DNV·GL

Certificate No:
TAK0000169

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Synthetic Fibre Ropes

with type designation(s)
Polyester and Polypropylene mix 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
Zhejiang Four Brothers Rope Co., Ltd. Factory Standard Q/ZJSX 006-2016 "Power-Mixed® Rope"
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.

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Job Id: **262.1-012302-4**
Certificate No: **TAK0000169**

Product description

Polyester and Polypropylene mix Ropes

8-strand and 12-strand plaited synthetic fibre ropes (Ref. Factory Standard Q/ZJSX 006-2016):
- Specific gravity: <1 (floats in seawater)

ROPE CHARACTERISTICS			
Diameter, mm	**Nominal linear mass, kg/m**	**Minimum Breaking Load (MBL), kN (8-strand Type-L)**	**Minimum Breaking Load (MBL), kN (12-strand Type-T)**
12	0,0813	33,3	33,3
16	0,1436	57,8	57,8
20	0,2272	88,2	88,2
24	0,335	123	123
28	0,460	163	163
30	0,528	186	186
32	0,595	209	209
36	0,742	273	273
40	0,915	330	330
44	1,090	393	393
48	1,320	453	453
52	1,500	526	526
56	1,790	608	608
60	2,005	692	692
64	2,260	775	775
72	2,840	971	971
80	3,490	1 177	1 177
88	4,200	1 422	1 422
96	5,000	1 687	1 687
104	5,860	1 982	1 982
112	6,740	2 286	2 286
120	7,740	2 610	2 610

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

Polyester and Polypropylene mix double-braided ropes (Ref. Factory Standard Q/ZJSX 008-2016):
- Specific gravity: <1 (floats in seawater)

ROPE CHARACTERISTICS		
Diameter, mm	**Nominal linear mass, kg/m**	**Minimum Breaking Load (MBL), kN (Type-C)**
36	0,893	268
40	1,050	315
44	1,280	375
48	1,510	433
52	1,730	511
56	2,090	581

60	2,350	659
64	2,610	756
72	3,310	932
80	4,080	1 130
88	4,860	1 370
96	5,750	1 630
104	6,800	1 870
112	7,840	2 150
120	8,990	2 470

Fibre ropes are to be delivered with a linear mass within ± 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;
- Zhejiang Four Brothers Rope Co., Ltd. Factory Standard Q/ZJSX 006-2016 "*Power-Mixed® Rope*".
- 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