



# PileForm™ W Retrowrap™

Corrosion Control System  
for Piles, Pipelines and Risers

## DESCRIPTION

Five Star® PileForm™ W Retrowrap™ is a wrap around corrosion protection system used for inshore splash zone and underwater corrosion protection for piles, pipelines and risers. Designed to suit any diameter from 1.97 inches to 9.8 feet (50 mm to 3 meters), it may be interlocked to accommodate any required protected length. Full-length Geon™ closure flanges are factory-fitted with corrosion-resistant self-threading fasteners designed to retain PileForm™ W 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.

## USES

Five Star® PileForm™ W Retrowrap™ is specifically designed to provide an easily installed retrofit installation for corrosion protection of sub sea pipelines and jetty piles. For deep water applications, the PileForm™ W Retrowrap™ units can be overlapped or butt joint and sealed using a cummerbund connector to provide a continuous, retrofit "active" protection system throughout the required length.

## BENEFITS

- Long-term service life
- Easy one-piece installation; no primer, filler or tapes
- Minimal surface preparation
- Full-length flange closure for easy installation
- Easy removal and replacement for substrate inspection
- Provides active protection with environmentally safe corrosion inhibitors
- Highly abrasion- and impact-resistant
- Totally UV-resistant
- May be fitted with corrosion rate monitoring
- 10-year manufacturer's warranty

## SIZING & CONFIGURATION

Five Star® PileForm™ W Retrowrap™ is constructed of a one-piece, easily installable jacket and can be fitted to any diameter from 1.97 inches to 9.8 feet (50 mm to 3 meters). PileForm™ W Retrowrap™ units are factory supplied in lengths of 40", 60" and 120" (1.02 M, 1.5 M & 3 M). Special lengths are available upon request. Consult Five Star Products, Inc. for further details.

### TYPICAL PROPERTIES — STANDARD WEIGHT FABRIC

<b>Fabric Type</b>		BX 4-OUF
<b>Coating Material</b>		100% PTMEG Polyurethane
<b>Color</b>		Black
<b>Surface Finish (Max.)</b>		280 R.M.S.
<b>Total Thickness, Finished <math>\pm .010</math>" (inclusive of polyester felt)</b>		.177" (4.5 mm)
<b>Weight, Finished <math>\pm 3</math> oz.</b>	ASTM D-751	50 oz/sq yd ( $\pm 3$ oz)
<b>Base Fabric</b>	ASTM D-751	Nylon
<b>Strip Tensile MD/XMD</b>	ASTM D-751	500/500 lbs.
<b>Tongue Tear MD/XMD <math>\pm 20</math> lbs.</b>	ASTM D-751	200/200 lbs.
<b>Taber Abrasion</b>	ASTM 3389 1,000 g weight H-18 wheel	>70,000 cycles Nylon reinforcing fabric exposure
<b>Coating Adhesion</b>	ASTM D-751	35 ( $\pm 5$ ) lbs/inch
<b>Accelerated Weathering</b>	ASTM D-4396	1,000 hrs excellent
<b>Low Temperature Bend</b>	ASTM D-746	-70°F
<b>Felt Type</b>		Polyester
<b>Felt Weight</b>	ASTM D-751	12 oz/sq yd
<b>Wrap Operating Temperature</b>	RetroGel P	-20°C - 90°C
	RetroGel S	-40°C - 120°C



**INSTALLATION EQUIPMENT**

- (3) Closure calipers
- (1) 1 3/4" AF 1/2" Drive Extended Socket
- (1) 1/2" Drive Compressed Air Driven Impact Wrench
- (1) 1/2" drive 9/16" AF Socket Wrench
- (1) 1/2" Drive 9/16" AF Combination Wrench

**INSTALLATION GUIDELINES**

Ensure that the substrate has been cleaned in accordance with the client's cleaning procedure, and then:

1. Remove the plastic backing sheet, if fitted, by gripping it at one corner and slowly pulling such that the sheet comes off completely.
2. Convey PileForm™ W Retrowrap™ unit to the pile and with overlap area uppermost. Position wrap around the pile and tie off into closed position. Fit draw bolt in every other bolt hole in flange and using impact wrench, drive draw bolt, complete with washer, through opposing flange until nut and washer can be fitted. Continue fitting draw bolts in every other bolt hole. Do not tighten draw bolts at this stage.
3. Ensure the wrap is in the required position and free from obstruction at closure face.
4. Using extended box wrench fitted to impact wrench, sequentially tighten draw bolt nuts until wrap panels are under tension and the unit has become self-supporting on riser.
5. Remove the ropes from the closure (if fitted).
6. Continue sequentially tightening draw bolts, keeping the gap between flange spaces as equal as possible.
7. Tighten all draw bolts until flange faces are closed.
8. Fit the 316L Stainless Steel bolt with washer through vacant holes in flanges and apply nuts finger tight.
9. Using a suitable socket attached to impact wrench, tighten stainless steel nuts until flanges are in face-to-face contact.
10. Refit extended box wrench, reverse direction of impact wrench and remove all draw bolts, taking care not to lose nuts and washers.
11. Repeat step 10, until all stainless steel bolts are fitted.
12. Using impact wrench, tighten all stainless steel nuts and fit and tighten nylon lock nuts.
13. Check wrap to ensure that it is seated correctly on pile.

For additional Installation instructions, please call Five Star Products' Engineering and Technical Service Center at 1-800-243-2206.

SKU / PRODUCT CODE	DESCRIPTION	UNIT SIZE
CALL	PileForm™ W Retrowrap™	VARIABLES

**WARRANTY:** "FIVE STAR PRODUCTS, INC. (FSP) PRODUCTS ARE MANUFACTURED TO BE FREE OF MANUFACTURING DEFECTS AND TO MEET FSP'S CURRENT PUBLISHED PHYSICAL PROPERTIES WHEN APPLIED IN ACCORDANCE WITH FSP'S DIRECTIONS AND TESTED IN ACCORDANCE WITH ASTM AND FSP STANDARDS. HOWEVER, SHOULD THERE BE DEFECTS OF MANUFACTURING OF ANY KIND, THE SOLE RIGHT OF THE USER WILL BE TO RETURN ALL MATERIALS ALLEGED TO BE DEFECTIVE, FREIGHT PREPAID TO FSP, FOR REPLACEMENT. THERE ARE NO OTHER WARRANTIES BY FSP OF ANY NATURE WHATSOEVER, EXPRESS OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE IN CONNECTION WITH THIS PRODUCT. FSP SHALL NOT BE LIABLE FOR DAMAGES OF ANY SORT, INCLUDING PUNITIVE, ACTUAL, REMOTE, OR CONSEQUENTIAL DAMAGES, RESULTING FROM ANY CLAIMS OF BREACH OF CONTRACT, BREACH OF ANY WARRANTY, WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR FROM ANY OTHER CAUSE WHATSOEVER. FSP SHALL ALSO NOT BE RESPONSIBLE FOR USE OF THIS PRODUCT IN A MANNER TO INFRINGE ON ANY PATENT HELD BY OTHERS."

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Specifications Subject to Change.  
 For most current version of datasheet, go to [FiveStarProducts.com](http://FiveStarProducts.com)

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