

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Synthetic Fibre Ropes**with type designation(s)
Polypropylene Multi-Filament Ropes

Issued to

Zhejiang Four Brothers Rope Co., Ltd
Linhai, China

is found to comply with

DNV GL class programme DNVGL-CP-0100 – Type approval – Synthetic fibre ropes for towing, mooring and anchoring**ISO 1346:2012 "Fibre ropes – Polypropylene split film, monofilament and multifilament (PP2) and polypropylene high-tenacity multifilament (PP3) – 3-, 4-, 8- and 12-strand ropes"****Zhejiang Four Brothers Rope Co., Ltd. Factory Standard Q/ZJSX 008-2016 "Double Braid Rope"****DNV GL rules for classification – Ships****DNV GL rules for classification – High speed and light craft****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 GL.**Issued at **Høvik** on **2018-03-18**This Certificate is valid until **2023-03-17**.DNV GL local station: **Ningbo**for **DNV GL**Approval Engineer: **Gisle Hersvik**

Rikard Törnqvist
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.



Product description

Polypropylene Multi-Filament Ropes

8- and 12-strand braided synthetic fibre ropes (Ref. ISO 1346:2012):

- Specific gravity: 0,91 (floats in seawater)

ROPE CHARACTERISTICS			
Diameter, mm	Nominal linear mass, kg/m	Minimum Breaking Load (MBL), kN	
		(8-strand Type-L)	(12-strand Type-T)
12	0,0651	19,1	20,2
16	0,116	30,2	32,0
20	0,181	47,7	50,4
24	0,260	67,5	72,0
28	0,354	90,0	95,4
30	0,407	101	106
32	0,463	119	126
36	0,586	144	153
40	0,723	180	189
44	0,875	212	225
48	1,040	252	270
52	1,220	302	320
56	1,420	338	360
60	1,630	383	405
64	1,850	428	450
72	2,340	540	567
80	2,890	675	720
88	3,500	810	855
96	4,170	954	1 008
104	4,890	1 125	1 188
112	5,670	1 260	1 350
120	6,510	1 440	1 530

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

Polypropylene multi double-braided ropes (Ref. Factory Standard Q/ZJSX 008-2016):

- Specific gravity: 0,91 (floats or seawater)

ROPE CHARACTERISTICS		
Diameter, mm	Nominal linear mass, kg/m	Minimum Breaking Load (MBL), kN
		(Type-C)
36	0,677	185
40	0,836	229
44	1,010	275
48	1,200	328
52	1,410	385
56	1,640	432

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60	1,880	495
64	2,140	561
72	2,710	701
80	3,350	861
88	4,050	1 010
96	4,820	1 190
104	5,650	1 390
112	6,560	1 590
120	7,532	1 810

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

Application/Limitation

The Type Approval covers ropes with diameter from 12 mm to and including 120 mm.

Scope of assessment is limited to evaluation of net mass per metre, type of lay and static strength.

Type Approval documentation

Tests carried out

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

- ISO 2307:2010

Initial setting/cycling of ropes has not been carried out prior to break testing.

The fibre rope is manufactured in accordance with;

- ISO 10325:2009 "Fibre ropes - High modulus polyethylene - 8-strand braided ropes, 12-strand braided ropes and covered ropes", and
- Zhejiang Four Brothers Rope Co., Ltd. Factory Standard Q/ZJSX 008-2016 "Double Braid Rope".

Marking of product

Product shall be marked with *manufacturer's name*; **Zhejiang Four Brothers Rope Co., Ltd., China**, *production plant* and *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 GL 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 Assessment to be performed after 2 and 3.5 years (Certificate Retention) and at renewal after 5 years (Certificate Renewal).

The main elements of the Periodical Assessment are to:

- Ensure that **Type Approval documentation** is available.
- Review design, materials, production process, and performance with respect to possible changes, in order to ensure compliance with **Type Approval documentation** and/or referenced material specifications.
- Ensure traceability between manufacturer's product marking and DNV GL Type Approval Certificate.



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END OF CERTIFICATE