OFFSHORE HEAVY LIFTING

BEXCO has been instrumental in successfully implementing heavy lift projects for major offshore contractors with its custom-made solutions, which are built to match the toughest environments and conditions where our customers operate.

The company offers a range of purpose-built, heavy lift and installation slings and ropes made with Dyneema®, produced at the BEXCO manufacturing plant in Hamme, Belgium and at its new load-out quayside facility in Antwerp.

With its modern R&D equipment, BEXCO is able to design, test and then produce customized slings for engineered lifts, meeting all complex loading and handling requirements for specific lifting projects. Attention to detail in approval procedures, documentation and administration are given equal importance, with the BEXCO project team committed to supporting the project follow-up from day one.

From tender through production and deployment right until final delivery and maintenance, BEXCO offers personal contact and advice from one of our expert BEXCO engineers for every step of the way.

BEXCO

OUR ROPE, YOUR SOLUTION

BEXCO Heavy-Lift SLINGS with Dyneema®

PRODUCT OPTIONS

BEXCO offers various types of lifting and installation arrangements using rope manufactured with DSM's Ultra High Molecular Weight PolyEthylene (UHMWPE), known as Dyneema®. With the same strength but weighing 8 to 10 times less than traditional wire ropes, these ropes are more flexible and much easier to handle; BEXCO synthetic ropes and slings made with Dyneema® also have a much better fatigue life compared to wire, whilst retaining similar elastic elongation properties.

BEXCO's range of offshore heavy lifting rope has served several offshore applications, including:

- Offshore Oil & Gas lifting & installation projects (FPSO's, oil rigs)
- Subsea installations (suction piles, pipelines, anchors, support structures, manifolds)
- Foundations for offshore Renewable projects s (Jackets, Monopiles)
- Offshore Decommissioning & Salvage

BEXCO supplies the world's leading engineering contractors with heavy lift slings to serve at offshore installations located in some of the most challenging marine environments on the planet.

CONSTRUCTION

BEXCO's precision-engineered Heavy-lift sling with DSM's UHMWPE (Dyneema®) is a so-called parallel core construction. This construction consists of two parts, namely the core elements and the cover (see figure).

The core elements are three-strand ropes that are oriented parallel to the longitudinal axis of the rope

The cover is a braid (mainly consisting of polyester) which provides dimensional stability to the rope structure and protects the cores from external damage. The three-strand core design is used because of the good stretch characteristics and excellent splice strength efficiency exhibited by this type of core design.

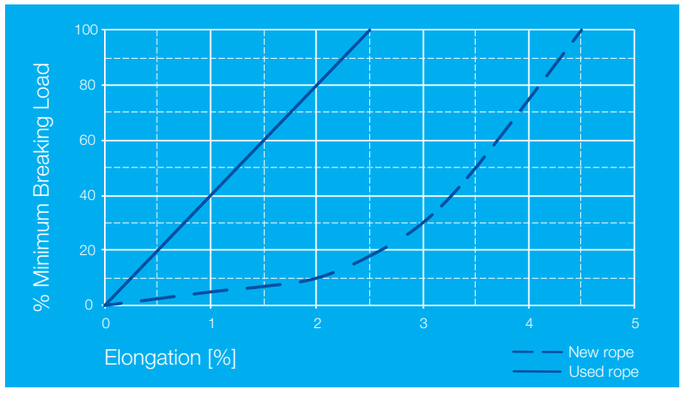
The braided cover is treated with a Marine Finish to further enhance the life of the cover under abrasion loads. The cover braid itself does not contribute to the strength of the rope.

MATERIAL PROPERTIES

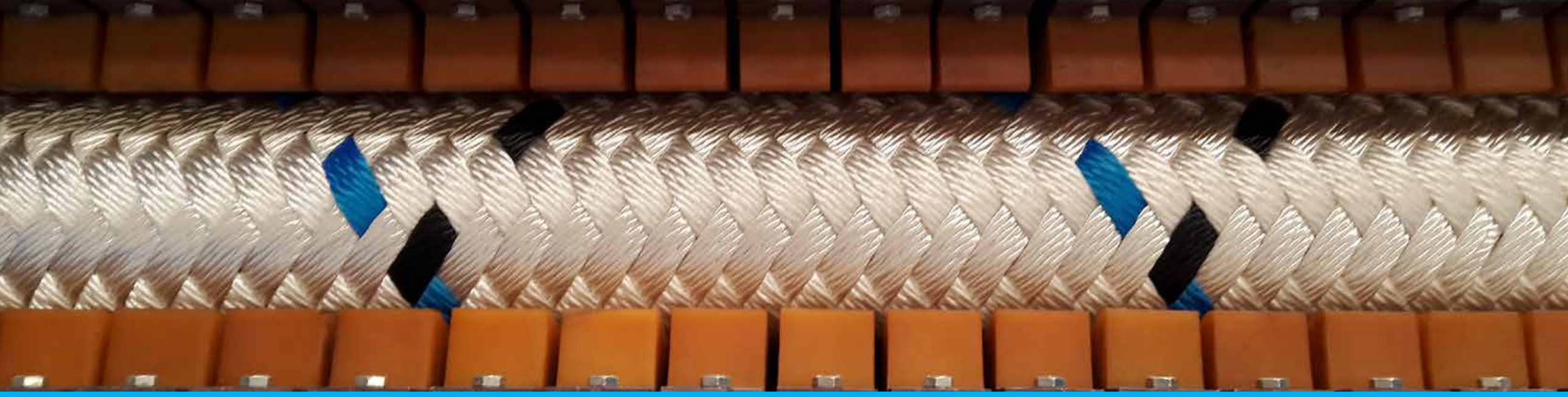
Polyethylene is an amorphous plastic with relatively low tensile strength. Through gel spinning the crystals achieve a maximum orientation, thus giving the material a high strength and stiffness. The product is commonly known as Ultra High Molecular Weight PolyEthylene (UHMWPE). It has an extremely low coefficient of friction and is extremely resistant to abrasion. The thermal properties of UHMWPE are comparable to ordinary Polyethylene. UHMWPE is also prone to cold flow and therefore has a high creep rate.

FEATURES

Materials	Ultra High Molecular Weight PolyEthylene
Construction	Load-bearing cores with a protective cover of composite yarn (other covers on request)
Treatment	Marine finish
Colour of Rope	White (Other colours on request)
Approx. Spec. Density	0,975 floating
Melting point	145°C
Abrasion Resistance	Excellent
U.V. resistance	Good
Temperature resistance	70°C max continuous
Chemical resistance	Excellent
Dry & wet conditions	Wet strength equals dry strength
Range of use	Offshore heavy lifting and installation



Dyneema®
With you when it matters



CONFIGURATION

A Single leg sling is made from single rope with an eye splice at both ends.

An Endless rope sling comprises a double length splice formed into a loop, known as a grommet. The grommet legs can also be tied together to form two eyes.

Testing has shown that the efficiency factor is dependent on the static bend or D/d ratio. Positioning of the splice also affects the grommet's efficiency factor.

Both sling type options can be used for basket lifts.

Single leg sling

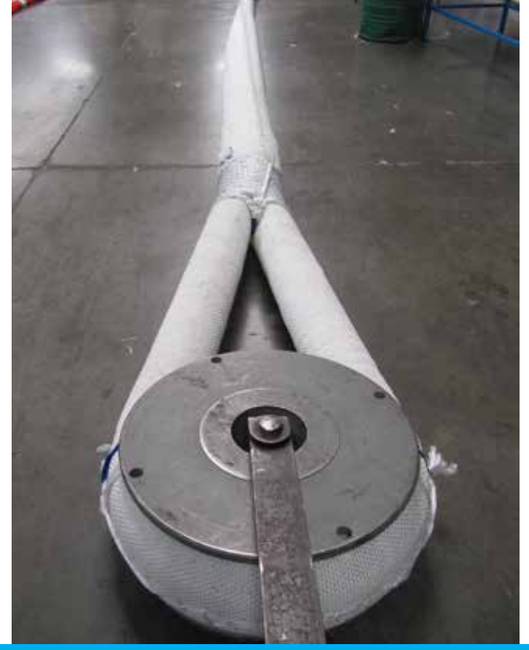
Endless rope sling (grommet)

Advantages/benefits of BEXCO's Heavy lift slings with Dyneema®

- Lightweight, permitting use of maximum payload capacity of the crane
- Easy handling and reduction in rigging time and manpower due to light weight in comparison with wire rope constructions
- Lighter rope means safer operations
- Soft surface of the rope, which inflicts no material contact damage to the payload
- The solution is maintenance free, remarkably durable and will not rust. The synthetic fibers are not affected by fresh or salt water
- The solution is torque free
- This synthetic rope is neutrally buoyant
- Relatively low transport cost due to lightness and ease in terms of secure packing
- Similar elastic elongation to wire rope

Diameter	Weight	MBL Single		MBL Grommet	
mm	kg/m	mT	kN	mT	kN
80	3.70	342	3.355	581	5.704
88	4.28	411	4.032	699	6.854
96	5.37	547	5.366	930	9.122
104	5.33	615	6.033	1.045	10.256
112	5.90	752	7.377	1.278	12.541
120	7.97	880	8.633	1.496	14.676
128	8.98	1026	10.065	1.744	17.111
136	9.99	1160	11.378	1.972	19.345
144	11.00	1300	12.753	2.210	21.680
150	12.00	1435	14.077	2.439	23.931
160	13.40	1640	16.088	2.788	27.350
180	16.70	2100	20.601	3.570	35.022
200	19.60	2500	24.525	4.250	41.692

Note 1: Spliced strength
Note 2: Single leg sling strength has been based on D/d ratio of 2:1/ please contact Bexco for lower D/d ratios
Note 3: Grommet strength has been based on a D/d ratio of 6:1. For lower D/d ratio contact Bexco



TEST FACILITY

Bexco R&D facility performs comprehensive testing of all of its synthetic rope constructions in different configurations. These include break load testing, stiffness and fatigue testing, influence of twist and small D/d ratios.

The test facility can be used for proof loading and length verification of slings up to 25m in accordance with various industry standards.

CERTIFICATIONS

BEXCO Heavy-Lift SLINGS with Dyneema® are manufactured to the highest standards of quality. BEXCO's manufacturing facilities are ISO 9001: 2008 certified for the research and development and production of Marine, Offshore and Industrial Ropes in synthetic high performance fibers.

All of BEXCOs production, operational and administrative processes are regularly audited by the world's leading classification societies including Lloyds Register, DNV GL, Bureau Veritas as the majority of its main offshore synthetic rope solutions serve the world's leading oil and gas majors. Comprehensive certification package are put together for each sling including description, drawings, certificates, handling and installation manual.

Any identification which is required to be attached to the finished rope is typically engraved into a metal plate which is fastened securely to the rope. It typically contains the following data:

- Purchase order number
- Rope reference number
- Rope minimum break strength
- Rope diameter
- Rope length
- Class certification number

ACCESSORIES

Eye protection

As a standard offering, the eyes BEXCO Heavy lift UHMWPE slings with Dyneema® are protected with heavy duty clothing. The clothing used is highly abrasion- resistant and remains flexible under working conditions. An extra protection can be given to chafe endangered places on a rope by applying a polyurethane elastomer on the protection cloth.

Hard eye protection: eyes may also be protected with heavy duty steel thimbles. The high-strength thimble protects the rope and maintains the proper bending radius when it is connected to mating hardware.

Filter Cloth

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 impact on the rope it is possible that seabed particles may diffuse into the rope.

These particles will have a deteriorating effect on the strength of the rope during its usage life due to their abrasive nature. To avoid this, filter material can be inserted between the cover and the core. The filter stops particles of 5 µm or larger.

Handling Points

Handling points (or clump weight connection points etc.) can be attached to the eyes and the body.

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