

Designed to protect the pile and surrounding areas from the environment. The tape covers and makes intimate con-



40 YEARS OF MARINE PROTECTION

APPLICATION INSTRUCTIONS

Seashield Series 80 System for Pile Protection

tact with the entire surface of any substrate in the splash or tidal zone.

1. SCOPE:

The series 80 system consists of Denso Seal T or Marine Piling (MP) Tape and Ultraflex 1500 or Densopol 80 tape, Primer, Mastic and Pilemesh outer protection all fastened with Smartband strapping and buckles.

2. USES:

For splash or tidal zone protection of steel, concrete or hollow segmented or universal piles in sheltered environments. Applicable to pilings that have a constant outside diameter (OD) throughout the length of the protection zone. For pilings without a constant OD Denso Seashield primer, mastic and prefabricated void fillers can be used to create a constant OD profile which enables the use of the system.

3. EQUIPMENT LIST:

Wire brush, powered wire brush, scraper, hammer and chisel, water blasting equipment (optional).
Brush cleaning solvent, utility knife, cleaning cloth, hand cleaner, barrier cream.
Diving gear and equipment or overalls, gloves and any other personal protection equipment deemed necessary by the Safety Data Sheets and Job Safety Analysis conducted prior

4. MATERIALS LIST:

to the commencement of any work undertaken.

- Denso Seashield Primer.
- Denso Seashield Mastic for filling and profiling irregular surfaces.
- Denso Seal T or Marine Piling Tape corrosion protection layer.

5. APPLICATION of TAPE SYSTEM:

a) Surface Preparation:

Surfaces to be protected must free from all marine growth, loose rust, original coatings, dirt etc.

The surface can be prepared by scraping, chipping, abrasive blast cleaning, high pressure water jetting, pneumatically or hydraulically driven tools such as scabblers, hull scrubbers, wire brushes, rotary scrapers and needle guns. Also hand tools such as wire brushes, scrapers and chipping hammers etc.

The choice of method will depend on a number of factors and will need to take into account the most practical with regard to site conditions and any environmental constraints imposed due to site



Figure 1. Preparing surface with high pressure water blasting. ▲

5. APPLICATION of TAPE SYSTEM (continued):

- Ensure that all thick layers of rust are removed from all steel surfaces.
- Remove all marine growth from the area to be protected .
- Areas of firmly adhering rust scale must be removed by chipping hammers and/or hand power tools.
- Remove corrosion deposits from the bottom of any deep pitting deeper than 2mm.
- Weld scars and protrusions of any kind (other than the welded seam on the pile) must be cut away and the surfaces ground smooth to remove sharp edges and sudden changes of profile.
- Wire brush and remove any loose and flaking paint. Wash off surface with seawater and bucket.

Precautions may need to be taken due to environmental concerns. During removal of any pre-existing coating measures should be taken to reduce the amount of debris, paint flakes or old coating etc. from being deposited into the marine environment. Local regulations may dictate certain precautions to be taken and conditions that need to be met as part of these works. A job site Environmental Management Plan may be available for guidance in these matters.

First Inspection:

When all growth, rust, etc. has been removed a close examination must be made of the surface area that has been prepared, to ensure a thoroughly clean surface without growth, sharp or protruding surfaces is obtained.

b) Priming:

Priming is always required when using Seal T Tape. Marine Piling Tape is regarded as self priming for new substrates. Denso Seashield Primer is applied to the surface area by gloved hand, cloth, roller or brush, at a spreading rate

Primer is required in;

- *Areas of deep pitting:* Defined as pits of 2.0mm or deeper where there is a danger of the tape wrapping 'bridging' the pits and leaving a void. These areas must be treated with a liberal coating of Seashield Primer to fill up any voids. If a very deep pit occurs then after priming cut a patch of Seashield Mastic and press firmly into the area.
- *Weld Scars:* Apply a liberal coat of Seashield Primer over these areas. After wrapping the pile with tape examine the area where scars occur. If there is any bridging cut with a sharp knife and press down to remove air. Patch with additional tape if required.
- *Spiral and Vertical Welds:* Apply a liberal amount of primer to the weld and smooth down by hand to create a fillet of primer either side of the weld. Sufficient should be used to avoid bridging when the tape is applied.



Figure 2. Cleaned pile showing the application of primer down the sides of a vertical weld seam and into pits. Shown is a hexagonal steel pile. The procedure is the same for circular concrete or

Second Inspection:



▲ **Figure 3.** Tape being applied under water.

c) Tape Wrapping:

For hexagonal or universal piles Denso can supply foamed void fillers specially designed to create a pile profile suitable for the use of this system. The voids are layered with Primer and Seal T Tape then the foamed void filler is placed into position creating a uniform external pile profile which enables the spiral application of tapes.

It is important to apply the tape with the correct side facing the pile. The outside of the tape roll is to make intimate contact with the piling substrate. The

Application of Seal T or Marine Piling Tape:

In the pile protection zone apply the tape by starting with two full circumferential wraps then proceed spirally along the pile progressing with a 55% overlap, giving effectively a double layer of tape. This will ensure a minimum double thickness of tape all the way. Carry on until the roll runs out. Commence each new roll by overlapping the last roll by the same length as the tape width, for example if the tape is 150mm wide then the overlap will

5. APPLICATION of TAPE SYSTEM (continued):

c) Tape Wrapping (cont):



As wrapping proceeds smooth by gloved hand to exclude water, air bubbles and wrinkles from under the tape and to aid sealing of overlaps. Any overlapped edges are to be moulded and blended together by hand. This process is repeated all the way along the protection zone finishing again with two complete horizontal turns of the tape.

Third Inspection:

It is imperative to thoroughly inspect the wrapped pile surface area ensuring it has been wrapped with the specified 55%

overlap, that all water, air bubbles and wrinkles are excluded from under the tape and that all overlaps are sealed, moulded and blended together.

It may be worthwhile assessing the number of piles that can be completed in a day so that only enough tape is applied for that same number of piles. Any Seal T or MP Tape that is left exposed should be temporarily protected with some HDPE sheet until the job can be finished. Do not leave tape only

◀ **Figure 4.** Pile being readied for third inspection after inner tape wrapping.

Application of Ultraflex 1500 or Densopol 80 Tape:

In the pile protection zone apply the Ultraflex 1500 or Densopol 80 Tape in a similar fashion to the Seal T or MP Tape by starting with two full circumferential wraps then proceed spirally along the pile progressing with a 55% overlap, giving effectively a double layer of tape. This will ensure a minimum double thickness of tape all the way. Carry on until the roll runs out.

Commence each new roll by overlapping the last roll by the same length as the tape width, for example if the tape is 150mm wide then the overlap will be about 150mm.

As wrapping proceeds smooth by hand to exclude water, air bubbles and wrinkles from under the tape and to aid sealing of overlaps. Any overlapped edges are to be moulded and smoothed down by hand. This process is repeated all

Fourth Inspection:

It is imperative to thoroughly inspect the Ultraflex 1500 or Densopol 80 Tape surface area ensuring it has been wrapped with the specified 55% overlap, that all water and air bubbles are excluded from under the tape and that all

6. APPLICATION of PILEMESH:

A sheet of Denso Pilemesh is cut to suit the circumference of the pile and tape with allowance for a 100 to 150mm overlap.

Denso Smartband strapping is then used to secure the Pilemesh at the top and bottom at most 50mm from its edge and at gaps of no more than 500mm apart.

Insert the Smartband strap teeth uppermost into one end of the buckle. Wrap the strap around the outside of the Pilemesh and insert into the opposite end of the buckle. Pull the buckle through hand tight before reverting to the Smartband fitting tool to complete tightening. Use the cutter blade on the fitting tool to remove excess strapping.

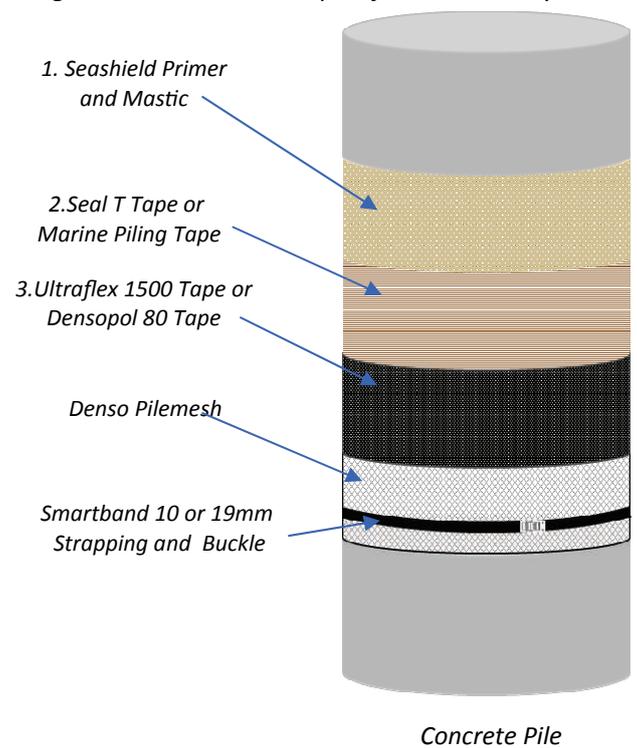
Ensure that all buckles are in the same vertical position on the pile near or on the overlap.

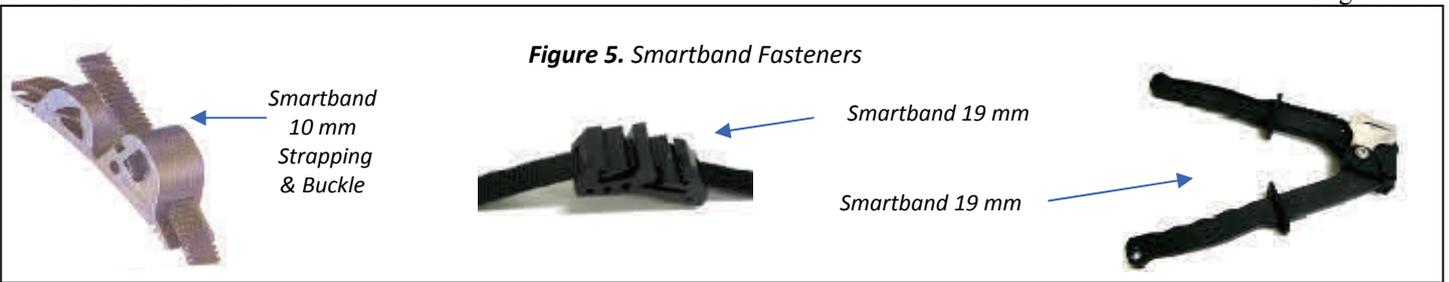
If possible the position of the overlap and buckles should be located on any sheltered side of the piles..

Final Inspection:

Check that all Pilemesh surfaces are smooth and flat around the pile, all strapping is not loose and that the Pilemesh is

Diagram 1. Illustrated example of the Series 80 System





7. SAFETY DATA:

Storage:	Denso Primer, Mastic and tapes shall be stored in a cool dry place out of direct sunlight between 5° and 25°C. Denso Pilemesh shall be stored the way they arrive and kept out of direct sunlight until they are required.
Transport:	Avoid prolonged exposure to high temperatures during transit, preferably in an enclosed vehicle.
Handling:	Denso Seashield Pilemesh shall be kept rolled and taped to prevent damage ready for transportation to the installation site. Care shall be taken to avoid sudden impact that may tear or damage the material.
Action in case of fire:	Extinguish with water fog, dry powder, carbon dioxide or chemical foam. Self-contained breathing apparatus may be required.
Skin Contact:	Wash with warm water and mild soap. Use pumiced heavy duty hand cleaner for stubborn stains.
Swallowing:	If feeling unwell, seek medical advice.
Inhalation:	In a fire situation avoid inhaling fumes.
Spillage:	No materials classified as hazardous. Pick up and collect material by hand or with absorbent rags or pads.
Disposal:	Incineration or landfill in accordance with local regulations.
Other:	For more information please refer to Denso safety data and technical data sheets. Available for all system components.



Approved Quality Management System
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