



Certificate no.:
TAK00002C0

TYPE APPROVAL CERTIFICATE

This is to certify:

that the **Synthetic Fibre Ropes**

with type designation(s)
POWERDAN®, 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

Revision: 2023-09

www.dnv.com

Page 1 of 4

Product description

POWERDAN®, 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.

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

ROPE CHARACTERISTICS POWERDAN®					
Reference number/Size		Weight		MBL	
Diameter [mm]	Circ. [Inch]	[ktex]	[kg/220m]	[kN]	[mT]
24	3	275	60	106	10.8
28	3-1/2	374	82	140	14.3
32	4	489	108	173	17.6
36	4-1/2	619	136	216	22.1
40	5	764	168	270	27.5
44	5-1/2	924	203	321	32.8
48	6	1100	242	374	38.1
50	6-1/4	1195	263	408	41.6
52	6-1/2	1291	284	443	45.2
56	7	1497	329	495	50.5
60	7-1/2	1718	378	571	58.3
64	8	1955	430	639	65.2
68	8-1/2	2207	486	719	73.4
70	8-3/4	2341	515	759	77.5
72	9	2474	544	800	81.6
75	9-3/8	2686	591	868	88.6
80	10	3055	672	984	100.4
85	10-5/8	3450	759	1115	113.8
88	11	3696	813	1194	121.8
90	11-1/4	3868	851	1219	124.4
95	11-3/4	4309	948	1361	138.9
100	12-1/2	4773	1050	1513	154.3
104	13	5162	1136	1626	165.9
112	14	5987	1317	1893	193.2
120	15	6873	1512	2110	215.3

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