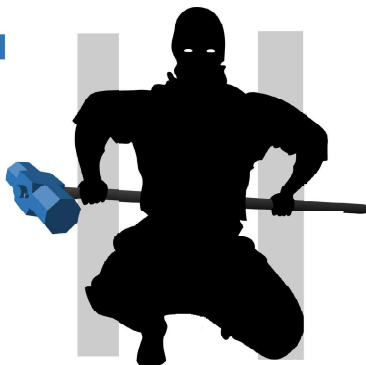




# T N E



Plastic Piling Company  
[www.plasticpiling.ninja](http://www.plasticpiling.ninja)  
Tel 01543 677290

***The use of hydro-swelling  
sealants***

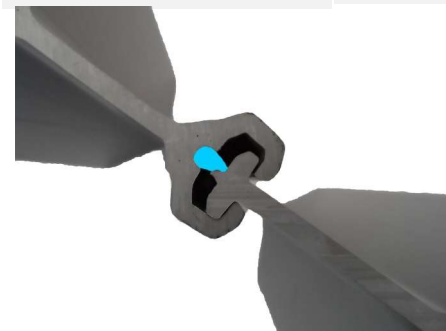


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Plastic sheet piling has proven as an excellent means of controlling water; either guiding it through channels, or lining those channels to prevent erosion or acting as an impermeable barrier. The nature of the material lends itself to longevity, with its outstanding corrosion and chemical resistance, combine with this is the fact, that the interlocks are well designed for these applications and are constantly improving.



For instance, standard MultiLock®, our flagship product is not only one of the most modern designs in plastic piling, but it is constantly evolving, most recently the interlock I beam design has been improved with the addition of a groove in the female and a sealing blade on the male. The latest development is the introduction of a With future developments assessing the use of an elastomeric blade to stay even further ahead of the competition.



What is clear is the performance of our plastic sheeting piling, provides exceptionally better sealing than can be expected with cold form trench sheeting, the cost and strength comparable alternatives. Add to this the improvements in design we have introduced to facilitate installation and it is clear why plastic piling is creating such excitement in this area. The ability of retaining or cut-off walls to prevent the passage of ground water is of great importance in many applications e.g. basements, underground tanks etc. Sealed sheet pile cut-off walls can be used to prevent leachate from contaminated ground or refuse and disposal sites leaking beyond the boundaries of the site. Traditionally these barriers to horizontal movement of liquids have been made using clay bunds or cement bentonite walls. These traditional methods take up larger areas of the ground, and are generally formed away from the edge of the site and are prone to leakage. It should be noted that concrete and slurry walls systems are porous in the long term and, as they are both relatively brittle materials, their ability to retain water will diminish if cracks appear as a result of movement or exposure to loading fluctuations.



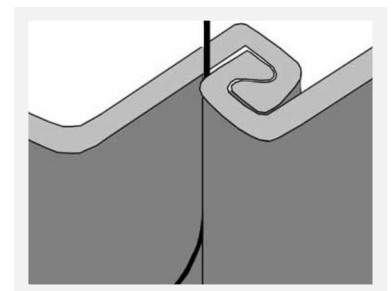
Sheet pile barriers offer a sealed solution on a much smaller footprint and the barrier can be placed at the site boundaries to maximise the ground area contained.

The photos (right) show an excellent example of the sealing nature of plastic piling, MultiLock® plastic sheet piling was used to create a basic water control structure, the time variance between the pictures is approximately one day.



The hydraulic performance of plastic piling has been assessed over the years and the efficiency of the cut-off has been related to the design of the interlocks and the distribution of the interlocks. Basically, the interlocks are the leakage point and the design of interlock will influence water tightness and clearly the wider the plastic sheet piles, the fewer the interlocks—and less leakage. The hydraulic head also influences, the greater the water pressure the greater the leakage. Leakage can also occur under the piles, if they have not been driven deep enough—toed into a watertight soil. It is imperative therefore that sheet pile selection is one that has minimal clutches, but the best driveability— Our advanced range offers exactly that. (Truline does have a narrower width than MultiLock and ProLock, but it does have double interlocks.)

In common with steel sheet piling, leakage can be reduced and in most cases eliminated by using a sealant, typically one that is hydro-swelling—expands to several times its original volume when in contact with water. The water tightness of sheet pile interlocks almost invariably improves with time, but a sealant will provide a means by which the flow or passage of water can be controlled immediately.



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A number of options have been proposed for sheet piling, particularly products like KM string or Swellseal R; these are an elastomeric rope, of which some or all is hydro-swelling, in our own tests, we have found that these are better for non-driven applications as they increase interlock friction dramatically,.

Fortunately, many of the companies that produced these strings, also produce a mastic version and the best we have come across (available from THE Plastic Piling Co.) is the GCP (Grace Construction products) Swellseal WA Mastic.

This is a one-component, hydro-swelling polyurethane, mastic for sealing construction joints in wet and underwater applications. So a practical option for typical site conditions, it is solvent free and easily adheres to PVC, expanding 200% its original volume, when in contact with water. It is durable and offers great chemical resistance particularly resistant to petroleum products, mineral and vegetable oils and greases.



#### Application method

For the 310cc cartridges, break the moisture proofing aluminium foil on the top of the cartridge and cut the nozzle diagonally at the appropriate position. Place the cartridge into a caulking gun.

Whilst within test conducted with the Europile, the Swellseal Mastic was used in a cured stated, its manufacturers have stated that it can also be used "wet". Wet driving allowing the contractor to drive the sheets immediately after application of the Swellseal Mastic.



#### Preferred "Wet" Method

1. Lay the sheets out with the female side of the pile accessible.
2. Clean all foreign material from the interlock.
3. Immediately before applying the sealant, blow the interlock clean with compressed air.
4. Apply an bead of sealant, between 4mm - 9mm of Swellseal Mastic, although it is important not to overfill the clutch.
5. Then using a brush or silicon spatula spread the sealant along the clutch to provide a good even coverage.
6. Drive the sheet pile fitting over a previously driven sheet, on the leading male. Some will inevitably be scraped off during installation, but upon exposure to water the expansion of the mastic will fill all possible leakage spaces.



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• **technical data/properties**

| Property                                | Value                                              | Norm                  |
|-----------------------------------------|----------------------------------------------------|-----------------------|
| Solids                                  | 100%                                               | Test DNC              |
| Uncured                                 |                                                    |                       |
| Viscosity                               | Gel / Paste                                        | Test DNC              |
| Density (at 20°C)                       | Approx. 1,45 kg/dm <sup>3</sup>                    | Din 53504             |
| Slump in vertical applications          | < 5 mm                                             | Boeing test           |
| Hand dry (at 20°C and 60% RH)           | 10 h                                               | Test DNC              |
| Flash Point                             | > 130 °C                                           | Pensky-Martens method |
| Cured (7 days at 25°C, 10 mm Thick)     |                                                    |                       |
| Swelling capacity in contact with water | Swells to approx. 200% of its original dry volume. | Test DNC              |

Alternate "Cured" method

1. Lay the sheets out with the female side of the pile accessible.
2. Clean out all foreign material.
3. Immediately before applying the sealant, solvent wipe the clutch.
4. After the solvent flashes off, apply a 4-10mm bead of Swellseal Mastic, again careful not to overfill.
5. Tool the Swellseal Mastic in the clutch to roughly the shape of the male interlock, in many cases it is convenient to brush cover the female interlock to ensure maximal coverage.
6. Store the Sheet piles in such a way that they will not get standing water in the clutch.

For panel driving, the actual methods is a combination of wet and cured, panels are formed whilst the sealant is "Wet", but end female interlock is allowed to cured prior to installation. Due to its special formulation , Swellseal Mastic WA cures and swells in the presence of moisture . Curing time is dependent on the temperature and humidity conditions, and will become firm on around 24-36 hours. Performance is not affected by the curing time.

**Certificates/approvals: WRAS - Drinking water approval - UK**

• **appearance**

- During application pasty, after curing rubbery.
- Colour: grey.

• **consumption**

| Nozzle diameter | Length (cartridge) |
|-----------------|--------------------|
| 3 mm            | 20 - 25 m          |
| 6 mm            | 8 - 10 m           |
| 8 mm            | 4 - 5 m            |
| 10 mm           | Approx. 3 m        |

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## 1. Identification of Substance / Preparation and Company

Name of preparation : SWELLSEAL MASTIC WA  
Recommended use : Caulk applied hydroswellng sealant for joints in concrete structures  
Company : De Neef Construction Chemicals NV/SA, Industriepark 8,  
2220 Heist-op-den-Berg, Belgium  
Telephone : + 32 15 24 93 60  
Fax : + 32 15 24 80 72

## 2. Composition / Information on ingredients

| hazardous ingredient | CAS-number | conc. (% w/w) | hazard classification | Risk phrases            |
|----------------------|------------|---------------|-----------------------|-------------------------|
| toluene diisocyanate | 26471-62-5 | < 0.1 %       | T                     | R23<br>R36/37/38<br>R42 |

## 3. Hazards Identification

May be irritating for eyes, skin and respiratory system.

## 4. First Aid Measures

General advice : In case of doubt or with persisting symptoms obtain medical attention. Never pass anything through the mouth of an unconscious person.

Skin contact : Remove soiled clothing. Wash skin with soap and water. Do not use solvents or thinners. Seek medical advice if irritation develops.

Eye contact : Rinse immediately with eye wash or clean water for at least 15 min. Contact lenses should be removed. Seek medical attention.

Ingestion : Immediately rinse mouth out. Do not induce vomiting. Seek immediate medical advice.

Inhalation : Unlikely

## 5. Fire Fighting Measures

Suitable extinguishing media : carbon dioxide, dry powder, water or foam  
Unsuitable extinguishing media : none  
Exposure hazards : at combustion smoke, carbon monoxide, nitrogen oxides, isocyanate vapors and traces of cyanides may be formed.

Special protective equipment : fire fighters should wear full protective clothing and self contained breathing apparatus.

## 6. Accidental Release Measures

Personal precautions : Ensure adequate ventilation if working in confined spaces. Avoid contact with eyes and wear protective clothing. Caution : spillages may be slippery.

Environmental precautions : Prevent material from entering sewage system, water courses or water treatment installations.

Methods for cleaning up : Spread sand or industrial absorbent over spillage and transfer into labelled containers for disposal. See section 13 for disposal considerations. Spilled material will polymerise under atmospheric moisture.

## 7. Handling & Storage

Handling : Never spray the product; do not drink, eat or smoke during handling.

Storage : Keep containers dry and closed. Store in original containers.  
Storage temperature 5 - 25 °C.

## 8. Exposure Controls / Personal Protection

Respiratory protection : Normal conditions of ventilation are usually adequate. Wear a fine particle mask or respirator, or use local exhaust ventilation as necessary when using in confined areas with inadequate ventilation.

Hand protection : Use protective gloves. Suitable types are pvc or neoprene. If in doubt seek advice from a reputable manufacturer. Barrier creams help to protect exposed areas but are no substitute for full physical protection. They should not be applied once exposure has occurred.

Skin protection : Cotton or cotton/synthetic overalls or coveralls are normally suitable. Grossly contaminated clothing should be removed and the skin washed with soap and water or a proprietary skin cleaner.

## 9. Physical and Chemical Properties

|                        |                         |
|------------------------|-------------------------|
| appearance :           | grey paste              |
| odour :                | sweet                   |
| pH :                   | not applicable          |
| flash point :          | not applicable          |
| autoflammability :     | > 450 °C                |
| explosive properties : | not applicable          |
| vapour pressure :      | not applicable          |
| relative density :     | ± 1,5 g/cm <sub>3</sub> |
| solubility in water :  | not soluble             |

## 10. Stability and Reactivity

|                                    |                                         |
|------------------------------------|-----------------------------------------|
| Stability :                        | Stable under normal ambient conditions. |
| Materials to avoid :               | Water, amines and alcohols.             |
| Hazardous decomposition products : | None in ambient conditions              |

## 11. Toxicological Information

No information on the product itself is available.

## 12. Ecological Information

No information on the product itself is available.

## 13. Disposal Consideration

Do not allow into drains or water courses or where ground water or surface waters may be affected. Ensure any containers containing waste material are correctly labelled. Wastes, including emptied packing, are controlled wastes and should be disposed of in accordance with local, state or EC regulations at an authorised site.

## 14. Transport Information

Not considered as dangerous goods under transport regulations.

## 15. Regulatory Information

No classification required.

## 16. Other Information

Training advice : Do not use unless trained to do so.

Recommended uses : The product is only supplied for use in accordance with uses listed in sec. 1.

This Material Safety Data Sheet conforms to EC Directive 91/155/EEC.

The information given here is to the best of our knowledge true and accurate and provided solely for making safety assessments. The information on its own is not a specification or an indication of suitability for a particular use.



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