



**FUSION M™**  
**RACING MEMBRANE SAILS**

# **FUSION M™** **PERFORMANCE** **ADVANTAGE**

Using Quantum's state-of-the-art iQ Technology® design process, each Fusion M Racing sail is developed and optimized specifically for your boat and racing challenges—whether you're racing around the world or trying to best your local rival. The custom sail design is developed using the most advanced membrane construction and shaping methods in the industry to guarantee infinitely repeatable and unprecedented shapes in an easy to trim package. Fusion M Racing sails are the fastest and most efficient tailor-made sail for your program.



# iQ TECHNOLOGY<sup>®</sup> DESIGN

Quantum's unprecedented iQ Technology and design process are the result of more than 25 years of experience in the sailmaking business paired with the best sailors, sailmakers, and designers in the world. The technology and approach draws on this expertise and a comprehensive understanding of how to design and build the complex engineered structures that make up today's high-tech racing sails, as well as the rig and spar systems that work in tandem with the sails to achieve the perfect shapes that, simply put, make the boat go fast. Data from all of Quantum's projects—from super yachts to dinghies—feed into the system's skills and knowledge database and enhance every sail we design.

## BETTER BOAT HANDLING MEANS BETTER PERFORMANCE

iQ Technology enables Quantum sail designers to achieve optimal sail shapes for unmatched speeds and overall performance through better sail and boat handling in a large range of conditions.

- **Versatile Shapes:** iQ Technology's highly sophisticated Fluid Structure Interaction (FSI) tools integrate aerodynamics, and Finite Element Analysis (FEA) allows for the creation of custom fiber maps that account for the unique, ever-changing loads exerted on a sail in a large range of conditions.
- **Repeatable Shapes:** The optimized fiber matrix creates a structural system that supports the entire sail with nearly consistent stretch in all directions, preventing any one part of the sail from becoming overloaded or distorted. This improves boat handling and makes it easy to achieve fast, efficient shapes over and over again and, ultimately, extends the competitive life of the sail.

## OPTIMIZED SAIL PLANS

iQ Technology studies are also used to evaluate the response of proposed sails in a variety of conditions to create the most versatile, high-performing sail plan possible for each team's needs. For teams racing under rating rules, similar studies can be used to analyze the effects of potential rating rules on sail selection, design, and sizing to deliver speed and a rating advantage.

## iQ SAILING SOLUTIONS

### CUSTOMIZED SOLUTIONS, UNIVERSAL BENEFITS

Quantum's sail designers rely on iQ Technology to develop sailing solutions for a broad range of scenarios. While the objectives vary and deliverables are customized to each project, iQ speeds up the design work and delivers demonstrable results, including better performance, shorter project timelines (no "hit or miss" attempts at fitting sails).

#### OBJECTIVE

Refine sail structure for a particular application before the boat hits the water.

Optimize sail structure for a particular application and wind range before the boat hits the water.

Provide yacht designers and equipment vendors with essential information for finalizing deck layouts and hardware specifications.

#### DESIGN ANALYSIS

Observe stress and strain within the sail.

Predict flying shapes and performance consequences.

Evaluate structural loads throughout the sail and at all attachment points.

#### BENEFIT

Deliver optimal structural performance (weight/resistance).

Deliver out-of-the-bag performance with the best fit, size, shape, structure.

Enable integrated and optimized boat performance with increased efficiency.

# ***THE POWER OF FUSION M CONSTRUCTION***

Quantum's Fusion M membrane sail construction process is based on tolerances measured in fractions of millimeters to ensure the advantages of the custom fiber matrix design. The result is a superior membrane with a longer structural and performance life that doesn't sacrifice ease of use and shape.

## **▲ *PERFORMANCE & STRUCTURAL LONGEVITY***

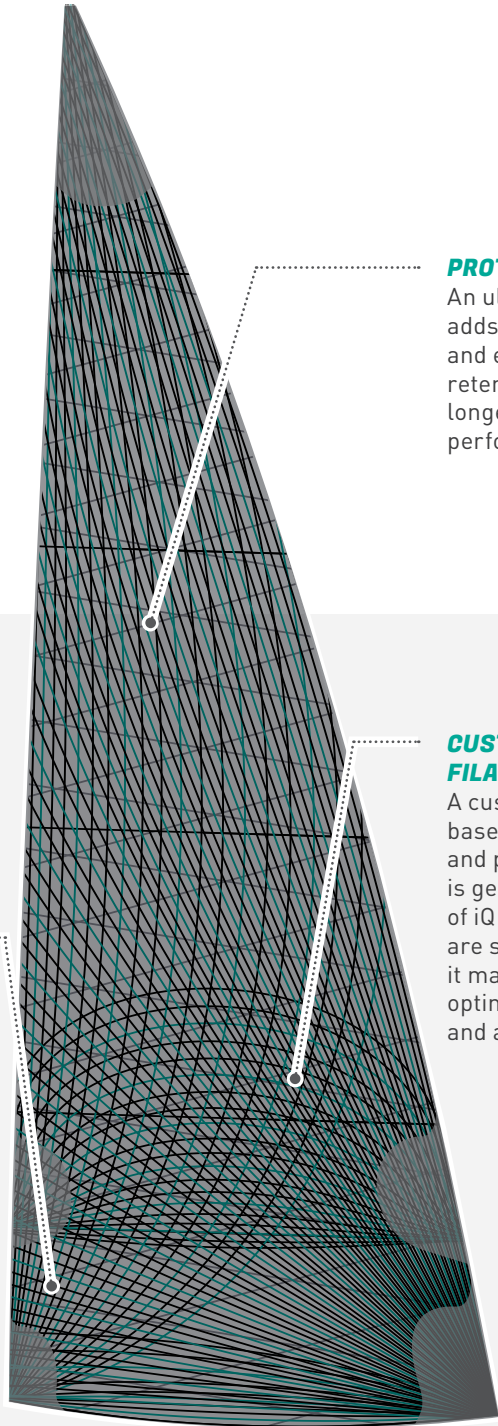
To achieve unmatched performance, Quantum uses a two-step construction process. It starts with vacuum bagging to lock the custom fiber matrix in place between the chosen skin material. Next, infrared heat and several tons of pressure are applied to spread the adhesive throughout the layers. The sail panels are completely cured before the shaping process begins to eliminate the effects of shrinkage and to guarantee the structural integrity and repeatability of the carefully optimized aerodynamic shape of the sail.

## **▲ *MULTIPLE FIBER & SKIN OPTIONS***

Quantum works with suppliers around the globe to source and offer only the highest quality material options. Quantum sail consultants and designers will work with you to find the right fiber and skin combination based on boat size, sailing requirements, and the unique needs of your program.

## **▲ *COMMITMENT TO INNOVATION***

Quantum has invested significant resources to develop the most efficient manufacturing process to minimize waste. Additionally, Quantum is committed to innovation and works closely with suppliers to reduce environmental impact through the research, development, and testing of new materials and production methods.



#### **PROTECTIVE SKIN LAYER**

An ultra-lightweight skin adds structural durability and enhances shape retention, increasing the longevity of the sail and its performance.

#### **CUSTOM FIBER & FILAMENT MATRIX**

A custom fiber matrix based on your unique boat and program requirements is generated with the help of iQ Technology®. Fibers are strategically run where it matters most to ensure optimal shape, ease of trim, and added strength.

#### **ATTENTION TO DETAIL**

Every detail is exquisitely engineered and refined. The sail is hand-finished with the highest attention to detail given to every construction element, including head and corner reinforcements, luff and leech cords, edge tapes, reef points, etc.

## **FUSION M ANATOMY**

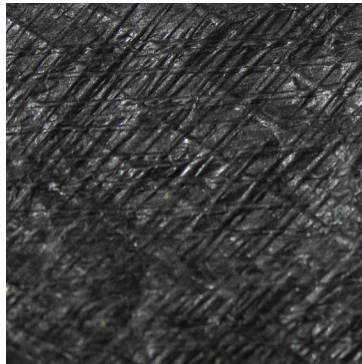
Fusion M's nearly isotropic structures provide perfect balance and shared loading. The iQ Technology designed fiber and filament matrix, durable skins, and the highest attention to hand-finished details translate into unparalleled shape-holding from the outset through the long haul.

PURE  
PERFORMANCE



# COMPARE SKINS

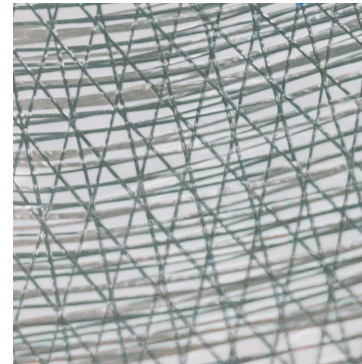
Skins are an integral part of the layering system that holds the fiber-and-filament matrix in place and protects them from both the elements and the boat. The fiber-and-filament matrix is sandwiched between a thin film and covered with a skin to ensure softer handling, reduced shrinkage, increased shape retention, and enhanced durability. The range of skin options means you can find the perfect balance between pure performance and ultimate durability.



## VX

This ultralight, filament based skin is the high-performance choice for programs of every level. The VX is more durable and less susceptible to shrinkage, increasing the longevity of the sail's precision shape.

- ▲ **COLOR:** Black or Gray
- OPTIONS:** Ultralight, Light, or Offshore
- COST:** ●●●●●



## MATTE

This non-glare, translucent skin has helped power podium wins around the globe for years. The Matte skin is an affordable option for teams of all levels that require reliable performance and durability.

- ▲ **COLOR:** Gray
- OPTIONS:** Light or Standard
- COST:** ●●●●●

# COMPARE FIBERS

The fibers and filaments in the membrane sail enable the iQ Technology-perfected designs to come to life. A wide range of fiber combinations enable designers to create an optimal mix of pure performance and extreme durability to meet your program's needs.

## HIGH-TENACITY CARBON

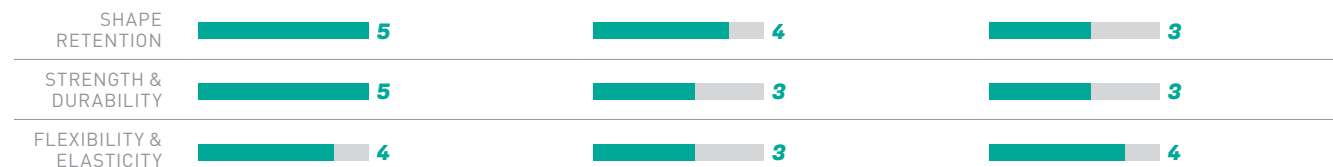
Maximum shape retention and strength for maximum performance. Ideal for large boats and professional programs.

## ARAMID

High-performance blend of extreme shape retention and durability. Ideal for medium-sized boats and offshore campaigns.

## HIGH TENACITY POLYESTER

Highly versatile and affordable with great shape retention and durability. Ideal for smaller boats and club-level programs.

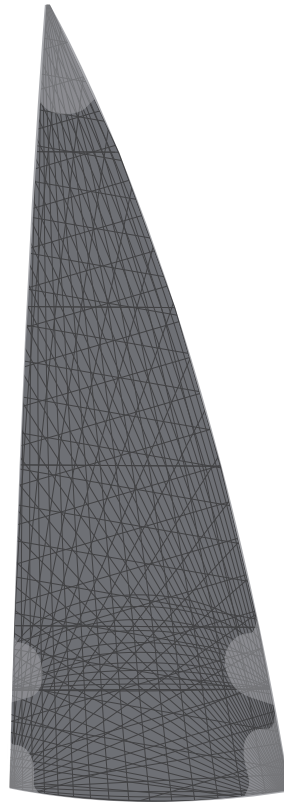


# SAIL SERIES OVERVIEW

A wide range of fiber-and filament packages, combined with the latest skin options, offer whatever balance between pure performance and ultimate durability you need. From ultimate strength and weight ratio to sails tough enough to go around the world, Quantum's Fusion M series has you covered.

*All Fusion M sails are available in square-top or pin-head options.*

## FUSION M 3



Fusion M 3 is perfect for the small-to-mid-sized-boat programs looking for an affordable, high-quality membrane sail or when class rules do not permit high modulus fibers or filaments. The M 3 delivers with rugged, reliable polyester fibers paired with easy-to-trim designs.

### FUSION M 3

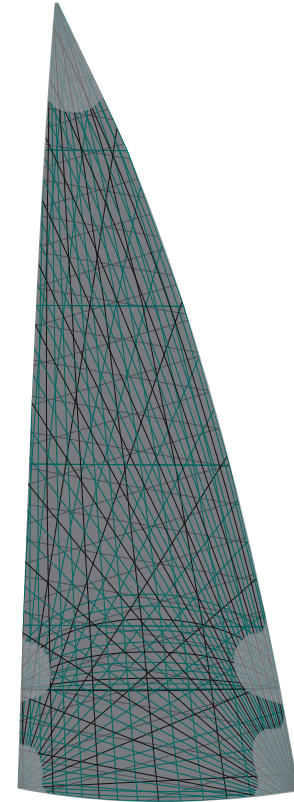
**BOAT SIZE**  
20'-35' / 6m-10m

**RACING TYPE**  
Club Racing  
Class-Rule One Design

**FIBER**  
— POLYESTER

**COST**  
● ● ● ● ●

## FUSION M 5



Reliability and versatility make Fusion M 5 the go-to membrane sail for small to mid-sized boats. Customized aramid/carbon blend produces a lightweight sail with superior, all-around performance and ease of trim.

### FUSION M 5

**BOAT SIZE**  
25'-45' / 8m-14m

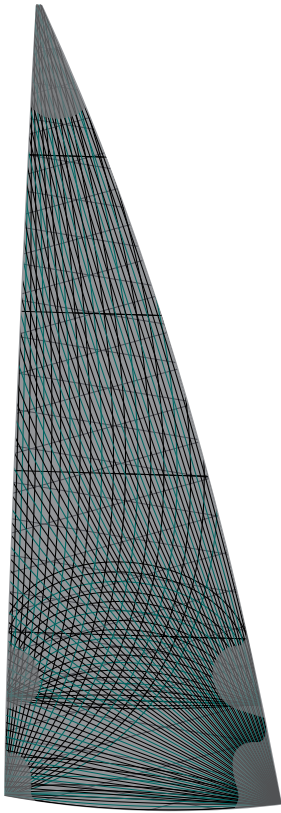
**RACING TYPE**  
Club Racing  
Regional Racing

**FIBER**  
— CARBON  
— ARAMID

**COST**  
● ● ● ● ●

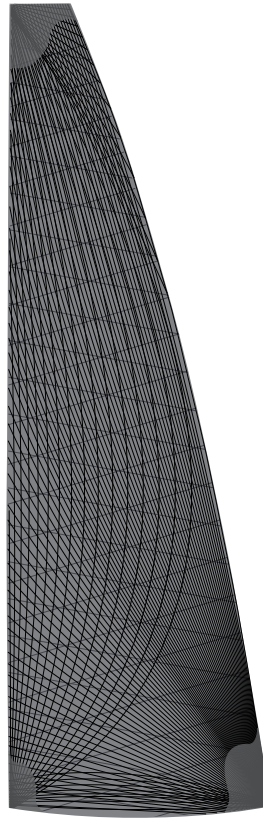


## FUSION M 7



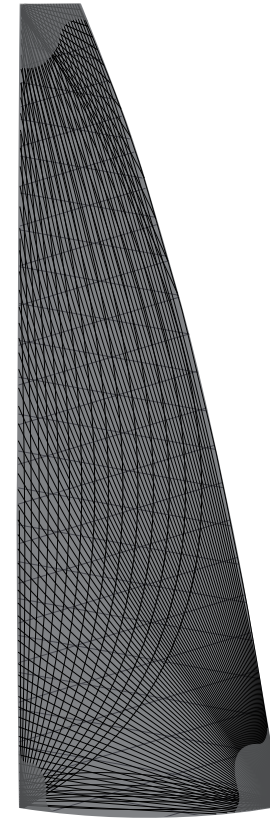
The Fusion M 7 delivers the unmatched performance required for success at the higher levels. The carbon/aramid blend is optimized for each project to produce ultimate performance for the lightest weight, without sacrificing strength or ease of trim.

## FUSION M 7+



The Fusion M 7+ is everything that makes the Fusion M 7 the industry standard but made with all carbon for no-holds-barred performance. Simply the strongest, lightest, and most durable sail available for larger-boat programs.

## FUSION M 9



The Fusion M 9 is the ultimate sail for grand prix and fiercely competitive teams. Quantum's top designers integrate with each program to develop and engineer custom solutions to meet its unique challenges.

### FUSION M 7

**BOAT SIZE**  
35'-80' / 10m-24m

**FIBER**  
— CARBON  
— ARAMID

**RACING TYPE**  
Inshore & Offshore Racing  
Distance Racing

**COST**  
●●●●●

### FUSION M 7+

**BOAT SIZE**  
35'-80' / 10m-24m

**FIBER**  
— CARBON

**RACING TYPE**  
Grand Prix Inshore & Racing  
Distance Racing

**COST**  
●●●●●

### FUSION M 9

**BOAT SIZE**  
50'+ / 15m+

**FIBER**  
— CARBON

**RACING TYPE**  
Grand Prix Racing  
Distance Racing

**COST**  
●●●●●

FOR  
EVERY CHALLENGE



A B  
C



- A** J/99  
Local Racing/Cruising - Fusion M 7 VX
- B** CLUBSWAN 36  
Pro Circuit - Fusion M 7 VX
- C** J/92  
Club Racing - Fusion M 5 VX



**D** IMOCA 60 MALIZIA II  
Vendée Globe Campaign- Fusion M 7+ VX

**E** OD 35T CHICO 2  
Loca/Offshore Racing - Fusion M 5 Matte

**F** TP52 QUANTUM RACING  
Grand Prix/52 Super Series - Fusion M 9 VX



**E**  
**D** **F**

# THE QUANTUM EXPERIENCE

It's one thing to make exceptional sails, but we go even further by making your challenges our own. With superior and personalized customer service, we're with you every step of the way as loyal advisors, friends and fellow sailors. It's about providing unparalleled customer service and serving as a trusted resource and partner for all your sail needs. Quantum's customer care services include:

- 1 EXPERT CONSULTATION**  
Guides you through choices of materials, construction options, hardware, sizing, sail handling systems.
- 2 DETAILED, ON-BOARD MEASUREMENT**  
Ensure a perfect, custom fit for your sails.
- 3 COLLABORATION**  
Throughout the process, collaboration ensures your needs are met and you know what you are getting and why.

- 4 NEW SAIL INSTALLATION AND INSTRUCTION**  
Quantum will fit, fine-tune, and instruct you in the use and care of your sails.
- 5 EXCELLENT PRODUCT WARRANTY**  
Backed by sailing and service experts at more than 50 locations around the globe.

**MAKING YOUR CHALLENGES OUR OWN**



Fusion M 5 Matte

## PROFESSIONAL SAIL CARE SERVICES

Quantum's service technicians provide a broad array of sail care services – from a simple repair to sail re-cuts. The first step for any project is an understanding of your needs and a sail evaluation so we can provide you with an accurate, up-front estimate of time and cost. Here are some of the services you can find at Quantum sail lofts around the world.

- Multipoint Inspections
- Sail Repairs
- Annual Sail & Canvas Maintenance
- Sail Removal & Installation
- Sail Pick-up & Drop-off
- Sail Mildew Removal, Mitigation and Prevention
- Sail and Canvas Washing
- Same Day/Overnight Repair Services
- Sail Re-Cuts
- Sail Conversions
- Sail/Hardware Upgrades
- Canvas Repair & Fabrication