Certificate no.:
TAK00002F0

TYPE APPROVAL CERTIFICATE

This is to certify:

that the Synthetic Fibre Ropes

with type designation(s)
YSM-SOLID 8 [YSM and Partners],
YSM-SOLID 12 [YSM and Partners]

issued to

Responsive Industries Limited.

Palghar, 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 **2024-10-08**
This Certificate is valid until **2029-10-07**.
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

YSM-SOLID 8: 8-strand plaited / braided synthetic fibre rope
YSM-SOLID 12: 12-strand plaited / braided synthetic fibre rope

- Fibre material: Mixed polyolefin fibres (75% PP, Polypropylene and 25% PE, High Density Polyethylene)
- Specific gravity: 0.92 (floats in seawater)

Compliance with OCIMF Mooring Equipment Guidelines (MEG4)

Mooring Line Base Design Certificate - For YSM-SOLID 38 mm and 112 mm
Ref. No.: RIL/MEG4-YSM-SOLID/LBDC/24/001 **[Issue date: 2024-10-01]**
Mooring Line Certificates will be issued with reference to Mooring Line Base Design Certificate.

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

YSM-SOLID 8 and **YSM-SOLID 12**: 8- and 12-strand plaited / braided synthetic fibre ropes

Diameter [mm]	Linear Density -Rope [g/m]	Mass -Rope [kg/220 mtrs]	MBL [kN]	MBL [kgf]	LDBF [kN]	LDBF [kgf]
			Un-Spliced	Un-Spliced	Spliced	Spliced
38	654	144	225.8	23025	203.22	20723
40	718	158	274.51	27992	247.05	25192
44	877	193	330.88	33740	297.79	30366
48	1040	229	387.25	39488	348.52	35539
49	1090	240.0	402.56	41050	362.30	36944
50	1136	250.0	417.88	42612	376.09	38350
51	1181	260.0	433.20	44174	389.88	39756
52	1227	270	448.53	45737	403.67	41163
53	1277	281.0	463.84	47298	417.45	42568
54	1322	291.0	479.16	48860	431.24	43974
55	1368	301	494.48	50423	445.03	45380
56	1418	312	509.80	51985	458.82	46786
57	1472	324.0	528.18	53859	475.36	48473
58	1527	336.0	546.56	55733	491.90	50160
59	1581	348.0	565.00	57614	508.50	51852
60	1631	359	583.33	59483	524.99	53534
61	1686	371.0	603.06	61495	542.75	55345
62	1740	383.0	622.79	63506	560.51	57156
63	1795	395.0	642.52	65518	578.26	58966
64	1850	407	662.25	67530	596.02	60777
68	2090	460	745.10	75979	670.59	68381
72	2340	515	828.43	84476	745.58	76028
76	2609	574	921.57	93973	829.41	84576
80	2900	638	1019.61	103971	917.64	93573
84	3195	703	1117.65	113968	1005.88	102571
88	3509	772	1225.49	124965	1102.94	112468
92	3845	846	1333.33	135961	1199.99	122364
96	4163	916	1450.98	147958	1305.88	133162
100	4545	1000	1560.45	159121	1404.40	143208
104	4900	1078	1661.76	169452	1495.58	152506
112	5700	1254	1917.65	195545	1725.88	175990
116	5927	1304	2029.71	206972	1826.73	186274
120	6545	1440	2201.96	224537	1981.76	202083

The data in the table is provided by Responsive Industries Limited.

Application/Limitation

The approval range covers ropes with diameter from 38 mm to and including 120 mm.

The OCIMF MEG4 approval range covers ropes with diameter from 38 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 ropes.
- DNV-CP-0100.

The fibre ropes are manufactured in accordance with:
- Product Specification (YSM-SOLID), Form No. RIL/OCIMF/YS-001.

Marking of product

Product shall be marked with *manufacturer's name*: **Responsive Industries Limited, India**, *type designation*: YSM-SOLID 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