

## Abrasion Resistance of Webbing

RE: Abrasion Resistance of Webbing &ndash; A Good Choice for Top Rope Anchors? - Marty Comiskey

Recently, a PATC member e-mailed me inquiring about the use/wisdom of webbing to construct top rope anchors vs. using static line.

Unlike trad anchors, that are used for only a short while (i.e. one/two climbers-one, maybe two pitches) and are closely located near the belayer and (hopefully) closely monitored and quite often, assuming no falls, not loaded/stressed, top rope anchors are often set up and used continuously for several hours, are used by a multitude of climbers and even with no falls are loaded/stressed when the climbers are lowered to the ground.

As such, top rope anchors need to be not only strong, but especially redundant and secure as they go unmonitored for several hours. That is why we have redundant anchors, redundant masterpoints and redundant carabiners. Since these top rope anchors are out of sight for potentially the whole day, we need to be worry free as to friction/wear on the rope/webbing, possible cross loading of the biners, etc.

Assuming bomber pro, anchors (top rope or otherwise) don't usually fail because the loads on the static rope or webbing exceed their strength rating. If/when they fail; rather they tend to fail because of abrasion across the rock/cutting and/or rock fall onto the rope/webbing.

If this is the case, then how does webbing compare to static line as to its resistance to abrasion (i.e. cutting) and the wisdom to choose it as anchor material.

Webbing has some advantages over static line:

- Cheaper
- Less bulk
- Less weight

It also has some disadvantages:

- Lower abrasion resistance as compared to static line
- Webbing knots used (i.e. water knot) are not as readily adjustable as rope knots (i.e. bowline)

Tom Moyer, SLC Search and Rescue, conducted a little test/experiment some years ago to answer this question. His complete report (Qualifying a Rescue Rope) can be downloaded from his website:

[www.xmission.com/~tmoyer/testing](http://www.xmission.com/~tmoyer/testing)

I have included two of the more relevant graphs from his report. Tom Moyer tried to quantify how webbing compared to static line in resisting abrasion both along the rope/webbing (i.e. vertical friction against rock) and across the rope/webbing (i.e. horizontal friction against the rock).

His conclusion: if there is any possibility of movement of the anchor material, then webbing is a poor choice for anchor material. Webbing can be used to extend an anchor from a distant tree to the rock edge, but the webbing should not extend over the cliff without padding.

Interestingly, I have seen many people use webbing to encase their static line to protect it against abrasion, but do nothing to protect their webbing against abrasion, and it is much more prone to cutting than static line. Climb safe.