

DOES NYLON LOSE 15% OF ITS STRENGTH WHEN WET?

Presented by:

Jim Kovach

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It has been written and stated that there is a 15% loss of strength in nylon ropes when they are wet. This presentation will present our findings on how nylon one inch tubular webbing and 8mm accessory cord stack up when tested wet and dry.

ABOUT THE PRESENTER

Jim Kovach is a firefighter who recently retired after 32 years in the fire service. He began presenting at the North American Technical Rescue Symposium in 1996 and then at the International Technical Rescue symposium in 2000. He has presented on topics, including Personal Escape Rope Testing, Tower Climbing, 8mm Testing, Fall Factors, Tower Rescue, UV Degradation, Never Step On a Rope, Bottom Belay Testing, NFPA Standards, Rigging and Anchoring in the Fire Service and equipment testing.

In 2005 he formed the company ***All About Rope, Inc.*** to pursue his research and testing. ***All About Rope, Inc.*** will test rescue gear and equipment for free with the understanding that we can use the data acquired to inform other rescuers through our seminars and lectures.

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ALL ABOUT ROPE, INC.

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August 25, 2007

Temperature 88 degrees

Humidity 75%

The purpose of this testing was to try and answer the question “Does nylon lose 15% of its strength when wet?” We tested 2 types of nylon materials; new, one inch tubular webbing tied in a loop and secured with a water bend and new 8mm accessory cord tied in a loop and secured with a double overhand bend. The results are in order from the lowest breaking strength to the highest for ease of comparison.

The webbing was submerged in a 5 gallon bucket of water for a period of time ranging from 10-63 minutes. All the rigging was around a 4 inch diameter smooth steel pipe with the pull end of the webbing attached to an SMC steel carabiner.

Dry	Wet	Wet
Rigged wrap 3 pull 2	10 minutes	32 minutes
9935 lbf	8195 lbf	9165 lbf
	9050 lbf	9265 lbf
	9875 lbf	9985 lbf
Rigged as basket.	33 minutes	45 minutes
9355 lbf	5765 lbf	7740 lbf
9505 lbf	6735 lbf	7910 lbf
9615 lbf	7060 lbf	8780 lbf
Rigged as girth hitch	39 minutes	60 minutes
5310 lbf	6335 lbf	5795 lbf
5645 lbf	6605 lbf	5800 lbf
	6805 lbf	6435 lbf
Rigged wrap 2 pull 2	50 minutes	63 minutes
7930 lbf	7310 lbf	8305 lbf
10,010 lbf	9345 lbf	9395 lbf
10,625 lbf	9850 lbf	10,370 lbf
Rigged 2 pieces wrap 2 pull 1		
8645 lbf		
9070 lbf		
11,935 lbf		
Rigged wrap 4 pull 3	5 minutes	43 minutes
12,525 lbf	12,155 lbf	11,350 lbf
13,705 lbf	13,520 lbf	12,225 lbf
13,880 lbf	13,550 lbf	12,750 lbf

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August 26, 2007

Temperature 82 degrees
Humidity 74%

The new PMI 8mm accessory cord was tied in a loop and secured with a double overhand bend. It is the same length as we would use for our long prusiks.

The 8mm was submerged in a 5 gallon bucket of water for a period of time ranging from 31-72 minutes. The 8mm was attached at each end to an SMC steel carabiner and pulled to failure.

Dry	Wet	Wet
Rigged end to end	31 minutes	60 minutes
4760 lbf	4055 lbf	4580 lbf
5120 lbf	4505 lbf	4585 lbf
5185 lbf	4520 lbf	4755 lbf
Rigged as basket	37 minutes	67 minutes
9050 lbf	8485 lbf	8180 lbf
9245 lbf	9045 lbf	8420 lbf
9360 lbf	9120 lbf	8690 lbf
Rigged doubled	41 minutes	72 minutes
8090 lbf	6345 lbf	6895 lbf
8405 lbf	8060 lbf	7375 lbf
8640 lbf	8645 lbf	8580 lbf

