

### General description

RETROWRAP STD2 is a wraparound corrosion protection solution for inshore splash zone and underwater corrosion protection for piles, pipelines and risers. STD2 is specifically designed to endure the rough conditions through the splash zone at semihard wave conditions and moderate temperature variations.

RETROWRAP STD2 is designed to suit any pile diameter from 100 mm to 3 meters, also square, hexagonal and octagonal shaped piles, and it may be interlocked to accommodate any required protected length. 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.

RETROWRAP STD2 resists long term immersion, both in seawater and in fresh water. The system is built to last for over **15 years** in the most demanding conditions. Attacks, both chemical and biological, will be fought off. RETROWRAP HD2 provides permanent protection from waves and currents, while standing tall against severe UV-radiation, ozone and temperature variations.

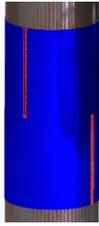
RETROWRAP STD2 panels are a multi-layer monocoque construction consisting of a polymeric textile reinforcement encapsulated within the polyurethane matrix and outer layer and bonded in-line to a polyester, penetration resistant, felt impregnated with a corrosion inhibitor or biocide contained within a water-resistant gel, as dictated by the application for which the system will be supplied.

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 pressures and increasing 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 STD2, the tear will not propagate.

RETROWRAP STD2 Installation is cost effective, fast and easy. Using our specially designed draw bolt installation set, installation can be accomplished fast and safety even in demanding installations conditions. No labor-intensive ancillary materials such as tapes, sealants or adhesives are 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 STD2 installation instructions for further information regarding the installation procedure.

### Features & benefits

- Maintenance free corrosion protection concept
  - Cost effective installation. Quick and easy to install; no primer, filler or tapes
  - Environmentally friendly and low lifespan Carbon Footprint due to long design lifetime, **15 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 STD2

#### Wrap Main Components

- PVC fabric panel
- Extruded marine and impact resistant polymetric closure flanges
- Stainless steel fasteners and nylock nuts
- Corrosion protection gel, Retrogel P or Retrogel S

#### Product Data:

Product name	Retrowrap STD2	Old name: Nexgen
Product HS Code	39269092	Including gel and fastening bolt sets
Pile Diameters applicable	∅ 100 - 3000 mm (typically) Also for Hexagonal, Octagonal and dual/various diameter piles	If smaller or bigger diam contact CCI Oy
Wrap Height (Pile height to protect)	Tailor made according to customer needs. Depending on protected height, wraps are made in one, two or several pieces	Max one piece height 1,5 meter
Wrap Weight, including gel (as delivered)	4.4 ± 0.2 kg/sqm	@ gelling ~2 kg / sqm
Wrap max total thickness as installed, including flanges	54 ± 2 mm Panel only ~ 4.3 mm	Distance from pile/structure surface
Fastening Bolts	Stainless steel, Marine Grade A4, M10 DIN 931	HS 73181575
Fastening Nuts	Stainless steel, Marine Grade A4, M10 DIN 934	HS 73181631
Fastening Washers	Stainless steel, Marine Grade A4, M10 DIN 921 or DIN 522	HS 73182200
Nylon Nuts (Optional)	Nylon, M10 PA 6.6, DIN 555	HS 39259080
Wrap Operating Temperature	-20 to +75°C	
Storage Recommendations	In crates, max +50°C ambient temp, non-dusty area, no direct exposure to sun	

#### Panel specifications

Panel Type	Reinforced coated multi-layer fabric	
Outer and inner layer coating	Polyvinyl chloride, PVC	
Color	Black	
Base fabric type	Polyester, PES	DIN EN ISO 2076
Fabric weight (excl. felt)	0,9 kg/sqm	EN ISO 2286-2
Felt type	Polyester	
Felt weight	0.5 kg/sqm	
Fabric thickness including felt	4 mm ± 2%	Excl. Gel
Tensile strength MD/XMD	4300/4100 N	EN ISO 1421/V1
Tear strength MD/XMD	500/500 N	DIN 53363
Impact resistance	12 m/N (175 ft/lbs)	ITI/1477
Coating adhesion	20 N / cm	PA 09.03 (intern)
Light fastness	> 6	EN ISO 105 B02
Closure Flanges / Rods	Geon, Vinyl / PVC	

LAMINATED PANEL FABRIC STRUCTURE



#### Gel specifications

Gel name	Retrogel P
HS Code	34039900
Operating Temperature Range	-20 to +90°C
Base material, approximate	Refined petroleum wax, 50 %
Corrosion inhibitor, approximate	Thixotropic media, 40 %
Other, approximate	Oxyalkylates and alcohol in heavy aromatic naphtha, 10 %
Hydrophobic	Yes
Color	Tan
Appearance	Soft paste
Odor	Oily Hydrocarbon
Specific gravity	1.2

Specifications subject to change without notice

Designed and sold by:

U.S. Patent No. 5,435,667  
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