

A Sticky Situation

Ever walked into a spider web?

It's not a pleasant experience for anyone involved (including the spider). But you've probably never walked into a spider web and thought, "Wow, the strength-to-density ratio of these strands must be off the charts!"

But it *is* off the charts. Ounce for ounce, spider silk has twice (some say five times!) the tensile strength of steel, stretching up to around 40 percent its original length without breaking. It's been calculated that if a spider could produce a strand the width of a pencil, it would be strong enough to suspend a Boeing 747.

Spiders manufacture their webs using complex organs called spinnerets, where microscopic spigots produce filaments of silk on demand, each of them fractions of a micron wide, weaving them together into a single strand thinner than a human hair.

The thread is impressive, and so is the construction of the web itself. The spider must tie together nonsticky threads as a frame, then begin weaving the sticky spiral pattern that will ultimately catch its prey (and, occasionally, panic the unsuspecting humans who walk into it).

Pictured: western spotted orb weaver (*Neoscona oaxacensis*)



Photography by James Capo

Text by James Capo and Jeremy Lallier