

## **RACER BENEFITS**

SAVE WEIGHT, GAIN PERFORMANCE

**Speed** >>>

**Acceleration** >>>

**Handling** >>>

**Reliability** >>>

**Speed and Acceleration** – An established indicator for estimating a boat's speed and acceleration is its Sail Area/ Displacement (weight) Ratio ("SA/D Ratio"). Generally speaking, a higher number (larger sail and/or less weight) equals a faster boat. The logic behind the "SA/D Ratio" is to estimate the Power generated from a given Sail Area, and compare it to the Weight of the boat. Thus, the ultimate goal is to maximize the boats Power in relation to Weight, or Power-to-Weight Ratio ("P/W Ratio").

POWERLITE PBO Rigging saves up to 65% of rigging weight aloft and is 18% stiffer on average. These two factors have considerable effect on the boat's Power-to-Weight Ratio by increasing Power and decreasing Weight:

- 1. Improved Power Transfer:** POWERLITE PBO Rigging improves the boat's power transfer efficiency, or overall Power through:
  - a. Reduced Heeling Angle:** A more upright sailing posture, or reduced heeling angle means more power can be transferred from the sail. The reduction in heeling angle is due to the weight savings aloft, as described under "Compounded Weight Savings."
  - b. Reduced Tip-Falloff and Mast/Sail Distortion:** POWERLITE PBO Rigging's increased stiffness improves the mast's and sail's ability to hold its desired shape and transfer energy under strong winds. This increased stiffness also means the rig does not have to be over tensioned to provide adequate overall rigidity – a common practice to improve power transfer efficiency.
- 2. Compounded Weight Savings:** The unique benefit of reducing rigging weight aloft is the potential to further reduce crew and/or boat weight. A common rule of thumb is that one pound weight savings aloft can equate to 5-8 lbs. of savings in the keel, or 4-7 lbs. on the side rail. The magnitude of weight savings depends on boat configuration and heeling angle. This compounded weight savings can total up to several % of the boat's weight, significantly improving power and handling.

**Handling** – Reducing weight aloft lowers the vertical position of the center of gravity, or "VCG", which dramatically affects a boats handling, stability, and response. An automobile example of this phenomenon can be seen by comparing the handling between a car and a top-heavy sport utility vehicle. The car's responsiveness and stability over the sport utility vehicle is primarily due to its low VCG. The effects on a sailboat are amplified by its tall mast, so reducing the "top" weight has several obvious benefits:

- 1. Improved Response and Transition Time:** A lower VCG reduces the force necessary to change directions and increases speed in a tack or jibe. A more upright sailing posture also reduces the distance the rig has to swing in transition, so the overall feel is lighter and makes for a more nimble sailing vessel.
- 2. Improved Stability:** Lowering the boats VCG directly affects the "Angle of Vanishing Stability". The Angle of Vanishing Stability is one of the best predictors of ultimate stability the resistance to capsize and heel.
- 3. Reduced Dynamic Motion:** Lowering the boat's VCG also reduces pitching (hobby horsing), and wave rolling. By decreasing the dynamic motion, more energy can be delivered in a forward direction, increasing the boat's efficiency.

**Reliability** – No performance upgrade part is worth buying if it won't hold up to race conditions. After many years of use, PBO rigging continues to be the racer's choice for strength and reliability under AC and Grand Prix racing conditions. POWERLITE PBO has been designed and is race proven to hold up in the harshest conditions when maintained and used properly.<sup>1</sup> POWERLITE PBO is substantially stronger than rod or wire, has a fatigue life over 3X that of wire, and 6X that of rod<sup>2</sup>. In addition, the product comes with a 4 year limited warranty – unmatched by any other synthetic rigging and most steel rigging. More benefits of POWERLITE PBO Rigging:

1. Safer in shock loading when tensioned properly, due to higher overall strengths.
2. Less fatigue on the boat and rigging components when tensioned properly.
3. Safer, more convenient stepping/un-stepping, coiling, storage, and transport for trailerables. In addition, synthetic rigging will not damage the boat's deck or painted surfaces.

**LEAST EXPENSIVE WAY TO LIGHTEN YOUR RIG AND GAIN PERFORMANCE** – Carbon-fiber masts cost two to four times as much as their aluminum equivalents. That's the bad news. They save weight, but not in direct proportion to cost. By comparison, POWERLITE PBO Rigging is the most cost effective way to dramatically save weight and gain performance from the boat, with packages coming in close to the price of rod replacement.

## POWERLITE PBO RIGGING SETS AN ENTIRELY NEW STANDARD FOR DROP-IN PERFORMANCE GAIN VS. DOLLARS INVESTED



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<sup>1</sup> See manufacturer's instructions for usage and care guidelines.

<sup>2</sup> Tests were performed in a laboratory and may not correlate to field use or actual longevity.