

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Synthetic Fibre Ropes

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

Issued to

Tufropes Private Limited
Silvassa, Dadra & Nagar Haveli, 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]

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: **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

TUFFLEX 8: 8-strand plaited synthetic fibre rope

TUFFLEX 12: 12-strand braided synthetic fibre rope

- Fibre material: Polyester/Polyolefin dual fibres
- Specific gravity: 0.99 (floats in seawater)
- With or without marine finish.
- UV-stabilized.
- Double construction: Mixed (PP+Polyester) Yarn. Outer Polyolefin yarn covered with high tenacity polyester (HT PES) yarn.

Compliance with OCIMF Mooring Equipment Guidelines (MEG4)

Mooring Line Base Design Certificate - For TUFFLEX 32 mm and 120 mm

Ref No.: TF/MEG4/MLBDC/TF/23/001

Issue date: **2023-03-01**

Mooring Line Certificates will be issued with reference to Mooring Line Base Design Certificate.

Mooring Tail Base Design Certificate - For TUFFLEX 32 mm and 120 mm

Ref. No.: TF/MEG4/MTBDC/TF/23/002

Issue date: **2023-03-01**

Mooring Tail Certificates will be issued with reference to Mooring Tail Base Design Certificate.

The rope Manufacturer 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.

The breaking load values are given for un-spliced and spliced mooring ropes. The LDBF/TDBF (Line/Tail Design Break Force) is the value stated for the spliced rope.

TUFFLEX 8-strand and TUFFLEX 12-strand:

Ref. Number / Size		Linear Density -rope	Mass -rope	Breaking Load [Kg]	
Diameter [mm]	Circ. [Inch]	[g/m]	[kg/220m]	Un-spliced	Spliced
32	4	564	124.00	20500	18450
36	4-1/2	714	157.00	25500	22950
40	5	886	195.00	30700	27630
44	5-1/2	1082	238.00	36500	32850
48	6	1282	282.00	47200	42480
52	6-1/2	1500	330.00	55400	49860
56	7	1718	378.00	64100	57690
60	7-1/2	1991	438.00	73500	66150
64	8	2250	495.00	84100	75690
68	8-1/2	2541	559.00	93700	84330
72	9	2850	627.00	103800	93420
76	9-1/2	3177	699.00	115450	103905
80	10	3523	775.00	127700	114930
84	10-1/2	4218	928.00	142510	128259
88	11	4545	1000.00	158300	142470
96	12	5977	1315.00	187800	169020

104	13	7000	1540.00	219200	197280
112	14	8136	1790.00	253100	227790
120	15	9318	2050.00	289600	260640

Application/Limitation

The approval range covers ropes with diameter from 32 mm to and including 120 mm.

The OCIMF MEG4 approval range covers ropes with diameter from 32 mm to and including 120 mm.

Place of Manufacture

Tufropes Private Limited, Survey No.: - 328/1/1/1, Tipco Road, Masat, Silvassa, Dadra & Nagar Haveli and Daman Div. 396230, India

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 (TUFFLEX) - TF/MEG4/DS/TF/002 of 2023-03-01
- ISO 10556:2009 – Fibre ropes of polyester/polyolefin dual fibres

Marking of product

Product shall be marked with *manufacturer's name, 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