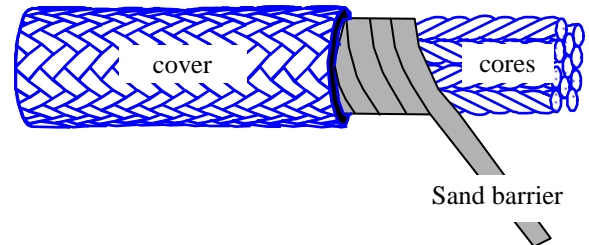


DeepRope® Polyester

CONSTRUCTION

The DeepRope® line for mooring applications is a so-called parallel core construction. This construction consists of three parts, namely the core elements, sand and mud barrier and the cover (see figure).

The core elements are three-strand ropes that are oriented parallel to the longitudinal axis of the rope. The three-strand core design is used, because of its strength efficiency and spliceability. Every sub-rope is spliced back into itself to make the rope more damage resistant.



Depending on the installation procedure there may be a potential risk that the rope is dropped on the seabed. Although this in itself has no effect on the rope it is possible that sea-bed particles may diffuse into the rope. These particles will have a deteriorating effect on the strength over the life of the rope due to their abrasive nature. To avoid this a filter material is inserted between the cover and the core. The filter stops particles of 5 µm or bigger. Typically the cover will be some seven millimetres thick. For special applications alternative materials and different thickness are also possible.

MATERIAL PROPERTIES

Polyester is a particularly reliable fibre with mechanical properties quite close to those of nylon. The abrasion resistance of polyester is better than that of nylon and so is the tension-tension fatigue performance. Since both fibres are quite similar to polyester should generally be preferred. In favour of nylon is its lower density (1,14 vs 1,38) and higher energy absorption.

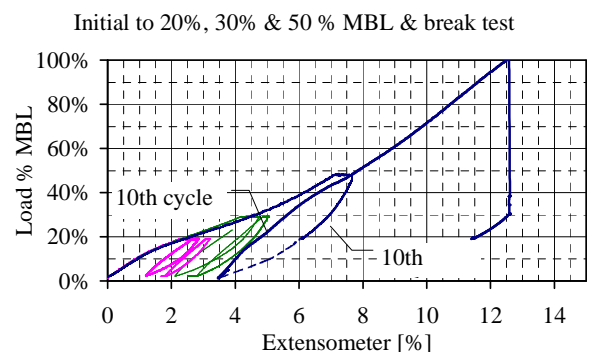
FEATURES

- Material: Polyester
- Construction: load-bearing cores with a protective cover of polyester yarn
- Treatment: Marine finish
- Colour of Rope: White with marker yarns

- Approx. Spec Density 1,38 non floating
- Melting Point: 251° C
- Abrasion Resistance: Excellent
- U.V.resistance: Excellent, due to jacket
- Temperature resistance: 120° C max continuous
- Chemical resistance: Good, bases and solvents may have a mild effect

- Water uptake: ± 30%
- Dry & wet conditions: Wet strength equals dry Strength

- Range of Use: Deepwater moorings



DeepRope® Polyester mooring line; strength table

Material: Acordis Polyester 855TN

Minimum Breaking Load in spliced condition

Total weight is in air:

Submerged weight is in seawater ($\rho = 1,05 \text{ kg/l}$)

conform ISO (@1- 2% MBL)

conform PetroBras spec. (@20% MBL)

Diam inch	MBL		Total weight [lb/ft/m]		Submerged weight		Stiffness [kips]		
	tf	kips	@2% MBL	@20% MBL	@2% MBL	@20% MBL	EA ¹	EA ²	EA ³
4,45	380	837	5,92	5,80	1,41	1,39	1,62E+04	1,89E+04	2,47E+04
4,62	414	913	6,38	6,25	1,53	1,49	1,76E+04	2,07E+04	2,69E+04
4,95	483	1065	7,30	7,15	1,74	1,71	2,06E+04	2,41E+04	3,14E+04
5,10	518	1141	7,75	7,59	1,85	1,82	2,20E+04	2,58E+04	3,36E+04
5,25	552	1217	8,21	8,03	1,96	1,92	2,35E+04	2,76E+04	3,59E+04
5,40	587	1293	8,66	8,48	2,07	2,03	2,50E+04	2,93E+04	3,81E+04
5,54	621	1369	9,11	8,92	2,18	2,13	2,64E+04	3,10E+04	4,04E+04
5,67	656	1445	9,56	9,36	2,29	2,24	2,79E+04	3,27E+04	4,26E+04
5,80	690	1521	10,01	9,79	2,39	2,34	2,94E+04	3,44E+04	4,49E+04
5,93	725	1597	10,45	10,23	2,50	2,45	3,08E+04	3,62E+04	4,71E+04
6,06	759	1673	10,90	10,67	2,61	2,55	3,23E+04	3,79E+04	4,93E+04
6,18	794	1749	11,34	11,10	2,71	2,65	3,38E+04	3,96E+04	5,16E+04
6,31	828	1825	11,79	11,53	2,82	2,76	3,52E+04	4,13E+04	5,38E+04
6,42	863	1901	12,23	11,97	2,92	2,86	3,67E+04	4,31E+04	5,61E+04
6,54	897	1978	12,67	12,40	3,03	2,97	3,82E+04	4,48E+04	5,83E+04
6,65	932	2054	13,11	12,83	3,14	3,07	3,96E+04	4,65E+04	6,06E+04
6,77	966	2130	13,55	13,26	3,24	3,17	4,11E+04	4,82E+04	6,28E+04
6,88	1001	2206	13,99	13,69	3,35	3,27	4,26E+04	4,99E+04	6,50E+04
6,98	1035	2282	14,43	14,12	3,45	3,38	4,41E+04	5,17E+04	6,73E+04
7,09	1070	2358	14,87	14,55	3,56	3,48	4,55E+04	5,34E+04	6,95E+04
7,19	1104	2434	15,30	14,97	3,66	3,58	4,70E+04	5,51E+04	7,18E+04
7,30	1139	2510	15,74	15,40	3,76	3,68	4,85E+04	5,68E+04	7,40E+04
7,40	1173	2586	16,18	15,83	3,87	3,79	4,99E+04	5,85E+04	7,62E+04
7,50	1208	2662	16,61	16,25	3,97	3,89	5,14E+04	6,03E+04	7,85E+04
7,60	1242	2738	17,05	16,68	4,08	3,99	5,29E+04	6,20E+04	8,07E+04
7,69	1277	2814	17,48	17,10	4,18	4,09	5,43E+04	6,37E+04	8,30E+04
7,93	1290	2844	18,63	18,23	4,45	4,36	5,58E+04	6,54E+04	8,52E+04
8,32	1310	2889	19,21	18,80	4,59	4,50	5,73E+04	6,72E+04	8,75E+04
8,42	1344	2963	19,65	19,23	4,70	4,60	5,87E+04	6,89E+04	8,97E+04
8,52	1378	3037	20,09	19,67	4,81	4,70	6,02E+04	7,06E+04	9,19E+04
8,61	1411	3111	20,54	20,10	4,91	4,81	6,17E+04	7,23E+04	9,42E+04
8,71	1445	3185	20,98	20,53	5,02	4,91	6,31E+04	7,40E+04	9,64E+04
8,80	1478	3259	21,42	20,96	5,12	5,01	6,46E+04	7,58E+04	9,87E+04
8,89	1512	3333	21,86	21,39	5,23	5,12	6,61E+04	7,75E+04	1,01E+05
9,16	1613	3556	23,18	22,68	5,44	5,32	7,05E+04	8,27E+04	1,08E+05
9,42	1714	3778	24,50	23,97	5,75	5,63	7,49E+04	8,78E+04	1,14E+05
9,67	1814	4000	25,81	25,25	6,07	5,94	7,93E+04	9,30E+04	1,21E+05
9,92	1915	4222	27,12	26,53	6,38	6,24	8,37E+04	9,82E+04	1,28E+05
10,16	2016	4444	28,43	27,81	6,69	6,55	8,81E+04	1,03E+05	1,35E+05

Dynamic Modulus based on type approval tests for BV and PetroBras:

¹ cycling between 10-30% MBL

² cycling between 20-30% MBL

³ cycling between 40-50% MBL