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Attachments

 Technical Services TECH Note RILEM Tube Test Procedures

 Product Data literature for all products evaluated

Submitted Information

For: Charles J. Smith, Xella AAC Texas, Inc.
cc: Coburn Bond
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Robert Holmes
Brian Koenings

Subject: Xella AAC Texas, Inc.
Cibolo, TX

Date: May 1, 2008

Project: 0804-01 PTP

Samples Submitted: 2 types of Autoclaved Aerated Concrete (AAC)

Sample	Color	Finish	Integral Water Repellent	Size
AAC Block	White	Ground	None	3.75" x 3.75" x 1"
AAC Block	White	Smooth	None	3.75" x 3.75" x 1"

Submitted by: Coburn Bond

Introduction

Architectural Materials Testing (AMT) Laboratories is a Boyer Industries company that provides laboratory testing and consulting services for the construction industry. Laboratory testing includes evaluating chemical cleaning products and protective treatments for a variety of new and existing architectural materials.

This report includes descriptions of the PROSOCO, Inc. products and test methods that were used. Following test results and conclusions, the report provides recommendations for the most effective products and procedures.

Purpose of Testing

Two types of autoclaved aerated concrete (AAC block) were submitted for testing to AMT Laboratories by PROSOCO, Inc. to determine the optimal concentration of cleaner which leaves the external surface looking most like the uncleaned surface of the AAC block. The effectiveness of protective water repellents and graffiti control products suitable for concrete block was also evaluated.

Limiting Surface Alterations – Sure Klean® Custom Masonry Cleaner, Sure Klean® Concrete Brick Cleaner, Sure Klean® Light Duty Concrete Cleaner, and Sure Klean® Vana Trol® were evaluated to determine the optimal concentration of cleaner which leaves the external surface looking most like the uncleaned surface of the AAC block.

Color uniformity was evaluated by comparing aggregate exposure and surface pigment alternation/removal of each cleaned surface with the uncleaned surface of the submitted samples.

Aggregate Exposure is the visual examination comparing aggregate exposure of the uncleaned surface of the AAC block to surfaces cleaned with the selected product(s) at given dilutions.

Surface Pigment Alteration/Removal is the visual examination comparing the surface pigmentation of the uncleaned surface of the AAC block to surfaces cleaned with the selected product(s) at given dilutions.

The following is the scale used for reporting results of both categories:

- | | |
|---|--|
| 0 – Worst match to uncleaned surface | 3 – Good match to uncleaned surface |
| 1 – Poor match to uncleaned surface | 4 – Best match to uncleaned surface |
| 2 – Fair match to uncleaned surface | |

Protective Water Repellents – Sure Klean® Weather Seal Blok-Guard® & Graffiti Control and Sure Klean® Weather Seal Siloxane WB Concentrate were evaluated for their ability to provide water repellency to the submitted samples.

Graffiti Control – Sure Klean® Weather Seal Blok-Guard® & Graffiti Control was evaluated for its ability to control graffiti on the submitted samples. Sure Klean® Fast Acting Stripper and Defacer Eraser® Graffiti Wipe were evaluated for their ability to remove graffiti from the submitted samples.

Products Evaluated**Cleaning Products Evaluated**

Sample	Product	Dilution
AAC Block, Ground and Smooth Finish	Sure Klean® Custom Masonry Cleaner	1:2, 1:4, 1:6
	Sure Klean® Concrete Brick Cleaner	1:2, 1:3
	Sure Klean® Light Duty Concrete Cleaner	1:2, 1:3
	Sure Klean® Vana Trol®	1:6, 1:8

Protective Water Repellent Products Evaluated

Sample	Product	Dilution
AAC Block, Ground and Smooth Finish	Sure Klean® Weather Seal Blok-Guard® & Graffiti Control	Concentrate
	Sure Klean® Weather Seal Siloxane WB Concentrate	1:9

Graffiti Control Products Evaluated

Sample	Product	Dilution
AAC Block, Ground and Smooth Finish	Sure Klean® Weather Seal Blok-Guard® & Graffiti Control	Concentrate

Graffiti Removal Products Evaluated

Sample	Product	Dilution
AAC Block, Ground and Smooth Finish	Sure Klean® Fast Acting Stripper	Concentrate
	Defacer Eraser® Graffiti Wipe	Concentrate

Limiting Surface Alterations

These cleaning trials were conducted to determine the optimal concentration of cleaner to provide the best color uniformity when compared to the uncleaned surface of the submitted samples.

Description of Product Evaluated –Cleaning

Sure Klean® Custom Masonry Cleaner – A general purpose, concentrated acidic cleaner for most custom masonry and colored concrete. Removes concrete splashes, excess mortar, mud, heavy efflorescence and surface soiling, leaving the masonry clean and uniform with no acid burning or streaking. Liquid concentrate for dilution with 2-6 parts water. Apply by brush or low-pressure spray.

Sure Klean® Concrete Brick Cleaner – Removes common construction and atmospheric staining from concrete brick and other architectural concrete surfaces. This general-purpose, non-etching, acidic cleaner removes rust, mud, oil, atmospheric dirt, mortar smears and other stains without altering the surface texture. Concrete Brick Cleaner adds depth to colors and brightens white matrices and exposed aggregate.

Sure Klean® Light Duty Concrete Cleaner – Removes common construction and atmospheric staining from smooth architectural and engineered concrete. This general-purpose, non-etching, acidic cleaner removes rust, mud, oil, atmospheric dirt, mortar smears and other stains without altering the surface texture. Light Duty Concrete Cleaner adds depth to colors, brightens white matrices and exposed aggregate.

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.

Sample Preparation – Limiting Surface Alterations

A visual examination was also made to determine the optimal dilution of the tested cleaners that provide the best color uniformity when compared to the uncleaned surface of the submitted samples.

Test Method – Limiting Surface Alterations

Chemical cleaners were evaluated using the following procedure:

1. Pre-wet the surface with water.
2. Apply at the appropriate dilutions.
3. Allow appropriate dwell time, as specified.

Sure Klean® Custom Masonry Cleaner	3-5 minutes
Sure Klean® Concrete Brick Cleaner	3-5 minutes
Sure Klean® Light Duty Concrete Cleaner	3-5 minutes
Sure Klean® Vana Trol®	3-5 minutes
4. Reapply the product and moderately agitate with a brush.
5. Pressure rinse thoroughly.*
6. Allow the sample to dry for at least 18 hours and visually examine.
7. Visually compare the color of the cleaned surfaces of the AAC block to an uncleaned surface 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 – Limiting Surface Alterations

Substrate: AAC Block – Ground Finish		Pigment Color: White			
Product	Dilution	Surface Finish Removal	Substrate Deterioration	Color Change	Staining
Sure Klean® Custom Masonry Cleaner	1:2	1	0	0	0
Sure Klean® Custom Masonry Cleaner	1:4	1	0	0	0
Sure Klean® Custom Masonry Cleaner	1:6	1	0	0	0
Sure Klean® Concrete Brick Cleaner	1:2	1	0	0	0
Sure Klean® Concrete Brick Cleaner	1:3	1	0	0	0
Sure Klean® Light Duty Concrete Cleaner	1:2	1	0	0	0
Sure Klean® Light Duty Concrete Cleaner	1:3	1	0	0	0
Sure Klean® Vana Trol®	1:6	0	0	0	0
Sure Klean® Vana Trol®	1:8	0	0	0	0
Substrate: AAC Block – Smooth Finish		Pigment Color: White			
Product	Dilution	Surface Finish Removal	Substrate Deterioration	Color Change	Staining
Sure Klean® Custom Masonry Cleaner	1:2	2	2	0	0
Sure Klean® Custom Masonry Cleaner	1:4	2	2	0	0
Sure Klean® Custom Masonry Cleaner	1:6	2	2	0	0
Sure Klean® Concrete Brick Cleaner	1:2	2	2	0	0
Sure Klean® Concrete Brick Cleaner	1:3	2	2	0	0
Sure Klean® Light Duty Concrete Cleaner	1:2	2	2	0	0
Sure Klean® Light Duty Concrete Cleaner	1:3	2	2	0	0
Sure Klean® Vana Trol®	1:6	1	0	0	0
Sure Klean® Vana Trol®	1:8	1	0	0	0

0 – No Change **3 – Change – Heavy**
1 – Change – Slight **4 – Change – Excessive**
2 – Change – Moderate

Photographs – Limiting Surface Alterations

AAC Block, Smooth Finish; Limiting Surface Alterations



Photographs – Limiting Surface Alterations

AAC Block, Smooth Finish; Limiting Surface Alterations



**Sure Klean® Light Duty
Concrete Cleaner (1:2)**

**Sure Klean® Light Duty
Concrete Cleaner (1:3)**



**Sure Klean®
Vana Trol® (1:6)**

**Sure Klean®
Vana Trol® (1:8)**

**Uncleaned
Surface**

Conclusions – Limiting Surface Alterations

Based on the test results, samples cleaned with Sure Klean® Vana Trol® did not have adverse effects or removal of the finish of the submitted ground AAC block. Sure Klean® Vana Trol® caused a slight surface removal on the smooth finish AAC block. Samples cleaned with Sure Klean® Custom Masonry Cleaner, Sure Klean® Concrete Brick Cleaner, and Sure Klean® Light Duty Concrete Cleaner showed slight surface finish removal and substrate deterioration on the ground finish AAC block, and moderate surface finish removal and substrate deterioration on the smooth finish AAC block.

Recommendations – Limiting Surface Alterations

Recommendations for cleaning for the AAC Block submitted by Xella AAC Texas, Inc., Cibolo, TX are provided in the chart below. Recommendations are based on the optimum dilution for providing the best match to the uncleaned surface of the concrete block.

Sample	Cleaner
AAC Block Ground and Smooth Finish	Sure Klean® Vana Trol® (1:8)

The most appropriate cleaner and dilution should be determined on the specific job-site, and will be dependent primarily on the nature and severity of soiling present at that location.

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 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 Blok-Guard® & Graffiti Control – A clear, solvent-based silicone elastomer formulated to weatherproof concrete block and other porous masonry materials. Blok-Guard® & Graffiti Control protects masonry surfaces from repeated graffiti attacks without altering the natural appearance. Blok-Guard® & Graffiti Control penetrates and fills pores to prevent water penetration through exterior walls exposed to normal weathering. Graffiti removal is fast and easy using Defacer Eraser® Graffiti Wipe. Blok-Guard® & Graffiti Control is easy to apply with low-pressure spray, brush or roller.

Sure Klean® Weather Seal Siloxane WB Concentrate – A self-emulsifying water repellent concentrate designed for dilution with fresh water at the job site. This solvent-free blend of silanes and oligomeric alkoxysiloxanes mixes easily with water to produce a penetrating water repellent ideal for application to dense or porous masonry surfaces.

Sample Preparation – Protective Water Repellents

Both of the products were applied by brush in accordance with the current PROSOCO, Inc. Product Data Sheet application instructions. Both treatments were allowed to cure for at least 72 hours prior to testing.

Test Methods – Protective Water Repellents**Water Absorption Tube Test: Vertical RILEM II.4, 5.0 milliliters, 20 minutes**

The water absorption tube test simulating wind driven and wind-blown rain conditions was performed. Tests were run with vertical 5.0-milliliter head pressures. Filled to 5.0 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 5.0 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 – Protective Water Repellents

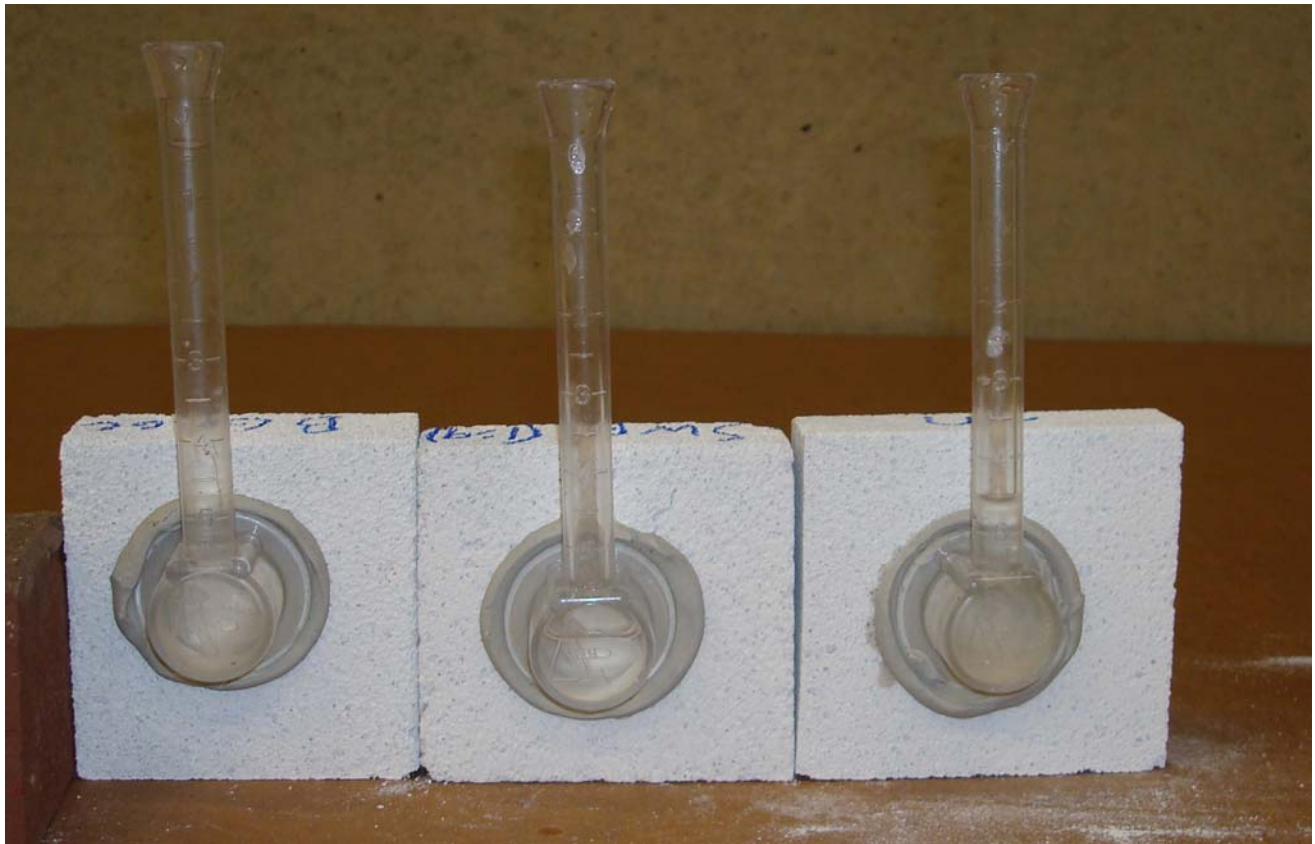
Water Absorption Tube Test: Vertical RILEM II.4, 5.0 milliliters, 20 minutes

AA = Above Average **A** = Average **BA** = Below Average

AAC Block – Ground Finish	Results in mL loss	Ranking
Untreated Control	-4.5 mL	--
Sure Klean® Weather Seal Blok-Guard® & Graffiti Control	-0.0 mL	<u>AA</u>
Sure Klean® Weather Seal Siloxane WB Concentrate (1:9)	-5.0 mL	<u>BA</u>
AAC Block – Smooth Finish	Results in mL loss	Ranking
Untreated Control	-3.3 mL	--
Sure Klean® Weather Seal Blok-Guard® & Graffiti Control	-0.0 mL	<u>AA</u>
Sure Klean® Weather Seal Siloxane WB Concentrate (1:9)	-0.0 mL	<u>AA</u>

Photographs – Protective Water Repellents

AAC Block, Ground Finish; RILEM II.4, 5.0mL, 20 Minutes



**Sure Klean® Weather
Seal Blok-Guard®
& Graffiti Control**

**Sure Klean® Weather
Seal Siloxane WB
Concentrate (1:9)**

Untreated Control

Conclusions – Protective Water Repellents

Based upon laboratory evaluations, Sure Klean® Weather Seal Blok-Guard® & Graffiti Control provided excellent water repellency to both finishes of the submitted AAC Block. Sure Klean® Weather Seal Siloxane WB Concentrate (1:9) provided excellent water repellency to the smooth finish AAC block. Neither of the products tested altered the appearance of the samples.

Recommendations – Protective Water Repellents

Recommendations for water repellency for the AAC block submitted by Xella AAC Texas, Inc., Cibolo, TX 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
AAC Block, Ground Finish	*Sure Klean® Weather Seal Blok-Guard® & Graffiti Control
AAC Block, Smooth Finish	*Sure Klean® Weather Seal Blok-Guard® & Graffiti Control or Sure Klean® Weather Seal Siloxane WB Concentrate (1:9)

***NOTE:** Sure Klean® Weather Seal Blok-Guard® & Graffiti Control 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.

Graffiti Control

This evaluation compares the effectiveness of graffiti control treatments in preventing staining of enamel spray paint and permanent markers.

Description of Products Evaluated – Graffiti Control

Graffiti Control Treatments

Sure Klean® Weather Seal Blok-Guard® & Graffiti Control – A clear, solvent-based silicone elastomer formulated to weatherproof concrete block and other porous masonry materials. Blok-Guard® & Graffiti Control protects masonry surfaces from repeated graffiti attacks without altering the natural appearance. Blok-Guard® & Graffiti Control penetrates and fills pores to prevent water penetration through exterior walls exposed to normal weathering. Graffiti removal is fast and easy using Defacer Eraser® Graffiti Wipe. Blok-Guard® & Graffiti Control is easy to apply with low-pressure spray, brush or roller.

Products Evaluated for Graffiti Removal

Sure Klean® Fast Acting Stripper – A thixotropic stripping compound formulated specifically for removal of high strength paints and coatings such as epoxies, polyurethanes, and floor enamels. Additionally, Fast Acting Stripper dissolves most spray paints, marking pens, lacquers and other graffiti.

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

Graffiti Agents

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

Sample Preparation – Graffiti Control

Sections of the AAC block samples were treated with Sure Klean® Weather Seal Blok-Guard® & Graffiti Control in accordance with the current PROSOCO, Inc. Product Data Sheet application instructions and were then allowed to cure for at least one day. At the end of the cure period, a visual adverse effects evaluation was made and then the graffiti agents were applied to the substrates.

Spray paint and markers were applied as graffiti agents to all treated surfaces no sooner than one day following application of Sure Klean® Weather Seal Blok-Guard® & Graffiti Control. Removal of the graffiti agents was attempted 24 hours after application of the graffiti agents, using Sure Klean® Fast Acting Stripper and Defacer Eraser® Graffiti Wipe.

Test Method – Graffiti Control

Chemical cleaners were evaluated using the following procedure:

1. Apply the product to a dry surface, soiled with graffiti.
2. Allow appropriate dwell time:
 - Fast Acting Stripper.....20 minutes
 - Graffiti Wipe5 minutes
3. Pressure rinse thoroughly until water runs clear.*
4. Allow the surface to dry thoroughly and visually examine to determine effectiveness.

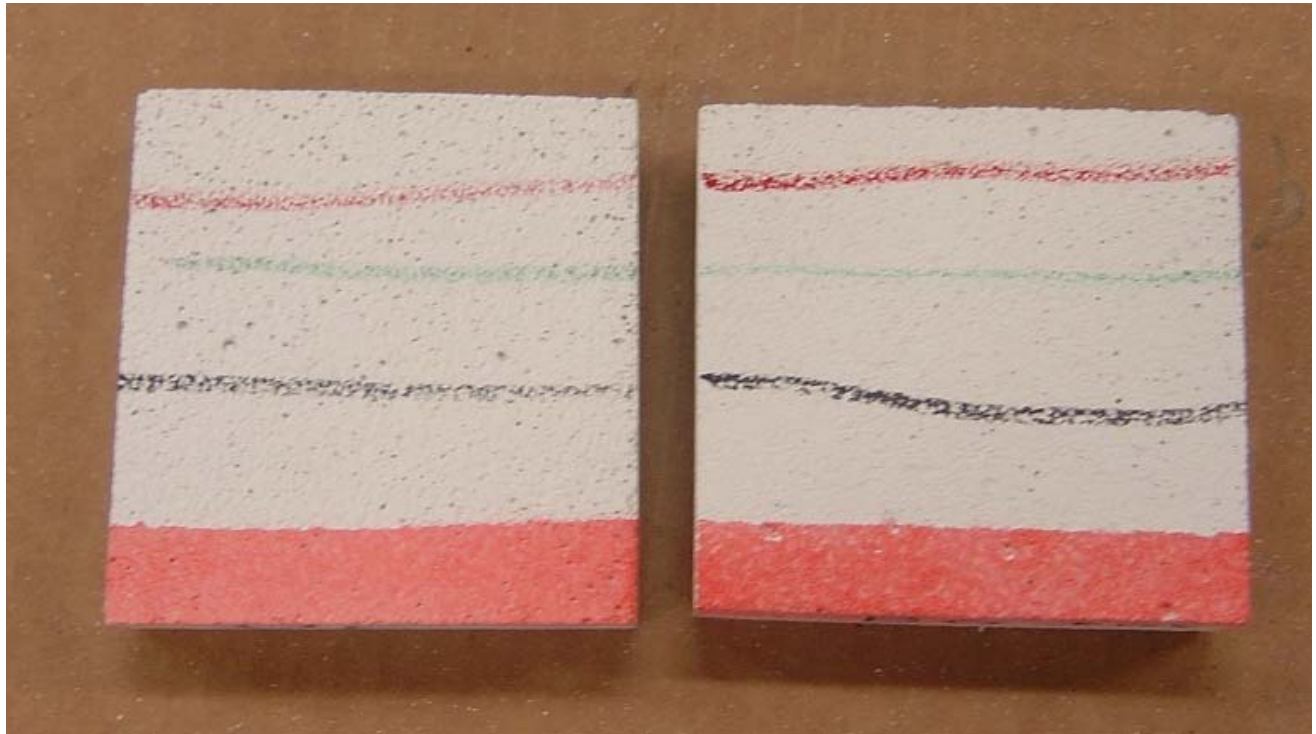
***Pressure Rinsing Equipment** – Masonry washing equipment generating approximately 700-800 psi with a water flow rate of 8 gallons per minute delivered through a 45 degree fan spray tip was used for rinsing.

Test Results – Graffiti Control

AAC Block – Ground Finish					
Untreated Control	Red Paint	Black Marker	Green Marker	Red Marker	% Avg. Removal
Fast Acting Stripper	25%	15%	50%	25%	29%
Graffiti Wipe	25%	10%	35%	25%	24%
Blok-Guard® & Graffiti Control	Red Paint	Black Marker	Green Marker	Red Marker	% Avg. Removal
Fast Acting Stripper	35%	30%	50%	35%	38%
Graffiti Wipe	35%	30%	50%	35%	38%
AAC Block – Smooth Finish					
Untreated Control	Red Paint	Black Marker	Green Marker	Red Marker	% Avg. Removal
Fast Acting Stripper	25%	25%	50%	25%	31%
Graffiti Wipe	25%	25%	50%	25%	31%
Blok-Guard® & Graffiti Control	Red Paint	Black Marker	Green Marker	Red Marker	% Avg. Removal
Fast Acting Stripper	40%	25%	60%	25%	38%
Graffiti Wipe	30%	25%	65%	25%	36%

Photographs – Graffiti Control

AAC Block; Smooth Finish, Before Graffiti Removal

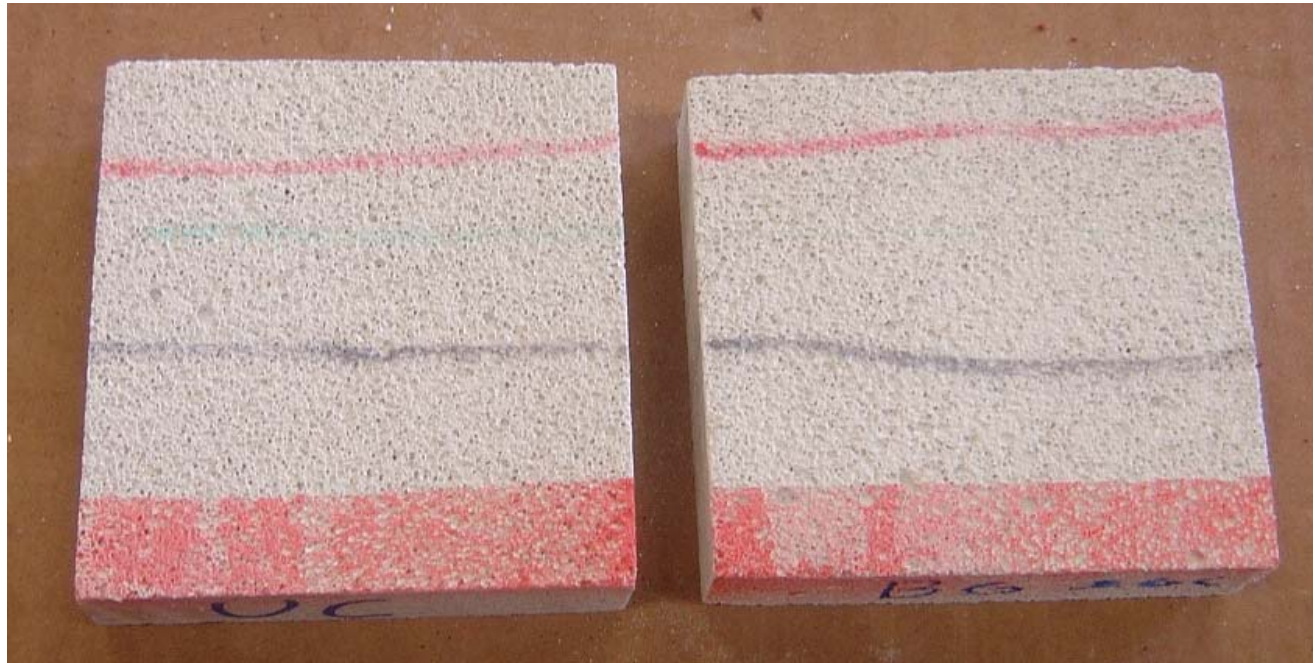


Untreated Control

**Sure Klean® Weather Seal
Blok-Guard® & Graffiti Control**

Photographs – Graffiti Control

“AAC Block”; Smooth Finish; After Graffiti Removal



**Sure Klean® Fast
Acting Stripper**

**Defacer Eraser®
Graffiti Wipe**

Untreated Control

**Sure Klean® Fast
Acting Stripper**

**Defacer Eraser®
Graffiti Wipe**

**Sure Klean® Weather Seal
Blok-Guard® & Graffiti Control**

Conclusions – Graffiti Control

Based upon laboratory evaluations, graffiti removal was improved when the submitted samples were treated with Sure Klean® Weather Seal Blok-Guard® & Graffiti Control prior to graffiti application. The treatment did not alter the appearance of the submitted samples.

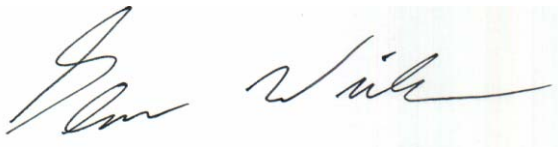
Recommendations – Graffiti Control

Recommendations for graffiti control treatment for the AAC Block submitted by Xella AAC Texas, Inc., Cibolo, TX are provided in the chart below. Recommendations are based on the treatment that proved most effective for providing graffiti repellency and the product that was most effective at removing the graffiti on all types submitted.

Sample	Graffiti Repellents	Graffiti Removers
AAC Block, Ground and Smooth Finish	*Sure Klean® Weather Seal Blok-Guard® & Graffiti Control	Sure Klean® Fast Acting Stripper or Defacer Eraser® Graffiti Wipe

***NOTE:** Sure Klean® Weather Seal Blok-Guard® & Graffiti Control 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. Because the severity of graffiti varies from location to location, on-site testing should be conducted to determine the most appropriate graffiti control product and procedure for a particular project.



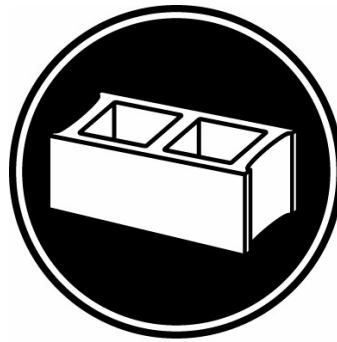
Glenn Winkler
Project Testing Laboratory Technician



PALLET TAG PROGRAM
Laboratory Report

Xella AAC Texas, Inc.
900 Schneider Dr.
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Autoclaved Aerated Concrete (AAC)



Project No. 0804-01 PTP

Prepared For:
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SINCE 1939

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AMT Laboratories
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