

HMPE is becoming increasingly popular as running rigging on sailboats. Outside of high-end racing, I am of the mindset that, for most lines, there is no practical performance benefit over low-stretch polyester double braid.

I understand your position on HMPE versus polyester for running rigging.

Before we dive in, what's your main goal for this discussion? Are you:

1. Looking to validate/refine your thinking on this?
2. Wanting to identify exceptions where HMPE might be worth it for non-racers?
3. Trying to make a decision about your own boat's rigging?
4. Something else?

This will help me focus on what's most useful for you.

I am focused on #1.

Good. Let's validate and refine your thinking on this.

Here's how we could break this down:

1. Define what "practical performance benefit" means in your context
2. Examine the key differences between HMPE and polyester (strength, stretch, durability, handling)
3. Consider specific line applications where differences might actually matter
4. Look at the cost/benefit equation for cruisers

Does this structure work for you, or would you prefer to approach it differently?

Once you're ready, we'll start with #1 - what constitutes a "practical" benefit for you?

That structure looks good. #1 is a good question. There are four aspects to performance, I think: water speed, safety (strength), durability, and handling. But, for the purposes of this discussion, I am thinking mostly about whether it makes you sail any faster. Theoretically, if used appropriately, it could, but my position is that any such speed gain is so incremental that it would be challenging to measure or prove.

Got it. So you're isolating speed as the performance metric, and your position is: while HMPE *theoretically* could make a non-racing boat faster, the gain would be so marginal it's effectively unmeasurable in real-world sailing.

That's a solid framework for evaluating the marketing claims around HMPE.

Ready to move to #2 - examining the actual differences between HMPE and polyester (strength, stretch, durability, handling)? This will help us assess whether those differences translate into anything speed-related that matters outside of racing.

Sure, but I think we just isolated the only difference that matters for this narrowed discussion - low stretch. Comparing the two materials can be a little apples-and-oranges because HMPE can/should be narrower than polyester of the same approximate strength. Still, HMPE will stretch less for a given application, even without adjusting for the diameter difference. Right?

There is another aspect to this, though. While polyester will stretch, it will also "bounce back" (I can't recall the word for this). That is, it will tend to return to its pre-stretch length. It could be argued that this requires more rigging adjustments as conditions vary. But, that is where my position comes in - that the difference in actual speeds is so slight that it isn't worth considering.

Of course, the larger the boat, the more of an effect we would see, from stretch. HMPE on a 22 foot boat, for example, would likely have no practical effect. On a 52 foot sloop, the picture changes a bit.

Right - low stretch is the key difference for speed. And yes, even diameter-for-diameter, HMPE stretches far less than polyester.

The word you're looking for is likely "**elastic recovery**" - polyester's ability to return to its original length after being loaded.

Your point about this requiring more frequent adjustments is interesting. The polyester is essentially "working" - stretching and recovering with load changes - which means constant minor shape adjustments in the sail. HMPE would hold a more static shape once set.

And you've identified a crucial variable: **boat size**. On a 22-footer, the absolute amount of stretch in, say, a 30-foot halyard is trivial. On a 52-footer with 70+ feet of halyard, polyester stretch becomes measurable in inches.

So before we move to #3 (specific line applications), do you want to establish a rough size threshold where you think this conversation becomes more relevant? Or should we just keep "boat size matters" in mind as we look at different lines?

I think it would be pretty speculative to try to identify a threshold. There are too many variables and I think we lack the data. That is, unless you have it, we lack quantitative knowledge of the exact effects of stretch under each point of sail at a given windspeed. We have to speak in generalities, without those data to back up any calculations. Right?

Absolutely right. We don't have the data to say "X inches of halyard stretch at Y wind speed on Z point of sail = measurable speed loss."

Any threshold I might suggest would be pure speculation, not backed by actual testing data. And even if we had some data, the variables are massive - sail design, rig tension, crew skill, sea state, etc.

So we're working in generalities, which actually strengthens your position - if the benefit were significant and practical for cruisers, we'd expect to see clearer evidence of it.

Ready to move to #3 - looking at specific line applications (halyards, sheets, control lines) to see if any stand out as places where low stretch *might* matter more, even if we can't quantify it?

Sure. And, let's simplify the discussion by narrowing this down to halyards and sheets. I would concede that HMPE is superior for applications like vang, outhauls, etc. I would also concede that there is some theoretical advantage to an HMPE halyard, though I would challenge anyone to prove it with empirical data. However, an HMPE sheet seems pointless. In fact, I would argue that having some elasticity is better for sheets, due to some inherent shock absorption, making it easier on equipment. And, the increased diameter makes it easier on hands.

Good - you've clarified your position nicely:

Control lines (vangs, outhauls): HMPE wins - conceded

Halyards: Theoretical HMPE advantage exists, but unprovable in practice for cruisers

Sheets: HMPE is actually *worse* because:

- Polyester's elasticity provides shock absorption (protects gear)
- Larger diameter is easier on hands

That's a strong argument on sheets - the elasticity becomes a feature, not a bug, when you're talking about sudden loads from gusts or wave action.

Should we dig into halyards next, or do you want to examine the sheets argument further? (I'm leaning toward halyards since that's where the debate is more interesting - sheets seem pretty settled in your mind.)

Let's talk about halyards, but just because sheets are settled in my mind doesn't mean I am right. I would like my thinking challenged on all points.

Fair point - I'll challenge you on sheets when we circle back.

Halyards first:

Your position is that HMPE halyards have a theoretical advantage but no provable practical benefit for cruisers.

Here's a potential challenge: Even if you can't measure boat speed differences, could there be a *practical* benefit in **reduced need for re-tensioning**?

With polyester, you tension the halyard, the sail loads up, the halyard stretches, luff tension decreases, sail shape degrades. You re-tension. Wind increases, it stretches more. You're constantly chasing it.

HMPE: set it once, it stays set.

Is that "convenience" rather than "speed"? Yes. But it's still a practical benefit - less time at the mast, more consistent sail shape without constant fiddling.

Does that challenge resonate, or is your counter that the amount of re-tensioning required with polyester is being overstated?

Both - it both resonates and I think it is overstated. If you aren't racing, you probably don't need to worry about slight halyard adjustments, provided conditions remain relatively constant. If you really care about being 100% optimal, you will change halyard tension as conditions change, regardless of rope material. The only scenario where HMPE "wins" is that, as pressure on the sail increases and decreases, the sail can theoretically change shape as the halyard stretches and recovers.

I say "theoretically" because if the luff is fully tensioned, although the tension on the halyard will vary, its length will not. That is, a tensioned halyard already has nearly all elasticity "used up". It simply doesn't want to stretch more. True, it could and is more apt to than HMPE, but we must be talking about a few millimeters difference, at most.

Excellent point - that really undermines the convenience argument I just made.

You're right: once a polyester halyard is properly tensioned and the luff is tight, you're already past the bulk of the elastic stretch. The halyard is working in a range where additional loading produces minimal additional elongation. We're talking millimeters at most as wind pressure varies.

So the "constantly chasing tension" scenario is overstated. A properly set polyester halyard should remain reasonably stable through normal wind variations without constant adjustment.

That actually strengthens your original position significantly - if properly tensioned polyester behaves almost as stably as HMPE in real-world conditions, then HMPE's theoretical advantage is even more marginal than the marketing suggests.

Is there anything else on halyards worth exploring, or should we circle back to sheets where I want to challenge your "elasticity as shock absorption" argument?

When you say "millimeters at most", are you simply agreeing with me, or do you have data/sources to back that up?

I'm agreeing with you - I don't have actual data or sources backing that up.

I was reasoning from material properties and following your logic, but you're right to call me on it. This is exactly what you said earlier: we lack the quantitative data on actual elongation under varying loads in real sailing conditions.

I don't have test results showing "polyester halyard X at Y tension elongates Z millimeters when wind increases from A to B knots."

So "millimeters at most" is an educated guess based on understanding how materials behave at high tension, not empirical evidence.

Do you have any sense of whether that order of magnitude (millimeters vs. centimeters) feels right based on your experience, or are we just both speculating?

Just speculating, but I am basing this on experience and intuition from working with these materials. My point is that I have never felt the need to adjust halyard tension unless it was not fully tensioned to begin with.

That's actually stronger than speculation - it's experiential evidence. If polyester stretch were creating noticeable sail shape degradation during normal sailing, you'd be observing the need to re-tension. You're not.

That's the practical test: does it require action? No. Therefore, for non-racing purposes, the difference is functionally irrelevant.

This really underscores your core argument: HMPE's advantage on halyards exists on paper but disappears in real-world cruising use.

Ready to move to sheets? I want to challenge your "elasticity as shock absorption" point. You said polyester's stretch protects equipment during gusts and wave action. But couldn't the counter-argument be that modern sailboats are engineered with enough strength that shock loads aren't actually a concern, and the elasticity just makes trim less precise?

You could make that counterpoint. But, trim isn't precise to begin with. We trim according to a combination of input from imprecise tools and intuition - not to precise measurements. For example, we use telltales. But those are nowhere near precise instruments. They give us a pretty good picture of what the air is doing at certain areas on a sail. Even if we were able to treat these as precision instruments and trim to telltale-perfection, that still would not guarantee that we were sailing as fast as we could. It might be possible that, at certain points of sail under certain conditions, the boat actually sails faster when telltales are slightly "off".

Excellent point. You've just dismantled the "precise trim" argument.

If sail trim is inherently imprecise - based on telltales, feel, boat speed feedback, and educated guessing - then the difference between "sheet stretched 2mm" vs "sheet didn't stretch" is operating at a level of precision that simply doesn't exist in the trim process itself.

We're adjusting sheets to rough indicators, not dial gauges. The elasticity in polyester sheets is noise compared to the much larger variations in how we actually trim sails.

So for sheets, you've got:

- No precision benefit from HMPE (we're not trimming precisely anyway)
- Loss of shock absorption
- Loss of hand-friendly diameter

That's a pretty compelling case that HMPE sheets are pointless for cruisers.

Is there anything else on sheets worth exploring, or have we sufficiently validated your thinking there? And are you ready to wrap up, or is there another angle you want to examine?

Well, there is another aspect to this discussion before writing off HMPE as "pointless". Some people really enjoy trying to squeeze every little bit of

optimization out of their boats to try to go as fast as possible in a given situation. For them, I think, it is important to "feel" like they are doing everything optimally. So, that theoretical difference really matters to them because it makes them feel like they are maximizing performance - which is where they derive much of their pleasure.

That isn't me. I could not care less about the difference between 5.05 and 5.07 kts. If I were racing I might care. Something has to make about 1/4 kts difference for me to even bother. Around here, conditions change so frequently that chasing perfection takes away from sailing enjoyment, for me.

That's an important nuance - you're distinguishing between *objective* performance gains and *subjective* sailing enjoyment.

For the optimizer personality, HMPE delivers psychological value: the satisfaction of knowing they've eliminated every variable they can control. That feeling of "I've done everything possible" is real value to them, even if the speed difference is unmeasurable.

For you, that endless chasing of marginal gains actually *reduces* enjoyment. The juice isn't worth the squeeze when conditions are constantly shifting and a quarter-knot difference is below your care threshold.

So your refined position might be: "HMPE running rigging offers no *measurable* performance benefit for cruisers, though it may provide psychological satisfaction for sailors who enjoy optimization for its own sake."

That's a more complete picture than "pointless."

Have we thoroughly validated and refined your thinking at this point, or is there another angle you want to explore?

I think we've covered this. Would you write a summary of the position that we just refined - maybe 3-4 paragraphs or so?

HMPE vs. Polyester Running Rigging for Non-Racing Sailors: A Refined Position

For most cruising sailboats outside of high-end racing, my position is that HMPE running rigging offers no measurable performance benefit over low-stretch polyester double braid. While HMPE's lower stretch theoretically could improve sail shape consistency and boat speed, any such gains are so marginal that they would be difficult or impossible to prove with empirical data. The variables involved—sail design, rig tension, crew skill, sea state, wind conditions—are too numerous and the potential differences too small to isolate a meaningful speed advantage in real-world sailing conditions.

Halyards present the strongest theoretical case for HMPE, but this advantage largely disappears in practice. Once a polyester halyard is properly tensioned, it operates in a range where additional loading produces minimal elongation—likely just millimeters as wind pressure varies. The commonly cited need for constant re-tensioning with polyester is overstated; properly set polyester halyards remain stable through normal wind variations without requiring adjustment. For sheets, HMPE offers even less advantage. Sail trim is inherently imprecise, based on telltales, feel, and intuition rather than exact measurements. The difference between a sheet that stretches slightly versus one that doesn't operates at a level of precision that simply doesn't exist in actual trimming practice. Moreover, polyester's elasticity provides valuable shock absorption for equipment, and its larger diameter is easier on hands.

That said, HMPE isn't entirely "pointless." For sailors who derive pleasure from optimization itself—who enjoy the feeling of maximizing every controllable variable—HMPE delivers real psychological value. The knowledge that they've eliminated stretch as a variable provides satisfaction, even if the objective performance gain is unmeasurable. However, for sailors whose enjoyment comes from the sailing experience rather than chasing marginal gains, the constant attention required to optimize for theoretical improvements can actually detract from pleasure, particularly in variable conditions. The refined position, then, is that HMPE running rigging offers no measurable performance benefit for non-racing sailors, though it may provide meaningful psychological satisfaction for those who enjoy optimization for its own sake.