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

For: Mark O'Keefe
cc: Paul Tessier
    Steve Dean

Subject: KRC Rock
        San Marcos, CA

Date: May 4, 2005

Project: 0503-09 PTP

Samples Submitted: 1 type of natural stone

<table>
<thead>
<tr>
<th>Sample</th>
<th>Color</th>
<th>Size</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Autumn Flame”</td>
<td>Red/Orange/Gray</td>
<td>Various</td>
</tr>
</tbody>
</table>

Submitted by: Mark O'Keefe
Purpose of Testing

One type of natural stone was submitted to PROSOCO, Inc.’s Testing Laboratory with a request to determine if application of the products evaluated will produce any surface alteration during new construction cleaning operations. Additionally, the effectiveness of water repellents, stain repellents, and color enhancing treatments suitable for natural stone were evaluated.

**New Construction Cleaning** – Enviro Klean® Safety Klean and Sure Klean® Vana Trol® were evaluated for removal of laboratory applied mortar.

To simulate new construction soiling, the sample was 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 the sample and filled with a wet mixture of Type S or Type N cementitious mortar. The wet mortar-filled cylinder was allowed to remain in contact with the sample for 10 minutes before removal.

Heavy deposits of mortar were removed with dry scraping after 24 hours. Prepared cleaning solutions were then evaluated for their effectiveness in removing residual Type S mortar after 3, 7, and 14 days of curing and Type N mortar after 7, 14, and 21 days of curing.

**Limiting Surface Alterations** – Enviro Klean® Safety Klean and Sure Klean® Vana Trol® were tested at various dilutions to determine if a cleaning program implemented to remove excess mortar, and related new construction soiling would otherwise alter the appearance of cleaned surfaces. Surface alterations were evaluated visually based upon perceived discoloration or erosion/etching of the sample.

**Surface Finish Removal** is the visual examination of the sample comparing the surface finish of the untreated control surface to the surface finish cleaned with selected product(s) at given dilutions.

**Substrate Deterioration** is the visual examination of the sample 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 sample.

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

**Staining** 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 SL100 Water Repellent and Stand Off® SLX100 Water & Oil Repellent were evaluated on the submitted sample for their ability to provide water repellency.

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

**Color Enhancement** – ConcreteScience® SpecSeal WB-Flat was evaluated for its ability to provide color enhancement to the submitted sample.
### Products Evaluated

#### Products Evaluated for New Construction Cleaning and Limiting Surface Alterations

<table>
<thead>
<tr>
<th>Sample</th>
<th>Treatment</th>
<th>Dilution</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Autumn Flame&quot;</td>
<td>Sure Klean® Vana Trol®</td>
<td>1:6, 1:8</td>
</tr>
<tr>
<td></td>
<td>Enviro Klean® Safety Klean</td>
<td>1:2, 1:3</td>
</tr>
</tbody>
</table>

#### Water Repellent Products Evaluated

<table>
<thead>
<tr>
<th>Sample</th>
<th>Treatment</th>
<th>Dilution</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Autumn Flame&quot;</td>
<td>Sure Klean® Weather Seal SL100 Water Repellent</td>
<td>Concentrate</td>
</tr>
<tr>
<td></td>
<td>Stand Off® SLX100 Water &amp; Oil Repellent</td>
<td>Concentrate</td>
</tr>
</tbody>
</table>

#### Stain Repellent Products Evaluated

<table>
<thead>
<tr>
<th>Sample</th>
<th>Treatment</th>
<th>Dilution</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Autumn Flame&quot;</td>
<td>Stand Off® Stone, Tile, &amp; Masonry Protector (STMP)</td>
<td>Concentrate</td>
</tr>
<tr>
<td></td>
<td>Stand Off® SLX100 Water &amp; Oil Repellent</td>
<td>Concentrate</td>
</tr>
</tbody>
</table>

#### Color Enhancement Products Evaluated

<table>
<thead>
<tr>
<th>Sample</th>
<th>Treatment</th>
<th>Dilution</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;Autumn Flame&quot;</td>
<td>ConcreteScience® SpecSeal WB-Flat</td>
<td>Concentrate</td>
</tr>
</tbody>
</table>
New Construction Cleaning

These cleaning trials were conducted to determine the optimal cleaning/cure time combination to most efficiently remove Type S or Type N mortar from the submitted samples.

Type S or Type N cementitious mortar was prepared in compliance with the manufacturer’s instructions, applied to the natural stone surface and allowed to cure for 3, 7 and 14 days for Type S mortar and 7, 14 and 21 days for Type N mortar. Mortar removal was accomplished using chemical assistance and a high-pressure water rinse with pressure rinsing equipment. The removal of Type S mortar was visually evaluated after 3, 7 and 14 days of curing and Type N mortar after 7, 14 and 21 days of curing.

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® 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 – 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.
   - Vana Trol® .......................................................... 3-5 minutes
   - Safety Klean.......................................................... 3-5 minutes
4. Pressure rinse thoroughly.*

*Pressure rinsing was conducted at approximately 1300 psi with a warm water flow rate of 1.9 gallons per minute.
### Test Results – New Construction Cleaning; Type S Mortar

<table>
<thead>
<tr>
<th>Product</th>
<th>Dilution</th>
<th>3 day</th>
<th>7 day</th>
<th>14 day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enviro Klean® Safety Klean</td>
<td>1:2</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>1:3</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Sure Klean® Vana Trol®</td>
<td>1:6</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>1:8</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

### Test Results – New Construction Cleaning; Type N Mortar

<table>
<thead>
<tr>
<th>Product</th>
<th>Dilution</th>
<th>7 day</th>
<th>14 day</th>
<th>21 day</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enviro Klean® Safety Klean</td>
<td>1:2</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>1:3</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Sure Klean® Vana Trol®</td>
<td>1:6</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td></td>
<td>1:8</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>

### Test Results – Limiting Surface Alterations

<table>
<thead>
<tr>
<th>Substrate: Natural Stone</th>
<th>Pigment Color: “Autumn Flame”</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product</td>
<td>Dilution</td>
</tr>
<tr>
<td>Enviro Klean® Safety Klean</td>
<td>1:2</td>
</tr>
<tr>
<td>Enviro Klean® Safety Klean</td>
<td>1:3</td>
</tr>
<tr>
<td>Sure Klean® Vana Trol®</td>
<td>1:6</td>
</tr>
<tr>
<td>Sure Klean® Vana Trol®</td>
<td>1:8</td>
</tr>
</tbody>
</table>

0 – No change  3 – change – heavy
1 – change – slight  4 – change - excessive
2 – change – moderate
Photographs – New Construction Cleaning; Type S Mortar

“Autumn Flame” Natural Stone; 3 Day Cleaning

“Autumn Flame” Natural Stone; 7 Day Cleaning

“Autumn Flame” Natural Stone; 14 Day Cleaning
Photographs – New Construction Cleaning; Type N Mortar

“Autumn Flame” Natural Stone; 7 Day Cleaning

Sure Klean® Vana Trol® 1:6  
Sure Klean® Vana Trol® 1:8  
Enviro Klean® Safety Klean 1:2  
Enviro Klean® Safety Klean 1:3  
Untreated Control

“Autumn Flame” Natural Stone; 14 Day Cleaning

Sure Klean® Vana Trol® 1:6  
Sure Klean® Vana Trol® 1:8  
Enviro Klean® Safety Klean 1:2  
Enviro Klean® Safety Klean 1:3  
Untreated Control

“Autumn Flame” Natural Stone; 21 Day Cleaning

Sure Klean® Vana Trol® 1:6  
Sure Klean® Vana Trol® 1:8  
Enviro Klean® Safety Klean 1:2  
Enviro Klean® Safety Klean 1:3  
Untreated Control
Photographs – Limiting Surface Alterations

“Autumn Flame”; Limiting Surface Alterations
Conclusions – New Construction Cleaning

Based on the test results, all PROSOCO, Inc. products tested performed well in removing excess mortar from the submitted samples. These products performed well in removing the mortar soils even after allowing the mortar to remain on the surface of the samples for 14 days using Type S mortar and 21 days using Type N mortar under ideal curing conditions. Also none of the evaluated products caused any surface alterations on the submitted sample.

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 and construction dirt while minimizing any potential surface alterations to the decorative finish, clean within 3 days of construction when using Type S mortar and within 7 days of construction when using Type N mortar.

Recommendations – New Construction Cleaning

Recommendations for cleaning for the natural stone submitted by KRC Rock, San Marcos, CA, are provided in the chart below. Recommendations are based on the optimum dilution for complete removal of mortar while limiting surface alterations.

<table>
<thead>
<tr>
<th>Sample</th>
<th>New Construction Cleaning (Type S mortar, 14 day cleaning)</th>
<th>New Construction Cleaning (Type N mortar, 21 day cleaning)</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Autumn Flame”</td>
<td>Enviro Klean® Safety Klean (1:2) OR (1:3) OR Sure Klean® Vana Trol® (1:6) OR (1:8)</td>
<td>Enviro Klean® Safety Klean (1:2) OR (1:3) OR Sure Klean® Vana Trol® (1:6) OR (1:8)</td>
</tr>
</tbody>
</table>

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 SL100 Water Repellent – A modified, “neat” silane system that offers invisible protection and low volatility and complies with all known regulations limiting the Volatile Organic Compound (VOC) content of architectural coatings and sealers. SL100 protects horizontal and vertical concrete and masonry surfaces against water and waterborne contaminants. The small molecular structure of SL100 ensures maximum penetration and colorless protection of dense, color-sensitive surfaces. Ideal for GFRC, integrally colored pre-cast concrete and many types of natural stone.

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 sample was allowed to absorb atmospheric humidity for at least 24 hours prior to treatment. The treatments were applied by brush in accordance with the current PROSOCO, Inc. Product Guide. Both treatments were allowed to cure for at least 7 days prior to testing.
Test Methods – Protective Water Repellents

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 horizontal 5.0-milliliter head pressures. Filled to 5 milliliters, a water absorption tube produces a 103 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 ml of water or more, then:

A rating of **AA Above Average** water repellent performance would require loss of no more than 5 ml X 20% = 1 ml.

A rating of **A Average** water repellent performance would require loss of no more than 5 ml X 50% = 2.5ml.

A rating of **BA 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

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

<table>
<thead>
<tr>
<th>“Autumn Flame”</th>
<th>Results in mL loss</th>
<th>Ranking</th>
</tr>
</thead>
<tbody>
<tr>
<td>Untreated Control</td>
<td>-0.0</td>
<td>--</td>
</tr>
<tr>
<td>SL100 Water Repellent</td>
<td>-0.0</td>
<td>AA</td>
</tr>
<tr>
<td>SLX100 Water &amp; Oil Repellent</td>
<td>-0.0</td>
<td>AA</td>
</tr>
</tbody>
</table>
Photographs – Protective Water Repellents

“Autumn Flame” Natural Stone; RILEM Testing

Stand Off® SLX100 Water & Oil Repellent
Sure Klean® Weather Seal SL100 Water Repellent
Untreated Control
Conclusions – Protective Water Repellents

Test results indicate that both of the water repellents tested exhibited above average water repellency on the submitted sample. None of the water repellents evaluated created any color change or adverse effects to the submitted sample.

Recommendations – Protective Water Repellents

Recommendations for water repellent treatments for the natural stone submitted by KRC Rock, San Marcos, CA, are provided in the chart below. Recommendations are based on the treatments that proved most effective at providing water repellency on the submitted natural stone.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Water Repellents</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Autumn Flame”</td>
<td>Sure Klean® Weather Seal SL100 Water Repellent</td>
</tr>
<tr>
<td></td>
<td>OR</td>
</tr>
<tr>
<td></td>
<td>Stand Off® SLX100 Water &amp; Oil Repellent</td>
</tr>
</tbody>
</table>

The ability of a water repellent treatment to prevent the ingress of water 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 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 sample.

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-heavy 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

<table>
<thead>
<tr>
<th>Products</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Coca Cola</td>
<td>ambient (~70°F)</td>
</tr>
<tr>
<td>Ketchup</td>
<td>ambient (~70°F)</td>
</tr>
<tr>
<td>Mustard</td>
<td>ambient (~70°F)</td>
</tr>
<tr>
<td>Red wine</td>
<td>ambient (~70°F)</td>
</tr>
<tr>
<td>Balsamic Vinegar</td>
<td>ambient (~70°F)</td>
</tr>
<tr>
<td>Soy Sauce</td>
<td>ambient (~70°F)</td>
</tr>
<tr>
<td>Olive Oil</td>
<td>ambient (~70°F)</td>
</tr>
<tr>
<td>Wesson Oil</td>
<td>(~250°F)</td>
</tr>
<tr>
<td>Coffee</td>
<td>(~120°F)</td>
</tr>
</tbody>
</table>

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 protective treatments were applied by brush in accordance with the current PROSOCO, Inc. Product Guide.
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°) 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 Flame”

<table>
<thead>
<tr>
<th>Treatment</th>
<th>Coco-Cola</th>
<th>Ketchup</th>
<th>Mustard</th>
<th>Red Wine</th>
<th>Balsamic Vinegar</th>
<th>Soy Sauce</th>
<th>Olive Oil</th>
<th>Wesson Oil</th>
<th>Hot Coffee</th>
</tr>
</thead>
<tbody>
<tr>
<td>Untreated Control</td>
<td>4</td>
<td>-</td>
<td>-</td>
<td>4</td>
<td>4</td>
<td>4</td>
<td>5</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>SLX100</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>STMP</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>2</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

### Test Results – Stain Repellency

#### “Autumn Flame”

<table>
<thead>
<tr>
<th>Untreated Control</th>
<th>Coca-Cola</th>
<th>Ketchup</th>
<th>Mustard</th>
<th>Red Wine</th>
<th>Balsamic Vinegar</th>
<th>Soy Sauce</th>
<th>Olive Oil</th>
<th>Wesson Oil</th>
<th>Hot Coffee</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 hr</td>
<td>100%</td>
<td>100%</td>
<td>&lt;1%</td>
<td>100%</td>
<td>100%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>4 hour</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>100%</td>
<td></td>
</tr>
<tr>
<td>1 hour</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>&lt;1%</td>
<td>&lt;1%</td>
<td>100%</td>
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</tr>
<tr>
<td>10 min.</td>
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<td>100%</td>
<td>&lt;1%</td>
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<td>100%</td>
<td></td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Coca-Cola</th>
<th>Ketchup</th>
<th>Mustard</th>
<th>Red Wine</th>
<th>Balsamic Vinegar</th>
<th>Soy Sauce</th>
<th>Olive Oil</th>
<th>Wesson Oil</th>
<th>Hot Coffee</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 hr</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
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</tr>
<tr>
<td>4 hour</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
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<td>1 hour</td>
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<td>10 min.</td>
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<td>100%</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Coca-Cola</th>
<th>Ketchup</th>
<th>Mustard</th>
<th>Red Wine</th>
<th>Balsamic Vinegar</th>
<th>Soy Sauce</th>
<th>Olive Oil</th>
<th>Wesson Oil</th>
<th>Hot Coffee</th>
</tr>
</thead>
<tbody>
<tr>
<td>24 hr</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
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</tr>
<tr>
<td>4 hour</td>
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</tr>
<tr>
<td>1 hour</td>
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<td>100%</td>
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</tr>
<tr>
<td>10 min.</td>
<td>100%</td>
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<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
</tbody>
</table>
Photographs – Stain Repellency

“Autumn Flame” Natural Stone; Stains Applied

“Autumn Flame” Natural Stone; Stains Removed

Stand Off® SLX100 Water & Oil Repellent  Stand Off® Stone, Tile & Masonry Protector (STMP)  Untreated Control

Stand Off® SLX100 Water & Oil Repellent  Stand Off® Stone, Tile & Masonry Protector (STMP)  Untreated Control
Conclusions – Stain Repellency

Based upon laboratory evaluations, both of the treatments tested improved the surface beading of the samples, although Stand Off® SLX100 Water & Oil Repellent performed slightly better. In addition, both treatments were effective in repelling the staining agents from the samples.

Recommendations – Stain Repellency

Recommendations for stain resistance treatment for the natural stone submitted by KRC Rock, San Marcos, CA, are provided in the chart below. Recommendations are based on the treatments that proved most effective for providing stain repellency on the submitted natural stone.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Stain Repellent</th>
<th>Maintenance Cleaner</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Autumn Flame”</td>
<td>Stand Off® SLX100 Water &amp; Oil Repellent</td>
<td>Enviro Klean® 2010 All Surface Cleaner (1:10)</td>
</tr>
<tr>
<td></td>
<td>OR</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Stand Off® Stone, Tile &amp; Masonry Protector (STMP)</td>
<td></td>
</tr>
</tbody>
</table>

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 Enhancement

Description of Products Evaluated – Color Enhancement

ConcreteScience® SpecSeal WB-Flat – A stabilized styrene acrylic co-polymer-based curing, sealing, compound. It’s tough, chemical resistant, long lasting and non-yellowing. A surface coated with SpecSeal WB-Flat will bead water much like a freshly waxed car. The product is effective on vertical and horizontal, exterior and interior, above- and below-grade architectural concrete and masonry.

Easily applied SpecSeal WB-Flat quickly forms a hard clear film that is permanent, tough, chemical resistant, waterproof, dust proof, and non-yellowing VOC compliance. Independent lab analysis confirms that the product's non-yellowing characteristics outlast and outperform competitive products and equal the performance of pure acrylic systems.

Sample Preparation – Color Enhancement

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.

Test Method – Color Enhancement

ConcreteScience® SpecSeal WB-Flat was applied by brush in accordance with the application instructions in the current PROSOCO, Inc. Product Guide.
Test Results – Color Enhancement

<table>
<thead>
<tr>
<th>Sample</th>
<th>ConcreteScience® SpecSeal WB-Flat</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Autumn Flame”</td>
<td>3</td>
</tr>
</tbody>
</table>

Scale: 0- No enhancement; dull  
1- Slight Enhancement  
2- Moderate Enhancement  
3- Significant Enhancement

Photographs – Color Enhancement

“Autumn Flame” Natural Stone; Color Enhancement Treatments Applied
Recommendations – Color Enhancement

Recommendations for color enhancement for the natural stone submitted by KRC Rock, San Marcos, CA, are provided in the chart below. Recommendations are based on the treatment that proved most effective in providing color enhancement to the submitted samples.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Color Enhancement</th>
</tr>
</thead>
<tbody>
<tr>
<td>“Autumn Flame”</td>
<td>ConcreteScience® SpecSeal WB-Flat</td>
</tr>
</tbody>
</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 product and procedures 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

KRC Rock
San Marcos, CA

Project No. 0503-09 PTP

Prepared For:

KRC Rock
315 East Carmel Street
San Marcos, CA 92069

Prepared By:

PROSOCO, Inc.
April 2005