DNV·GL

Certificate No:
TAK00001DZ

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Synthetic Fibre Ropes

with type designation(s)
LANKOFORCE,
LANKOFORCE WITH JACKET

Issued to
Lankhorst Euronete Portugal S.A.
Maia, Portugal

is found to comply with
DNV GL class programme DNVGL-CP-0100 – Type approval – Synthetic fibre ropes for towing, mooring and anchoring
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 **2018-12-04**
This Certificate is valid until **2023-12-03**.
DNV GL local station: **Lisbon**

Approval Engineer: **Gisle Hersvik**

for **DNV GL**

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

LANKOFORCE and LANKOFORCE WITH JACKET
Fibre material, core: HMPE Dyneema® SK78
Fibre material, jacket: Polyester (PES), Dyneema® SK62 and TIPTO (Polyolefin dual fibre)

LANKOFORCE
12-strand braided synthetic fibre ropes (12x1) (Ref. LEP Rope Supply Specification No. 242018R2):
- Specific gravity: 0,98 (floats in seawater)
- Elongation at break: 2,2 %

ROPE CHARACTERISTICS LANKOFORCE			
Diameter, mm	**Nominal linear density Ktex**	**Nominal linear mass, kg/m**	**Minimum Breaking Strength (MBS), kN**
14	107	0,107	184
16	140	0,140	244
18	180	0,180	303
20	215	0,215	374
22	280	0,280	450
24	335	0,335	533
26	385	0,385	612
28	435	0,435	701
30	515	0,515	789
32	590	0,590	887
34	650	0,650	991
36	710	0,710	1076
40	885	0,885	1314
44	1090	1,090	1559
48	1260	1,260	1853
52	1490	1,490	2160
56	1760	1,760	2490
60	2020	2,020	2820
64	2300	2,300	3210
72	2900	2,900	4010
80	3580	3,580	4510

Fibre ropes are to be delivered with a linear density within ± 5 % of the nominal linear density given in the table. The unspliced MBS data as provided in the LEP Rope Supply Specification No. 242018R2.

LANKOFORCE with Polyester Jacket
12-strand braided synthetic fibre ropes (12x1) with Polyester Jacket (24, 36 or 48 strands) (Ref. LEP Rope Supply Specification No. 242018R2):
- Specific gravity: 1,06 (sinks in seawater)
- Elongation at break: 2,2 %

ROPE CHARACTERISTICS LANKOFORCE with Polyester Jacket

Diameter, mm	Nominal linear density Ktex	Nominal linear mass, kg/m	Minimum Breaking Strength (MBS), kN
20	261	0,261	267
22	310	0,310	332
24	350	0,350	409
26	426	0,426	492
28	490	0,490	583
30	558	0,558	670
32	645	0,645	767
34	732	0,732	863
36	814	0,814	970
40	970	0,970	1177
44	1220	1,220	1544
48	1390	1,390	1782
52	1640	1,640	2141
56	1950	1,950	2283
60	2210	2,210	2635
64	2480	2,480	2983
72	3190	3,190	3938

Fibre ropes are to be delivered with a linear density within ± 5 % of the nominal linear density given in the table. The unspliced MBS data as provided in the LEP Rope Supply Specification No. 242018R2.

LANKOFORCE with Dyneema Jacket
12-strand braided synthetic fibre ropes (12x1) with Dyneema Jacket (24, 36 or 48 strands) (Ref. LEP Rope Supply Specification No. 242018R2):
- Specific gravity: 0,98 (floats in seawater)
- Elongation at break: 2,2 %

ROPE CHARACTERISTICS LANKOFORCE with Dyneema Jacket			
Diameter, mm	**Nominal linear density Ktex**	**Nominal linear mass, kg/m**	**Minimum Breaking Strength (MBS), kN**
20	237	0,237	267
22	286	0,286	332
24	324	0,324	409
26	398	0,398	492
28	460	0,460	583
30	526	0,526	670
32	611	0,611	767
34	696	0,696	863
36	776	0,776	970
40	911	0,911	1177
44	1160	1,160	1544
48	1380	1,380	1782
52	1570	1,570	2141
56	1840	1,840	2283

60	2100	2,100	2635
64	2460	2,460	2983
72	3050	3,050	3938

Fibre ropes are to be delivered with a linear density within ± 5 % of the nominal linear density given in the table. The unspliced MBS data as provided in the LEP Rope Supply Specification No. 242018R2.

LANKOFORCE with TIPTO Jacket
12-strand braided synthetic fibre ropes (12x1) with TIPTO Jacket (24, 36 or 48 strands) (Ref. LEP Rope Supply Specification No. 242018R2):
- Specific gravity: 0,97 (floats in seawater)
- Elongation at break: 2,2 %

ROPE CHARACTERISTICS LANKOFORCE with TIPTO Jacket			
Diameter, mm	**Nominal linear density Ktex**	**Nominal linear mass, kg/m**	**Minimum Breaking Strength (MBS), kN**
24	303	0,303	409
26	380	0,380	429
28	435	0,435	584
30	500	0,500	671
32	583	0,583	768
36	750	0,750	971
40	970	0,970	1177
44	1205	1,205	1544
53	1640	1,640	2143

Fibre ropes are to be delivered with a linear density within ± 5 % of the nominal linear density given in the table. The unspliced MBS data as provided in the LEP Rope Supply Specification No. 242018R2.

Manufactured by

Lankhorst Euronete Portugal S.A., Rua da Cerfil, 4471-909 Maia - Portugal
Lankhorst Euronete Portugal S.A., Av do Cabedelo, Darque, 4935-160 Viana do Castelo - Portugal
Lankhorst Euronete Portugal S.A., Av Padre Américo 434, 4580-147 Beire-Paredes - Portugal

DNV GL local station: Lisbon

Responsibilities

The Company (stated on the front page of this Certificate) takes the responsibility that both design and manufacture are in compliance with Rules, Standards and/or Regulations listed on page 1 of this certificate.

Application/Limitation

The Type Approval covers ropes with diameter from 14 mm to and including 80 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

The fibre rope is manufactured in accordance with;
- LEP Rope Supply Specification No. 242018R2.

Marking of product

Product shall be marked with *manufacturer's name*; **Lankhorst Euronete Portugal S.A.**, *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 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.

END OF CERTIFICATE