

BULLETIN

Waterproofing Requirements

(12/7/07)

A Dal-Seal® TS single sheet waterproofing membrane shall be installed beneath the finished flooring and above the concrete floor and extend up all adjacent walls 6" at all toilet rooms and in all other areas that contain floor penetrations or that may be exposed to liquids in all Tenant spaces throughout the mall that are not cast-in-place on compacted fill (on grade).



Apply Bonding Agent (latex modified thin-set).



Embed TS with Roller.



Install Tile by a Thin-Bed Method.

Flooring Membrane Accessories:

All drains must be accessible and have cleanouts.

Use NobleFlex Drain Flashing when drain clamping ring is below the finished floor.

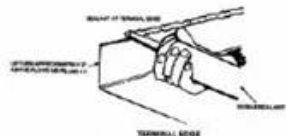
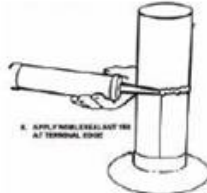
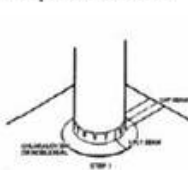


NobleFlex
Drain Flashing



Inside & Outside/Dam Corners

The Tenant shall sleeve, firestop, flash and caulk all penetrations so as to provide an adequate seal. Examples shown:

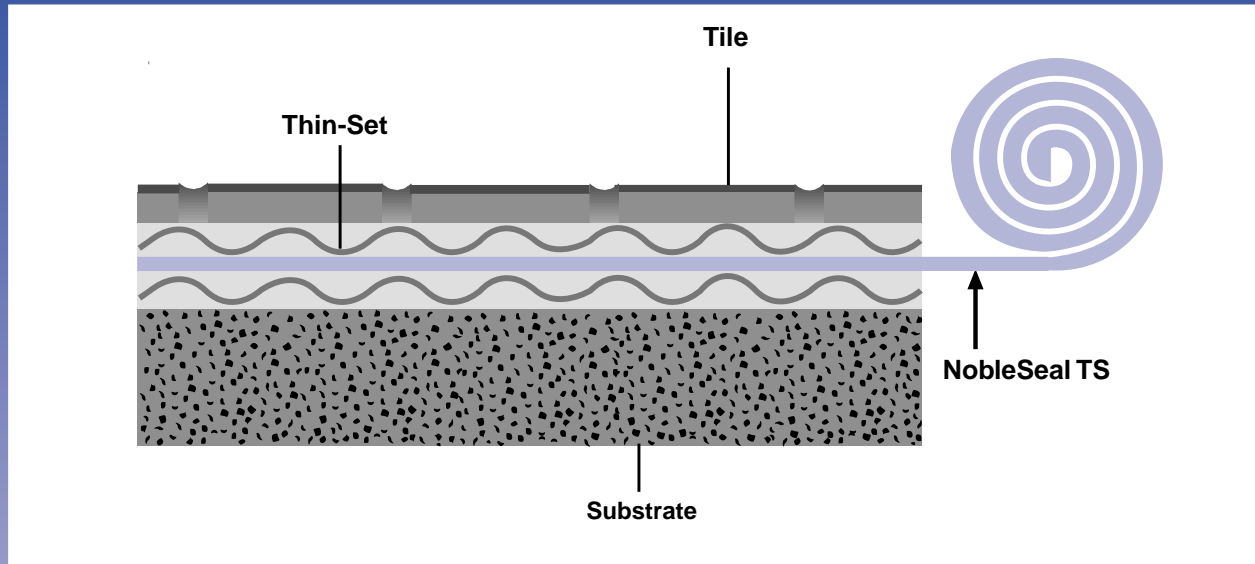


Each waterproofed space must undergo an on-site, four hour flood test to be witnessed by the Landlord.

THIN-BED WATERPROOFING

NobleSeal® TS

A single sheet membrane that provides waterproofing as well as crack isolation/joint bridging



- Single sheet membrane**
 - Insures uniform thickness and quality - Minimizes variables
 - No curing - Saves time
- Best (lowest) permeability - Effective waterproofing (meets ANSI A118.10-1993)**
- Time tested - Over 15 years - Guaranteed to last**
- Protects tile from cracking**
 - Rated "Extra Heavy Service" by Robinson Test (ASTM C 627)
 - Allows tile to bridge joints - Preserves tile patterns
- Use over common substrates including radiant heat and gypsum based concrete**

Installation*



*Apply bonding agent
(latex modified thin-set)*



Embed TS with a roller



*Install tile by a thin-bed
method*

*CAUTION - Read complete installation instructions prior to installing.

PRODUCT DESCRIPTION

APPLICATIONS

Use in interior applications of ceramic and stone tile, both horizontal and vertical surfaces, over common substrates: Wet areas in shopping centers, food courts, hotels, condominiums, supermarkets, prisons, health clubs, military and university housing, malls, plazas, decks, steam rooms, balconies, fountains, pools and planters.

COMPOSITION AND MATERIALS

NobleSeal TS is a composite manufactured from Chlorinated Polyethylene (CPE), a non-plasticized elastomer with non-woven polyester laminated to both sides. It is designed to provide both water-proofing and crack isolation of ceramic, dimension stone, agglomerated and terrazzo tile.

HOW TO SPECIFY

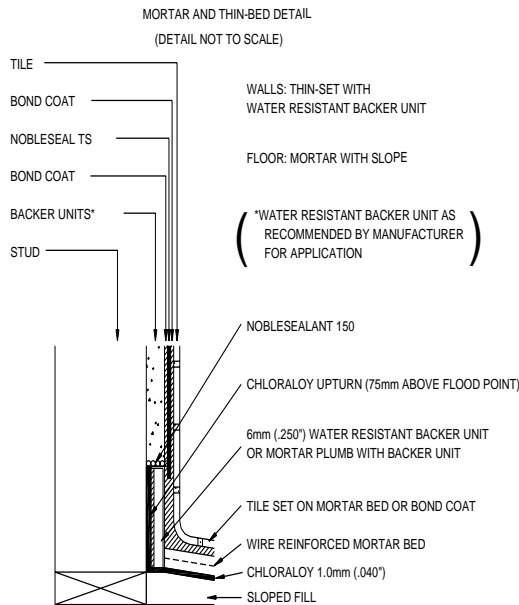
Specify in Division 9 • Where required, provide NobleSeal TS, a composite sheet membrane manufactured from Chlorinated Polyethylene (CPE), with non-woven polyester laminated to both sides with a nominal thickness of 0.8mm (.030”).

PRODUCT DIMENSIONS

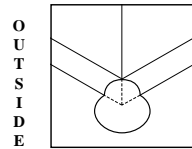
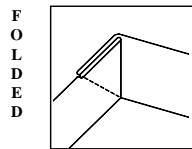
- 1.5m x 30.5m = 45.8m² (5' x 100' = 500 sq. ft.)
- Nominal thickness is 0.8mm (.030”).

DETAILS

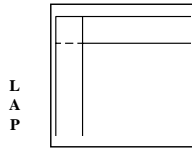
WET AREAS



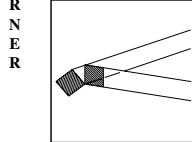
CORNERS



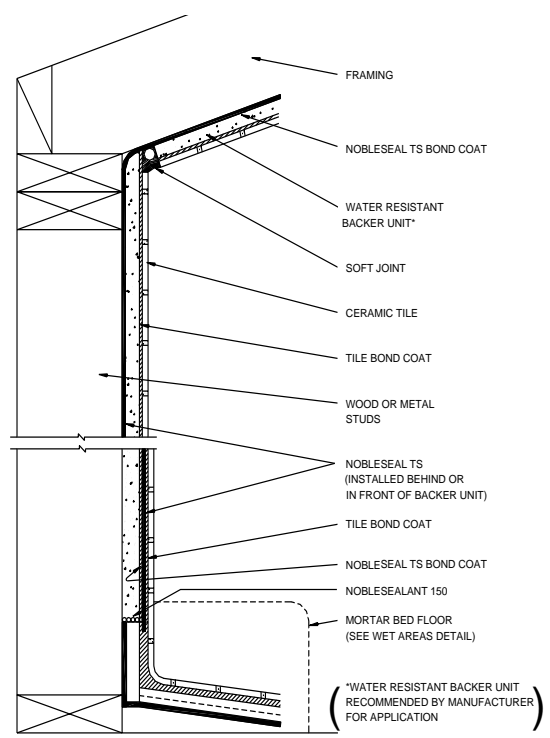
STEP 1. CREASE SHEET (SOLID LINES); CUT SHEET ON DOTTED LINE



STEP 2. FOLD; SEAL WITH NOBLESEALANT 150



STEAM ROOM



NOTE: NOBLESEAL TS MUST BE INSTALLED IN COMPLIANCE WITH APPROPRIATE ANSI STANDARDS AND TCA RECOMMENDATIONS. SEE INSTALLATION INSTRUCTIONS FOR MORE DETAILS. CONTACT THE NOBLE COMPANY FOR OTHER INFORMATION.

WARRANTY

NobleSeal TS brand CPE membrane is guaranteed for the life of the original installation by The Noble Company against failure caused by rotting, cracking and microorganism deterioration when properly installed in tile systems for which its use is recommended by The Noble Company. This warranty is limited to the replacement of defective material and freight charges to destination only. There are no other expressed or implied warranties, and this warranty is in lieu of any other warranty, including, but not limited to, implied warranties of merchantability and fitness for purpose. The Noble Company is not responsible for consequential damages. The remedy of the purchaser set forth herein is exclusive.

Additional product information is available 24 hours a day, 7 days a week at www.noblecompany.com or by calling Fast Fax, our automated Fax Back System (1-800-272-1519).

NobleSeal[®] TS Product Data

Thin-Set Waterproofing & Crack Isolation Sheet

1. PRODUCT NAME

NobleSeal TS - Waterproofing and crack isolation sheet membrane

2. MANUFACTURER

The Noble Company

P.O. Box 350

Grand Haven, MI 49417-0350

Phone: (800) 878-5788

(231) 799-8000

Fax: (231) 799-8850

Web Site: www.noblecompany.com

3. PRODUCT DESCRIPTION

NobleSeal TS is a composite, elastomeric sheet membrane engineered for waterproofing and crack isolation of thin-set ceramic, dimension stone, agglomerated and terrazzo tile. May also be used to bridge control joints. Suitable for interior applications in new construction and renovation projects.

Applications:

- Malls to residential-wet areas
- Horizontal or vertical installations
- Over concrete, backer units, plywood substrates, **radiant heating systems and lightweight underlayments**
- Tile and stone, all types
- Steam rooms, thin-set/full bed
- Pools and fountains
- Food processing areas
- Bridging control joints
- Tile over tile

Limitations: NobleSeal TS is not designed for use as a wearing surface. For applications not detailed in the installation instructions, contact The Noble Company.

Composition and Materials:

NobleSeal TS is a composite manufactured from Chlorinated Polyethylene (CPE), a non-plasticized elastomer with non-woven polyester laminated to both sides.

Product Dimensions: Standard roll is 1.5m x 30.5m = 45.8m² (5' x 100' = 500 sq. ft.). Nominal thickness is 0.8mm (.030").

Accessories: NobleSealant 150 - sealant for drains, penetrations, terminal edges and to seam sheets together; NobleWeld 100 - seaming cement; Preformed outside corners.

Applicable Standards: Meets requirements of ANSI A118.10-1993 and ASTM C 627 (Robinson Test) - Rated for "Extra Heavy Service."

4. TECHNICAL DATA

See back page.

5. INSTALLATION

NobleSeal TS can be thin-set to a suitable substrate. Tile can then be thin-set directly to the NobleSeal TS. Installer must be familiar with The Noble Company's written instructions, TCA Handbook recommendations and ANSI A108 standards. On specified projects, contractor must be experienced with installation procedures and recommendations of The Noble Company prior to commencing work.

Additional information and samples are available upon request.

6. AVAILABILITY AND COST

Availability: NobleSeal TS may be obtained throughout the United States and Canada from distributors of ceramic and stone tile. For export, contact The Noble Company.

Cost: The installed cost is competitive to any product specifically designed for the same application. Due to project variability, cost estimates are best provided by local distributors or contractors. Contact The Noble Company for the nearest distributor.

7. WARRANTY

NobleSeal TS brand CPE membrane is guaranteed for the life of the original installation by The Noble Company against failure caused by rotting, cracking and microorganism deterioration

when properly installed in tile systems for which its use is recommended by The Noble Company. This warranty is limited to replacement of defective material and freight charges to destination only. There are no other expressed or implied warranties, and this warranty is in lieu of any other warranty, including, but not limited to, implied warranties of merchantability and fitness for purpose. The Noble Company is not responsible for consequential damages. The remedy of the purchaser set forth herein is exclusive.

8. HOW TO SPECIFY

Specify in Division 9. Where required, provide NobleSeal TS, a composite sheet membrane manufactured from non-plasticized Chlorinated Polyethylene (CPE), with non-woven fabric laminated to both sides. Nominal thickness is 0.8mm (.030").

9. TECHNICAL SERVICES

Specifications, drawings, and installation procedures will be reviewed upon request. Samples and field support are available through The Noble Company staff or factory representatives. Contact The Noble Company for details.

10. FILING SYSTEMS

- Sweet's Architectural File
- Sweet's BuyLine. Call for nearest company representative.
- Sweet's CD

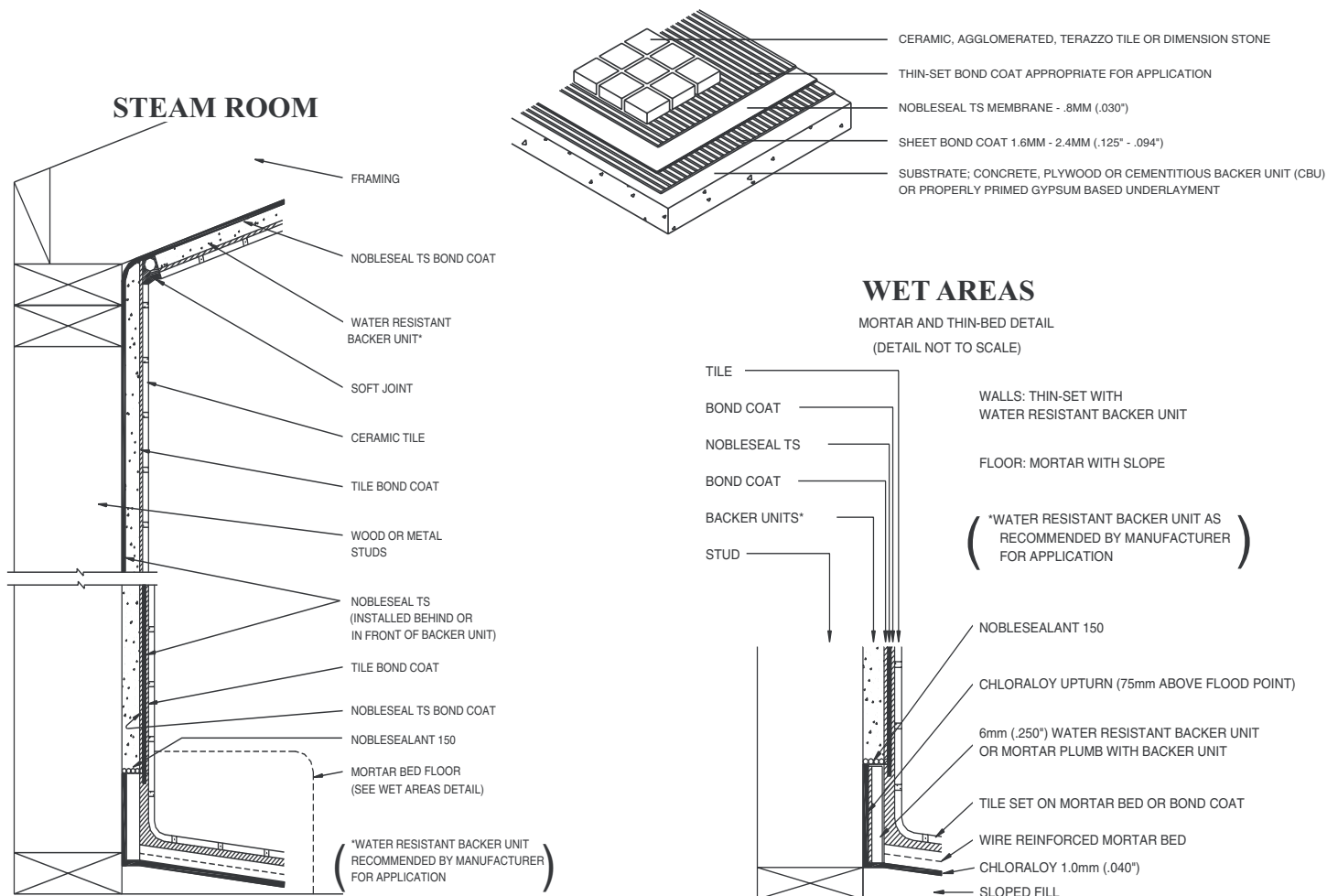
®Registered trademark of The Noble Company, Grand Haven, Michigan.



TEST DATA

PHYSICAL PROPERTY	TEST METHOD	UNITS	NOBLESEAL TS
System Performance	ASTM C 627	cycles	1-14 "Extra Heavy Service"
Hardness	ASTM D 2240	shore A	82
Tensile Strength	ASTM D 412 Die C	psi	1600
Elongation	ASTM D 412 Die C	%	44
Tear Strength	ASTM D 624 Die C	psi	400
Shear Strength 7 day/4 week/12 week	ANSI A118.10-1993	psi	Pass
Shear Strength - Water Immersion 7 day/100 day	ANSI A118.10-1993	psi	Pass
Fungus & microorganism Resistance	ANSI A118.10-1993	% change wt. elong.	Pass
Seam Strength	ANSI A118.10-1993	psi	Pass
Waterproofness	ANSI A118.10-1993	perms	Pass

THE NOBLESEAL TS SYSTEM



NOTE: NOBLESEAL TS MUST BE INSTALLED IN COMPLIANCE WITH APPROPRIATE ANSI STANDARDS AND TCA RECOMMENDATIONS. SEE INSTALLATION INSTRUCTIONS FOR DETAILS. CONTACT THE NOBLE COMPANY FOR OTHER INFORMATION.

These suggestions and data are based on test results The Noble Company believes to be reliable. Users should verify by tests that this product, as well as these methods, are suitable with the products being used in their application. Since specific use, materials and handling are not controlled by The Noble Company, this warranty is limited to the replacement of defective Noble Company products. The Noble Company disclaims any responsibility for (a) warranties of merchantability and fitness for purpose; (b) verbal recommendations of its representatives; and (c) consequential damages.

Additional product information is available immediately by fax for this or any other Noble product. Just dial The Noble Company's Fast Fax service at 1-800-272-1519 from a touch-tone phone for information 24 hours a day, 7 days a week.



The Noble Company

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NOBLESEAL[®] TS

SECTION 09300 THIN-BED WATERPROOF/CRACK ISOLATION SHEET MEMBRANE (Short Form Specification)

PART 1 - GENERAL

1.1 REFERENCES

- 1.1.1. ANSI A108.13 Installation of Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone.
- 1.1.2. ANSI A118.10 Load Bearing, Bonded, Waterproof Membranes for Thin-Set Ceramic Tile and Dimension Stone.
- 1.1.3. ASTM C-627 - Evaluating Ceramic Floor Tile Installation Systems Using the Robinson-Type Floor Tester.

1.2 QUALITY ASSURANCE

- 1.2.1. Use qualified workers thoroughly skilled and experienced in current ANSI A108 standards and Tile Council of America (TCA) recommendations.

1.3 SUBMITTALS

- 1.3.1. Product Data: Submit manufacturer's technical information and installation instructions for materials required.

1.4 PROJECT CONDITIONS

- 1.4.1. Comply with bonding agent manufacturer's recommended procedures for hot or cold weather.

PART 2 - PRODUCTS

2.1 MEMBRANE

- 2.1.1. WATERPROOF MEMBRANE: NobleSeal TS composite sheet membrane manufactured by The Noble Company of non-plasticized Chlorinated Polyethylene (CPE), nominal thickness of 30 mils, flexible synthetic elastomer with fabric laminated on both surfaces. Conforms to Thin-Bed waterproof membrane standard ANSI A118.10. Meets Heavy Duty Service requirements per ASTM C-627.

PART 3 - EXECUTION

3.1 INSPECTION

- 3.1.1. Examine substrates to verify they are ready to receive tile and membrane with no deficiency that could result in a potentially defective installation. Prepared substrates to be in accordance with ANSI A108, A3.1 and Tile Council of America (TCA) recommendations.

3.2 INSTALLATION

- 3.2.1. Install membrane and tile per ANSI A108.13, ANSI requirements for thin-set methods and manufacturer's printed instructions.
- 3.2.2. Install membrane with products or methods approved in writing by manufacturer when joining, sealing, fastening or adhering sheet membrane.

[3.3 FIELD QUALITY CONTROL WATER TEST

- 3.3.1 Upon completion of work, plug drain or dam areas and fill with water. After 24 hours inspect for leakage. Make necessary adjustments to stop leakage and re-test until watertight.]

3.4 PROTECTION

- 3.4.1. Protect membrane from pedestrian or vehicular traffic and prolonged exposure to sunlight.

Note: A specifier is within his rights to issue a proprietary specification that names only one brand. If in the informed and professional judgement of the specifier, his client's needs will be best served by naming a particular brand, then he has the responsibility to limit his specification to one source. This practice is even acceptable on publicly funded projects. This principle of proprietary specification has found legal support in the case of Whitten Corp. v. Paddock Pool Builders, Inc., a Federal District Court case from Massachusetts (376 F. Supp 125). Further support came in 1975 when the U.S. Supreme Court rejected further appeal and review.

INSTALLATION INSTRUCTIONS

NobleSeal® TS



CONTENTS

SHEET WATERPROOFING AND/OR CRACK ISOLATION SYSTEM FOR THIN-BED CERAMIC TILE, DIMENSION STONE, AGGLOMERATED TILE OR TERRAZZO INSTALLATIONS*:

1. General	1
2. Materials	2
3. Procedures	2
4. Seaming and Joining	3
5. Upturns and Corners	5
6. Drains	5
7. Installing Tile	5
8. Tile Over Tile	5
9. Protection of Sheet	5
10. Other Waterproofing	5

SPECIFIC REQUIREMENTS FOR USE OF NOBLESEAL TS AS A CRACK ISOLATION SYSTEM IN THIN-BED CERAMIC TILE, DIMENSION STONE, AGGLOMERATED TILE OR TERRAZZO INSTALLATIONS*:

A. General Condition	5
B. Materials	6
C. Bridging Control Joints	6
D. New Construction	6
E. Tile Installation	6

*For wood, v.c. tile and sheet vinyl, contact The Noble Company.

STEAM ROOM INSTRUCTIONS FOR THIN-BED METHOD:

a. General	8
b. Products	8
c. Installation	9

Other Noble Sheet Membranes:

- **Chloralay® 240**
(mortar-bed waterproofing) - 1.0 mm (.040") - Doc.#100
- **NobleSeal SIS**
(thin-bed sound control) - 1.25 mm (.050") - Doc. #350
- **NobleSeal CIS**
(crack isolation) - 0.8mm (.030") - Doc. #330
- **Noble Deck™**
(Exterior waterproofing & crack isolation) - 1.0 mm (.040") - Doc. #161

Warranty: NobleSeal TS brand CPE membrane is guaranteed for the life of the original installation by The Noble Company against failure caused by rotting, cracking and microorganism deterioration when properly installed in tile systems for which its use is recommended by The Noble Company. This warranty is limited to the replacement of defective material and freight charges to destination only. There are no other expressed or implied warranties, and this warranty is in lieu of any other warranty, including, but not limited to, implied warranties of merchantability and fitness for purpose. The remedy of the purchaser set forth herein is exclusive. The Noble Company is not responsible for consequential damages.

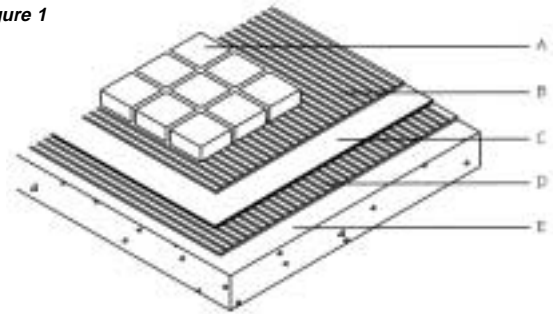
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THE NOBLESEAL TS SYSTEM

Figure 1



- A. CERAMIC, AGGLOMERATED, TERRAZZO TILE OR DIMENSION STONE
- B. THIN-SET BOND COAT APPROPRIATE FOR APPLICATION
- C. NOBLESEAL TS MEMBRANE - .8MM (1/32")
- D. SHEET BOND COAT 1.6MM - 2.4MM (1/16" - 3/32")
- E. SUBSTRATE: CONCRETE, PLYWOOD, WATER RESISTANT BACKER UNIT OR PRIMED GYPSUM BASED CONCRETE

INSTALLATION ACCESSORIES

- >>>> NobleWeld 100
- >>>> NobleWeld 100 Dispenser
- >>>> NobleSealant 150
- >>>> Xylene
- >>>> Preformed Corners

NOTE: Review all detail drawings, Figures 1 through 11.



NobleSeal TS is a finished sheet when it arrives at the job site.



Install sheet with a factory prepared and packaged bonding agent recommended for that particular application.



Tile may be set before sheet bond coat begins to cure or after bond coat has fully cured.

1. GENERAL

The use of NobleSeal TS will provide a waterproof barrier and/or protect tiled surfaces from substrate cracks when installed in strict compliance with these instructions. The bonded sheet is typically less than 1/8".

- 1.1 PRODUCT:** NobleSeal TS is a thin (1/32") bonded, load bearing sheet membrane for waterproofing. TS also provides crack isolation when incorporated into thin-bed installations for ceramic tile, dimension stone, agglomerated tile or terrazzo.
- 1.2 PROPERTIES:** NobleSeal TS is a finished composite sheet, an alloy made from Chlorinated Polyethylene (CPE) with non-woven fabric laminated to both sides. Physical properties of NobleSeal TS are not affected by climate, substrate condition or skill of the installer.

1.3 **PROCEDURE:** To incorporate NobleSeal TS sheet into a thin-bed installation. Prepare substrate and select bond coat in accordance with TCA Handbook recommendations and ANSI A108 standards for the particular application (as if membrane were not being used).

1.4 **BOND COAT:** Install sheet with a factory prepared and packaged bonding agent recommended by bond coat manufacturer for that particular application.

>>>> The terms “bond coat” and “bonding agent” refer to ANSI A118 and TCA Handbook recommendations for methods using modified latex-portland cement mortar.

1.5 **PLANNING:** Tile may be set before sheet bond coat begins to cure or after bond coat has fully cured (refer to bond coat manufacturer’s published cure times). Depending upon job-site conditions (i.e., cold or damp) this may require 50% additional cure time.

1.5.1 **LAYOUT:** Determine most efficient direction to install sheet, taking into consideration location of walls, seams and movement joints. Use chalk lines to maintain sheet alignment.

1.5.2 **DRAINAGE:** Wet areas should have proper slope.

CAUTION: All drains must have a suitable membrane clamping device.

1.5.3 **FLASHING:** Turn sheet up the wall above flood point or top of base; trim excess sheet.

1.6 **INSTALLER:** Must be familiar with The Noble Company’s current written instructions, TCA Handbook recommendations and ANSI A108 standards. On specified projects, contractor must be experienced with installation procedures for Noble Company products or be instructed by a Noble Company representative prior to commencing work.

>>>> **RECOMMENDED: Test material and method under job site conditions to confirm suitability. For waterproofing applications, test area by flooding before installation of tile.**

NOTE: For any procedure not covered by these instructions, contact The Noble Company.



Quantity of NobleSeal TS sheet required is equal to the amount of tile estimated, including allowance for waste and seams.

2. MATERIALS

2.1 **MEMBRANE:** Quantity of NobleSeal TS sheet required is equal to the amount of tile estimated, including allowance for waste and seams. Use preformed corners as necessary.

2.2 **SHEET WIDTH:**
 $1.5\text{ m} \times 30.5\text{m} = 45.8\text{m}^2 - (5' \times 100' = 500\text{ s.f.})$

2.3 **SEAMING AND JOINING:** Use NobleSealant 150 or NobleWeld 100 seaming cement to join sheets (refer to 4. of these instructions for details).

2.4 **SHEET BOND COAT:** NobleSeal TS should be bonded by a method using latex-portland cement mortar. Bonding agent must conform to the appropriate ANSI standards, TCA Handbook recommendations, and bonding agent manufacturer’s directions. Acceptable materials include the following:

a. A modified portland cement thin-set mortar for the bonding of ceramic tile to which a polymer has been incorporated in latex form or as a re-emulsifiable powder (Note: When added in

liquid form, it is added as a replacement for part or all of the gauging water.).

- b. Polymeric or acrylic latex fortified portland cement mortar.
- c. Rapid setting types of mortar, epoxy mortar, epoxy adhesive*, furan mortar or organic adhesive*.

***NOTE: To bond with adhesive, test or verify that the brand will cure under the sheet.**

NOTE: Job-site mortar mixes must conform to ANSI A108.5 and A118.4, and to latex supplier’s instructions.

CAUTION: Do not disturb bond coat once curing process has begun.

>>>>**Most bonding agents will stick to the fabric on NobleSeal TS, but not to the bare CPE.**



Hot-air gun may be used to expedite curing of seams or making seams at temperatures below 45°F. Also, use heat to shape, mold or stretch membrane, i.e., contour to slope.

2.5 **MORTAR BED METHODS:** Sheets may be installed as waterproofing and/or to protect tile from cracking.

- a. **Bonded:** Thin-set sheet to fully cured mortar bed (see TCA Detail F122).
- b. **Loose-Laid:** (Slip Sheet/Cleavage Membrane) NobleSeal TS or Chloraloy under full mortar bed (see TCA Detail 121).
- c. **Combination:** Thin-bed and mortar bed methods, i.e., floor and wall. For example, see Figure 7 and refer to Steam Room Instructions for details (page 6).

NOTE: When floor is not required to be waterproofed, refer to NobleSeal CIS instructions for crack protection/renovation or bridging movement joints.

2.6 **WATERPROOF SEALANT:** Use NobleSealant 150 to seal penetrations (i.e., pipes, wire, conduit), corners, drains and terminal edges, seal cut corners or bond preformed corners to substrate and sheet to corners. NobleSealant 150 is also an approved alternate seaming material (see 4.1 through 4.1.3).

2.7 **TOOLS:** Normal tile setting tools, plus scissors or snips, rubber hand roller, linoleum or terrazzo roller (100 lbs. recommended), commercial hot-air gun and NobleWeld 100 dispenser (seam cement dispenser), and commercial caulk gun.

NOTE: Hot-air gun may be used to expedite curing of solvent welds or seaming at temperatures below 7°C (45°F). Also, use heat to shape, mold or stretch membrane.

3. PROCEDURES

3.1 **INSPECTION:** Determine that the substrate conforms to ANSI A108 standards. Report in writing any deficiencies that might affect performance of the system.

NOTE: Substrate condition for sheet is the same as tile (as if NobleSeal TS sheet were not being used).

3.2 **BONDING SHEET TO SUBSTRATE:** Refer to Detail F122 in TCA Handbook. Substrate must be clean and free of sealers, waxes, bond breakers, dust and dirt. A flat floor makes it easier to install the sheet. Use cement based leveling compounds prior to bonding sheets.

NOTE: After installation, sheet must be kept clean to enable tile to bond. If necessary, clean with vacuum and damp mop.

3.2.1 Use pre-packaged, thin-set type mortar modified with powdered latex or polymeric resin, or add liquid latex to a factory prepared dry-set mortar. Specialized bonding agents such as accelerated curing types of flexible multi-purpose types recommended by the bonding agent manufacturer for bonding to a particular substrate may also be used. Mix according to manufacturer's instructions. Never mix components (i.e., liquids and powders) from different manufacturers.

NOTE: Refer to page 6 when sheet is used for crack isolation.

3.2.2 On flat substrate, spread thin-set bond coat with a 1/8" x 1/8" "V"-notched trowel. Trowel an area as wide as the sheet and as deep as can be comfortably reached. In order to avoid trapping air under the sheet, trowel mortar in parallel rows across the width or length of the sheet. Unroll sheet continuously into bond coat before it begins to form "skin". If skinning occurs, remove thin-set mortar and replace.

NOTE: Variation in trowel size, angle at which trowel is held, mixing ratio or any combination thereof may be necessary to achieve maximum contact and penetration.



Normal installation conditions - spread bond coat with a 1/8" x 1/8" "V"-notched trowel. Trowel an area as wide as the sheet and as deep as can be comfortably reached (comb ridges parallel).



Embed NobleSeal TS into bond coat. For horizontal areas, use linoleum roller (100 lbs. recommended). Work from center of sheet to edges.

NOTE: Control high temperature by shading, misting substrate with water, working at night or any combination of these techniques. Fine notched trowels increase "skinning" rate.

3.2.3 To prevent outer edges from lifting, curling or drying prematurely, use weight, i.e., tile boxes or mortar bags. Screen work area from wind.

3.2.4 Embed NobleSeal TS into bond coat (flatten all trowel ridges). For horizontal areas, use 100 lb. roller. Work from center of sheet to edges. Pull roller edge-to-edge in overlapping passes. Start at end of first sheet installed, progressing to area installed last. In small areas, use hand roller or straight edge.

3.2.5 Complete coverage of substrate and full penetration of bond coat into the fabric is required. Prior to curing, lift sheet and inspect for full contact. If rows or ridges of bonding agent are seen, additional rolling or bond coat is necessary.

3.3 **WATERPROOFING DRYWALL AND WATER RESISTANT BACKER UNITS (BU):** While BUs may not deteriorate due to moisture, they are not waterproof. The TS system will protect the substrate and adjoining areas from moisture damage (see Figure 2). Follow preceding installation procedures (3. through 3.2.5).

CAUTION: Be sure to protect bottom edge of drywall in wet areas. Leave a minimum 1/4" gap at bottom edge of drywall. Apply continuous bead of NobleSealant 150 at the edge of the sheet. The proper type of backer rod for wet areas may also be installed in this 1/4" gap. After installing tile, seal joint at tub with caulking recommended by caulk manufacturer for this purpose. Seal all penetrations of membrane with NobleSealant 150 (i.e., drains, pipes, spouts, conduit and valves).

3.4 **WATERPROOFING PLYWOOD:** NobleSeal TS can only protect the side on which it is applied. The opposite side and/or edges will absorb moisture, which may adversely affect the tile installation.

3.5 **CRACK PROTECTION, RENOVATION OR BRIDGING CONTROL JOINTS FOR THIN-SET TILE:** Refer to specific details contained in NobleSeal CIS Installation Instructions and page 6 of this manual.

3.6 **PROTECTION REQUIRED:** Cover sheet with suitable material to prevent damage from any/all foot or vehicle traffic, i.e., skim coat of thin-set mortar, rugs, plywood, etc. Sheet must be clean and free of dust and dirt for mortar to bond properly.

Figure 2 SHOWER

NobleSeal TS membrane bonded over BU with Chloraloy shower pan

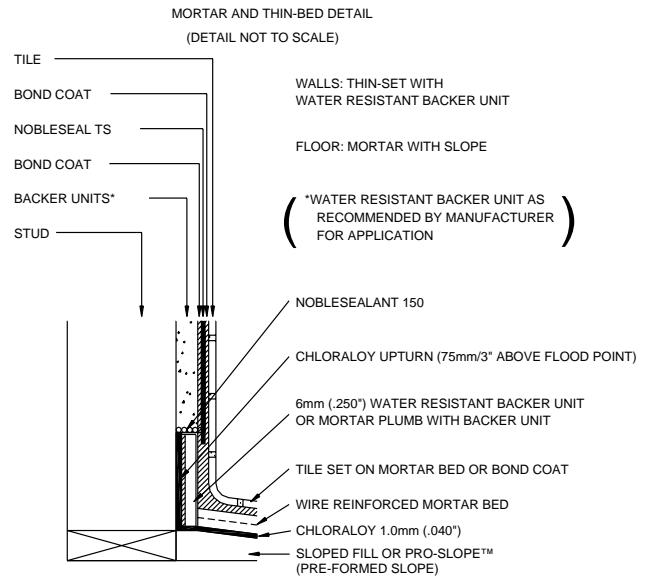
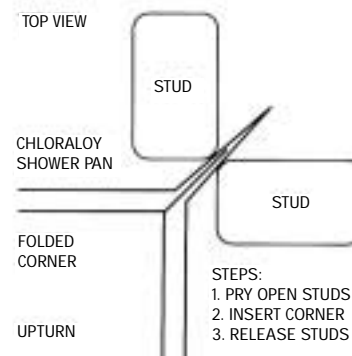


Figure 3 TUCKED CORNER



4. SEAMING AND JOINING (For Waterproof Installations)

When more than one sheet is needed, two methods are acceptable and of equal performance:

- A. **NobleSealant 150** for seaming any area with or without polyester fabric, i.e., joining end of roll to another roll or any combination of surfaces. Recommended in areas with high humidity or cold temperatures. Provides permanent waterproof seam.
- B. **NobleWeld 100** for chemical fusion of bare CPE to bare CPE (prepared seam area).

>>>> ESTIMATE

NobleSealant 150 - 1/8" diameter bead yields 150 lin. ft. (10.3 oz. tube). 3/16" diameter bead yields 70 lin. ft.

NobleWeld 100 - for 2" wide seam, 1 qt. per 100 lin. ft.

>>>> PROCEDURE

4.1 NobleSealant 150: Use heavy duty commercial caulk gun. Overlap sheets 2" minimum.

NOTE: Fabric does not need to be removed.

- 4.1.1** Apply 1/8" bead 1/4" from edge of sheet being overlapped.
- 4.1.2** Apply another bead of sealant parallel and 1" from the first bead.
- 4.1.3** Overlap sheets and flatten with roller or by pressing with trowel.

NOTE: Beads must be continuous without skips or voids.



Apply first bead of NobleSealant 150 as shown.



Apply second bead, then press seam.

>>>> END SEAMS: Procedure to make a seam where bare CPE seaming area is not provided: Use NobleSealant 150 (see 4.1 through 4.1.3) or NobleWeld 100 and follow these instructions. NobleSeal TS fabric must be removed to make a chemically fused seam (see 4. A & B for options). Mark 2" wide seam area on top of bottom sheet and 2" on bottom of overlapping top sheet. Flood area to be seamed with Xylene approximately 1" wider than the seam marks. Keep wet for at least one minute. Fabric is ready to peel if it will slide on the CPE when scuffed near the edge with fingernail or margin trowel. If solvent dries or fabric does not delaminate easily, re-apply Xylene. Peel fabric back to mark. Cut fabric at the mark with scissors (as if slitting open an envelope). While CPE is still soft and wet, stray fabric pieces (or fibers) may be re-bonded to the CPE with heavy pressure on the hand roller.



NobleSeal TS fabric coating must be removed to make a solvent weld where bare CPE seaming area is not provided. Flood areas to be seamed with Xylene approximately 1" wider than the seam marks.



Cut fabric at the mark with scissors.



Press seam together while CPE is soft and wet.



Use rubber roller to press seam together - removing air and excess solvent.

>>>> LAP SEAMS: Rolls of NobleSeal TS have 2" of exposed CPE for seaming on each edge. Position sheets side by side and overlap area to be welded. Alternate: Use NobleSealant 150 (see 4.1 through 4.1.3).



Position sheets side by side and overlap area to be welded. Prime/clean bonding area by lightly applying Xylene or alcohol.



Roughen bonding area with copper scrub pad or clean wire brush to improve seam cement reaction.



Apply solvent liberally and evenly to both surfaces. Do not allow cement to dry.

4.2 NobleWeld 100

- 4.2.1** Allow 2" for lap seam. Work only 2' to 3' of seam at a time.
- 4.2.2** Clean by lightly applying Xylene or alcohol. Immediately wipe with clean, lint-free cloth.
- 4.2.3** Roughen both surfaces to be bonded with copper scrub pad or clean wire brush.
- 4.2.4** Apply NobleWeld 100 liberally (puddled) and evenly to both surfaces approximately 1" wider than seam. Do not allow solvent to dry. Material should be soft, wet and tacky. Should solvents dry before completing seam, re-apply.
- 4.2.5** Close seam while CPE is soft and still wet with solvent.
- 4.2.6** Use roller, trowel or rub seam with cloth to eliminate air bubbles. Note the application of heat improves the efficiency of seaming at low temperatures. A hot air gun is recommended to cure seam below 7°C (45°F).
- 4.2.7** To insure continuous seam, peel seam back several inches into just completed section before starting next section.
- 4.2.8** Seams must be allowed to cure to develop strength. Do not stress until allowed to cure for 24 hours at 21°C (70°F) and 40% relative humidity. Cure time may be reduced by heating.
Note: Seam may be water tested after curing.

NOTE: Do not leave can open when not in use - solvents in NobleWeld 100 will quickly evaporate. After 4 hours of use, dispose of open can. To seam large areas quickly, pour NobleWeld 100 into plastic brush-top dispenser, or pour NobleWeld 100 on seam area and spread with a natural bristle brush.

5. UPTURNS AND CORNERS

- 5.1 For flashing up a wall, turn sheet up vertical surface higher than flood level. Crease/fold sheet before installing or make allowance for upturn and then crease.
- 5.2 Depending on substrate, use latex portland cement mortar for normal tile substrate or NobleSealant 150 for non-porous or metal substrate.
- 5.3 Install base trim on fabric - not bare CPE. Trim excess sheet after installation of all base trim pieces.
- 5.4 Corners may be folded (see Figure 11) or cut (see Figure 10). Seal cut corners with NobleSealant 150. For tucked corner details, see Figures 3 and 11.
- 5.5 If preformed corners are used (see Figure 11), they may be chemically fused (bare CPE to bare CPE). Corners may also be bonded to sheet and/or substrate with NobleSealant 150. In thin-bed applications, NobleSeal TS should be placed over the corner so tile can be bonded to fabric.

6. DRAINS

For waterproofing, all drains must have clamping ring to secure membrane to drain body. Inspect floor to insure that proper slope has been provided to eliminate ponding or water on top of membrane. Install sheet over sloped fill as follows:

- 6.1 Remove strainer and clamping ring.
- 6.2 Place NobleSeal TS over drain body. Press membrane to feel outline of drain. Cut drain opening.
- 6.3 Carefully punch or notch openings for clamping ring bolts through sheet.
- 6.4 Apply bead of NobleSealant 150 on the drain body under the NobleSeal TS.
- 6.5 Press membrane into sealant.
- 6.6 Reset clamping ring and firmly tighten bolts.
- 6.7 Replace strainer and adjust to proper height for tile.



Should more than the standard 5' x 100' roll be required, sheets may be joined.



Preparation for thin-bed tile. Substrate must meet requirements for ceramic tile installation.

7. INSTALLING TILE

- 7.1 Set tile in accordance with TCA Handbook recommendations, ANSI A108 standards and bond coat manufacturer's directions. Complete penetration of fabric by the bond coat is required.

NOTE: Bond coat must be in contact with fabric, not bare CPE. Remove bare CPE edge if not used for seaming.

- >>>> **CASE 1: RECOMMENDED FOR SMALL PROJECTS WHICH MUST BE FINISHED IN ONE TRIP.** Install tile immediately on NobleSeal TS, while substrate bond coat under sheet is still plastic (before bond coat begins to cure).

NOTE: Rapid-curing type of thin-set mortar may be used with approval of mortar manufacturer.

- >>>> **CASE 2: INSTALL TILE AFTER BOND COAT HAS CURED:** Refer to bond coat manufacturer's instructions for cure time and allow an additional 50% when installed under NobleSeal TS sheet.

8. TILE OVER TILE

Refer to TCA Handbook recommendations TR711, TR712 and TR713, then follow The Noble Company's current written instructions for installing NobleSeal TS or NobleSeal CIS.

9. PROTECTION OF SHEET

Protect the installed sheet from damage and all foot or vehicular traffic until the tile is installed (use mortar skim coat, rugs, plywood, etc.).

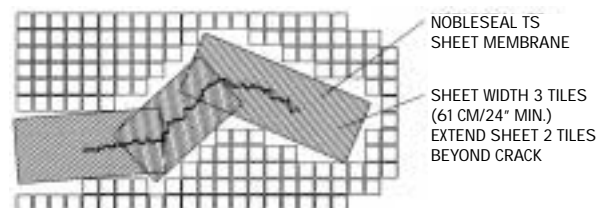
10. OTHER WATERPROOFING

For other waterproofing applications, contact The Noble Company. There is a NobleSeal CPE (Chlorinated Polyethylene) waterproofing membrane designed for most positive waterproofing requirements.

Specific Requirements for Use of NobleSeal TS as a Crack Isolation System in Thin-bed Ceramic Tile, Dimension Stone, Agglomerated Tile or Terrazo Installations.

NobleSeal TS may be used in areas over occupied space as waterproofing as well as crack isolation, i.e., food courts. When used for both functions, sheets must be seamed (see Section 4) and entire area covered.

Figure 4 – CRACK ISOLATION - SOFT JOINT PLAN

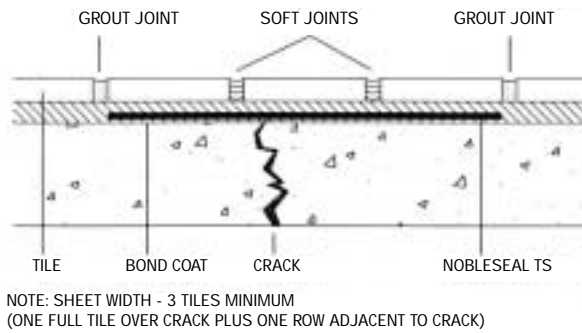


For applications that do not require waterproofing, NobleSeal TS must be modified. Since our crack isolation system does not require overlapped seams, the 2" areas provided on each edge must be removed before making the recommended butt seam. The roll should be cut to a width 3 times the size of the tile to be installed over it unless the entire floor is being covered.

A. GENERAL CONDITION

Substrate must meet requirements set forth by the TCA Handbook for Ceramic Tile Installation and ANSI A108 and A118 standards. While the primary function of the sheet in this application is crack isolation, this does not preclude normal industry practices or requirements, including joint placement. Use of this system to bridge cracks or movement joints with tile may not be an absolute solution.

Figure 5 – CRACK ISOLATION - CROSS SECTION



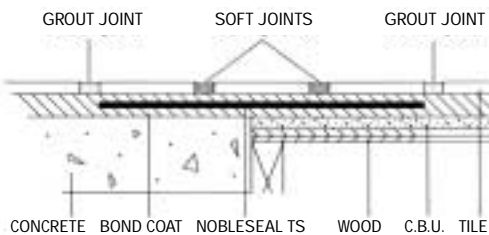
B. MATERIALS

>>>>RECOMMENDED MATERIAL: Use NobleSeal CIS which does not require any modification. CIS is available in various widths (2', 3', 4' and 6') to accommodate tile sizes from 1" x 1" to 24" x 24". For more detailed information, refer to NobleSeal CIS Installation Instructions (Fast Fax Doc. #330).

C. BRIDGING CONTROL JOINTS

The tile industry recommendation is to align grout joints directly over all substrate joints. When it is not feasible or desirable to cut the tile work to align with movement joints (cold, poured, or saw cut), the Noble Company offers the following procedure as an alternate for any layouts with patterns, diagonals, herringbone, basket weave, etc. (see Figures 4, 5 and 6).

Figure 6 – JOINT BRIDGING - CONCRETE/WOOD



C.1 EXECUTION: Install sheet (refer to NobleSeal CIS Installation Instructions for details). Elastomeric (soft) joint should be used in lieu of grout in joint closest to substrate control joint (see Figures 4, 5 and 6). The joint(s) must equal the width of the substrate joint. One (1) soft joint is required, two (2) joints are recommended.

NOTE: Elastomeric grout joint(s) must be thoroughly clean and free of mortar or debris to function. (Refer to TCA Detail EJ171 for recommendations.)

D. NEW CONSTRUCTION

D.1 Install NobleSeal TS sheet on all areas to be protected. Comply with specific instructions (see pages 1 through 5).

E. TILE INSTALLATION

E.1 Refer to instructions on page 5, section 7.

Steam Room Instructions For Thin-Bed Method.

The procedure for installing NobleSeal TS as thin-bed waterproofing is the same as the previous instructions (see pages 1 through 5). This application is suitable for commercial and residential projects.

There are two options for placement of the sheet. Install the sheet behind the BU or over the BU. Both are equal in performance and, therefore, both may be used on the same project. (Refer to TCA Details SR613 and SR614.)

We recommend that the tile contractor install the BU, waterproofing and tile. This ensures that all components will conform with industry standards and practices.

a. GENERAL

The following instructions for a thin-bed installation incorporating NobleSeal TS are specific to its use in steam room applications. Refer to pages 1 through 5 of these instructions for sheet installation and seaming procedures.

- a.1 INSTALLER:** On specified projects, contractor must be experienced with installation procedures for NobleSeal TS, or be instructed by a Noble Company representative prior to commencing work.
- a.2 INSPECTION:** Determine that substrate meets requirements of ANSI A108 for installation of tile. Report in writing any deficiencies that might affect performance.

NOTE: Walls common to exteriors require special design to prevent condensation in wall cavity. Consult with project architect.

- a.3 TEMPERATURE:** Although maximum room temperature is limited to 50°C (120°F) by equipment safety controls, neither NobleSeal TS nor Chloraloy will be affected at that temperature. Verify that mortar and grout are recommended by their respective manufacturers for this temperature.

- a.4 PLANNING:** Determine the most efficient sequence to install BU, NobleSeal TS and tile.

>>>> CASE 1: BU NOT INSTALLED: Areas with steel or wood studs shall comply with BU manufacturer's requirements. Tile contractor should install BU and NobleSeal TS waterproofing.

>>>> CASE 2: BU INSTALLED: Inspect to insure that construction and installation of BU conforms with manufacturer's instructions and ANSI A108.11, A118.9 and A118.10.

b. PRODUCTS

- b.1 NOBLESEAL TS:** For thin-bed installations.
- b.2 CHLORALOY 240:** For floors and other full mortar bed applications.



Noble Company sheet membranes are for both commercial and residential projects. Use NobleSeal TS for thin-set floors.



Install NobleSeal TS to waterproof walls. Use Chloraloy 240 to waterproof sloped floors with full mortar bed.

- b.3 WATER RESISTANT BACKER UNIT (BU):** Use material which meets ANSI A108.11 and A118.9 standards.

c. INSTALLATION

>>>> **RECOMMENDED:** Tile contractor should install BU to assure that substrate conforms to ANSI A108 requirements and all materials and methods are compatible.

c.1 Refer to The Noble Company's current written instructions (see pages 1 through 6), TCA Handbook recommendations and ANSI A108 standards for installing NobleSeal TS and Chloraloy 240 as waterproofing. See Cases 1 and 2 of Section 1.4a (page 6). Refer to Figure 7.

c.2 CEILINGS:

>>>> **SHEET BEHIND BU:** Recommended to expedite installation of tile (see Figure 7). Place heavy bead of NobleSealant 150 on studs to hold sheet temporarily and seal screw penetrations when compressed by BU. Ceiling sheet may be prefabricated into a larger unit to minimize seaming procedure overhead.

>>>> **BU PREVIOUSLY INSTALLED:** Bond sheet to BU with recommended bonding agent. Support sheet until thin-set cures, i.e., prop plywood against sheet on ceiling.

CAUTION: Thin-set manufacturer may require a minimum cure of 14 to 21 days when used in a steam room. Verify with mortar manufacturer.

c.3 WALLS: Sheet placement at contractor's option (over BU or behind BU).

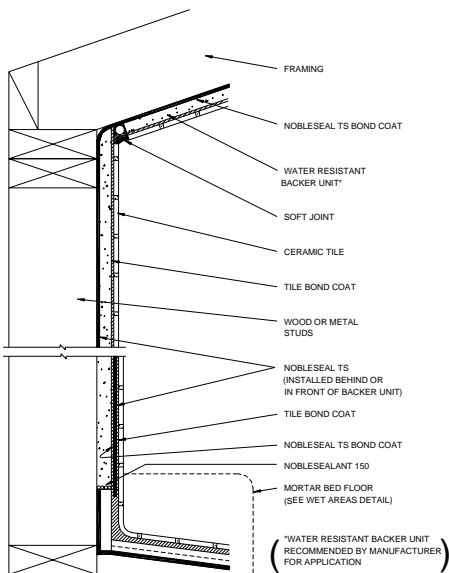
>>>> **SHEET BONDED OVER BU:** Procedure is same as other NobleSeal TS waterproofing applications.

>>>> **SHEET BEHIND BU:** Refer to section 3.2. Seal junction of wall and floor membranes with NobleSealant 150 to prevent moisture migration behind membrane.

c.4 FLOORS:

>>>> **FULL MORTAR BEDS:** Use Chloraloy 240. Refer to current written instructions of The Noble Company for installing Chloraloy 240 as waterproofing (see Figure 2).

Figure 7 – STEAM ROOM



These suggestions and data are based on information The Noble Company believes to be reliable. Users should verify by tests that NobleSeal TS, as well as these installation methods, are suitable with the products being used in their application. Since specific use, materials and handling cannot be controlled by The Noble Company, warranty is limited to the replacement of defective Noble Company products.

The Noble Company disclaims any responsibility for any warranties of merchantability and fitness for purpose, verbal recommendations of its representatives and/or consequential damages.

Figure 8 – JOINT BRIDGING - CROSS SECTION

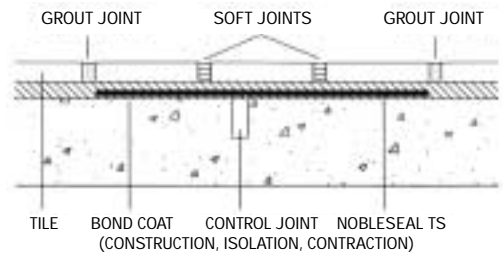


Figure 9 – JOINT BRIDGING - PLAN VIEW

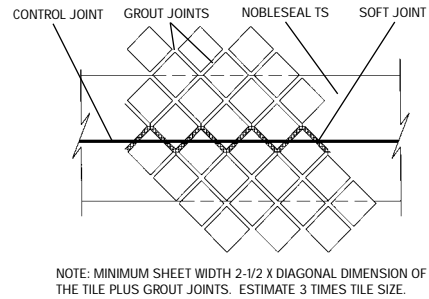


Figure 10 – LAP CORNER

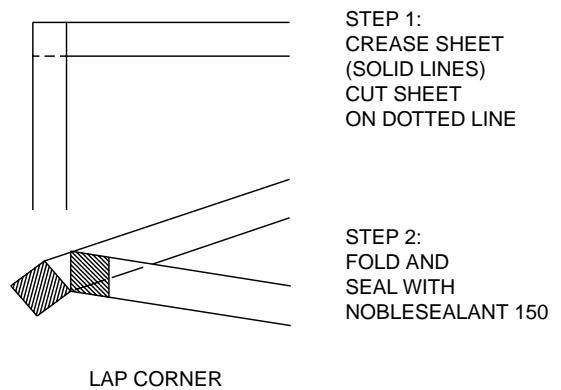


Figure 11 – FOLDED, TUCKED, PREFORMED & OUTSIDE CORNERS

