

TYPE APPROVAL CERTIFICATE

This is to certify:**That the Synthetic Fibre Ropes**with type designation(s)
TIPTO Twelve

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**.for **DNV GL**DNV GL local station: **Lisbon**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.



Job Id: **262.1-030099-1**
Certificate No: **TAK00001DW**

Product description

TIPTO Twelve

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

12-strand braided synthetic fibre ropes (12x1) (Ref. LEP Rope Supply Specification No. 272018R1):

- Specific gravity: 0,93 (floats in seawater)
- Elongation at break: 14 %

ROPE CHARACTERISTICS			
Diameter, mm	Nominal linear density Ktex	Nominal linear mass, kg/m	Minimum Breaking Strength (MBS), kN
16	121	0,121	48
20	189	0,189	73
24	273	0,273	103
28	373	0,373	137
32	530	0,530	177
36	660	0,660	222
40	756	0,756	269
44	924	0,924	321
48	1090	1,090	378

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. 272018R1.

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 16 mm to and including 48 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

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The fibre rope is manufactured in accordance with;
- LEP Rope Supply Specification No. 272018R1.

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