As there is a lot of incorrect information floating around regarding lines and their advantages and disadvantages, we put together a short info on the most common types of speedwing lines and their advantages and disadvantages.

Quick Summary

For ski use / snow (= wet environments) unsheeted SK75 Dyneema lines have proven to be a good fitting allround compromise,

for footlaunch use (if dust, dirt or any vegetation beside from grass is involved) sheeted lines (either with a SK 75 Dyneema core or an Aramid core) are normally the better fitting alternative.

As very often in technical material choice there is no clear black and white and a wide area of grey depending on the exact usage / abuse scenario.

For all of You who are interested to know more, here is the full story:

Sheeted lines

Sheeted lines have an unwoven (straight parallel fibres) core material - usually aramid or dyneema plus a polyester sheet woven around the load bearing core for extra protection.

These lines are superior to unsheeted woven (8 strand, 12 or 16 strand are usually used) dynaeema lines in terms of core abraison and (most importantly in extremely dusty environments) DIRT accumulation in the core that grinds up the core from the inside over time (a tiny piece of sharp rock / sand buried in the core can result in a huge reduction in load

bearing for a woven dyneema line).

In real life the sheeted lines are definately less prone to snag roots or thornbushes or similar stuff as they are stiffer and - compared to unsheeted lines - single filaments can NOT get pulled out of the load bearing strands without ripping the outer protective sheet first.

So for use on dry, harsh, dusty ground the sheeted lines are usually the better compromise.

Unsheeted strand-woven lines

In more wet environments where the line might get soaked with water and then freeze up (e.g. riding up in a relatively warm tram and then flying in minus 20 degrees celcius) the above mentioned sheeted lines can get damaged if they soak with water and then freeze up internally (the loadbearing core) and get bent in a small radius (as with any packing of the wing) .

On the downside with an unsheeted line its easy to pull single filaments out of the strand and thereby damage the line as each single filament is very thin and can be ripped apart relatively easy (obviously each thin single filament only holds very little load inside the tightly woven and prestretched compound of lines).

Damaged lines

In either case: if the sheet is broken OR some of the unprotected load bearing strands in an unsheeted line have been cut it is advisable to replace the line immediately - at least if its one of the main load bearing lines (A or B in 3 riser wings, A in 2 riser wings) again with a slight advantage for the sheeted line as a broken sheet is easier to detect and will not immediately reduce the useful load of the line ....

on the other hand dyneema linesets are usually even more massively overbuilt (mostly a similar outer diam. as the sheeted lines, but more loadbearing core material) compared to most sheeted speedwing lines, so if one or two strands out of 12 or 16 unsheeted braided dyneema line are cut (e.g. by a ski edge) the line will usually be more then strong enough to withstand normal use for a few flights...

Conclusions

.) for use in wet environments unsheeted, prestretched and (color)coated SK75 Dyneema lines are usually better (hence those EXACT SAME sk75 dyneema braided lines are used as linesets for kitesurfing kites since over 10 years with great success) as trapped water that freezes up and expands will not damage the lines outer sheet when the line is bent.

Plus water can evaporate easier without damaging the lines (hydrolysis is a problem with aramid based lines if they are exposed to hydrogen (= water) for long peroids of time (= packed damp)

.) As most seasoned paraglider pilots know from experience with Dyneema upper cascades, Dynaeema lines are a bit more "elastic" - have a more "dampened" feel - compared to aramid lines, as they will absorb load spikes a bit better and can tolerate overloading a bit better (both factors are relatively irrelevant in speedwing use as lines are extremely short and massively overbuilt, so compared to superthin upper cascade lines on paragliders the real world difference is very little to neglectable)

.) For dusty or very harsh environments (areas with lots of rocks, thornbushes etc.) a sheeted line is in most cases preferable to an unsheeted line as it is stiffer and therefore it will be much less likely to wrap around an object and snag in the process.

Plus its impossible for single fibres to get pulled out of the woven strand (also easily happens with the velcro on your gloves).

Plus it will not accumulate invisible abrasive particles inside the line wearing out the lines from the inside of the core over time (also can happen with salt cristalizing inside the line from a salt water landing - here the unsheetd line has an advantage as you can rinse the core more effectively compared to a sheeted line where its more or less impossible to effectively rinse the core and dissovle the salt crystals without soaking teh lines for days in fresh water - which in turn will damage aramid cores...).

.) In paragliding sheeted and unsheeted lines in both dyneema an aramid are often used in combination - lower lines sheeted to make them more robust and upper lines unsheeted to safe drag (as an unsheeted braided line is thinner as it lacks the protective polyester sheet of a sheeted line).

the drag saving argument is more or less irrelavant in a speedwings over the other properties as lines are usually massively overbuilt to withstand snags in highwind launches and ski edges in winter use.

despite this (beeing overbuilt), **IF a line gets damaged it is highly advisable to immediately replace it with a line in the correct material, dimension and load rating**

A sidenote regarding materials

Dyneema based lines are more prone to shrinkage when beeing exposed to heat above 50 degree celcius, as the prestretched molekule chains simply "coil up" a bit (e.g. car trunk, car parked in the sun on hot days = + 50 to sometimes 70 degrees C), but that can be reverse with careful re-stretching under a defined load (depending on each lines workload, usually 25% of the workload) but are in turn highly UV and Water resistant.

Aramid fibres (used with anti UV coating in unsheeted and usually without any anti UV coating in sheeted lines) are more or less immune to shrinkage but are degrading faster if exposed to UV light and hydrogen (water).

The sheet (if present) is usually polyester material independent of the core material beeing aramid based or dyneema based.

There are extremely durable lines made with vectran cores and dyneema sheet, but these are very expensive and to my current knowledge not made in the small dimensions we need for speedflying / paragliding - I would love to have such lines on my wings, as they are more or less indestructible.

Hope that brought some light into the most common standard questions regarding speedwing lines

The Schnellcraft Crew