

SeaShield Marine Systems



Features

- Prevents infestation of marine borers
- Prevents leaching of creosote and/or ACZA into the water
- Can accommodate irregular shaped timber piles
- Provides abrasion and puncture resistance in aggressive coastal environments
- Simple design allows for easy installation
- Adds years of service life to piles
- Long, maintenance-free service life
- Proven 75 year history of sealing out oxygen with Denso Petrolatum Tape

Series 90

Timber pile protection system that includes petrolatum tape and a protective outercover

SeaShield Series 90 System provides timber pile protection against marine borer destruction and deterioration due to weathering. The system eliminates existing marine borers and protects against further infestation. By using Denso Marine Piling Tape and an outercover, the pile is encapsulated, thus removing all oxygen from reaching the timber pile. The system kills the marine borers inside the pile and those outside can not penetrate the barrier. The system also acts as a preservative and eliminates leaching of creosote and/or ACZA into the water.

Denso[®]
DENSO NORTH AMERICA



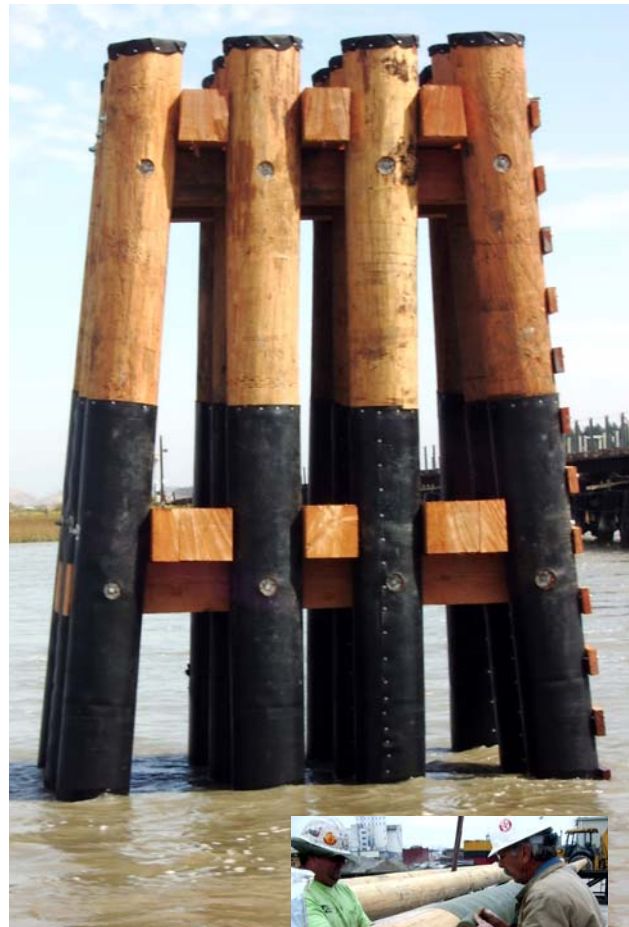
SeaShield Series 90 consists of Denso Marine Piling Tape preventing marine borer destruction and an outcover for mechanical protection of tape.

SeaShield Series 90 System

The Series 90 System can accommodate hour-glassed piles, posting, bracing and other timber support members. This system is easily installed and does not require any special or expensive equipment. It is the most effective, economical and long-term solution to extending the life of new or existing timber piles.

The Series 90 System utilizes the proven Denso Marine Piling Tape for eliminating oxygen from reaching the pile and is highly conformable to all shapes and irregularities of the pile. The outcover is used for mechanical protection of the tape. No seals are required on the outcover, thus eliminating the need for a tight seal of the jacket.

For further details please refer to the engineering specifications for SeaShield Series 90 System.



Find Out More

Contact Denso North America for a complete literature package or a no-cost on-site evaluation of your application:

1-888-821-2300



DENSO NORTH AMERICA

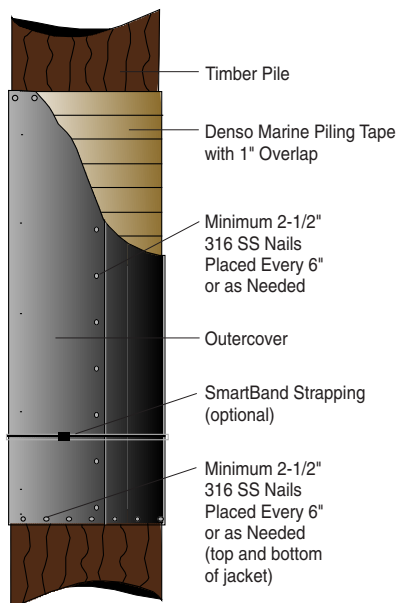
HOUSTON:
9747 Whithorn Drive,
Houston, Texas,
U.S.A. 77095
Tel: 281-821-3355
Fax: 281-821-0304

TORONTO:
90 Ironside Crescent,
Unit 12, Toronto,
Ontario, Canada M1X1M3
Tel: 416-291-3435
Fax: 416-291-0898

e-mail: info@densona.com

www.densona.com

A Member of Winn & Coales International





Engineering Specifications for **SeaShield Series 90** Timber Pile Protection System

1.0 Scope

- 1.1 This specification may be used for the materials and application of Denso SeaShield Series 90 for Timber Pile Protection.
- 1.2 The Engineer shall select appropriate sections of the specification to insure that the specification is comprehensive for specified work.

2.0 General Requirements

- 2.1 Contractor shall comply with all written recommendations of the manufacturer regarding application of the specified system.
- 2.2 The manufacturer of specified materials shall be Denso North America, 9747 Whithorn Drive, Houston, TX 77095, Tel: 281-821-3355 or 90 Ironside Crescent, Unit 12, Toronto, Ontario, Canada M1X1M3 Tel: 416-291-3435. E-mail: info@densona.com

3.0 Materials

3.1 Denso Marine Piling Tape

The Denso Marine Piling Tape shall be comprised of a non-woven synthetic fabric carrier fully impregnated and coated with a neutral petrolatum based compound with water displacing agents and wide spectrum biocides and backed with a thin layer of HDPE.

The Denso Marine Piling Tape shall have a character stable in composition and plasticity over a wide temperature range. The tape shall be non-hardening and non-cracking. The tape shall accommodate vibration and extreme movement of substrate. Highly resistant to mineral acids and alkalis.

The Denso Marine Piling Tape shall meet the physical specifications values listed on the specification sheet.

3.2 Flexible Plastic Outercover

The flexible plastic outercover shall be either High Density Polyethylene (HDPE) or Ethylene Propylene Diene Terpolymer Reinforced (EPDM-R). It shall be new, seamless non-rigid virgin material. Use of reprocessed resin is prohibited. The sheet shall be uniform throughout, free from dirt, oil and other foreign matter and free from cracks, creases, wrinkles, bubbles, pinholes and any other defects that may affect its service. The sheet shall conform to the following mechanical and physical properties.

<u>Physical Properties</u>	<u>ASTM Method</u>	<u>Typical Values</u>
Tensile Strength		
EPDM-R	10 lbf.	ASTM D-7004
HDPE	120 lb/in.	ASTM D-638
Breaking Strength		
EPDM-R	90 lbf (400 N)	ASTM D-7004
Elongation		
EPDM	250% min.	ASTM D-412
HDPE	560% min.	ASTM D-638
Specific Gravity		
EPDM-R	1.10	ASTM D-792
HDPE	0.90-0.96	ASTM D-1505
Low Temperature		
EPDM-R	-49°F	ASTM D-2137
HDPE	-100°F	ASTM D-746
Mil Thickness		
EPDM-R	+15/-10%	ASTM D-412
HDPE	+/-10%	ASTM D-1593

3.3 Nails

Nail shall be of two types:

a. Type I nails shall be nominal 1-1/2 inches in length, equipped with a neoprene washer 316 stainless steel. Ring Shank diameter shall be .135 inch with + or - 5%. Head diameter shall be 3/8" with + or - 10%.

b. Type II nails shall be nominal 2 1/2 inches in length, 316 stainless steel. Ring shank diameter shall be .131 inch with + or - 4%. Head diameter shall be .27 inch with + or - 10%.

3.4 Strapping

The nails may be substituted with Denso SmartBand straps and buckles

4.0 Installation

4.1 Cleaning and Surface Preparation

Identify piles to be protected with the outercover between elevations indicated in the drawings.

Remove marine growth, and foreign matter for the entire length which is to be protected with the barrier wrap. All surface projections such as nails, bolts, large splinters, fouling organisms and other surface conditions that would penetrate the outercover shall be removed.

4.2 Application of Denso Marine Piling Tape

The Denso Marine Piling Tape shall be wrapped onto the timber pile using a minimum 1" overlap. Application shall begin at the designated low point indicated in the specifications and drawings and proceed upward to the high point creating a weather board effect.

Hold end of the tape firmly against the starting point and firmly press onto the surface. Unroll the tape, keeping the roll close to the pile. Do not get a long lead of tape as it will tend to fold and gap on the surface being wrapped.

Apply sufficient tension to provide continuous adhesion, but do not stretch the tape. As application proceeds, press out all folds and air pockets that may occur.

Maintain a minimum 6" overlap when overlapping one roll with the end of a new roll.

At the completion of each roll, smooth the overlaps by hand in the direction of the spiral to insure sealing of the overlap.

4.3 Plastic Barrier Outercover

Locate the outercover between the elevations indicated in the specifications and drawings. Wrap the outercover around the pile to form a tight sheath with a minimum 3" overlap. Temporary straps may be used to hold the jacket in place prior to nailing.

4.4 Overlapping Outercover

Where it is necessary to utilize more than one outercover to protect the entire length of a pile, the second outercover shall overlap a minimum of 12 inches (above and or below) the inner cover. Rotate the vertical closure seam of the overlapping outercover 90 degrees from the vertical seam of the units above and or below. Install over-lapping outercovers as described in Part 4.2

4.5 Nailing

The vertical seam shall be secured to the pile with Type II nails every 10" or as needed. Type I nails shall be driven at a minimum of 8" or as needed around the circumference of the pile on the top and bottom of the jacket.

4.6 Strapping (Optional)

The strapping shall be placed every 10 inches on center from top to bottom. The top and bottom straps shall be placed 1" from the top and bottom of the outercover.

4.7 Mud Line Seal

Excavate the soil around the base of the piles so that the outercover extends to a minimum of 2 feet below the mud line. After installation of the outercover, back fill all excavated areas to the original mud line.



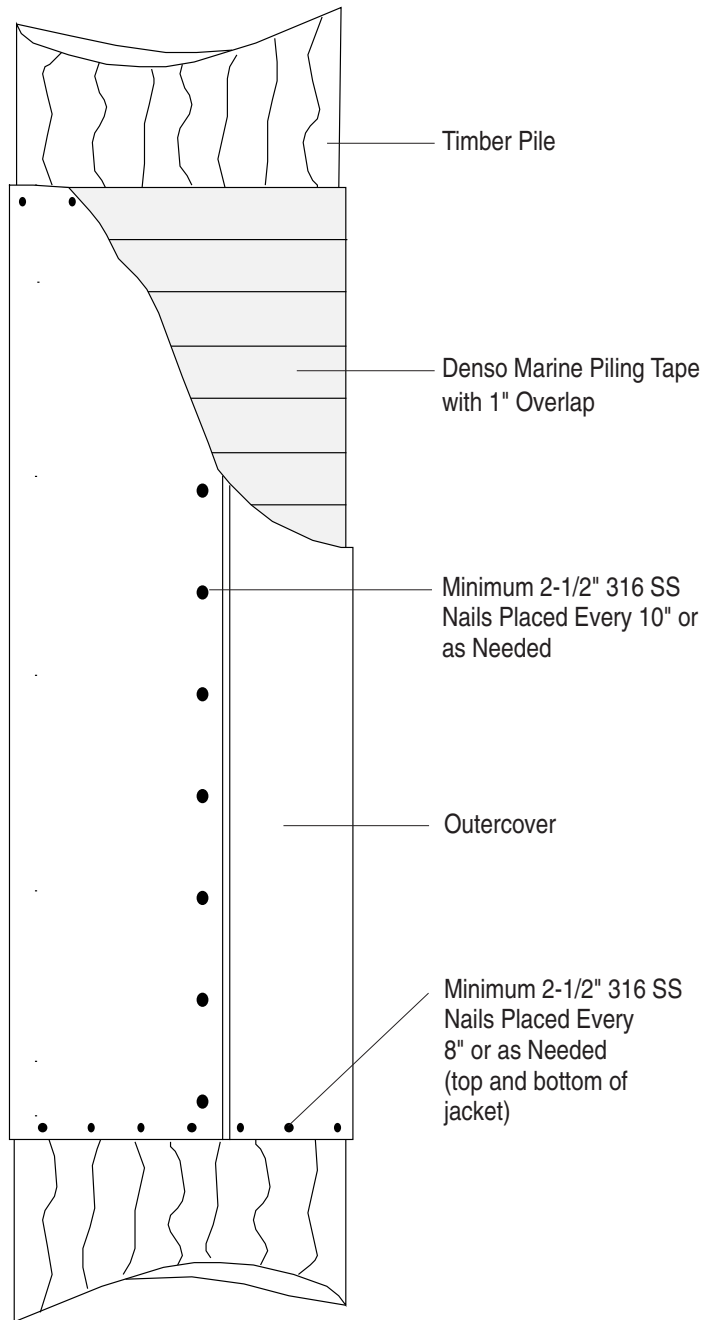
DENSO NORTH AMERICA

HOUSTON:
9747 Whithorn Drive,
Houston, Texas,
U.S.A. 77095
Tel: 281-821-3355
Fax: 281-821-0304

TORONTO:
90 Ironside Crescent,
Unit 12, Toronto,
Ontario, Canada M1X1M3
Tel: 416-291-3435
Fax: 416-291-0898

www.densona.com

A Member of Winn & Coales International



Elevation View

Sheet 1
(Not to Scale)

**SeaShield Series 90
Timber Pile Protection System**

