



Engineering Specifications for SeaShield 2020SP™ Sheet Pile Protection System

1.0 Scope

- 1.1 This specification may be used for the materials and application of SeaShield Series 2020SP™ for protection of sheet piles.
- 1.2 This specification may not cover all circumstances. The Engineer shall select appropriate sections of the specification to ensure that the specification is comprehensive for specified work. This Specification Guide does not constitute a risk assessment. We recommend that installation is carried out with due regard for Health and Safety.

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 supplied by Denso (Australia) Pty Ltd.

3.0 Materials

- 3.1 Denso SeaShield™ Primer
 - 3.1.1 The Denso SeaShield™ Primer shall be comprised of saturated petroleum hydrocarbons (petrolatum), inert fillers and passivating agents.
 - 3.1.2 The primer is used to displace moisture, passivate surface oxides and fill surface imperfections on severely corroded areas.
 - 3.1.3 The physical specification values shall meet the values given on the data sheet for the Denso SeaShield™ Primer.
- 3.2 Denso Mastic™
 - 3.2.1 The Denso Mastic™ shall be comprised of saturated petroleum hydrocarbons (petrolatum), inert fillers, reinforcing fibers and thermal extenders. Variations may contain beads of cellular polymer and flow control additives.
 - 3.2.2 Denso Mastic™ shall be cold applied self-supporting

Mastic for molding around irregular shaped fittings to provide a suitable profile for applying the Denso Marine Piling Tape™.

- 3.2.3 The physical specification values shall meet the values given on the data sheet for the Denso Mastic™.
- 3.3 Denso Marine Piling Tape™
 - 3.3.1 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 inert siliceous fillers, water displacing agents and inhibitors. It is backed with a HDPE film.
 - 3.3.2 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. Superficial oxidation renders surface less tacky. Highly resistant to mineral acids and alkalis.
 - 3.3.3 The Denso Marine Piling Tape™ shall meet the physical specifications values listed on the data sheet.
- 3.4 SeaShield 2020SP Jacket
 - 3.4.1 The SeaShield 2020SP Jacket shall be comprised of High Density Polyethylene (HDPE). It shall be new, seamless 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, pin-holes and any other defects that may affect its service.
 - 3.4.2 The SeaShield 2020SP Jacket is used to prevent damage to underlying Denso Marine Piling Tape™. The jacket will be custom engineered to have the correct fit for the profile of the sheet pile wall. The jackets shall be manufactured with Denso proprietary equipment to ensure quality fabrication.
- 3.5 Wall Attachment Spine, welded clamp bar and plates
- 3.6 SeaShield™ Bolts, Nuts & Washers
 - 3.6.1 316 Stainless Steel fasteners for attachment of jacket to wall attachment spine.

- 3.7 SeaShield™ Foam Blocks
 - 3.7.1 SeaShield™ Foam Blocks shall be comprised of polystyrene.
- 4.0 General Surface Preparation Requirements**
- 4.1 Remove weld spatter, sharp points and edges.
 - 4.2 Remove marine growth, loose rust, paint and foreign matter by hand and /or power tools.
 - 4.3 A hydraulic whirl away or high-pressure water blasting may be used to prepare the surface.

5.0 Application

- 5.1 Using short section of spine and foam blocks, locate where spine will attach. If capping beam is in place, locate spine 5 mm below capping beam. Locate clamp bars using location tool to ensure correct spacing. Weld to sheet pile using 50mm length, 5mm fillet welds each side at attachment points. Welding to be in accordance with AS1544.1 GP.

Fill joints in sheet piles with SeaShield Mastic™ and prime area underneath spine attachment with SeaShield™ Primer at a rate of approximately 1 L per square metre.

- 5.2 For U-Piles: place 2 layers of the tape underneath spine attachment, extending beyond spine.
Place spine-filler foam block into cavity of spine.
- 5.3 For Z-Piles: place 1 layer of 300 mm wide tape over clutch underneath spine attachment area.
Fill area with SeaShield Mastic™ to shape spine cavity and finish with layer of tape.
Use short length of spine to check correct profiling has been achieved. Ensure no mastic under feet of spine.
- 5.4 Install clamp plates to hold spine in place and tighten bolts to minimum 20Nm.
- 5.5 Install adjacent and above/below spines, with 5 mm gap vertically between spines that are stacked.
- 5.6 Fill any joints with SeaShield Mastic™ and primer remainder of wall between spines.
- 5.7 Apply primer to clamp plates and bar and apply SeaShield Mastic™ between and around clamp plates.
- 5.8 Apply tape vertically between spines ensuring minimum 55% overlap.
- 5.9 Ensure tape overlaps over clamp plates. Ensure minimum 2 layers of tape.
- 5.10 Use short section of foam block to check if any areas require additional tape or profiling mastic, including clamp bar and plates.
- 5.11 If using capping plate at top or bottom of system, apply with brackets and place polyurethane sealant as per installation manual.

- 5.12 Apply primer to back of foam blocks to promote adhesion to tape.
- 5.13 Insert foam blocks on either side of the spines, ensuring that the fit is tight, snug and secure.
- 5.14 Install jacket onto studs just enough to get all washers and nuts installed. Using a cordless impact driver with deep drive socket, starting from one side tighten each nut a small amount and then repeat on other side of jacket. Repeat sequence multiple times until all nuts are tightened.
- 5.15 Additional jackets may be installed above or below with overlap section.
- 5.16 Tie rod covers will be installed after jacket is tightened. Trimming of spines, jacket and foam blocks may be required prior to installation in above steps.

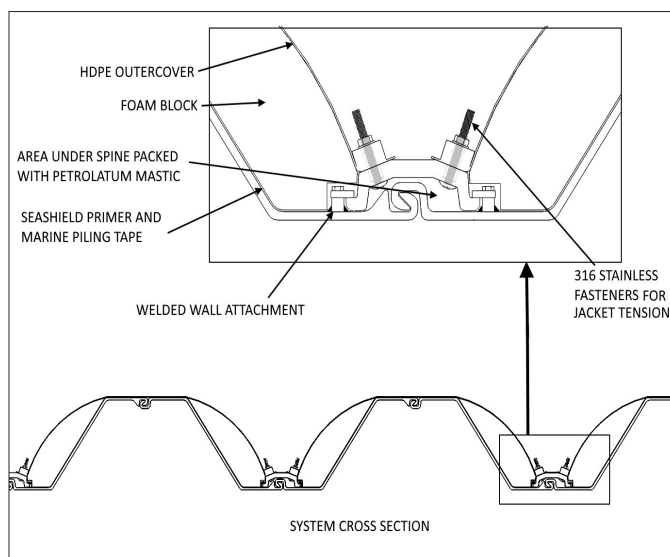


Figure 1: SeaShield 2020SP™ System cross-section.

Note: Detailed drawing and instructions are provided for every project, showing layout of components, installation instructions for special items such as tie-rod covers, top/bottom capping plates or other wall features.



DENSO (AUSTRALIA) PTY LTD

77-95 National Boulevard
Campbellfield, VIC 3061
Tel: +61 3 9356 7600
Fax: +61 3 9356 7699

www.densoaustralia.com.au

A Member of Winn & Coales International