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Dyneema®
With you when it matters

Royal Netherlands Navy ships moored on ropes with Dyneema®

Dyneema® based ropes used in mooring of Royal Netherlands Navy ships

While commercial vessels typically use mooring lines with Dyneema® in order to waste less time in port, naval ships, use Dyneema® when they have to safely moor for longer periods of time.

Navy ships spend a significant portion of their time in port, and, consequently, are more vulnerable to storms during this period or when they are under repair. These ships are very valuable (some of them costing several million Euros) and are manned year round. If such a ship would break away from its moorings it could provide significant hazard to the crew and do damage to the hardware.

The Royal Netherlands Navy moors their ships by hand and as such, the mooring procedure is different and more labor intensive compared to similar sized vessels in the commercial shipping industry.

Berthing starts by moving the ship to its correct position by

tensioning the mooring lines using the capstans. Securing the mooring lines is done by hand. When the mooring line reaches its desired tension, a stopper rope made from Dyneema® is used to secure it. In the final stage of the mooring action, each of the ropes is fixed on double bollards in a figure of eight configuration by hand. This precise job, carried out by skilled personnel, needs to be done quickly and above all, in a safe manner. The Royal Netherlands Navy always uses two mooring lines per position for additional assurance and safety.

Another distinct difference in mooring between commercial shipping and the Navy is the fact that naval ships are often moored in two or three rows resulting in mooring lines being transferred over several ship decks to the quay. Also ship-to-ship mooring is an option. Mooring ship-to-ship means that the first ship at the quay carries all the tension on its lines. With the strong but lightweight mooring lines with Dyneema® these specific mooring actions are no issue.



In case the ship is moored to a buoy, the benefits of Dyneema® are even more apparent. Buoy mooring is more exposed to the elements compared to mooring at a quay thus health and safety risks need to be mitigated as much as possible. The mooring operation on a buoy needs special training and attention by the crew. Despite the fact that buoy mooring lines have a higher break strength and are thicker compared to the regular mooring lines with Dyneema® they can easily and safely be transferred to- and hooked onto the buoy by just one sailor.

On occasion, the spring lines are even used as tow lines when requested to do so by tugs in foreign ports.

The benefits of using mooring lines with Dyneema® for the Royal Netherlands Navy are eminent. The ropes are lightweight and strong, easy to store, easy to maintain and yet very durable, simple to handle, and last but not least, very safe.



Lightweight and high strength

Ropes with Dyneema® are as strong as steel wire ropes of the same diameter but at only one-seventh of the weight. This contributes to easy handling of the ropes. Furthermore, ropes with Dyneema® are about 60% of the diameter and 30% of the weight of equally strong polyester or polyamide ropes. Taken into account that the Royal Netherlands Navy uses a safety factor of seven, ropes with Dyneema® are still very manageable in size. The low weight and the small diameter of the ropes with Dyneema® are key-advantages in handling these ropes.

Maintenance

Ropes made with Dyneema® require minimal maintenance. There is no need to grease the rope, as with steel wire, which means they don't pollute the deck of the ship or the environment with grease. Ropes with Dyneema® will not damage chocks, bollards, fairleads or other parts of the ship, leaving the crew more time for their operational tasks. The

ropes do not rot or corrode when stored wet. Additionally ropes with Dyneema® are very easy to splice on board.



Easy to store

Ropes with Dyneema® require less storage space compared to other synthetics; not to mention steel wire. Navy ships are designed to maximize the use of their limited space. Ropes with Dyneema® are stored in the narrow and small places below deck and on reels in special storage rooms. When the twelve-strand braided ropes with Dyneema® are taken out from the storage rooms, phenomena like kinking, buckling or folding do not compromise the ropes' performance, which assures safety of the crew.



Durability

Contrary to commercial vessels, navy ships are moored for longer periods of time. Over that time, the crew has to count on the durability of the mooring ropes. Ropes with Dyneema® have excellent abrasion resistance, tension and bending fatigue characteristics, making them very suitable for long term mooring. Ropes with Dyneema® have proven to outperform



other synthetics used by the Royal Netherlands Navy with respect to life time, abrasion resistance and strength.

Handling

Due to its low weight, ropes with Dyneema® are very easy to handle and require minimum crew members and time to get the ropes from below deck and moor the ship. Because of the manual handling of the ropes, safety is paramount. The Royal Netherlands Navy enforces a safety factor of seven for its mooring lines to ensure its crew's safety.



Safety

As the mooring lines are handled manually, safety is vital. In the unlikely event of a rope failure, ropes with Dyneema® show no snap-back like that shown by steel wire rope or polyester and nylon based ropes. Due to the nature of the fiber, effects like fish hooks or broken wire are not present thus preventing hand injuries. Back and shoulder injuries are minimized because of the low weight and easy handling of the ropes. For additional safety, the mooring lines with Dyneema® are equipped with 8 meter long composite ropes (PET/PP) as tails to prevent peak loads.

Mooring lines with Dyneema® address the very specific issues with the use and handling on Royal Netherlands Navy ships. They contribute to a safer and more crew friendly environment compared to other synthetics and steel wire rope.

About Lankhorst Ropes

Lankhorst Ropes combines more than 200 years of experience with modern production techniques. A strong innovative ability and direct contact with end users, allows us to come with practical solutions to the market. We strive to offer durable products that will enhance the efficiency and safety on board.

Lankhorst high performance ropes are used in harbor mooring, single point mooring, deep sea mooring as well as towing, lifting and installation. Lankhorst Ropes is ISO 9001:2000 certified and own production facilities in Greece, Portugal and Brazil. With eight specialized sales offices in seven different countries we offer our services around the globe.

