



SubShield



MARINE
Sustainable Performance

Description:

SubShield is a two-component, solvent free, 100% solid, epoxy based underwater putty/coating, formulated from special selected epoxy combinations, and it is glass flake reinforced.

SubShield is ideal for underwater repairs

- Near VOC Free
- No dew point restrictions
- Outstanding resistant against chemicals and solvents
- Excellent adhesion and abrasion resistance
- Ideal for use on wet and saturated metal and concrete

Recommended Uses:

Specially designated for application underwater or in very wet areas as a high viscosity repair coating/compound for damaged surfaces

- Structural steelwork
- Lock doors (above and below water level)
- Ships, Offshore and Marine structures
- Tank repairs
- Swimming pools and ponds
- Repair of cracks, including old and damaged concrete

Specifications:

Specific gravity:	1,33 ± 0,05 g/cm ²	
Colour:	Oxide Yellow	
Solids (vol.):	98,9% ± 1%	
Solids (wt.):	98,6% ± 1%	
VOC:	19 gr/litre	
Potlife at 20°C:	30 minutes	
Shelf life:	24 months, unopened	
	Store indoors at 5°C to 40°C	
Mixing Ratio:	A : B; 2,41 : 1 (weight), 1,52 : 1 (volume)	
Thickness range:	500-2500 µm (20-98 mils)	
Cure:	10°C	25°C
Touch dry	-	-
Hard dry	48 hrs.	24 hrs.
Full cure	9 days	7 days
Re-coating interval:	Not applicable	

H2O Marine B.V.

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Qualifications:

SubShield applied at 1500 µm on a 10 mm thick grit blasted mild steel panel has passed the test requirements as mentioned in NEN-EN-ISO 12944-6 (2018) Im2 H.

Pull Off Adhesion: The dolly Pull Off strength on 10 mm thick grit blasted mild steel, as determined in accordance with ISO 4624, following a 7-day cure at 20°C, will typically be:

Clean and dry: > 18 MPa*

Wet > 15 MPa*

Underwater > 12 MPa*

*Cohesive failure of SubShield

Shore D Hardness (ASTM D2240) 72*

Elongation (ASTM D638) 4.1%*

*7-days cure at 20°C

Application Equipment:

Reducer/Clean up

Equipment: H2O Solvent E

Application

Small areas: Brush, roller, trowel, putty knife, spatula or mitt/glove

Large areas: Power brush/roller, PVC Sheets

Application Conditions:

Temperature

Surface: Water temperature 5°C (41°F) minimum, 40°C (104°F) maximum.

Material: 10°C (50°F) Minimum. Material should be kept in an environment as near as possible to room temperature for at least 24 hours prior to application.

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Preparation of steelwork

The performance of this product will depend upon the degree of surface preparation. The surface to be coated must be clean and free from contamination. Prior to paint application all surfaces should be assessed and treated in accordance with ISO 8504:2000.

Accumulated dirt and soluble salts must be removed. Dry bristle brushing with normally be adequate for accumulated dirt. Soluble salts should be removed by freshwater washing.

Oil and/or grease should be removed in accordance with SSPC-SP1 solvent cleaning.

Iron & Steel

Remove all oil and grease from the surface by Solvent cleaning as per SSPC SP-1. Remove all weld spatter and round all sharp edges by grinding. Minimum surface preparation is Commercial Blast cleaning Sa2. Blast clean all surfaces using a sharp, angular abrasive for optimum surface profile (75µm to 100µm/3 to 4 mills). The blast cleaning operation produces large quantities of dust and debris which must be removed from the abraded surface. Or use waterjet cleaning according to SSPC-SP WJ2 (L)/NACE WJ-2 (L), see SSPC- VIS4/NACE VIS7 for reference photographs. Waterjet cleaning does not provide the primary anchor pattern on the metallic surface known as "surface profile" and is therefore not applicable on new steel. Prime any bare steel the same day as it is cleaned or before flash rusting occurs.

Immersion

When applying to bare steel substrates below water or in permanently wet conditions, the surface should be prepared by power discing with a carborundum disc or needle gun to achieve a clean roughed surface in accordance with SSPC-SP11 Power Tool Cleaning.

Previously painted surfaces

In order to prepare a strategy for maintenance painting, it is important to undertake a survey to determine whether part or full re-painting is required, where coatings are found to be firmly adherent to the substrate with no indication of breakdown, they can be considered as a suitable base for the maintenance coats.

The surface condition of the existing paint should be thoroughly washed to remove contaminants, and it may then be necessary to abrade the surface lightly especially of hard and shiny coatings, to enable good adhesion.

Where the breakdown is localized, and the majority of the protective coating is intact and soundly adherent to the substrate, then the small areas of breakdown can be prepared back to the substrate for localized repainting. Ideally, the affected areas should be prepared to a standard as mentioned above, e.g. localized blast cleaning or by manual and mechanical methods where blasting is impractical. Feather the edges to insure proper adhesion of the repainted surface.

In maintenance painting operations after surface cleaning of the substrate, even by dry blast cleaning to Sa 2½ standard, there may be contamination with salts produced by the corrosion process. Old steel structures that are pitted by corrosion are more likely to have salts of ferrous sulphate and iron chlorides retained within the pitted areas and their presence needs to be determined prior to painting. The maximum allowable contamination is 50 mg/m².



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Application Procedures:

The product components and the mix ratios are given on the product labels. Ensure the correct quantity and type for the given pack size is used.

Premix component A with a power mixer at moderate speed to homogenize the container, add the hardener to the base and agitate with a power mixer for 2-5 minutes until completely dispersed, paying attention to the side and bottom of the container. NOTE: since the potlife is limited and shortened by high temperatures, do not mix more material than will be used within the potlife period (approx. 25 min. at 20°C).

Spreading rates are calculated on volume solids and do not include an application loss factor due to surface profile, roughness or porosity of the surface, skill and technique of the applicator, method of application, various surface irregularities, material lost during mixing, spillage, over thinning, climatic conditions, and excessive film build.

Application under water will reduce coverage rates further

Clean the tools immediately after use with H2O Solvent E. Flushing of application equipment is essential before any break in work and is recommended at regular intervals throughout the application procedure. Only mix units of SubShield as they are required for immediate use.

Drying times and curing times should be considered as a guide only.

Pot-life is dependent on ambient and material temperature, the hotter the material the shorter the pot life.

Vigilant care and attention to pot life is required during application – if gelling has started, do not apply!

Application – Offshore (intermittently Wet Area)

A. Use PVC mesh cut to size and wrapped tightly around the substrate. Use wire to secure the mesh film firmly so that it does not slip. All wire must be tacked under the mesh. After mixing, force the SubShield well into the mesh using rubber trowel, spatula and/or gloved hands.

B. Lay a sheet of PVC cloth on the ground and coat with SubShield to approx. 2 mm. Place the coated PVC onto the steel and wrap around the substrate using a rope or wire to keep it in place. The PVC sheet can be peeled off after the coating has cured.

Application – Underwater

This is a fairly difficult technique which requires thorough planning. For small areas, limited handleable quantities of SubShield should be mixed and then taken by diver to the area to be repaired. For larger areas, either of the methods described above can be used.

Always ensure small amounts of material are fully adherent to the substrate before progressing.



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Limitations:

Active or passive CP systems will produce electrical fields which can affect the bonding of the coating; the CP systems therefore must be isolated, and the surface allowed to depolarize.

There can be pre-existing electrical charges in underwater structures which may interfere with bonding, ALWAYS carry out a small test patch in actual marine environment.

There are no CP difficulties in fresh water or with non-conductive surfaces such as concrete, fibreglass or wood.

Safety Precautions:

Danger!

Intended for professional use only. Obtain and Read H2O Marine's Safety Data Sheet for this before using.

Keep out of reach of children

First aid: If affected by inhalation of vapor or spray mist, remove to fresh air. If breathing difficulty persists or occurs later, consult a physician and have label information available. In case of eye contact, flush immediately with plenty of water for at least 15 minutes and get medical attention; for skin, wash thoroughly with soap and water. If swallowed, do not induce vomiting. Get medical attention immediately. Wash clothing before reuse. Thoroughly clean or destroy contaminated shoes.

Keep container closed when not in use. If spilled, contain spilled material and remove with inert absorbent. Dispose of contaminated absorbent, container and unused contents in accordance with local, state and federal regulations.

Ordering Information:

Packaging:	5 and 20 Liter sets
Product code:	0509101-xx
Weight :	Comp. A: 1,51 g/cm ³ .
	Comp. B: 1,04 g/cm ³ .
	Mixed: 1,33 g/cm ³

Warranty:

H2O Marine B.V. warrants her products to be free of manufacturing defects in accord with applicable H2O Marine quality control procedures. Liability for products proven defective, if any, is limited to replacement of the defective product or the refund of the purchase price paid for the defective product as determined by H2O Marine B.V. NO OTHER WARRANTY OR GUARANTEE OF ANY KIND IS MADE BY H2O Marine B.V., EXPRESSED OR IMPLIED STATUTORY, BY OPERATION OF LAW OR OTHERWISE, INCLUDING MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

Disclaimer:

The information and recommendations set forth in this Technical Data Sheet are based upon tests conducted by or on behalf of the H2O Marine Company, such information and recommendations set forth herein are subject to change and pertain to the product offered at the time of publication.

Consult your H2O Marine representative to obtain the most recent Technical Data Information.

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