

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Synthetic Fibre Ropes

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

Issued to

INDIA NETS

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 **Høvik** on **2022-04-04**

This Certificate is valid until **2027-04-03**.

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

for **DNV**

Approval Engineer: **Gisle Hersvik**

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Gustav Heiberg
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

TUFFLEX PRO 8: 8 Strand plaited / braided synthetic rope
TUFFLEX PRO 12: 12 Strand plaited / braided synthetic rope

- Fibre material: Polyolefin fibres & Polyester yarn
- Specific gravity: 0.98 (floats in sea water)
- Elongation at break: 18 % $\pm$ 3%
- 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 TUFFLEX PRO 32 mm and 104 mm

Ref No.: - **IN/MEG4/MLBDC/TFPRO/21/001**

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

Mooring Tail Base Design Certificate – for TUFFLEX PRO 32 mm and 104 mm

Ref No.: - **IN/MEG4/MTBDC/TFPRO/21/002**

Mooring Tail Certificate will be issued with reference to mooring tail base design certificate.

INDIA NETS 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 13 (104 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 $\pm 5\%$ of the nominal linear mass given in the table.

Linear Density is tabulated on the following pages.

All LDBF/TDBF (Line/Tail Design Break Force) values are given for dry and wet, un-spliced and spliced mooring ropes.

TUFFLEX PRO 8 - TUFFLEX PRO 12:

Ref. Number / Size		Linear Density - rope [kg/m]	Mass - rope [kg/ 220m]	Breaking Load [Ton]	
Diameter [mm]	Cir. [Inch]			Un-spliced	Spliced [LDBF/TDBF]
32	4	0.560	124.00	25.10	22.60
34	4-1/4	0.640	140.00	28.00	25.20
36	4-1/2	0.710	157.00	31.10	28.00
38	4-3/4	0.800	175.00	33.80	30.40
40	5	0.890	195.00	36.60	32.90
42	5-1/4	0.980	216.00	41.40	37.30
44	5-1/2	1.080	238.00	46.60	41.90
46	5-3/4	1.180	260.00	52.40	47.20
48	6	1.280	282.00	58.60	52.70
50	6-1/4	1.390	306.00	63.20	56.90
52	6-1/2	1.500	330.00	68.05	61.20
54	6-3/4	1.610	354.00	73.00	65.70
56	7	1.720	378.00	78.10	70.30
58	7-1/4	1.850	407.00	83.50	75.20
60	7-1/2	1.990	438.00	89.10	80.20
62	7-3/4	2.120	466.00	95.90	86.30
64	8	2.250	495.00	103.10	92.80
66	8-1/4	2.390	526.00	108.80	97.90
68	8-1/2	2.540	558.00	114.60	103.10
70	8-3/4	2.690	592.00	120.30	108.30
72	9	2.850	627.00	126.10	113.50
74	9-1/4	3.050	671.00	133.50	120.20
76	9-1/2	3.260	717.00	141.10	127.00
78	9-3/4	3.470	764.00	149.00	134.10
80	10	3.700	814.00	157.10	141.40
82	10-1/4	4.000	880.00	165.70	149.10
84	10-1/2	4.320	950.00	174.60	157.10
86	10-3/4	4.650	1023.00	183.70	165.30
88	11	5.000	1100.00	193.10	173.80
90	11-1/4	5.240	1152.00	202.70	182.40
92	11-1/2	5.480	1205.00	212.60	191.30
94	11-3/4	5.720	1259.00	222.70	200.40
96	12	5.980	1315.00	233.10	209.80
98	12-1/4	6.230	1370.00	242.00	217.80
100	12-1/2	6.480	1425.00	251.00	225.90
102	12-3/4	6.740	1482.00	260.20	234.20
104	13	7.000	1540.00	269.50	242.60

Application/Limitation

The OCIMF MEG4 approval range covers ropes with diameter from 32 mm to and including 104 mm.

The OCIMF 2000 approval range covers ropes with diameter from 32 mm to and including 104 mm.

Manufactured by

INDIA NETS 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

INDIA NETS Unit 2, Indore SEZ Phase-I, Sector-III, F-1 & 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 (TUFFLEX PRO) - Ref No - IN/MEG4/DS/TFPRO/008 of 2020-12-01
- 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*; **INDIA NETS**, *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