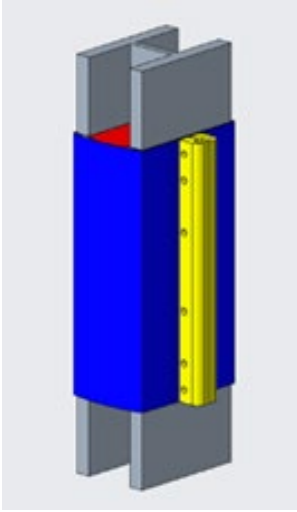


General description



RETROWRAP H is a wraparound corrosion protection solution for inshore splash zone and underwater corrosion protection for H-piles. RETROWRAP H is specifically designed as a long-term solution to endure rough conditions at hard storms and big temperature variations.

RETROWRAP H is designed to suit H-pile sizes up to about 1 X 1 m (39" X 39") square dimensions and it can be interlocked to accommodate any required protected length.

First class corrosion protection is achieved by wrapping the protected area with corrosion protection inhibitor gel impregnated into a felt layer. The felt is pressed and held in place by tailor made urethane fill-up pieces (in the H-pile middle part) and finally the tensioned outer coated fabric panel. Ends of the Retrowrap assembly are sealed to ensure a solid solution. RETROWRAP H panels are a multi-layer monocoque construction, like in Retrowrap HD2, consisting of a polymeric textile reinforcement encapsulated within the polyurethane matrix and outer layer.

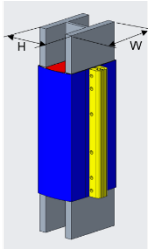
Full-length closure flanges are factory-fitted with corrosion-resistant marine grade fasteners designed to retain Retrowrap in position throughout its service life. During installation, the flanges permit the creation of induced hoop tension within the multilayer fabric, which induces the corrosion-inhibited gel to flow and totally encapsulate and protect the substrate without the use of primers, fillers or tapes.

The materials in the system are stressed below their operational limits ensuring a high safety factor in all parameters while in service, and they resist both high wave suction forces and heavy sea growth. If accidentally punctured, the hoop tension will cause the gel impregnated within the inner layer carrier to be exuded from the damaged area and "self-seal". The inhibitor within the gel will neutralize any oxygenated water which has permeated through the damaged wrap at the time of impact. The design of the laminar membrane and the hoop tensions involved combine to ensure that in the extremely unlikely event of a tear being introduced to the RETROWRAP H, the tear will not propagate.

RETROWRAP H Installation is cost effective, fast and easy. Using our specially designed draw bolt installation set, installation can be accomplished fast and safely even in demanding installations conditions. A minimum of ancillary materials is used in order to reduce to a minimum the possibility of human error and/or non-compatibility of components in the installation of the system. See RETROWRAP H installation instructions for further information regarding the installation procedure.

Features & benefits

- Maintenance free corrosion protection concept
- Cost effective installation. Quick, easy and safe to install
- Environmentally friendly and low lifespan Carbon Footprint due to long design lifetime, 25 years.
- Minimal operational lifetime costs
- Easy removal and replacement for inspection
- Minimal pile surface preparation -does not require substrate shotblast preparation
- Cold-applied – no hot work permit required
- Hoop tension forces created within the outer skin resist high wave suction forces and sea growth
- Material to retain hoop tension throughout the projected operational life of the fabric
- Multilayer fabric, heavy-duty construction
- Supplied in interlocking modular lengths
- Polyurethane provides the highest abrasion resistance
- Provides active protection with environmentally safe corrosion inhibitors
- Excellent UV, Ozone and Oxidization resistance
- Resistance to high climactic temperature variations and hydrocarbon oil contamination
- May be fitted with corrosion rate monitoring



Technical specification

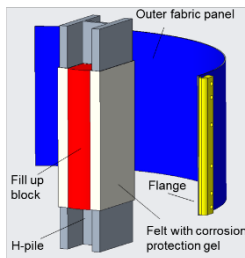
RETROWRAP H

Wrap Main Components

- Inner layer with felt, saturated with corrosion protection gel, Retrogel P or Retrogel S
- Polyurethane fill-up blocks
- Thermoplastic Polyurethane outer fabric panel
- Extruded marine and impact resistant polymetric closure flanges
- Marine grade stainless steel fastening bolt sets

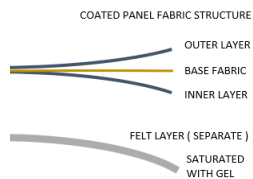
Product Data:

Product name	Retrowrap H	For H-piles
Product HS Code	39269092	Including fasteners
Pile Size applicable	Up to W:1000 mm x H:1000 mm (39"x 39"), typically	If bigger contact CCI Oy
Wrap Height (Pile height to protect)	Custom-made according to customer needs. Depending on protected height , wraps are made in one, two or several pieces	Typical one piece height 1 - 3 meter
Wrap Weight, (as delivered)	2,6 ± 0.2 kg/sqm (~ 0.53 lb/sq ft), excluding felt and fill up blocks	
Felt Weight (as delivered)	3,6 ± 0.2 kg/sqm (~ 0.74 lb/sq ft) , including gel	@ gelling ~3 kg / sqm (~ 0.61 lb/sq ft)
Fill up blocks	Polyurethane, Custom-made for each pile size and type	
Wrap max total thickness as installed, including flanges	55 ± 2 mm (2.16 ± 0.08") at fastening flanges Panel only ~ 4.8 mm (~ 0.19")	Distance from pile/structure surface
Fastening Bolts	Stainless steel, Marine Grade A4 (316) , M10 DIN 931	HS 73181575
Fastening Nuts	Stainless steel, Marine Grade A4 (316), M10 DIN 934	HS 73181631
Fastening Washers	Stainless steel, Marine Grade A4 (316), M10 DIN 125 or DIN 522	HS 73182200
Nylon Nuts (Optional	M10 PA 6.6, DIN 555	HS 39259080
Wrap Operating Temperature	-20 to +90°C (-4 to +194°F), using Retrogel P gel -40 to +120°C (-40 to +248°F), using Retrogel S gel , case by case	Normal conditions contact CCI Oy
Storage Recommendations	Max +50°C (122°F) ambient temp , non-dusty area, no direct exposure to sun	In crates



Panel specifications

Panel Type	Reinforced coated multi layer fabric	
Outer and inner layer coating	Thermoplastic Polyurethane, TPU	
Color	Black	
Base fabric type	Polyester , PES	
Fabric weight (excl. felt)	1.6 kg/sqm (~ 0.33 lb/sq ft)	
Felt type	Polyester	
Felt weight	0.6 kg/sqm (~ 0.13 lb/sq ft)	
Fabric thickness including felt	4.5 mm (0.177")	
Tensile strength MD/XMD	4000/3000 N/5cm	DIN53354, EN ISO 1421
Tear strength MD/XMD	550/450 N	DIN 53363
Coating adhesion	170 N/5cm	IVK 3.13
Accelerated weathering	7000 hours , excellent	Supplier
Closure Flanges / Rods	Geon , Vinyle / PVC	



Gel specifications

Gel name	Retrogel P	Retrogel S
HS Code	34039900	34039900
Operating Temperature Range	-20 - 90°C (-4 - 194°F)	-40 - 120°C (-40 - 248°F)
Base material , approximate	Refined petroleum wax, 50 %	Flourocarbon gel, 90%
Corrosion inhibitor, approximate	Thixotropic media, 40 %	10%
Other , approximate	Oxyalkylates, alcohol ,naphtha, 10 %	-
Hydrophobic	Yes	Yes
Color	Tan	Off-white
Appearance	Soft paste	Soft paste
Odor	Oily Hydrocarbon	Slight
Specific gravity	1.2	1.23

Specifications subject to change without notice