

# Waterproofing Solutions



Waterproofing



Crack Isolation



Sound Control



Moisture Barrier



[www.nacproducts.com](http://www.nacproducts.com)

# **When it comes to waterproofing, are you getting a complete solution or a temporary fix?**

Water does more than just damage buildings. It creates mold, disrupts families and businesses and can harm the integrity of a structure lowering its value, not to mention the costs and commotion associated with repairs.

Some of the common areas where water problems occur include decks, kitchens, baths, shower pans, steam rooms and saunas.

When a builder, architect, contractor, specifier or homeowner identifies a flooring situation in need of a waterproofing solution, additional factors should be considered; does the solution provide moisture and mold resistance in addition to waterproofing? Does the solution work in extreme temperature conditions? Does the solution provide crack isolation and the ability to immediately and successfully install hard surface flooring? Is the solution backed by a company with a history of success?

Many products available on the market today do not address all of these important issues. This booklet is an educational reference guide designed to provide information related to the value and importance of these systems as well as some solutions to help you make more informed decisions when investing in a waterproofing system.

## **What are the industry standards?**

The industry standards are practices that define the installation of ceramic tile and other hard surface flooring, as well as the test methods and physical properties for the installation materials. The industry standards have been determined or are recognized by industry professionals including, ANSI (American National Standards Institute), ASTM (American Society for Testing & Materials), TCNA (Tile Council of North America), NTCA (National Tile Contractors Association) among others, to serve as a guideline for the tile industry.

Knowing and understanding the industry standards can protect the building owner, homeowner and specifier from problems due to failure. Some important specifications are outlined in the "technical data & specifications" section in the back of this reference guide. Full copies of these standards and practices can be obtained by contacting NAC Products.

## Who is responsible if the floor system does not meet industry standards?

The manufacturer? The contractor? The installer? The architect? The specifier? Solutions for waterproofing involve more than just being a barrier for water migration. It must also withstand temperature variations and prevent mold and moisture vapor transmission. It should also include the ability to protect the tile system from failure, such as cracked tile due to excessive loads, tile and thin-set delaminating from the waterproofing membrane and de-bonding of the membrane from the substrate. All of these issues are addressed by ANSI test procedures and standards. A flooring solution that fails to provide a watertight seal could weaken the entire system and result in potential legal and liability issues.

## Additional considerations when reviewing product performance:

- Threshold Requirements:
  - Specifications often do not match the actual sight conditions for new construction and existing renovations. NAC solutions are the thinnest, most durable layers of protection in the marketplace.
- Soft Joint Spacing:
  - Soft joints are a critical part of a tile system that account for movement in the tile field. The TCNA guidelines for movement joints under EJ171 clearly states how the location and frequency of joints should be placed based on the conditions of the installation.
- Hard to Reach and Problem Areas
  - Corners, flashing and areas where the building envelope meets the waterproofing should be clearly defined. NAC has products and systems specifically designed to strengthen the bond and watertight seal in these problem areas.
- Warranty
  - Consider the type and length of the warranty. Ensure the company providing the warranty has a history of success in the industry. Contact NAC for complete warranty details.



# Guidelines and Installations for Wet Areas

When choosing an installation method, consideration must be given for the amount of water the area will be subjected to. Wet area installation methods typically incorporate waterproofing to contain and evacuate water and to protect building materials. Damage can result from water exposure that exceeds the method's Environmental Classifications rating. Maintenance practices for the area must also be considered.

There are two general categories of waterproof installation methods:

- Use of an unbonded water-containment membrane (i.e. unbonded shower pan membrane)
  - Loose laid liner placed below the mortar bed receiving the tile
  - Connect into drains at the clamping ring
- Use of a bonded waterproof membrane that meets ANSI A118.10
  - Sheet membranes and roll-on or trowel-on liquid materials that dry/cure to form a waterproof membrane
  - Connect to drains at clamping ring or just below the tile when an integrated bonding flange is used

## Slope to Drain

Shower pans and bonded waterproof membranes must slope to and connect with a drain to fully evacuate water. Plumbing code typically requires membranes to be sloped a minimum of 1/4" per foot and extend at least 3" above the height of the curb or threshold. Membranes must be installed over other horizontal surfaces in wet areas subject to deterioration, like shower seats. They must be sloped and configured so as to direct water to the membrane connected to the drain.

## Weep Holes

The weep holes of clamping drains enable water to pass from the membrane into the plumbing system. Crushed stone or tile or other positive weep protectors placed around/over weep holes prevent their blockage.

## Connection with Drain or Flange

To form a watertight seal, membranes must have adequate contact with the clamping ring of the drain or with the bonding area of an integrated bonding flange.

## Membrane Cuts and Penetrations

Membranes must be protected to prevent punctures resulting from traffic on the membrane before the mortar bed is installed for shower pan membranes) or before the tile is installed (for bonded waterproof membranes). For punctures that do occur, the membrane must be replaced or repaired according to the membrane manufacturer's directions for repairs. Ensure the integrity of any repairs by water testing the repaired membrane.

## In-Corners, Out-Corners, and Seams

For sheet-type bonded waterproof membranes applied topically, preformed in-corners and out-corners enable waterproofing of corners without excessive material thickness that would result from folding. Sheet membranes in large areas are seamed, bonded, or otherwise welded together to form a continuous membrane. Shower pan membrane in-corners should be folded not cut. Preformed out-corners better enable wrapping of the membrane at the curb/jamb interface.

## Liquid Applied and Trowel-Applied Bonded Waterproof Membranes

These products require a minimum wet film thickness and have specified cure/dry time requirements. Many membranes of this variety incorporate a mesh that is embedded in the wet material during installation. Mesh may be required over the entire surface to be waterproofed or only in corners and/or joints.

## Configuration of Shower Receptor Components

When a shower pan membrane system is employed, some backer board types must be installed with the board held out of the mortar bed due to the saturation that occurs below this level. Vapor retarder membranes fastened to studs must weather-lap the shower pan membrane or flange of the tub or prefabricated shower receptor.

No matter which membrane system is used, the membrane must completely wrap the curb, and the jamb must be waterproofed to its outside edge a minimum of 3" above the curb. Curb and jamb waterproofing must be seamed together without breach to form a continuous barrier.

## Performing a Water Test

Where complete waterproofing is required such as in showers, water testing of the membrane, by the installing contractor, is recommended and may be required by applicable plumbing code.

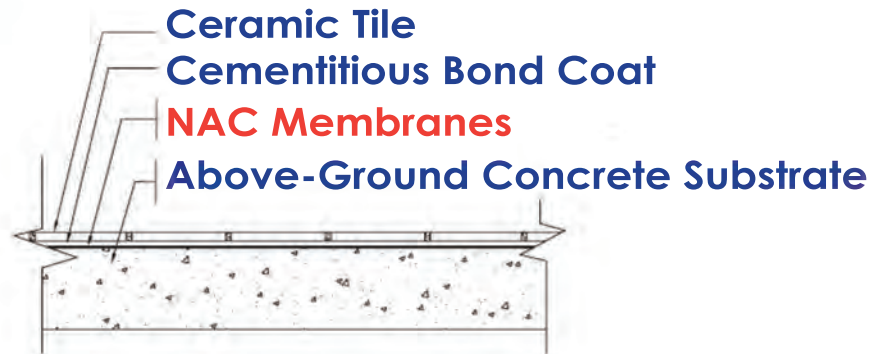






# Waterproofing Over Concrete

*Above-Ground on a Concrete Substrate*



All NAC membranes ECB<sup>®</sup>, ECB<sup>®</sup> 75, ECB<sup>®</sup> Green, Strataflex, SubSeal<sup>®</sup>, SAM<sup>®</sup> 3, SAM<sup>®</sup> 3 90 and Super SAM<sup>®</sup> 125 may be used in this type of application for concrete surfaces that require waterproof protection.

All NAC sheet membrane systems require the use of the appropriate NAC Primer to ensure a permanent bond to the substrate.

For specification purposes, the NAC products used in this system are:

- \* SubSeal<sup>®</sup> Liquid Waterproof Membrane
- \* NAC Sheet Membranes
- \* NAC Primer (with Sheet Membranes ONLY)
- \* NAC Approved Sealant (optional)

For more information contact NAC at 800-633-4622 or visit [www.NACproducts.com](http://www.NACproducts.com)

Products and specifications are subject to change without notice. Please refer to the TCNA Handbook for additional guidelines  
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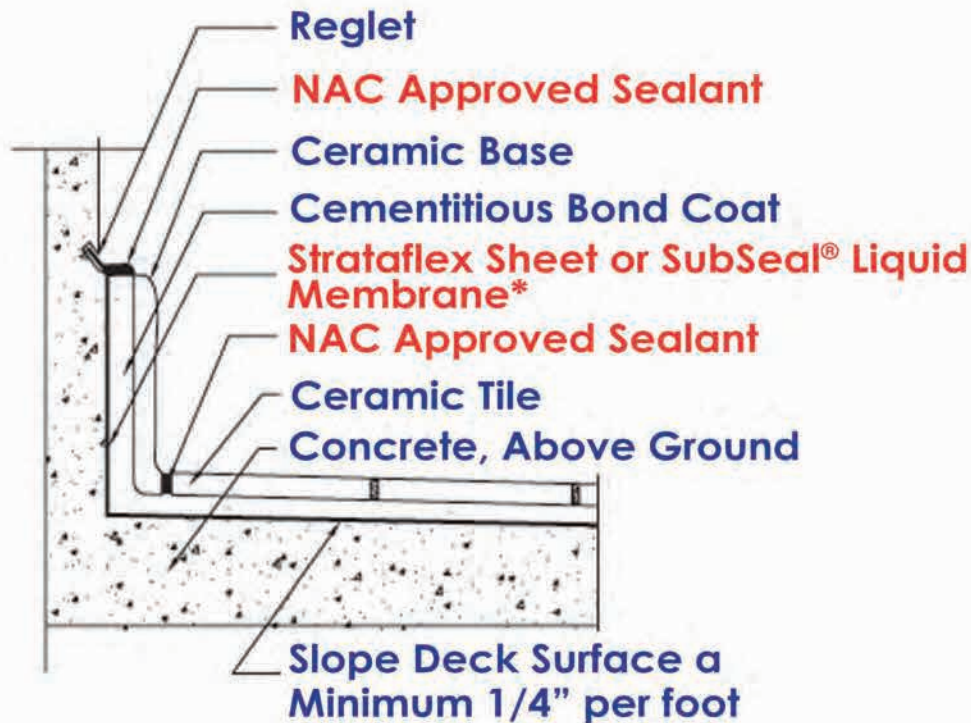
**Contact NAC for complete installation instructions.**





# Deck Waterproofing

Double layer of waterproof protection



**\* Either Strataflex Sheet or SubSeal® Liquid Membrane may be used in this application**

For specification purposes, the NAC products used in this system are:

- + SubSeal® Liquid Membrane
- + Strataflex Sheet Membrane w/NAC Primer
- + NAC Approved Sealant

For more information contact NAC at 800-633-4622 or visit [www.NACproducts.com](http://www.NACproducts.com)

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**Contact NAC for complete installation instructions.**

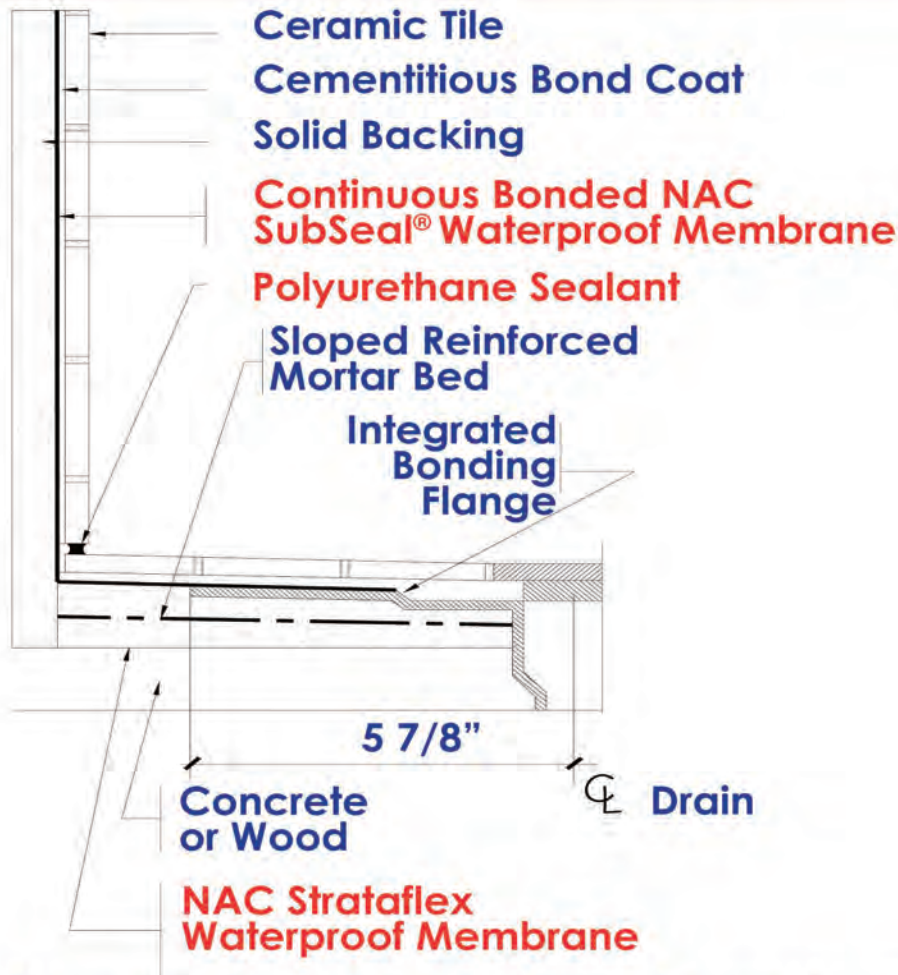


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# Shower Waterproofing

Double layer of waterproof protection



Shower receptors, curbs, seats, etc., must be properly waterproofed and installed to avoid water damage to adjacent building materials.

For specification purposes, the NAC products used in this system are:

- \* SubSeal® Liquid Membrane
- \* Strataflex Sheet Membrane
- \* NAC Primer
- \* NAC Approved Sealant

For more information contact NAC at 800-633-4622 or visit [www.NACproducts.com](http://www.NACproducts.com)

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**Contact NAC for complete installation instructions.**

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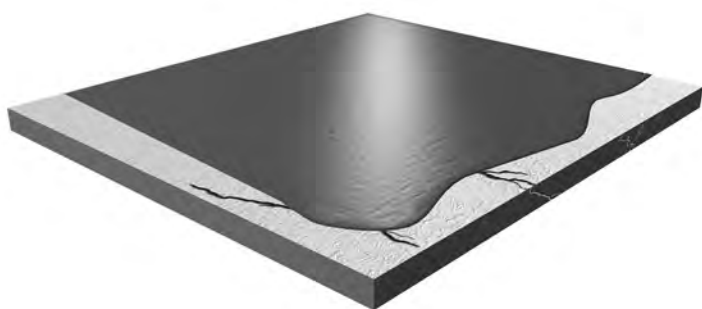




## SubSeal® Liquid Waterproof Membrane

**with crack suppression & moisture barrier capabilities**

**SubSeal®** is a one part, ready to use elastomeric waterproofing membrane which also functions as a sealant, stand alone crack suppressant and moisture barrier for hard surface, resilient and wood flooring. **SubSeal®** is easily applied with a trowel, brush, roller or airless sprayer and attaches to the substrate with superior adhesion and meets ANSI A118.10 for thin bed-load bearing waterproofing membranes.



### **How It Works:**

**SubSeal®** cures to form a thin, flexible layer that is an impervious water barrier providing superior waterproofing protection. It can also be used with sheet-applied membrane systems for seam and corner applications such as shower pans, exterior decks and balconies.

**SubSeal®** can be used at floor-to-wall, wall-to-wall, and wall-to-ceiling joints, at drains and protrusions and at all perimeters. The

membrane bonds to the substrate while creating a new surface to accommodate A118.4 or better latex mortars, organic adhesives and solvent-free epoxy setting materials. **SubSeal®** reduces tile failure by protecting tile and other hard surface floors from substrate movement while performing as a waterproofing agent.

**\*Use seam tape and pre-formed corners for additional support**

- Suitable for interior and exterior use
- Use as a stand alone liquid waterproofing and/or crack suppression membrane
- Thin, low profile membrane with superior flexibility when cured
- Protects against reflective cracking and delamination

- Assures waterproof integrity of corners and seams
- Quick drying; Same day tile installation; Flood test in less than 24 hours
- Effective barrier against mold
- Can be easily applied with trowel, roller, brush or sprayer

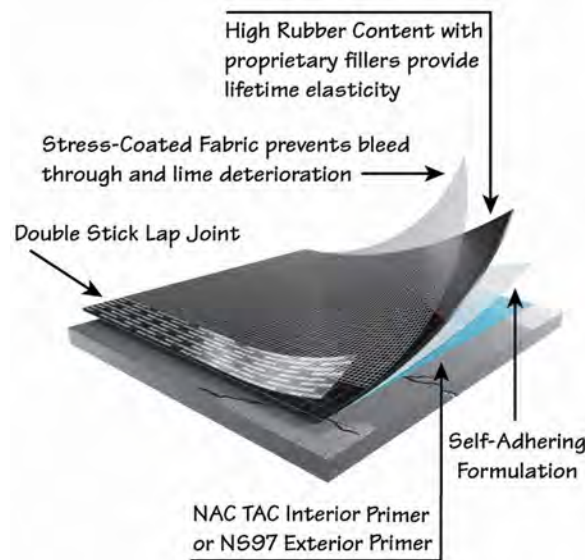


# NAC Products and Waterproofing Solutions



## Strataflex Waterproof Membrane with crack isolation capabilities

The **Strataflex** membrane is a high strength, 40 mil (1/16"), self bonding, elastomeric sheet applied membrane that provides waterproof protection. **Strataflex** features a 2 inch double stick lap joint that creates a water tight seal and is designed for use under floor surfaces that require protection from water penetration, structural and thermal movement, and moisture vapor transmission when used with the appropriate primer.



### How It Works:

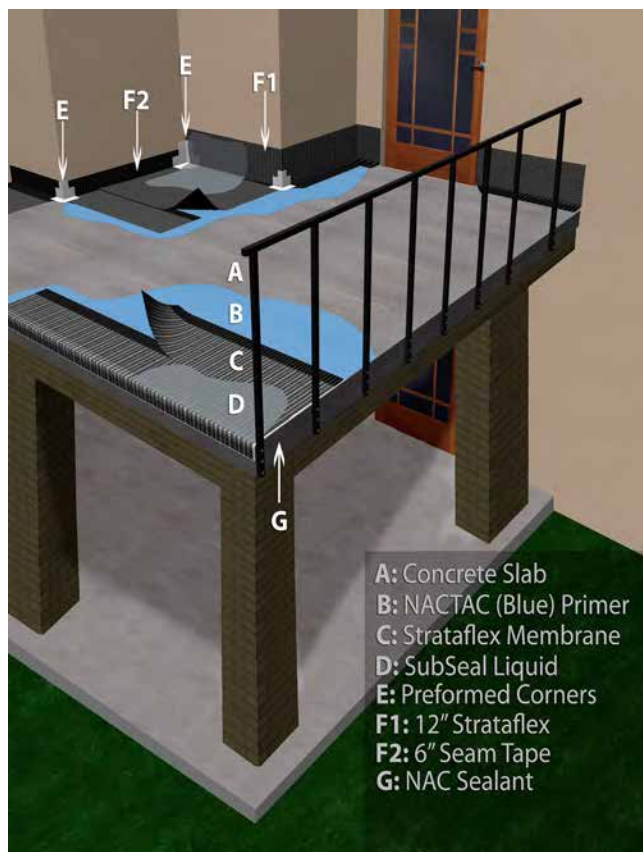
**Strataflex** is composed of a tough non-asbestos fiber sheet, laminated to a polymer modified bitumen. **Strataflex** has a unique "Stress Flex" fabric and provides a perfect thin-bed or thick-bed application for the installation of ceramic tile, marble, pavers, or brick. **Strataflex** adheres permanently to the substrate, forming a continuous, impervious water barrier staying flexible not drying out or cracking under structural stress and is capable of withstanding extreme climates. **Strataflex** also serves as an anti-fracture membrane bridging up to 3/8" lateral expansion and contraction.

- Double stick lap joint for easy application
- Suitable for interior and exterior use
- Reduces live and dead load failure
- Safely covers asbestos flooring and provides an effective barrier against radon and mold

- Eliminates need to cut tile to meet control/cold joints
- Can be used for thin-bed and medium-bed applications
- Serves as a waterproof/vapor barrier
- Works with radiant-heated floors and tile warming systems



## Extreme Waterproofing Systems Exterior Decks Featuring Strataflex & SubSeal®



The **Extreme Deck Waterproofing System** combines the stand-alone waterproofing products **Strataflex** sheet and **SubSeal®** liquid membranes to provide a durable, double layered defense from extreme heat and cold conditions ensuring lasting protection of exterior decks.

### How It Works

**Strataflex** is applied according to the **Strataflex** sheet membrane installation instructions. **NAC TAC** (Interior/exterior) **Primer** or **NS97** Exterior Primer may be used for the **Strataflex** installation. Once the **Strataflex** is installed, the entire area is coated with **SubSeal®** liquid membrane including all termination points.

**Preformed inside/outside fabric corners** are placed in the appropriate corners and coated with **SubSeal®**. A second coat of **SubSeal®** is applied in the opposite direction of the first coat to cover any gaps or pinholes that may have

emerged. Seam tape can also be used to flash up walls or posts and a polyurethane sealant can be used to cover end seams and terminations. The thin, low-profile system (50 mils dry/<1/4") is a perfect solution for low threshold applications on exterior balconies, decks or most areas over living spaces.

- A double layer of waterproof protection
- Same day tile installation
- Thin, low profile system (50 mils dry/< 1/4") is a perfect solution for low threshold applications

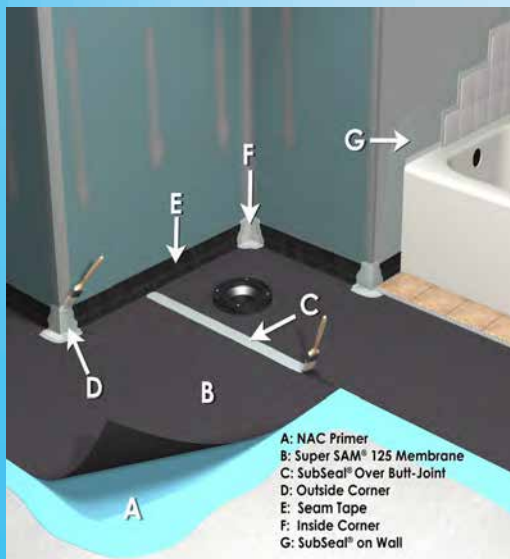
- Exceeds ANSI A118.10 and A118.12
- Most complete system on the market guaranteed
- Ideal for exterior decks over living space



# NAC puts the proof in waterproofing AND sound control.

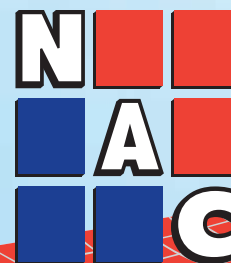
A waterproofing and sound control system for bathrooms

**EXTREME**  
WATERPROOFING SYSTEMS



## Features and Benefits

- Easy to install system provides sound control and waterproofing protection
- Systems works with any NAC sound control membrane and SubSeal® Liquid waterproofing membrane
- Exceeds ANSI A118.10 and A118.13 for waterproof and sound control membranes
- Sound control membranes also exceed ANSI A118.12 for crack isolation providing up to 3/8" crack isolation protection
- Same day tile installation



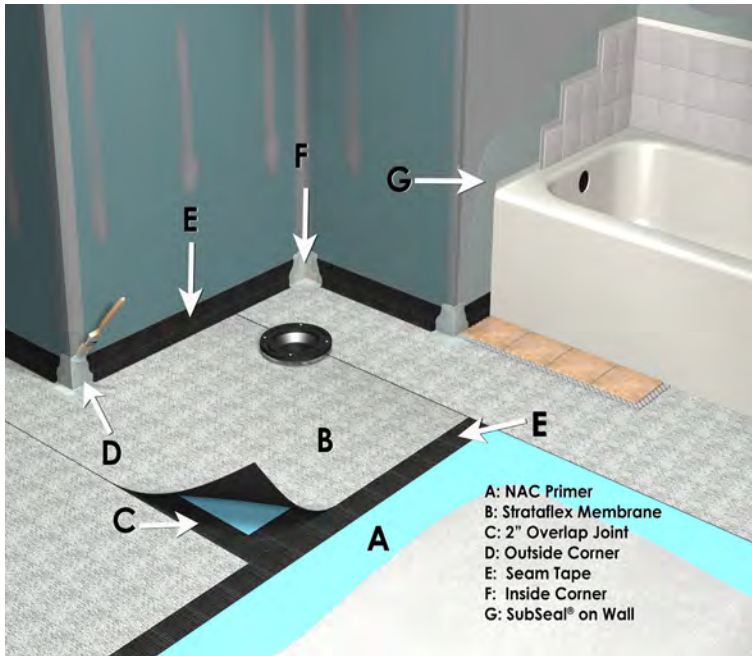
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## Extreme Waterproofing Systems Bathroom Installation Featuring Strataflex & SubSeal®

The **Extreme Waterproofing System** for bathroom installations combines the stand-alone waterproofing products **Strataflex** sheet and **SubSeal®** liquid membranes to provide a durable, high quality bathroom installation for surfaces requiring superior waterproofing protection.



### How It Works

**Seam tape** is applied at the floor-to-wall joints. **Strataflex** is applied over the **seam tape** and according to the **Strataflex** sheet membrane installation instructions. **NAC TAC** (Interior/exterior) **Primer** or **NAC TAC II** Interior Primer may be used for the **Seam tape** and **Strataflex** installation. **Seam tape** may also be used at the end seams and butt joints of the **Strataflex**. **Seam tape** is not required under the 2\"

**SubSeal®** liquid membrane is applied to the walls. Two thin coats of **SubSeal®** are preferred to one thick coat.

The second coat of **SubSeal®** is applied in the opposite direction of the first coat to cover any gaps or pinholes that may have emerged. Each coat of **SubSeal®** cures in about two hours. Tile may be set immediately after the **Strataflex** is installed, however **SubSeal®** must be fully cured before installing tile.

- **Strataflex** provides up to 3/8\"
- Same day tile installation
- 10#/1000 SF/24 HRS MVT protection when using **NAC TAC** primer and 7#/1000SF/24 HRS when using **NAC TAC II** primer

- Exceeds ANSI A118.10 and A118.12
- **SubSeal®** eases application in hard to reach areas
- **SubSeal®** bonds to wall while creating a new surface to accommodate A118.4 or better latex mortar.



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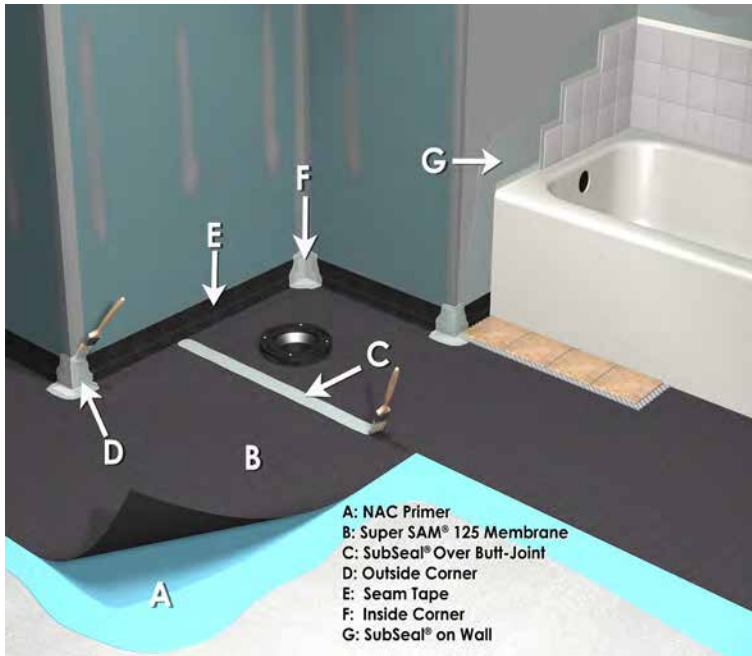


## Extreme Waterproofing Systems

Bathroom Waterproofing/Sound Control Systems

### Super SAM® 125 Installation

The **Extreme Waterproofing/Sound Control System** for bathroom installations combines **Super SAM® 125** sound control sheet membrane and **SubSeal®** liquid membranes to provide a durable, high quality bathroom solution for projects requiring superior waterproofing protection and impact and audible sound reduction.



#### How It Works

The **Super SAM® 125** installation includes seam tape and pre-formed fabric corners. **Seam tape** is applied at the floor-to-wall joints and **Super SAM® 125** is applied over the **seam tape** and according to the sheet membrane installation instructions. **NAC TAC** (Interior/exterior) Primer or **NAC TAC II** Interior Primer may be used for the **seam tape** and **Super SAM® 125** installation. **Seam tape** may also be used at the end seams and butt joints. **SubSeal®** liquid membrane is applied to the walls in two thin coats instead of one

thick coat. The second coat of **SubSeal®** is applied in the opposite direction of the first coat to cover any gaps or pinholes that may have emerged. **Preformed inside/outside fabric corners** are placed in the appropriate corners and coated with **SubSeal®** providing extra protection in that difficult area. **SubSeal®** cures in about two hours, creating a new surface to set tile.

- **Δ 22** on a 6" concrete slab
- **\*IIC = 51 \*STC = 54**
- A superior waterproofing/sound control solution for bathrooms
- **Super SAM® 125** provides up to 3/8" crack isolation protection
- Exceeds ANSI A118.10, A118.12 & A118.13

- MVT protection up to 10#/1000 SF/24 HRS when using **NAC TAC** primer and 7#/1000SF/24 HRS when using **NAC TAC II** primer
- **SubSeal®** bonds to wall while creating a new surface to accommodate A118.4 or better latex mortar.
- Same day tile installation

*\*On a bare 6" concrete slab*

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## Extreme Waterproofing Systems Companion Products



### NS97 Exterior Primer

**NS97** is a non-flammable, solvent-based primer for use in exterior applications. **NS97** is a pre-mixed methylene chloride formula that requires no thinning, establishes a permanent bond in 48 hours and will not re-emulsify.

**Coverage:** Approx. 300-400 square feet per gallon\*

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### NAC TAC Interior/Exterior Primer

**NAC TAC** is a non-flammable, neoprene-based primer for use in interior **OR** exterior applications. **NAC TAC** is a pre-mixed formula that requires no thinning, establishes a permanent bond in 48 hours and will not re-emulsify.

**Coverage:** Approx. 375-425 square feet per gallon\*

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### NAC TAC II Interior Primer

**NAC TAC II** is a non-flammable, water-based primer for use in interior applications that are on or above grade. **NAC TAC II** is a pre-mixed formula that requires no thinning, establishes a permanent bond in 48 hours and will not re-emulsify.

**Coverage:** Approx. 375-425 square feet per gallon\*

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### Moisture Lock 101®

**Moisture Lock 101®** is a clear, water-based chemical floor hardener for porous, cementitious substrates.

**Moisture Lock 101®** maximizes the coverage of NAC primers by minimizing absorption into porous, cementitious substrates, such as absorptive concrete, mud beds, gypsum, gypcrete, and patching/leveling compounds.

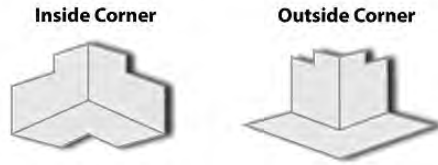
**Coverage:** Approx. 100-300 square feet per gallon\*

*\*Depending on applicator type and porosity of the substrate.*





### NAC Preformed Corners



**PFI/PFO Fabric Corners** are made of a breathable material and are used in conjunction with **SubSeal®**. The corners are commonly used in applications for on and above grade balconies, decks, bathrooms and kitchens.

Low profile and durable, the fabric allows for **SubSeal®** membrane to soak into the fibers assuring a strong waterproof corner.



Apply SubSeal® to corner



Place PF Corner into position



Apply SubSeal® over PF corner

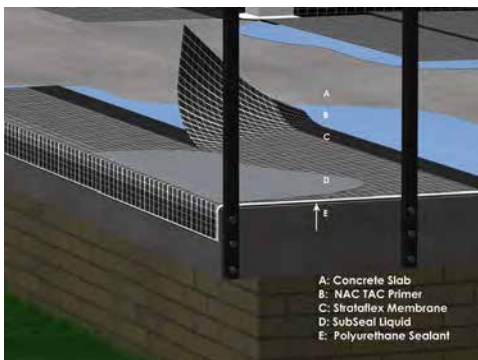


Secure, waterproof corner

**Seam Tape** is a 6" double-stick elastomeric tape designed for use with NAC sheet applied and liquid applied membrane systems.

**Seam Tape** can be used for interior and exterior applications to waterproof seams, joints, shower curbs, drains, exterior decks and balconies and other protrusions. **Seam Tape** is a double stick product but it must be used with an NAC primer for maximum adhesion.

**Seam Tape** is NOT a stand alone product and where exposed, must be covered with membrane.



The final component of the **Extreme Waterproofing System** is to use a **polyurethane sealant** to complete the waterproof protection. There are a variety of **polyurethane sealants** available on the market, NAC requires a flexible, silicone free, rubber based, dual purpose adhesive/sealant to provide a permanently elastic bond on the substrate.

The NAC **Extreme Deck System** is the most complete waterproofing system on the market and is the perfect solution for tough waterproofing applications.

\*NAC requires following TCNA guidelines for waterproofing and control joint placement.



## Strataflex Performance

Assessment	Strataflex
<sup>1</sup> Shear Strength (5.1) A118.12 5.1.3 5.1.4 5.1.5 5.1.6	86 psi 90 psi 168 psi 116 psi
<sup>1</sup> Point Load Test (5.2) A118.12	Up to 1756 pounds (Exceeds ANSI Requirement of 1000 lbs)
<sup>1</sup> Mold Growth (4.1) A118.12	Does not support mold growth
<sup>1</sup> System Crack Resistance Test (5.4) A118.12	Meets ANSI A118.12; (No Cracking in grout or tile)
<sup>2</sup> Load bearing, bonded, waterproof membranes A118.10 M-4.1; 4.2; 4.3; 4.4; 4.5	Exceeds ANSI A118.10 Requirements
<sup>2</sup> Shear Strength M-5.3; M-5.4; M-5.5	Exceeds ANSI A118.10 Requirements
<sup>2</sup> 12-Week Shear Strength M-5.6	160 PSI
<sup>2</sup> 100-Day Water Immersion Shear Strength M-5.7	95 PSI
<sup>3</sup> ASTM C-627 (Robinson)	Extra Heavy Duty

<sup>1</sup>A118.12 Load bearing, bonded, anti-fracture membranes. Test methods and minimum requirements for crack isolation membranes for thin-set ceramic tile and dimension stone installation.

<sup>2</sup>ANSI A118.10 Load bearing, bonded, waterproof membranes for thin-set ceramic tile and dimension stone installation

<sup>3</sup>ASTM C627 Standard test method for evaluating ceramic floor tile installation systems using the Robinson-Type Floor Tester



# Technical Data • SubSeal®

## Liquid Waterproofing Membrane

**Sizes & Weights:** 1 gallon - 4 gal/carton @ 40 lb. total weight  
 5 gallons - 5 gallon pail @ 48 lb. total weight

Shelf Life: 1 year

Freeze Thaw: Product must be protected from freezing.

Property	Test Value	Test Method
Mold Growth	Pass	ANSI 118.10
Seam Strength	Pass	ANSI 118.10
Breaking Strength	Pass	ANSI 118.10
Dimensional Stability	Pass	ANSI 118.10
Waterproofness	Pass	ANSI 118.10
7-day shear strength	Pass	ANSI 118.10
7-day water immersion shear strength	Pass	ANSI 118.10
4-week shear strength	Pass	ANSI 118.10
12-week shear strength	Pass	ANSI 118.10
100-day water immersion shear strength	Pass	ANSI 118.10
Stability in storage	Pass	ANSI 136.10
Shear Strength Room Temperature	Pass	ANSI 136.10
Shear Strength Wet, Type 11	Pass	ANSI 136.10
Shear Strength 28 Days	Pass	ANSI 136.10
Accelerated Aging	Pass	ANSI 136.10
Heat Resistance	Pass	ANSI 136.10
Impact Test	Pass	ANSI 136.10
Stain Test	Pass	ANSI 136.10
Test for Mold Growth	Pass	ANSI 136.10

*For full test results, please contact NAC Corporate Office .*

# Waterproof, Period!

# SUBSEAL®

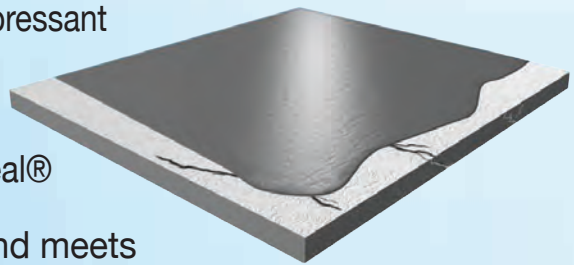
## Liquid Waterproofing and Crack Suppression Membrane

SubSeal® is a ready-to-use elastomeric waterproofing membrane which also functions as a sealant, stand alone crack suppressant

and moisture barrier. Easily applied with a trowel, brush, roller or airless sprayer, SubSeal®

has superior adhesion to the substrate and meets

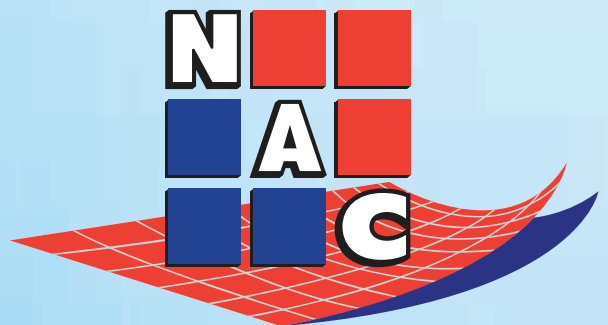
ANSI A118.10 and ANSI A118.12 for thin-bed, load bearing waterproof membranes.



***Perfect solution for bathrooms, kitchens, exterior decks - areas where waterproofing and crack suppression are needed!***



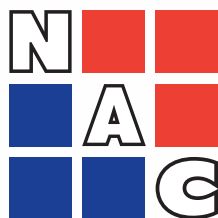
(available in 1 or 5 gallon sizes)



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**w w w . n a c p r o d u c t s . c o m**

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