be recommended to be applied as an in-plant treatment for dustproofing and densifying the “Rice” and “Early Gray” concrete pavers submitted from ARTO Brick in Gardena, CA.

Paver Kare® Deep Sheen WB and Sure Klean® Weather Seal Gloss ‘N Guard WB are recommended for sheen enhancement and water/stain resistance. Two applications are recommended for optimal sheen enhancement and stain resistance.

Consolideck® Concrete Protector SB is recommended for water/stain resistance when no change in appearance to the pavers is desired. Two applications are recommended for optimal stain resistance.

Application procedures from the PROSOCO, Inc. Product Data Sheet instructions must be followed:

### **Procedure for Consolideck® LS/CS®:**

Read “Preparation” and “Safety Information” sections in the Manufacturer’s Product Data Sheet for Consolideck® LS/CS®. Refer to the Product Data Sheet for additional information about application of Consolideck® LS/CS®. Do not dilute or alter.

## **Application**

### **Calculating Target Coverage Rate**

Variations in concrete quality, porosity, job site conditions, temperature and relative humidity will affect coverage rates and drying times. Test a representative section of the prepared surface to calculate the Target Coverage Rate.

1. Prepare the test section in accordance with manufacturer’s published preparation information. Surface must be clean, dry and absorbent. Surfaces should wet uniformly.
2. Pour one gallon of product into a clean pump up sprayer. Lightly apply sufficient product to wet the surface without producing puddles.
3. Use a clean microfiber pad to spread the product and ensure uniform wetting. Scrubbing is not necessary.
4. If surfaces dry immediately, increase your rate of application. Surface should remain wet for 5–10 minutes. Adjust rate of application to eliminate puddles.
5. Repeat steps 2 through 4 as needed to determine the correct rate of application. Measure the test area to establish the Target Coverage Rate per gallon.

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**Procedure for Consolideck® LS®:**

Surfaces to be treated must be clean, dry and absorbent. Test surface absorbency with a light water spray. If surface does not wet uniformly, use the appropriate Consolideck® surface preparation cleaner or mechanical process to remove remaining surface contaminants. Read “Preparation” and “Safety Information” sections in the Manufacturer’s Product Data Sheet for Consolideck® LS®. Refer to the Product Data Sheet for additional information about application of Consolideck® LS®. Do not dilute or alter.

**Application****Calculating Target Coverage Rate**

SPECIFIER NOTE: Variations in concrete quality, porosity, job site conditions, temperature and relative humidity will affect coverage rates and drying times. Test a representative section of the prepared surface to calculate the Target Coverage Rate.

1. Prepare the test section in accordance with manufacturer’s published preparation information. Surface must be clean, dry and absorbent. Surfaces should wet uniformly.
2. Pour one gallon of product into a clean pump up sprayer. Lightly apply sufficient product to wet the surface without producing puddles.
3. Use a clean microfiber pad to spread the product and ensure uniform wetting. Scrubbing is not necessary.
4. If surfaces dry immediately, increase your rate of application. Surface should remain wet for 5–10 minutes. Adjust rate of application to eliminate puddles.
5. Repeat steps 2 through 4 as needed to determine the correct rate of application. Measure the test area to establish the Target Coverage Rate per gallon.

**Procedure for Paver Kare® Deep Sheen WB:**

Before applying, read “Preparation” and “Safety Information” sections in the Manufacturer’s Product Data Sheet for Paver Kare® Deep Sheen WB. Refer to the Product Data Sheet for additional information about application of Deep Sheen WB. Do not dilute or alter. Do not shake. Shaking may entrap air.

**Brush or roller**

1. Saturate the entire surface. Avoid excessive overlapping.
2. Carefully brush out runs and drips.
3. Reapply, if needed, to produce an even appearance over the entire surface. Allow 30-40 minutes between applications or until first coat is dry. Less material will be needed for the second coat.

**Sprayer**

1. Apply two or more thin, even coats to a total thickness of 2-4 mils wet. Let first coat dry 15 minutes or until it becomes tacky.
2. Apply two or more additional coats in the same manner to produce an even appearance. Allow 30-40 minutes dry-time between each set of applications, or until the previous application is dry.

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**Procedure for Sure Klean® Weather Seal Gloss 'N Guard WB:**

Before applying, read "Preparation" and "Safety Information" sections in the Manufacturer's Product Data Sheet for Gloss 'N Guard WB. Refer to the Product Data Sheet for additional information about application of Gloss 'N Guard WB. Do not dilute or alter. Stir thoroughly before application. Do not shake. Shaking may entrap air.

**Sprayer: Tile and Decorative Paving**

1. Apply two or more thin, even coats to a thickness of 2 to 4 mils.
2. Allow 15 minutes between coats or until coating has become tacky.
3. Apply two or more coats again, in the same manner, to produce an even appearance.  
Allow 30 to 40 minutes dry-time between each set of applications, or until first application is dry.

**Procedure for Consolideck® Concrete Protector SB:**

Before applying, read "Preparation" and "Safety Information" sections in the Manufacturer's Product Data Sheet for Concrete Protector SB. Refer to the Product Data Sheet for additional information about application of Concrete Protector SB.

**Dilution**

Apply as packaged. Do not dilute or alter material. Stir or mix well before use.

**Horizontal Surfaces:**

1. Lightly wet a clean microfiber pad with Concrete Protector SB, leaving the pad damp.
2. Use a clean, pump-up sprayer, work from one control joint to another applying a light, fine spray to a small section of the floor.
3. Use the damp microfiber pad and firm downward pressure to immediately spread Concrete Protector SB. Produce a thin, even application. Spread the product as far as possible while maintaining a wet edge.
4. Allow treated surfaces to dry tack-free, typically 60 to 90 minutes.

SPECIFIER NOTE: Best results are achieved when Concrete Protector SB is allowed to dry and cure for at least 4 hours prior to burnishing.

5. Once dry, Concrete Protector SB may be burnished using a high-speed burnisher fitted with a Consolideck® Heat Burnishing Pad or 1500 to 3000 grit diamond polishing pad suitable for use on high-gloss finishes.

SPECIFIER NOTE: in addition to smoothing and polishing the treated surface, high-speed burnishing can help to remove any surface haze from possible over application.

6. Repeat steps 1 through 5 above, as necessary, to provide additional stain protection.  
Apply up to two coats for maximum protection.

Jobsite testing in a small, inconspicuous location must be conducted prior to overall application of any product.

A handwritten signature in black ink that reads 'Courtney A. Murdock'.

Courtney A. Murdock, CDT  
Project Testing Director

**ALL SAMPLES SUPPLIED FOR THE ABOVE EVALUATION WILL BE DISPOSED OF NINETY (90) DAYS AFTER THE ISSUE DATE OF THIS REPORT. IF SAMPLES ARE TO BE RETAINED FOR ADDITIONAL TESTING OR RETURNED TO THE SENDER, PROVIDE WRITTEN INSTRUCTIONS TO THE LABORATORY WITHIN NINETY (90) DAYS OF THE ISSUE DATE OF THIS REPORT.**

Recommendations made within this report are based on laboratory test applications and observations. Final determination of the suitability of a product and/or procedure should be made only after thorough job testing on actual surfaces.