

Wednesday, July 22, 2009 - posted by Kolin Powick

## QC Lab: Can I Use a Sharpie to Mark the Middle of my Rope?

Here's the question I get asked/emailed probably more than any other: "Can I use a Sharpie to mark the middle of my rope?"

My answer: "I don't know."

Years ago the UIAA published a warning (and I even remember it being written up in one of the climbing mags) that using a Sharpie to mark your rope probably isn't a good idea. Here's the relevant excerpt:

*Tests done by the UIAA Safety Commission and some rope manufacturers have shown that marking ropes with liquids such as those provided by felt-tipped pens can damage them; even with those markers, sold specifically for marking ropes. The test results have shown a decrease of up to 50% of the rope strength, more correctly: of the energy absorption capacity of the rope (expressed by the number of falls in the standard test method in accordance with the UIAA Standard 101).*

*Therefore the UIAA Safety Commission warns against marking a rope with any substance that has not been specifically approved by the rope manufacturer of that rope.*

Personally I questioned the applicability of these tests in real-world scenarios. The UIAA test is consistent and an industry standard for sure, but it's also extreme. Their test imposes a violent high-impact (fall factor 1.78 with a static belay) on the same section (in the above mentioned case, on the middle mark) of a rope, repeatedly, until it breaks. Not very realistic in everyday use. Think about that for a second: to have the middle of your 60-meter rope be the point where the rope is loaded during a fall, then you would have to be taking a HUGE 60-meter whipper—not very common.

At Black Diamond, we don't make ropes, and though we do have a drop tower, we don't have the ability to perform official UIAA drop tests. However, I'm a curious guy, so I had my crack crew of engineers grab a few cords, mark them up with a Sharpie, and pull them in the tensile tester. As expected, the ropes always broke at the knot—the Sharpie's middle mark seemingly having no effect on the strength of the cord during this test.



<b>Sample</b>	<b>Peak Value (lbf)</b>	<b>Failure Mode</b>
No Center Mark	2222	Rope at Bottom Knot
Factory Center Mark	2226	Rope at Bottom Knot
Sharpie Center Mark 1	2311	Rope at Bottom Knot
Sharpie Center Mark 2	2334	Rope at Bottom Knot



I don't think Sharpies or any other permanent markers have really been proven to actually damage nylon—short-term or long-term. However, I can't recommend them for use on rope either because the manufacturers will not and cannot guarantee that the marker will always be free of possibly harmful chemical ingredients. In other words, they can change the formula on a whim and none of us would be the wiser.

The simplest solution, if you're worried about the effect a marker will have on your rope, is to buy a rope with dual pattern. It makes identifying the middle point simple and permanent. If you have a rope already and it's not dual patterned and the middle marker has faded, I recommend using the rope manufacturer's recommended middle marker ink to re-mark it. And you can always use the tried and true method of finding the middle each time by starting at both ends and coiling until you find the centre.

Climb safe—

KP

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*Kolin Powick (KP) is a Mechanical Engineer hailing from Calgary, Canada. He has nearly 20 years of experience in the engineering field and has been Black Diamond's Director of Global Quality since 2002. Kolin oversees the testing of all of Black Diamond's gear from the prototype phase through continual final production random sample testing. If you have a technical question for KP, please email him at [askkp@bdel.com](mailto:askkp@bdel.com) and he will TRY to respond.*

## Photos



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Community post:

Jane Howe  
23 Jul 2009, 4:03PM

Hi there,

I am happy to see the BD testing results on the effect of markings. I have been climbing for six years (rock, ice, alpine). I am a materials scientist by training. I have a PhD in materials field and have been working with the federal government on energy-related materials for nine years. As far as I know, Sharpie uses very "mild" solvent which should NOT cause any harm to nylon, therefore, sharpie marking shall have minimum detrimental effect on the rope mechanical properties and long-term durability. I have been very much in doubt of UIAA's earlier tests. The sharp drop of the breaking strength made no sense. The BD strength test data are much in line with what is expected from the interaction of nylon with a mild solvent. If I can ask BD to be more scientific, I would suggest expanding the test sample size from four to ten, on different diameter ropes, as well. Thanks again for the good work.

-Jane Howe