



Certificate no.:  
**TAK00002BZ**

# TYPE APPROVAL CERTIFICATE

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## This is to certify:

that the **Synthetic Fibre Ropes**

with type designation(s)  
**POWERNEEMA® SBR, 12-strand**

issued to

**Zhejiang Four Brothers Rope Co., Ltd**  
**Linhai, China**

is found to comply with

**DNV class programme DNV-CP-0100 – Type approval – Synthetic fibre ropes for towing, mooring and anchoring**

**ISO 10325:2018 "Fibre ropes – High modulus polyethylene – 8-strand braided ropes, 12-strand braided ropes and covered ropes"**

## Application:

**Mooring and Towing of Ships and HSLCs.**

**Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.**

Issued at **Hamburg** on **2024-03-14**

This Certificate is valid until **2029-03-13**.

for **DNV**

DNV local unit: **Ningbo CMC**

Approval Engineer: **Gisle Hersvik**

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.



Form code: TA 251

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## Product description

**POWERNEEMA® SBR:** 12-strand braided/plaited synthetic fibre ropes without jacket

- Fibre material: UHMWPE
- With or without marine finish
- Specific gravity: 0.97 (floats in seawater)
- SBR: Sequential Break Rope. An SBR-component is a rope component, which by design is intended to stay intact at first break and thus prevent sudden, complete rope failure and inhibit or prevent recoil.
- POWERNEEMA® SBR, same as POWERNEEMA®, but with SBR-component.

The SBR-component using an ISP (Inner Stretchy Part, inner core element) has been tested in accordance with Cordage Institute, CI-1502:2019 Test Methods for High Modulus Reduced Recoil Risk Rope.

ISP in POWERNEEMA® SBR is reducing danger for recoil and is not influencing ropes' performance indicators.

## Rope Characteristics

The Rope Characteristics are tabulated on the next pages observing the following:

Fibre ropes are to be delivered with a linear mass within  $\pm 5\%$  of the nominal linear mass given in the tables.

The reference number corresponds to the approximate diameter, in millimetres.

The linear density, in kilotex, corresponds to the net mass per length of rope, expressed in grams per metre or in kilograms per thousand metres.

The MBL values quoted in the below table relate to un-spliced ropes.

The LDBF values quoted in the below table relate to spliced ropes.

**POWERNEEMA® SBR:** 12-strand braided/plaited, synthetic fibre ropes without jacket  
- Specific gravity: 0.97 (floats in seawater)

| ROPE CHARACTERISTICS<br>POWERNEEMA® SBR |                 |                     |           |      |       |      |       |
|-----------------------------------------|-----------------|---------------------|-----------|------|-------|------|-------|
| Reference number/Size                   |                 | Weight<br>incl. SBR |           | MBL  |       | LDBF |       |
| Diameter<br>[mm]                        | Circ.<br>[Inch] | [ktex]              | [kg/220m] | [kN] | [mT]  | [kN] | [mT]  |
| 24                                      | 3               | 341                 | 75        | 533  | 54.4  | 480  | 49.0  |
| 28                                      | 3 1/2           | 461                 | 101       | 704  | 71.9  | 634  | 64.7  |
| 32                                      | 4               | 619                 | 136       | 918  | 93.7  | 826  | 84.3  |
| 36                                      | 4 1/2           | 750                 | 165       | 1104 | 112.7 | 994  | 101.4 |
| 40                                      | 5               | 910                 | 200       | 1329 | 135.6 | 1196 | 122.0 |
| 42                                      | 5-1/4           | 1009                | 222       | 1459 | 148.9 | 1313 | 134.0 |
| 44                                      | 5-1/2           | 1108                | 244       | 1589 | 162.1 | 1430 | 146.0 |
| 46                                      | 5-3/4           | 1201                | 264       | 1698 | 173.2 | 1528 | 155.9 |
| 48                                      | 6               | 1294                | 285       | 1807 | 184.4 | 1626 | 166.0 |
| 50                                      | 6-1/4           | 1418                | 312       | 1971 | 201.1 | 1774 | 181.0 |
| 52                                      | 6-1/2           | 1557                | 343       | 2136 | 217.9 | 1922 | 196.1 |
| 54                                      | 6-3/4           | 1681                | 370       | 2300 | 234.7 | 2070 | 211.2 |
| 56                                      | 7               | 1805                | 397       | 2464 | 251.5 | 2218 | 226.0 |
| 58                                      | 7-1/4           | 1930                | 425       | 2622 | 267.6 | 2360 | 240.8 |
| 60                                      | 7-1/2           | 2055                | 452       | 2778 | 283.4 | 2500 | 255.1 |
| 62                                      | 7-3/4           | 2180                | 480       | 2936 | 299.5 | 2642 | 269.6 |
| 64                                      | 8               | 2325                | 512       | 3092 | 315.5 | 2783 | 284.0 |
| 66                                      | 8-1/4           | 2488                | 547       | 3293 | 336.1 | 2964 | 302.5 |
| 68                                      | 8-1/2           | 2650                | 583       | 3496 | 356.7 | 3146 | 321.0 |
| 70                                      | 8-3/4           | 2813                | 619       | 3697 | 377.2 | 3327 | 339.5 |
| 72                                      | 9               | 3025                | 666       | 3898 | 397.7 | 3508 | 358.0 |
| 74                                      | 9-1/4           | 3180                | 700       | 4080 | 416.3 | 3672 | 374.7 |
| 76                                      | 9-1/2           | 3335                | 734       | 4263 | 435.0 | 3837 | 391.5 |
| 78                                      | 9-3/4           | 3490                | 768       | 4444 | 453.5 | 4000 | 408.2 |
| 80                                      | 10              | 3645                | 802       | 4628 | 472.2 | 4165 | 425.0 |

Note:  
Diameters 24 mm and 80 mm have been tested in accordance with CI-1502:2019.

## Application/Limitation

The approval range covers ropes with nominal diameter from 24 mm to and including 80 mm.

## Type Approval documentation

### Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**, and according to:

- ISO 2307:2019, Fibre ropes -- Determination of certain physical and mechanical properties.
- ISO 9554:2019, Fibre ropes -- General specifications.
- ISO 10325:2018, Fibre ropes -- High modulus polyethylene -- 8-strand braided ropes, 12-strand braided ropes and covered ropes.
- Cordage Institute, CI-1502:2019 Test Methods for High Modulus Reduced Recoil Risk Rope.
- Cordage Institute, CI-1500A:2015 Test Methods for Fiber Rope Physical Properties.
- DNV-CP-0100.

### Marking of product

Product/package shall be marked with *manufacturer's name: **Zhejiang Four Brothers Rope Co., Ltd.**, place of production, type designation and diameter.*

The marking is to be carried out in such a way that it is visible, legible and indelible. The marking of product is to enable traceability to the DNV Type Approval Certificate.

### Periodical assessment

The scope of the Periodical Assessment is to verify that the conditions stipulated for the Type Approval is complied with and that no alterations are made to the product design or choice of materials.

Periodical assessments (for Certificate Retention / Certificate Renewal) shall be performed according to DNV-CP-0338.

This certificate is only valid if required Periodical assessments are carried out with satisfactory results. To check the validity of this certificate, please look it up in <https://approvalfinder.dnv.com>

END OF CERTIFICATE