Certificate No:
TAK00002A3

TYPE APPROVAL CERTIFICATE

This is to certify:

That the Synthetic Fibre Ropes

with type designation(s)
CORDA ROPE 3, CORDA ROPE 8 and CORDA ROPE 12 Mooring Lines,
CORDA ROPE 3, CORDA ROPE 8 and CORDA ROPE 12 Mooring Tails

Issued to
GENERAL WORK PRODUCTS, LLC
Harahan, LA, USA

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]
OCIMF Guidelines for the Purchashing 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 **Hamburg** on **2023-10-24**
This Certificate is valid until **2028-10-23**.
DNV local unit: **Houston**

Approval Engineer: **Gisle Hersvik**

for **DNV**

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

CORDA ROPE 3, CORDA ROPE 8 and CORDA ROPE 12 Mooring Lines: 3-, 8- and 12-strand braided synthetic rope
CORDA ROPE 3, CORDA ROPE 8 and CORDA ROPE 12 Mooring Tails: 3-, 8- and12-strand braided synthetic rope

- *Fibre material: Polyolefin fibres*
- *Specific gravity: 0.92 (floats in sea water)*
- *Elongation at break: 16 % ± 2%*
- *With or without marine finish.*
- *UV-stabilized.*
- *Single construction: Polyolefin yarn.*

Compliance with OCIMF Mooring Equipment Guidelines (MEG4)

Mooring Line Base Design Certificate – for CORDA ROPE 32 mm and 104 mm
Certificate No.: - **IN/MEG4/MLBDC/CR/23/001** Issued date: 2023-03-01 (Tufnets)
Mooring Line Base Design Certificate – for CORDA ROPE 32 mm and 96 mm
Certificate No.: **KR/MEG4/CORDA/ML/23/01** Issued date: 2023-07-13 (Kohinoor Ropes)
Mooring Line Certificate will be issued with reference to Mooring Line Base Design Certificate.

Mooring Tail Base Design Certificate – for CORDA ROPE 32 mm and 104 mm
Certificate No.: - **IN/MEG4/MTBDC/CR/23/002** Issued date: 2023-03-31(Tufnets)
Mooring Tail Base Design Certificate – for CORDA ROPE 32 mm and 96 mm
Certificate No.: **KR/MEG4/CORDA/MT/23/01** Issued date: 2023-07-13 (Kohinoor Ropes)
Mooring Tail Certificates will be issued with reference to Mooring Tail Base Design Certificates.

Tufnets Private Limited and **Kohinoor Ropes Pvt Ltd** have performed the full test scenario as per OCIMF MEG4.

Compliance with OCIMF 2000, Guidelines for the Purchasing and Testing of SPM Hawsers

Tested: Size 6 (48 mm) and Size 13 (104 mm) (Tufnets)
Tested: Size 6 (48 mm) and Size 12 (96 mm) (Kohinoor Ropes)

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.

Linear Density is tabulated on the following page.

All Break Force values are given for both un-spliced and spliced ropes.

The LDBF (Line Design Break Force) and TDBF (Tail Design Break Force) values are given for the spliced ropes.

CORDA ROPE 3 – CORDA ROPE 8 – CORDA ROPE 12

Ref. Number / Size		Linear Density - rope		Mass - rope		Minimum Breaking Load [lb]	
Diameter [mm]	Cir. [Inch]	[kg/m]	[lb/ft]	[kg/100m]	[lb/100ft]	Un-spliced	Spliced [LDBF/TDBF]
32	4	0.318	0.214	31.83	21.39	27825	25043
36	4-1/2	0.403	0.271	40.29	27.07	35216	31694
40	5	0.497	0.334	49.74	33.42	43477	39129
44	5-1/2	0.615	0.413	61.52	41.34	53016	47714
48	6	0.748	0.503	74.80	50.26	63580	57222
52	6-1/2	0.820	0.551	81.96	55.07	69154	62239
56	7	0.883	0.593	88.29	59.33	73865	66479
60	7-1/2	1.033	0.694	103.33	69.43	85085	76577
64	8	1.203	0.808	120.29	80.83	97240	87516
68	8-1/2	1.381	0.928	138.13	92.82	111220	100098
72	9	1.575	1.058	157.48	105.82	126310	113679
76	9-1/2	1.773	1.191	177.33	119.16	141671	127504
80	10	1.986	1.335	198.56	133.43	158015	142214
84	10-1/2	2.212	1.486	221.15	148.61	175400	157860
88	11	2.452	1.648	245.18	164.75	193807	174426
96	12	2.977	2.000	297.65	200.01	233750	210375
104	13	3.493	2.347	349.33	234.74	274332	246899

Note: LDBF/TDBF are tabulated in imperial units, however conversion to metric units may be provided by the Company.

Application/Limitation

The approval range covers ropes with diameter from 32 mm to and including 104 mm (Tufnets).
The approval range covers ropes with diameter from 32 mm to and including 96 mm (Kohinoor Ropes).

The OCIMF MEG4 approval range covers ropes with diameter from 32 mm to and including 104 mm (Tufnets).
The OCIMF MEG4 approval range covers ropes with diameter from 32 mm to and including 96 mm (Kohinoor Ropes).

The OCIMF 2000 approval range covers ropes with diameter from 32 mm to and including 104 mm (Tufnets).
The OCIMF 2000 approval range covers ropes with diameter from 32 mm to and including 96 mm (Kohinoor Ropes).

Manufactured by

KOHINOOR ROPES PVT LTD, Gut No. -47, Khupsa Shivar, Selu, Dist- Parbhani -431 503, Maharashtra, India

TUFNETS PRIVATE LIMITED 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

TUFNETS PRIVATE LIMITED Unit 2, Indore SEZ Phase-I, Sector-III, F-I & 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 (CORDA), Ref. No.: - IN/MEG4/DS/CORDA/005 (Tufnets)
- Manufacturing Specifications, KR/D/SR/20 (Kohinoor Ropes)
- ISO 10572:2009 “Mixed polyolefin fibre ropes”

Marking of product

Product shall be marked with the *Company’s name*, *place of production* and *type designation, diameter, length, 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