Certificate No:
**TAK000021E**

# TYPE APPROVAL CERTIFICATE

## This is to certify:

**That the Other Fibre Products**

with type designation(s)
**Fibrelite Standing Rigging Cruising Range; sizes FF19MN - FF265MN**

Issued to
## FUTURE FIBRES RIGGING SYSTEMS, S.L.
**Alcácer, Valencia, Spain**

is found to comply with
**DNV GL class programme DNVGL-CP-0413 – Type approval – Carbon and PBO cable rigging for sailing yachts**

## Application :

**Standing Rigging elements for Sailing Yachts**

Issued at **Hamburg** on **2021-06-01**
This Certificate is valid until **2026-05-31**.
DNV local station: **Area NB/CMC Iberia**

Approval Engineer: **Hasso Hoffmeister**

for **DNV**

**Andree Orth**
**Head of Section**

This Certificate is subject to terms and conditions overleaf. Any significant change in design or construction may render this Certificate invalid.
The validity date relates to the Type Approval Certificate and not to the approval of equipment/systems installed.

LEGAL DISCLAIMER: Unless otherwise stated in the applicable contract with the holder of this document, or following from mandatory law, the liability of DNV AS, its parent companies and their subsidiaries as well as their officers, directors and employees ("DNV") arising from or in connection with the services rendered for the purpose of the issuance of this document or reliance thereon, whether in contract or in tort (including negligence), shall be limited to direct losses and under any circumstance be limited to 300,000 USD.

## Product description
Fibrelite Standing Rigging Cruising Range; sizes FF19MN - FF265MN

## Application
Continuous wound PBO cables of different sizes (see table below) with different, "free articulation" type end fittings and different type protective braided covering for "Category A chafe protection". The products underwent a design review and physical prototype testing, according to DNVGL-CP-0413.Further, the production facilities were audited.

Details:
The certification is valid for:

End Fittings:
- Spools "SP"
- Barrel Pin "BP"
- Lashing Eye "LE"
- Thimble “LLT” and “LUT”

Braided Cover materials:
- Polyester High Tenacy filament yarn 178T
- Dyneema SK 75 filament yarn
- Polyester 1000/3
- Technora T240 1670 dTex
- 2600 denier Spectra 1000
- UHMWPE
- Dytec

The type approval is valid for the complete range in the table below and as specified in the approval documentation. Maintenance and Replacement details are to be regarded from the documentation of the manufacturer.

## Limitation
The Type Approval covering:

- Structural integrity of standing rigging cables, according to DNV-CP-0413:
  - Static ultimate strength
  - Fatigue strength
  - Chafe resistance
  - Impact resistance

## Product Range

| Cable Part No.: | Nominal EA [MN] | MBL* [kN] | MWL** [kN] |
|---|---|---|---|
| FF19MN | 19 | 216 | 53 |
| FF24MN | 24 | 280 | 71 |
| FF28MN | 28 | 315 | 78 |
| FF31MN | 31 | 352 | 85 |
| FF35MN | 35 | 401 | 98 |
| FF43MN | 43 | 478 | 107 |
| FF49MN | 49 | 543 | 135 |
| FF58MN | 58 | 642 | 162 |
| FF75MN | 75 | 825 | 205 |
| FF98MN | 98 | 1070 | 267 |
| FF111MN | 111 | 1213 | 303 |
| FF124MN | 124 | 1346 | 347 |
| FF139MN | 139 | 1505 | 392 |
| FF169MN | 169 | 1817 | 463 |
| FF220MN | 220 | 2344 | 570 |
| FF265MN | 265 | 2785 | 696 |

(*) MBL = Minimum Break load. Statistically assured minimum values, derived from static tensile tests
(**) MWL = Maximum Working Load, derived from “tensile to slack” fatigue testing

Further variant:

Cables constructed with extra fibre for extra tensile stiffness are designated FFyyMN+zzMN, where “zz” stands for the added stiffness and “yy” stands for the reference MWL and MBL specification as per the above table.

## Marking of product

Each product shall be marked with the TA Certificate number.

## Periodical assessment

For retension of the Type Approval, a DNV surveyor shall perform periodical assessment after two years (+/-90 days) and after 3.5 years (+/-90 days) to verify that the conditions for the approval are complied with.

## Type Approval documentation

Only displayed on Original certificate.