



Certificate no.:
TAK00002C1

TYPE APPROVAL CERTIFICATE

This is to certify:

that the **Synthetic Fibre Ropes**

with type designation(s)
POWERTEX®, 8- and 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 10572:2009 "Mixed polyolefin fibre 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**.

DNV local unit: **Ningbo CMC**

for **DNV**

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

POWERTEX®: 8- and 12-strand braided/plaited synthetic fibre ropes without jacket

- Fibre material: Polyolefin (PP/PE)
- With or without marine finish
- Specific gravity: 0.92 (floats in seawater)

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.

POWERTEX®: 8-strand and 12-strand braided/plaited, synthetic fibre ropes without jacket
- Specific gravity: 0.92 (floats in seawater)

ROPE CHARACTERISTICS POWERTEX®					
Reference number/Size		Weight		MBL	
Diameter [mm]	Circ. [Inch]	[ktex]	[kg/220m]	[kN]	[mT]
24	3	289	64	131	13.4
28	3-1/2	394	87	174	17.8
32	4	511	112	223	22.8
36	4-1/2	641	141	277	28.3
40	5	791	174	342	34.9
44	5-1/2	977	215	409	41.7
48	6	1146	252	479	48.9
50	6-1/4	1246	274	512	52.2
52	6-1/2	1341	295	554	56.5
56	7	1559	343	636	64.9
60	7-1/2	1791	394	729	74.4
64	8	2036	448	822	83.9
68	8-1/2	2300	506	935	95.4
70	8-3/4	2436	536	991	101.1
72	9	2582	568	1034	105.5
75	9-3/8	2796	615	1122	114.5
80	10	3191	702	1273	129.9
85	10-5/8	3605	793	1432	146.1
88	11	3859	849	1538	156.9
90	11-1/4	4036	888	1607	164.0
95	11-3/4	4496	989	1765	180.1
100	12-1/2	4982	1096	1957	199.7
104	13	5359	1179	2117	216.0
112	14	6232	1371	2455	250.5
120	15	7134	1569	2810	286.7

Application/Limitation

The approval range covers ropes with nominal diameter from 24 mm to and including 120 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 10572:2009, Mixed polyolefin fiber ropes
- 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