LIGHTWEIGHT DESIGN Heavy Duty Protection

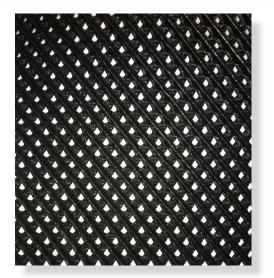




WHY SPECIFY ROCKGUARD® HD?

- Designed for ALL Regions
- Protection During & After Backfill Operations
- 11mm Consistent Thickness
- Half the Weight of Competitive Rockshields
- Designed to Allow Water to Flow Around the Pipe
 Available in Custom Roll and Pad Sizes
 Flexible Even in Cold Temps
 Fast & Easy Installation
 Shortest Lead Time Nationwide

ROCKGUARD PIPELINE PROTECTION MESH www.rockguard.biz



ROCKGUARD® HD [Heavy Duty]

- 11mm thick (0.43")
- Provides maximum protection
- Recommended for ALL pipeline diameters
- Small aperture openings
- · Excellent compressive and impact properties
- No inhibiting effect on cathodic protection
- Ergonomically correct

INSTALLATION GUIDELINES

PRODUCT BENEFITS

ROLLS:

- 1. All rolls should be of adequate coverage to entirely cover the circumference of the pipe.
- 2. **ROCKGUARD**[®]**HD** is to be placed around pipe, whereby placing overlap portion at the 6 o'clock position of the pipe.
- 3. Place all end to end overlaps min. 2"; all parallel pad overlaps minimum 6".
- 4. In the event that a side overlap is used place the overlaps "shingle style". This will ensure that no backfill will protrude under the **ROCKGUARD**[®]**HD**.
- 5. All rolls shall be secured to pipe by using a min. $\frac{3}{4}$ wide polyester filament tape.
- 6. After rolls are secured to pipe, the backfill process may take place.

PADS:

- 1. Custom cut pads should be wrapped around the circumference of the pipe, covering all exposed areas. Ensure that all pads are of sufficient dimension to protect the entire pipe.
- 2. All pad overlaps shall be placed at the 6 o'clock position of the pipe, taking care to secure the **ROCKGUARD**[®]**HD** with a polyester filament tape.
- 3. Place all end to end overlaps min. 2"; all parallel pad overlaps minimum 6".
- 4. All pads shall be secured to pipe by using a min. ³/₄" wide polyester filament tape.
- 5. After pads are secured to pipe, the backfill process may take place.



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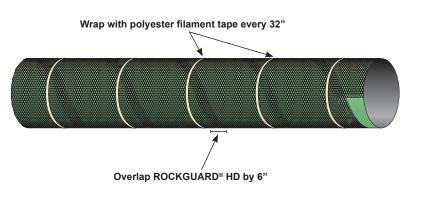
INSTALLATION METHODS

SPIRAL WRAPPING

ROCKGUARD® HD can be installed along the pipe or around the pipe as per the diagrams below and can be secured by means of polyester filament tape.

This process can be applied to longer circumference pipes:

- 1. Start wrapping the pipe moving along the length of the pipe, so that the **ROCKGUARD**[®] **HD** overlaps slightly.
- Use the polyester filament tape to secure the ROCKGUARD[®] HD insitu as the mesh is wrapped.

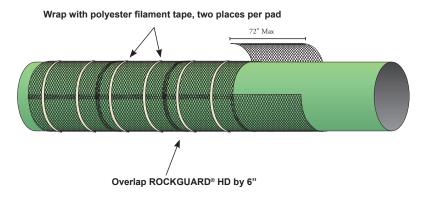


LATITUDINAL WRAPPING

ROCKGUARD[®] **HD** can be installed along the pipe or around the pipe as per the diagrams below and can be secured by means of polyester filament tape.

For pipes with a larger circumference than the roll width:

- 1. Cut the **ROCKGUARD**[®] **HD** into pieces of more than 6" extra than the circumference of the pipe.
- 2. Wrap the pipe with the **ROCKGUARD® HD** overlapping the adjacent installed mesh by 6".
- 3. Fix the **ROCKGUARD® HD** with polyester filament tape in two places per pad.



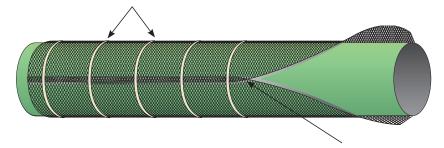
LONGITUDINAL WRAPPING

ROCKGUARD[®] **HD** can be installed along the pipe or around the pipe as per the diagrams below and can be secured by means of polyester filament tape.

For pipes with a circumference of less than 6" in relation to the width of the **ROCKGUARD® HD**

- 1. Unroll the **ROCKGUARD**[®] **HD** parallel to the pipe which is to be protected.
- 2. Place the ROCKGUARD® HD below the pipe.
- Wrap the ROCKGUARD[®] HD around the pipe overlapping the edges by approximately 6".
- 4. The mesh can be secured by polyester filament tape.

Wrap with polyester filament tape every 32"



Overlap ROCKGUARD HD[®] by 6"

PIPE SIZING CHART



RockGuard [®] HD (Heavy Duty) Rolls					
Pipeline Diameter	Recommended width ¹	Roll Size Available			
2"	13"	12" x 50' (*)			
4"	21"	21" x 50'			
6"	27"	28" x 50'			
8" 34"		3' x 50'			
10" 40"		3.5' x 50'			
12" 47"		4' x 50'			
16" 57"		4.75' x 50'			
18" 63"		6' x 50'			
20" 69"		6' x 50'			

(*) 4.5" Circumferential Overlap Provided (1) 6" Circumferential Overlap

	RockGuard [®] HD (Heavy Duty) 6' Custom Pads						
86 M	Pipeline	Recommended	Pad Size				
321	Diameter	width ¹	Fau Size				
WINCKIN O	24"	82"	82" x 6'				
	30"	101"	101" x 6'				
	34"	113"	113" x 6'				
	36"	120"	120" x 6'				
	42"	138"	138" x 6'				
-	48"	157"	157" x 6'				

(1) 6" Circumferential Overlap

LIGHT DUTY



RocKNeT[™] [Light Duty]

- 0.14" thick with large aperture openings
- Provides minimal protection
 - Recommended for 10" and smaller diameter pipelines with the following conditions:
 - Minimal drop height for backfill material
 - Backfill material is non-angular and will not damage coating on impact

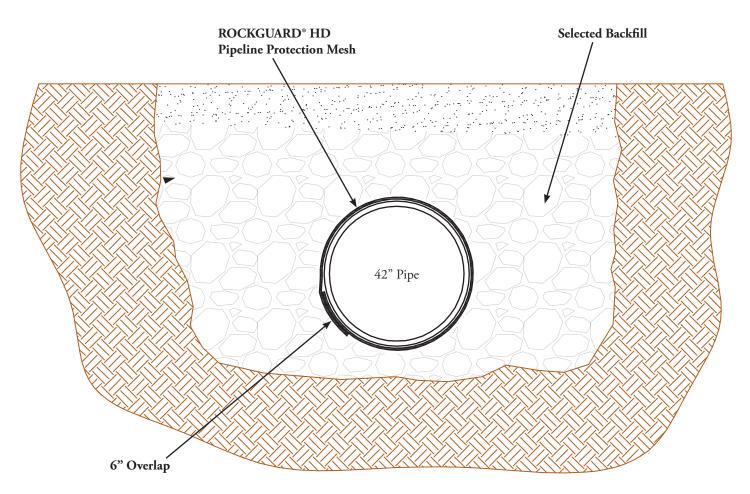
RockNet [®] LD (Light Duty) Rolls					
Pipeline	Recommended	Roll Size			
Diameter	width ¹				
N/A	N/A	5' x 100'			
N/A	N/A	6' x 100'			





APPLICATION DETAIL

SECTION VIEW



All the above information is given in good faith, but the figures are typical values only and should not be taken as a guarantee of performance. Manufacturing tolerances for dimensional and technical characteristics apply and are available upon request. The company reserves the right to improve the product and adjust the specification without notice.

FILAMENT TAPE



RG-400 Uni-Directional High Performance Fiberglass Reinforcement Tape

RG-400 is an economical fiberglass reinforced tape designed for most packaging. The 1.1 mil polypropylene film combined with an aggressive 'solventless' pressure-sensitive adhesive provides resistance to filament delimitation and separation, excellent adhesion to corrugated cartons, and outstanding holding power. Will hand break, no knives needed.

TAPE ESTIMATING CHART

				Approx. L.F. of Tape per L.F. of Pipeline** Spiral Wrap Spacing (in)
Nominal	Pipe	O.D with	Circumf.	Spiral Wrap Spacing (iii)
Pipe Size	Outside dia.	RG (in.)	w/ RG (in.)	6
2	2.375	3.24	10.17	1.97
4	4.5	5.36	16.84	2.98
6	6.63	7.49	23.51	4.05
8	8.63	9.49	29.80	5.07
10	10.75	11.61	36.47	6.17
12	12.75	13.61	42.76	7.2
14	14	14.86	46.68	7.85
16	16	16.86	52.97	8.89
18	18	18.86	59.25	9.93
20	20	20.86	65.53	10.97
22	22	22.86	71.82	12.02
24	24	24.86	78.10	13.06
30	30	30.86	96.95	16.19
34	34	34.86	109.52	18.29
36	36	36.86	115.80	19.33
42	42	42.86	134.65	22.47
48	48	48.86	153.50	25.61

**Multiply by Pipeline Length in ft. to get Estimated Tape Quantity in ft. (NO WASTE INCLUDED)





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RockGuard/Industrial Fabrics® may change product specifications without notice. The RockGuard/Industrial Fabrics® system is suitable for use in the application described in our literature and on our website, provided proper installation and engineering principles are followed. Professional engineering should be consulted before installation of RockGuard®material to assure proper design. ALL EXPRESSED OR IMPLIED WARRANTIES, INCLUDING THOSE OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.