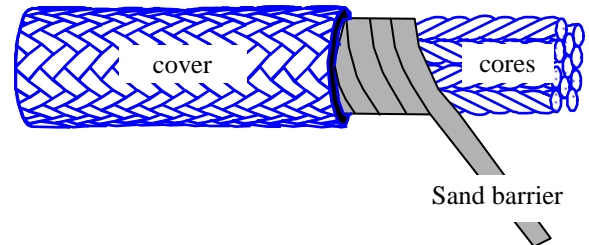


DeepRope® Polyester

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.

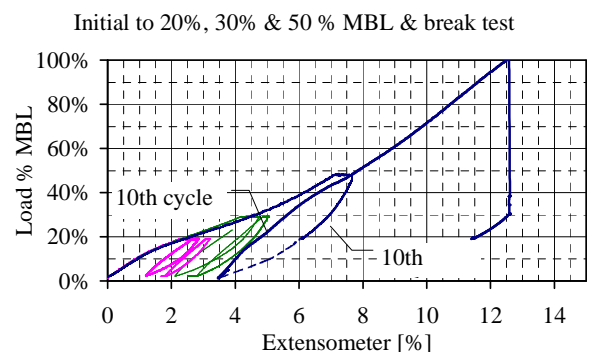
FEATURES

- 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 mm	MBL		Total weight [kg/m]		Submerged weight		Stiffness [kN]		
	tf	kN	@2% MBL	@20% MBL	@2% MBL	@20% MBL	EA ¹	EA ²	EA ³
113	380	3723	8,80	8,62	2,11	2,06	7,19E+04	8,43E+04	1,10E+05
117	414	4061	9,49	9,30	2,27	2,22	7,84E+04	9,20E+04	1,20E+05
126	483	4738	10,86	10,63	2,60	2,54	9,15E+04	1,07E+05	1,40E+05
130	518	5077	11,54	11,30	2,76	2,70	9,80E+04	1,15E+05	1,50E+05
133	552	5415	12,21	11,96	2,92	2,86	1,05E+05	1,23E+05	1,60E+05
137	587	5754	12,88	12,62	3,08	3,02	1,11E+05	1,30E+05	1,70E+05
141	621	6092	13,56	13,27	3,24	3,17	1,18E+05	1,38E+05	1,80E+05
144	656	6430	14,22	13,92	3,40	3,33	1,24E+05	1,46E+05	1,90E+05
147	690	6769	14,89	14,58	3,56	3,49	1,31E+05	1,53E+05	2,00E+05
151	725	7107	15,55	15,23	3,72	3,64	1,37E+05	1,61E+05	2,10E+05
154	759	7446	16,22	15,87	3,88	3,80	1,44E+05	1,69E+05	2,20E+05
157	794	7784	16,88	16,52	4,04	3,95	1,50E+05	1,76E+05	2,30E+05
160	828	8123	17,54	17,17	4,19	4,10	1,57E+05	1,84E+05	2,40E+05
163	863	8461	18,20	17,81	4,35	4,26	1,63E+05	1,92E+05	2,49E+05
166	897	8800	18,86	18,45	4,51	4,41	1,70E+05	1,99E+05	2,59E+05
169	932	9138	19,51	19,09	4,67	4,57	1,76E+05	2,07E+05	2,69E+05
172	966	9476	20,17	19,73	4,82	4,72	1,83E+05	2,15E+05	2,79E+05
175	1001	9815	20,82	20,37	4,98	4,87	1,89E+05	2,22E+05	2,89E+05
177	1035	10153	21,47	21,01	5,13	5,02	1,96E+05	2,30E+05	2,99E+05
180	1070	10492	22,13	21,65	5,29	5,18	2,03E+05	2,38E+05	3,09E+05
183	1104	10830	22,78	22,29	5,45	5,33	2,09E+05	2,45E+05	3,19E+05
185	1139	11169	23,43	22,92	5,60	5,48	2,16E+05	2,53E+05	3,29E+05
188	1173	11507	24,08	23,56	5,76	5,63	2,22E+05	2,61E+05	3,39E+05
190	1208	11846	24,72	24,19	5,91	5,78	2,29E+05	2,68E+05	3,49E+05
193	1242	12184	25,37	24,82	6,07	5,94	2,35E+05	2,76E+05	3,59E+05
195	1277	12522	26,02	25,45	6,22	6,09	2,42E+05	2,84E+05	3,69E+05
202	1290	12656	27,72	27,13	6,63	6,49	2,48E+05	2,91E+05	3,79E+05
211	1310	12855	28,58	27,98	6,84	6,69	2,55E+05	2,99E+05	3,89E+05
214	1344	13185	29,24	28,62	6,99	6,84	2,61E+05	3,07E+05	3,99E+05
216	1378	13514	29,90	29,27	7,15	7,00	2,68E+05	3,14E+05	4,09E+05
219	1411	13844	30,56	29,91	7,31	7,15	2,74E+05	3,22E+05	4,19E+05
221	1445	14173	31,22	30,55	7,47	7,31	2,81E+05	3,29E+05	4,29E+05
223	1478	14503	31,88	31,20	7,62	7,46	2,87E+05	3,37E+05	4,39E+05
226	1512	14833	32,53	31,84	7,78	7,61	2,94E+05	3,45E+05	4,49E+05
233	1613	15822	34,50	33,76	8,09	7,92	3,14E+05	3,68E+05	4,79E+05
239	1714	16810	36,46	35,67	8,56	8,38	3,33E+05	3,91E+05	5,09E+05
246	1814	17799	38,41	37,58	9,03	8,84	3,53E+05	4,14E+05	5,39E+05
252	1915	18788	40,36	39,49	9,50	9,29	3,72E+05	4,37E+05	5,69E+05
258	2016	19777	42,31	41,39	9,96	9,75	3,92E+05	4,60E+05	5,99E+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