

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Synthetic Fibre Ropes

with type designation(s)
POLARIS 8 and POLARIS 12 Mooring Lines

Issued to

TUFNETS PRIVATE LIMITED
Pithampur, Madhya Pradesh, India

is found to comply with

DNV class programme DNV-CP-0100 – Type approval – Synthetic fibre ropes for towing, mooring and anchoring

ISO 10325:2018 "Fibre ropes – High modulus polyethylene – 8-strand braided ropes, 12-strand braided ropes and covered ropes"

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 **2023-04-28**

This Certificate is valid until **2028-04-27**.

DNV local unit: **Mumbai NB & CMC**

for **DNV**

Approval Engineer: **Gisle Hersvik**

Thorsten Lohmann
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.

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

POLARIS 8: 8-strand plaited synthetic rope

POLARIS 12: 12-strand braided synthetic rope

- Fibre material: HMPE (High Modulus Polyethylene)
- Specific gravity: 0.97 (floats in sea water)
- Elongation at break: ca. 5 % $\pm$ 2 %

Compliance with OCIMF Mooring Equipment Guidelines (MEG4)

Mooring Line Base Design Certificate – for POLARIS 16 mm and 64 mm

Ref No.: **IN/MEG4/MLBDC/PR/22/001**

Issue date: **2022-12-07**

Mooring Line Certificate will be issued with reference to mooring line base design certificate.

TUFNETS PRIVATE LIMITED has performed the full test scenario as per OCIMF MEG4.

Rope Characteristics

The Rope characteristics are tabulated on the next page observing the following:

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

Linear Density are tabulated on the following pages.

Breaking load values are given for both un-spliced and spliced ropes. The LDBF (Line Design Break Force) is the value for spliced rope.

POLARIS 8-strand and POLARIS 12-strand:

Ref. Number / Size		Linear Density - rope	Mass - rope	Minimum Breaking Load			
				Un-spliced		Spliced (LDBF)	
Diameter [mm]	Cir. [Inch]	[kg/m]	[kg/100m]	[kN]	[Ton]	[kN]	[Ton]
16	2	0.151	15.10	260	26.52	235	23.97
18	2-1/4	0.190	19.00	310	31.62	283	28.87
20	2-1/2	0.232	23.20	380	38.76	340	34.68
22	2-3/4	0.281	28.10	450	45.90	400	40.80
24	3	0.331	33.10	520	53.04	470	47.94
26	3-1/4	0.384	38.40	600	61.20	540	55.08
28	3-1/2	0.445	44.50	680	69.36	610	62.22
30	3-3/4	0.506	50.60	770	78.54	690	70.38
32	4	0.575	57.50	870	88.74	780	79.56
34	4-1/4	0.646	64.60	955	97.41	859	87.62
36	4-1/2	0.720	72.00	1040	106.08	940	95.88
38	4-3/4	0.799	79.90	1148	117.10	1033	105.37
40	5	0.881	88.10	1260	128.52	1130	115.26
42	5-1/4	0.969	96.90	1360	138.72	1224	124.85
44	5-1/2	1.060	106.00	1460	148.92	1310	133.62
46	5-3/4	1.153	115.30	1579	161.06	1421	144.94
48	6	1.250	125.00	1700	173.40	1530	156.06
50	6-1/4	1.353	135.30	1833	186.97	1650	168.30
52	6-1/2	1.460	146.00	1970	200.94	1770	180.54
54	6-3/4	1.573	157.30	2113	215.53	1902	194.00
56	7	1.690	169.00	2260	230.52	2030	207.06
58	7-1/4	1.808	180.80	2394	244.19	2155	219.81
60	7-1/2	1.930	193.00	2530	258.06	2280	232.56
62	7-3/4	2.063	206.30	2683	273.67	2415	246.33
64	8	2.200	220.00	2840	289.68	2560	261.12

Application/Limitation

The approval range covers ropes with diameter from 16 mm to and including 64 mm.

The OCIMF MEG4 approval range covers ropes with diameter from 16 mm to and including 64 mm.

Manufactured by

TUFNETS PRIVATE LIMITED Unit 1, Indore SEZ Phase-I, Sector-III, Plot No D-1 to 12, B-1, 2 & F-3 to 5, Pithampur-454775, Dist.-Dhar-454775, Madhya Pradesh, India

TUFNETS PRIVATE LIMITED Unit 2, Indore SEZ Phase-I, Sector-III, F-I & F-2, Pithampur-454775, Dist.-Dhar-454775, Madhya Pradesh, India

DNV local station: Mumbai

Responsibility

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

Type Approval documentation

Tests carried out

Type Testing carried out in accordance with **Type Approval documentation**, and according to:

- OCIMF's Mooring Equipment Guidelines (MEG4) [requirements to testing].
- DNV-CP-0100.

The fibre ropes are manufactured in accordance with:

- Design Specification (POLARIS) - Ref No - IN/MEG4/DS/PR/011 of 2022-09-01
- ISO 10325:2018 – Fibre Ropes – High Modulus Polyethylene – 8-strand braided, 12-strand braided ropes and covered ropes

Marking of product

Product shall be marked with *manufacturer's name*; **TUFNETS PRIVATE LIMITED**, *place of production* and *type designation*: **POLARIS**, *diameter*, *product code* and *strength*.

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