Certificate no.:
TAK00002F7

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Synthetic Fibre Ropes

with type designation(s)
MAXIMA 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 10572:2009 "Mixed polyolefin fibre 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 **2024-12-11**
This Certificate is valid until **2029-12-10**.
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 300,000 USD.

Product description

MAXIMA: 8-strand braided synthetic fibre rope

- Fibre material: Mixed polyolefin fibres
- Specific gravity: 0.91 (floats in seawater)

Compliance with OCIMF Mooring Equipment Guidelines (MEG4)

Mooring Line Base Design Certificate – For MAXIMA 28 mm and 112 mm
Ref No.: GTF/MLBDC/MAXIMA/24/F1 **Issue date**: 2024-10-15
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.

MAXIMA: 8-strand braided synthetic fibre ropes

Diameter [mm]	Line Linear Density (LLD) [kg/m]	Line Tenacity (LT) [T/kg/m]	BF -unspliced [ton]	LDBF -spliced [ton]
28	0.355	38.03	15.0	13.50
29	0.380	37.30	15.8	14.18
30	0.405	36.67	16.5	14.85
31	0.430	39.35	18.8	16.92
32	0.460	37.57	19.2	17.28
33	0.475	38.65	20.4	18.36
34	0.488	39.97	21.7	19.50
35	0.500	41.04	22.8	20.52
36	0.518	41.70	24.0	21.60
37	0.530	43.05	25.4	22.82
38	0.546	44.08	26.7	24.07
39	0.630	39.89	27.9	25.13
40	0.727	36.05	29.1	26.21
41	0.745	36.97	30.6	27.54
42	0.763	37.86	32.1	28.89
43	0.820	36.99	33.7	30.33
44	0.882	36.07	35.4	31.82
45	0.900	36.97	37.0	33.27
46	0.922	37.71	38.6	34.77
47	0.980	36.64	39.9	35.91
48	1.041	35.61	41.2	37.07
49	1.080	35.75	42.9	38.61
50	1.127	35.69	44.7	40.22
51	1.170	35.45	46.1	41.48
52	1.218	35.10	47.5	42.75
53	1.260	35.43	49.6	44.64
54	1.323	35.24	51.8	46.62
55	1.370	35.28	53.7	48.33
56	1.418	35.30	55.6	50.05
57	1.470	35.31	57.7	51.91
58	1.520	35.23	59.5	53.55
59	1.570	35.29	61.6	55.41
60	1.632	35.29	64.0	57.60
61	1.680	35.35	66.0	59.38
62	1.741	35.15	68.0	61.20
63	1.790	35.21	70.0	63.02
64	1.850	35.07	72.1	64.87
65	1.900	35.21	74.3	66.91
66	1.970	35.02	76.7	68.99
67	2.030	35.11	79.2	71.28
68	2.091	35.21	81.8	73.62
69	2.150	35.01	83.6	75.28
70	2.214	34.76	85.5	76.95
71	2.270	34.91	88.0	79.24
72	2.341	34.84	90.6	81.56
73	2.390	34.95	92.8	83.52

Diameter [mm]	Line Linear Density (LLD) [kg/m]	Line Tenacity (LT) [T/kg/m]	BF -unspliced [ton]	LDBF -spliced [ton]
74	2.459	34.77	95.0	85.50
75	2.530	34.68	97.5	87.75
76	2.609	35.19	102.0	91.80
77	2.670	35.22	104.5	94.03
78	2.750	35.02	107.0	96.30
79	2.820	34.82	109.1	98.19
80	2.900	34.52	111.2	100.10
81	3.000	34.14	113.8	102.42
82	3.114	33.67	116.5	104.85
83	3.150	34.07	119.2	107.31
84	3.195	34.37	122.0	109.80
85	3.273	34.34	124.9	112.41
86	3.364	34.11	127.5	114.75
87	3.430	34.27	130.6	117.54
88	3.509	34.34	133.9	120.49
89	3.580	34.42	136.9	123.21
90	3.668	34.35	140.0	126.00
91	3.760	34.20	142.9	128.61
92	3.864	34.01	146.0	131.40
93	3.930	34.10	148.9	134.01
94	4.000	34.20	152.0	136.80
95	4.080	34.47	156.3	140.65
96	4.164	34.72	160.7	144.59
97	4.200	35.14	164.0	147.60
98	4.250	35.45	167.4	150.67
99	4.380	35.08	170.7	153.63
100	4.523	34.62	174.0	156.60
101	4.611	34.66	177.6	159.84
102	4.700	34.72	181.3	163.17
103	4.800	34.57	184.4	165.92
104	4.886	34.52	187.4	168.68
105	4.920	34.92	190.9	171.81
106	4.970	35.24	194.6	175.14
107	5.200	34.18	197.5	177.75
108	5.250	34.54	201.5	181.35
109	5.300	34.91	205.6	185.04
110	5.420	34.70	209.0	188.10
111	5.550	34.51	212.8	191.52
112	5.682	34.25	216.3	194.63

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 112 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 10572: 2009, Mixed polyolefin fibre rope.
- DNV-CP-0100.

The fibre ropes are manufactured in accordance with:

- Product Specification (MAXIMA), QAD/D/84 of 2024-09-25.

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