Certificate no.:
TAK00002EA

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Synthetic Fibre Ropes

with type designation(s)
MAXIFLEX Mooring Lines

issued to
Garware Technical Fibres Limited
Pune, Maharashtra, **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 **2024-09-06**
This Certificate is valid until **2029-09-05**.
DNV local unit: **India CMC MES**

for **DNV**

Approval Engineer: **Gisle Hersvik**

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 USD 300 000.

Product description

MAXIFLEX: 8-strand plaited synthetic fibre rope

- Fibre material: Polyester/polyolefin dual fibre
- Specific gravity: 1.1 (sinks in seawater)

Compliance with OCIMF Mooring Equipment Guidelines (MEG4)

Mooring Line Base Design Certificate – For MAXIFLEX 28 mm and 96 mm
Ref No.: GTF/MLBDC/ MAXIFLEX/24/D1 **Issue date**: 2024-07-29
Mooring Line Certificate will be issued with reference to Mooring Line Base Design Certificate.

Garware Technical Fibres 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 ±5% of the nominal linear mass given in the table.

All BF (Break Force) values are given for the un-spliced ropes.
All LDBF (Line Design Break Force) values are given for the spliced ropes.

MAXIFLEX: 8-strand plaited synthetic fibre ropes

Diameter [mm]	Line Linear Density (LLD) [kg/m]	Line Tenacity (LT) [T/kg/m]	BF -unspliced [ton]	LDBF -spliced [ton]
28	0.436	32.61	15.80	14.22
30	0.500	31.50	17.50	15.75
32	0.564	31.91	20.00	18.00
34	0.640	31.64	22.50	20.25
35	0.675	31.87	23.90	21.51
36	0.714	31.39	24.90	22.41
38	0.800	30.94	27.50	24.75
40	0.886	30.47	30.00	27.00
42	0.977	30.40	33.00	29.70
44	1.082	29.78	35.80	32.22
46	1.182	29.77	39.10	35.19
48	1.282	32.50	46.29	41.66
50	1.391	32.48	50.20	45.18
52	1.500	32.58	54.30	48.87
54	1.614	32.62	58.50	52.65
56	1.718	32.90	62.80	56.52
58	1.841	32.90	67.30	60.57
60	1.991	32.55	72.00	64.80
61	2.060	32.55	74.50	67.05
62	2.127	32.50	76.80	69.12
64	2.250	33.04	82.60	74.34
66	2.391	33.07	87.85	79.07
68	2.536	33.08	93.20	83.88
70	2.691	32.24	96.40	86.76
72	2.850	32.21	102.00	91.80
73	2.950	31.88	104.50	94.05
74	3.009	32.15	107.50	96.75
75	3.091	31.74	109.00	98.10
76	3.177	32.15	113.50	102.15
78	3.345	32.15	119.50	107.55
80	3.523	32.06	125.50	112.95
82	3.700	31.99	131.50	118.35
84	3.882	32.06	138.30	124.47
85	3.960	31.82	140.00	126.00
86	4.068	31.97	144.50	130.05
88	5.000	28.08	156.00	140.40
90	5.227	28.07	163.00	146.70
92	5.455	28.10	170.30	153.27
94	5.700	28.03	177.50	159.75
96	5.977	27.86	185.00	166.50

The data in the table is provided by Garware Technical Fibres Limited.

Application/Limitation

The OCIMF MEG4 approval range covers ropes with diameter from 28 mm to and including 96 mm.

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].
- ISO 10556: 2009, Fibre ropes of polyester/polyolefin dual fibres.
- DNV-CP-0100.

The fibre ropes are manufactured in accordance with:

- Product Specification (MAXIFLEX), QAD/D/86 of 2024-07-25.

Marking of product

Product shall be marked with *manufacturer's name*: **Garware Technical Fibres Limited, India**, *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