Certificate no.:
TAK00002D2

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Synthetic Fibre Ropes

with type designation(s)
TIPTO Eight

issued to
Lankhorst Euronete Portugal S.A.
Maia, **Portugal**

is found to comply with
DNV class programme DNV-CP-0100 – Type approval – Synthetic fibre ropes for towing, mooring and anchoring
DNV rules for classification – Ships
DNV rules for classification – High speed and light craft
OCIMF Mooring Equipment Guidelines (MEG4), Fourth Edition 2018 [test requirements]

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 **2024-07-17**
This Certificate is valid until **2029-07-16**.
DNV local unit: **CMC Team West**

Approval Engineer: **Gisle Hersvik**

for **DNV**

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.

Product description

TIPTO Eight: 8-strand braided synthetic fibre ropes

Fibre material: TIPTO (polyolefin dual fibres/mixed fibres)

TIPTO Eight - Compliance with OCIMF Mooring Equipment Guidelines (MEG4)

Mooring Line Base Design Certificate TIPTO Eight – 28 mm to 88 mm.
- Certificate reference: MLBDCTE Issued: 2024-06-13

Mooring Line Certificates will be issued with basis in IMP339/16 (Mooring Line Certificate).

Lankhorst has performed the full test scenario, including as follows:
- B8.5.7 Angled endurance: 17,000 cycles (17,000 cycles mentioned in MEG4).
- B8.5.10 Axial compression fatigue: 10,000 cycles (10,000 cycles mentioned in MEG4).

The Mooring Line Base Design Certificate shall be maintained in accordance with OCIMF MEG4.

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 ±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 *breaking forces* quoted in the below tables relate to unspliced ropes (MBF) and spliced ropes (LDBF), and are as provided in the Product Data Sheet as shown on the rope characteristics table for the rope type.

TIPTO Eight

8-strand braided synthetic fibre ropes (8x1) (Ref. Product Data Sheet, TIPTO Eight 8 strand: PDSTE-0):
- Specific gravity: 0,93 (floats in seawater)
- Elongation at break: 14 %

ROPE CHARACTERISTICS				
Reference number, mm	**Nominal linear density, Ktex**	**Nominal linear mass, kg/m**	**Minimum Breaking Force (MBF), kN**	**Line Design Break Force (LDBF), kN**
28	373	0,373	137	123
32	483	0,483	177	159
36	614	0,614	222	200
40	756	0,756	269	242
44	924	0,924	321	289
48	1090	1,090	378	340
52	1280	1,280	441	397
56	1490	1,490	508	457
60	1710	1,710	578	520
64	1940	1,940	651	586
68	2200	2,200	731	658
72	2460	2,460	814	733
80	3050	3,050	992	893
88	3690	3,690	1180	1062
96	4380	4,380	1400	1260
104	5150	5,150	1620	1458
112	5960	5,960	1870	1683
120	6860	6,860	2130	1917
128	7790	7,790	2410	2169
136	8800	8,800	2710	2439
144	9870	9,870	3030	2727

LEP references:
Product Data Sheet, TIPTO Eight 8 strand: PDSTE-0 of 2022.04.08 (28-144 mm)
Design Specification, TIPTO Eight 8 strand: DSTE-0 of 2022.04.08 (28-88 mm)

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 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 28 mm to and including 144 mm.

The OCIMF MEG4 approval covers ropes with diameter from 28 mm to and including 88 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.
- OCIMF's Mooring Equipment Guidelines (MEG4) [requirements to testing].
- DNV-CP-0100.

The fibre rope is manufactured in accordance with:

- Product Data Sheet, TIPTO Eight 8 strand: PDSTE-0.

Initial setting/cycling of ropes and testing of break strength are carried out in accordance with ISO 2307.

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 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