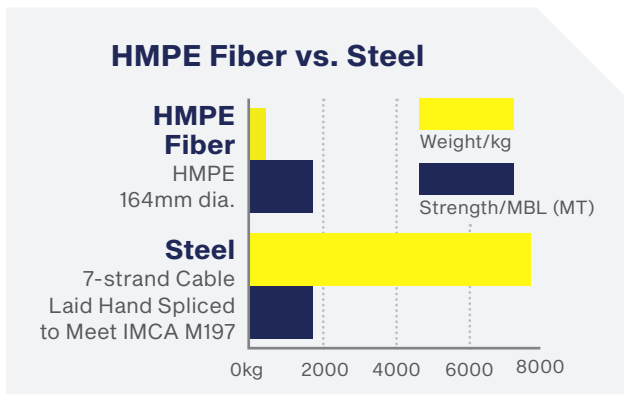




## HMPE FIBER VS STEEL

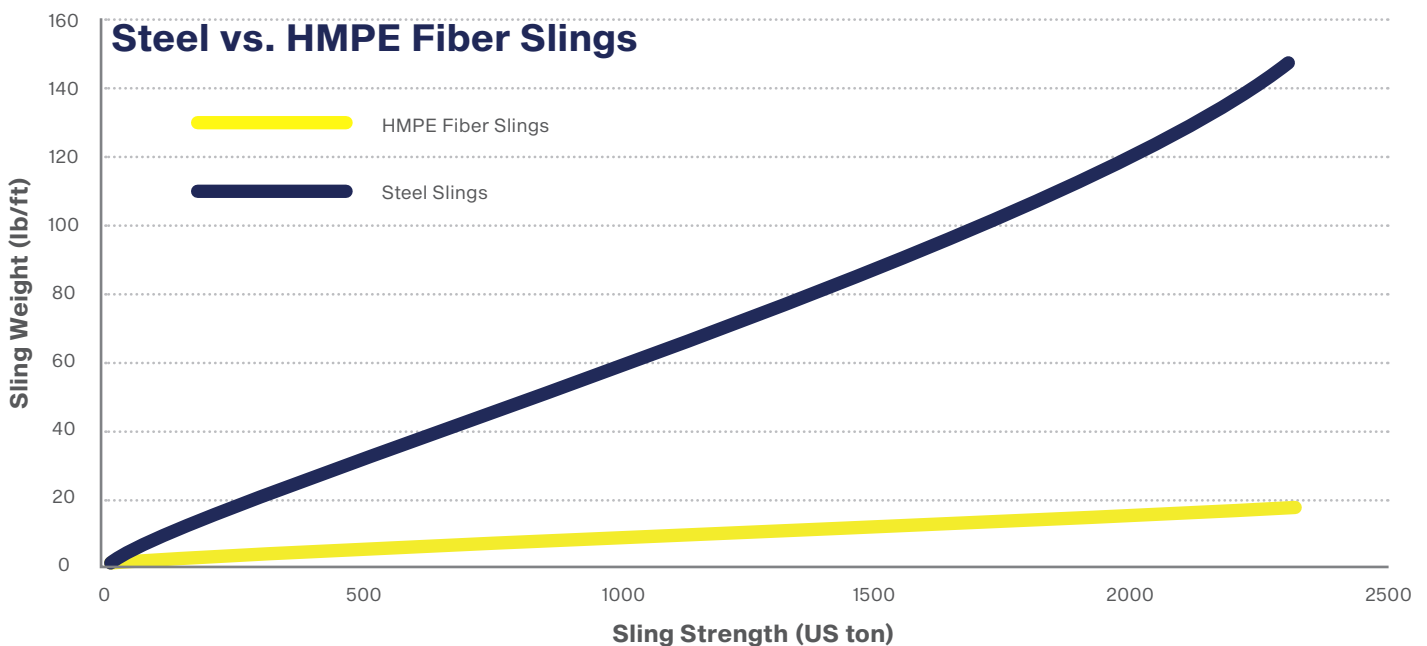
HMPE fiber ropes and slings have become increasingly popular as replacements for steel wire ropes in load handling. These modern, high-strength synthetic fibers offer remarkable durability without the risks of rust or corrosion. They remain unaffected by both salt and fresh water, and can be safeguarded against abrasion, cutting, and heat damage. Additionally, they are easy to inspect and repair.

1. **Weight Reduction:** They are 1/7 the weight of comparable steel wire rope sling.
2. **Rigging Efficiency:** The lightweight nature reduces rigging time.
3. **Ease of Handling:** Their flexibility and softness make them easier and safer to handle.
4. **Cost Savings:** Reduced handling, transportation, and storage costs.
5. **Repurposing:** Splice into different lengths / configurations throughout life of the sling.



### Benefits of HMPE Fiber vs. Steel

- Lighter and easier to handle
- Reduced risk of injury
- Remarkably durable, will not rust or corrode
- No broken/protruding wires
- Saves on transportation, storage, set-up
- Low maintenance
- Not affected by salt or freshwater
- Easy to inspect and splice



## PHYSICAL PROPERTIES OF HMPE

### Creep

Creep refers to the irreversible elongation of a rope under constant loading. Ropes experiencing creep often maintain relatively high breaking strengths until they are on the verge of failure, highlighting the importance of monitoring operating conditions that could cause excessive creep. When used within the recommended working load limit (WLL) and temperature range, HMPE exhibits minimal creep elongation during normal operations.

The risk of a rope creeping can be simplified into “The Three Ts”: tension, temperature, and time. Any operating conditions involving high loads, elevated temperatures, or extended durations will increase the likelihood of elongation due to creep.

### Abrasion Resistance

HMPE is renowned for its superior abrasion resistance compared to other fibers. This attribute is due to the molecular alignment of the polymer and the fiber’s low coefficient of friction. When braided into a rope, this property allows the fibers to move easily relative to one another, minimizing damage from abrasion.



**WARNING**



### Temperature Resistance

#### High-Temperature Considerations:

1. Strength Loss Threshold: HMPE ropes begin to irreversibly lose strength at temperatures above approximately 65°C (150°F).
  - Usage Restriction: Do not use HMPE ropes if ambient or contact temperatures exceed this limit.
2. Storage and Exposure Limits:
  - Short-Term Exposure: Avoid storage or exposure to temperatures over 70°C (160°F) for more than two hours.
  - Critical Temperature Limit: Never expose HMPE ropes to temperatures above 130°C (265°F), even briefly.

#### Low-Temperature Performance:

1. Strength in Cold Environments: HMPE fiber ropes exhibit no loss of strength in cold temperatures and may even gain strength at extremely low temperatures.
2. Ice Removal: Always remove any ice from slings before use to ensure safety and effectiveness.