

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Synthetic Fibre Ropes**with type designation(s)
Polyester 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 1141:2012 "Fibre ropes – Polyester – 3-, 4-, 8- and 12-strand ropes"****ISO 10547:2009 "Polyester fibre ropes – Double braid construction"****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

Polyester Ropes

8- and 12-strand braided synthetic fibre ropes (Ref. ISO 1141:2012):

- Specific gravity: 1,38 (sinks 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	0,109	20,7	22,5
16	0,194	36,0	38,3
20	0,304	56,7	60,3
24	0,437	81,0	85,5
28	0,595	106	113
30	0,683	119	126
32	0,777	135	144
36	0,984	171	180
40	1,210	212	225
44	1,470	252	270
48	1,750	302	320
52	2,050	360	383
56	2,380	405	428
60	2,730	450	477
64	3,110	504	540
72	3,930	639	675
80	4,860	810	855
88	5,880	954	1,008
96	6,990	1 125	1,188
104	8,210	1 350	1,440
112	9,520	1 530	1,620

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

Polyester double braid fibre ropes (Ref. ISO 10547:2009):

- Specific gravity : 1,38 (sinks in seawater)

ROPE CHARACTERISTICS		
Diameter, mm	Nominal linear mass, kg/m	Minimum Breaking Load (MBL), kN
		(Type-C)
6	0,0287	6,00
8	0,0510	10,4
10	0,0797	16,0
12	0,115	22,9
14	0,156	30,8
16	0,204	39,8
18	0,258	49,9

Job Id: **262.1-012302-4**
Certificate No: **TAK000016A**

20	0,319	61,2
22	0,386	73,4
24	0,459	87,1
26	0,539	102
28	0,625	117
30	0,717	134
32	0,816	151
36	1,030	190
40	1,280	233
44	1,540	280
48	1,840	331
52	2,160	387
56	2,500	445
60	2,870	509
64	3,260	576
72	4,130	720
80	5,100	886
88	6,170	1 060
96	7,350	1 260
104	8,620	1 470
112	10,000	1 690
120	11,500	1,940

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 6 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 1141:2012 "Fibre ropes - Polyester - 3-, 4-, 8- and 12-strand ropes", and
- ISO 10547:2009 "Polyester fibre ropes -- Double braid construction".

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.

Job Id: **262.1-012302-4**
Certificate No: **TAK000016A**

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.

END OF CERTIFICATE