

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Synthetic Fibre Ropes

with type designation(s)
**OCEANFLEX 8 and OCEANFLEX 12 Mooring Lines,
OCEANFLEX 8 and OCEANFLEX 12 Mooring Tails**

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 10556:2009 "Fibre ropes of polyester/polyolefin dual fibres"
OCIMF Mooring Equipment Guidelines (MEG4), Fourth Edition 2018 [test requirements]
OCIMF Guidelines for the Purchasing and Testing of SPM Hawsers (2000)

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 **2023-09-21**

This Certificate is valid until **2028-09-20**.

DNV local unit: **India CMC MES**

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

OCEANFLEX 8 and OCEANFLEX 12 Mooring Lines: 8-strand plaited and 12-strand braided synthetic ropes
OCEANFLEX 8 and OCEANFLEX 12 Mooring Tails: 8-strand plaited and 12-strand braided synthetic ropes

- *Fibre material: Polyolefin fibres & Polyester yarn*
- *Specific gravity: 0.98 (floats in sea water)*
- *Elongation at Break (New Rope) = 18% ±3%*
- *Elongation at Break (Cycled Rope) = 12% ±2%*
- *With or without marine finish.*
- *UV-stabilized.*
- *Single construction: Polyolefin & Polyester yarn.*

Compliance with OCIMF Mooring Equipment Guidelines (MEG4)

Mooring Line Base Design Certificate – for OCEANFLEX 32 mm and 96 mm
Certificate No.: - **TN/MEG4/MLBDC/OF/23/001** Issued date: 2023-08-18
Mooring Line Certificate will be issued with reference to Mooring Line Base Design Certificate.

Mooring Tail Base Design Certificate – for OCEANFLEX 32 mm and 96 mm
Certificate No.: - **TN/MEG4/MTBDC/OF/23/002** Issued date: 2023-08-18
Mooring Tail Certificate will be issued with reference to Mooring Tail Base Design Certificate.

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

Compliance with OCIMF 2000, Guidelines for the Purchasing and Testing of SPM Hawser

Tested: Size 6 (48 mm) and Size 12 (96 mm)

Rope Characteristics

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

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

Linear Density are tabulated on the following pages.

All Break Force values are given for both un-spliced and spliced ropes.

The LDBF (Line Design Break Force) and TDBF (Tail Design Break Force) values are given for the spliced ropes.

OCEANFLEX 8 - OCEANFLEX 12:

Reference No. / Size		Linear Density – rope	Mass – rope	Minimum Breaking Load [ton]	
Diameter [mm]	Cir. [inch]			Un-spliced	Spliced [LDBF/TDBF]
32	4	0.510	112.20	21.80	19.60
34	4-1/4	0.580	127.60	23.60	21.30
36	4-1/2	0.645	142.00	26.50	23.90
38	4-3/4	0.720	158.40	29.50	26.60
40	5	0.795	175.00	32.70	29.50
42	5-1/4	0.875	192.50	35.90	32.40
44	5-1/2	0.950	209.00	39.20	35.30
46	5-3/4	1.045	230.00	42.20	38.00
48	6	1.145	252.00	45.20	40.70
50	6-1/4	1.230	270.60	48.90	44.10
52	6-1/2	1.320	290.40	52.70	47.50
54	6-3/4	1.430	314.60	56.70	51.10
56	7	1.550	341.00	60.90	54.90
58	7-1/4	1.660	365.20	65.00	58.50
60	7-1/2	1.775	390.50	69.30	62.40
62	7-3/4	1.890	415.80	73.30	66.00
64	8	2.000	440.00	77.40	69.70
66	8-1/4	2.130	468.60	82.00	73.80
68	8-1/2	2.250	495.00	86.70	78.10
70	8-3/4	2.400	528.00	91.80	82.70
72	9	2.523	555.00	97.00	87.30
74	9-1/4	2.665	586.30	102.00	91.80
76	9-1/2	2.800	616.00	107.20	96.50
78	9-3/4	2.950	649.00	112.50	101.30
80	10	3.095	681.00	117.90	106.20
82	10-1/4	3.260	717.20	124.20	111.80
84	10-1/2	3.430	754.60	130.60	117.60
86	10-3/4	3.600	792.00	137.20	123.50
88	11	3.773	830.00	144.00	129.60
90	11-1/4	3.950	869.00	150.10	135.10
92	11-1/2	4.130	908.60	156.30	140.70
94	11-3/4	4.320	950.40	162.60	146.40
96	12	4.500	990.00	169.00	152.10

Application/Limitation

The approval range covers ropes with diameter from 32 mm to and including 96 mm.

The OCIMF MEG4 approval range covers ropes with diameter from 32 mm to and including 96 mm.

The OCIMF 2000 approval range covers ropes with diameter from 32 mm to and including 96 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].
- OCIMF 2000, Guidelines for the Purchasing and Testing of SPM Hawsers (1st Edition 2000) [testing].
- DNV-CP-0100.

The fibre ropes are manufactured in accordance with:

- Design Specification (OCEANFLEX) - Ref No - TF/MEG4/DS/OF/014 of 2023-02-09.
- ISO 10556:2009 "Fire ropes of polyester/polyolefin dual fibres"
- IS 14928: Textiles - Composite Synthetic Fibre Ropes

Marking of product

Product shall be marked with *manufacturer's name*: **TUFNETS PRIVATE LIMITED**, *place of production* and *type designation, 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