
timm
European rope craftsmanship
- since 1772
ACERA®
DNV GL type approved HMPE rope
\\ Mooring \\ Towing \\ Lifting \\ Safety \\ Services
Timm is now part of Wilhelmsen Ships Service AS

# From HEMP to HMPE

## – European rope craftsmanship since 1772

Rope development and manufacturing has been our passion and profession since the company was established in Norway in 1772.

The Timm head office and Timm Marine is located in Oslo. Our production is primarily from our own factory which is in Trencin, Slovakia, with additional licensed production in Korea and India.

Timm AS was acquired by Wilhelmsen Ships Service AS in September 2015, and is proud to become a part of a leading provider of recognised products and services to the maritime industry, servicing 1200 ports in 125 countries with an unparalleled global service organisation.

A range of more than 600 rope products and solutions are sold to customers within our key market segments:

- Shipping
- Offshore
- Fish farming/fisheries
- Outdoor

Three centuries of ropemaking have taught us what it takes to make great ropes. Ropemaking has always been the art of craftsmanship. Over the last decades it has increasingly become a science as well.

The continuous development towards higher performance solutions has turned our factory into more of a test facility, and our deliveries more into turnkey solutions with installation, inspections and on-board maintenance and services.

### Acera® high performance HMPE fiber solutions

The rope industry has increasingly focused on high performance fiber solutions. Our aim is to change the market dynamics for these ropes. Acera® genuine HMPE fiber is proprietary to Timm, provided exclusively through Timm and our dealer network.

Acera® is stronger than steel, 1/7 of the weight – as well as 1/3 of the weight of a same strength polyester rope.


**Royal Caribbean's new Quantum Class**

Secured by Acera® Amundsen, the 12-strand genuine HMPE ropes with DNV GL type approval

Since October 2014, Timm have been supplying a new HMPE mooring standard to the Royal Caribbean Quantum Class. Their latest WOW vessel , Ovation of the Seas, will be launched in April 2016 in China. This will be the third of this generation of 167,800-ton, 4,180 passenger cruise ships - joining Quantum of the Seas and Anthem of the Seas. Each vessel is supplied with Acera® Amundsen Ropes, Timm Signal Safety Ringtails and Timm Chafe Guard protection sleeves - offering stability in the toughest swell and temperature conditions.


With the The Mein Schiff programme, TUI Cruises entered into the premium volume market for cruises. These vessels are secured by 12-strand Acera® Amundsen Lite HMPE composite ropes. These ropes reduce the gap between the ultra light and expensive high performance ropes and conventional ropes made from 100% traditional fibers or steel.

This rope is constructed from the DNV GL type approved 12-strand Acera® Amundsen HMPE rope, and is significantly stronger than polyester and nylon ropes, but much lighter and with better abrasion resistance.

Timm will also supply the same mooring standard to Mein Schiff 5, launching in July 2016.

# Words from the bridge:

"The Acera ropes are more effective and reliable in swell conditions. We have not experienced any breakage (as opposed to other ships which were on the same pier/same day). Furthermore the ropes are very abrasion resistant and due to the thinner size, easier to handle on deck.

Your product is like a "magnet" to pilots, mooring men and other ship officers as they can easily spot the difference to other common products. The mooring men take pictures of your product. Our feedback is also most of the time very welcome, and many people ask us for details (and experiences) so they can propose them for their ships."

*Staff Captain – Mein Schiff 3 - TUI Cruises GmbH - January 2015*

# Acera®

## – the new generation HMPE fiber from Timm

The Acera® products are made with an uncompromising commitment to the highest European quality standards, in our European factory.

All Acera® ropes have HMPE type approval or Survey Report from DNV GL. The Acera® HMPE type approval is based on DNV GL testing and certification of:

- Fiber quality
- Production line
- Traceability
- Personnel
- Quality control
- Breaking strength finished rope

### Single Yarn Coating

All larger Acera® ropes are made from genuine Acera® yarn which is individually coated through a rotating 360° Lick-roller process. This cumbersome single yarn coating process demonstrates the uncompromising commitment to the quality standards of Acera®. Single yarn coating is proven to significantly enhance internal and external abrasion resistance, and extend service life and strength.

TYPE APPROVAL CERTIFICATE K-5913

DNV·GL

# Introducing Super HT polyester ropes with double strength

TERRALINE®

Polyester is a particularly reliable fiber, and has proven to be the most durable of the conventional fibers used in ropes. Our learnings from high performance HMPE solutions, enabled the Timm® engineers to design an innovative "twist" on the traditional 3-, 4- and 12-strand rope constructions.

The aim was to design a rope delivering the highest strength to cost ratio on the market, at a lower diameter than alternative mixed polymer solutions ( polysteel ). This new Polyester MaxLoad design delivers over twice the strength of conventional polyester ropes – with a breaking strength 170% above ISO standard.

Rope testing with DNV GL at the Ormen Lange testlab in Norway, proved that the subsea breaking strength (MBL) transcends the MBL from the standard ISO 2307 dry test procedure.

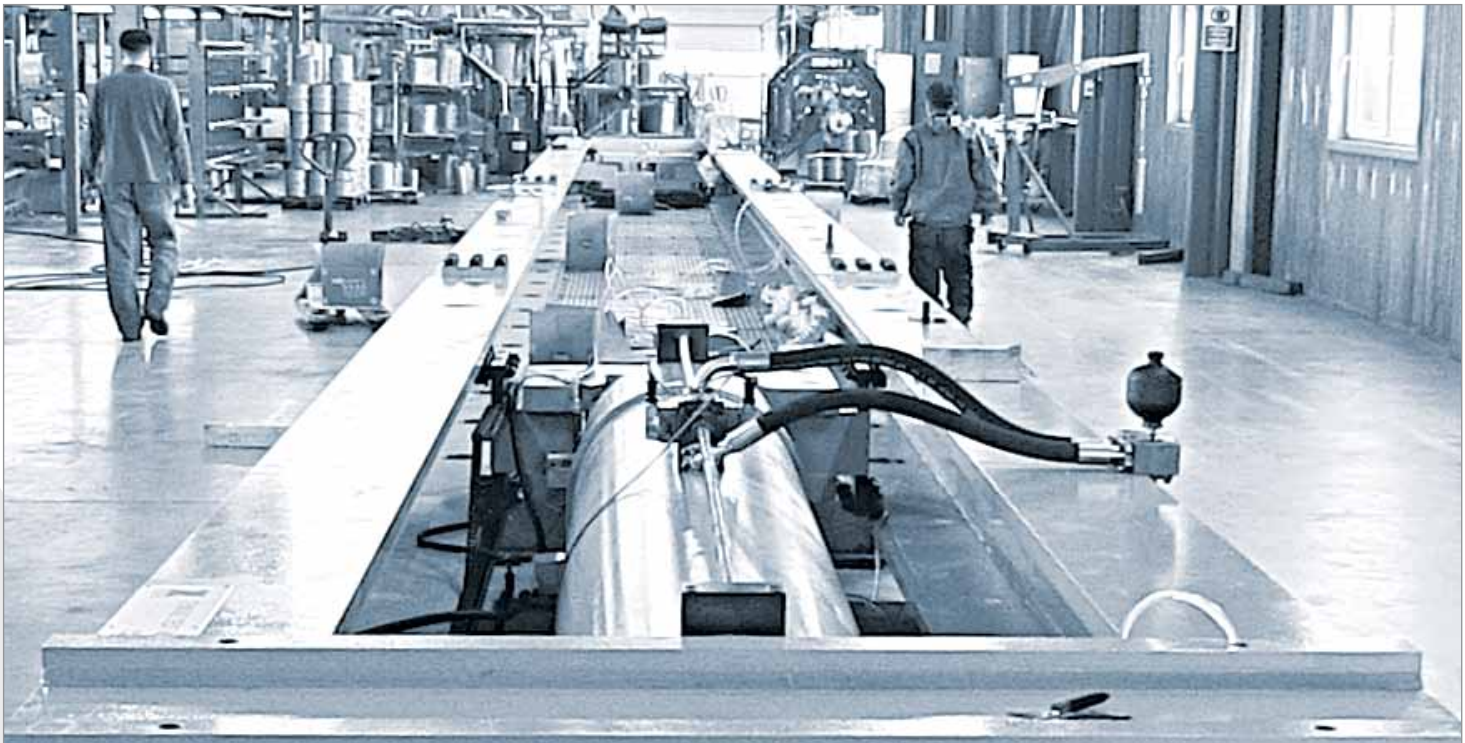
The peak performance of the Terraline® polyester ropes is obtained mainly through three key elements:

- Super HT polyester fibers
- Single yarn PU based marine coating
- Unique MaxLoad design

The breakthrough MaxLoad design was obtained from a set of unconventional yarn twist/strand laying/rope design ratios, and the use of new tools for simultaneous tensioning of all filaments, yarns and strands respectively.

The result is an unparalleled high performance polyester solution, providing slightly lower elongation - while preserving the key benefits of traditional polyester ropes.

Terraline® products especially suit applications demanding high breaking strength, low diameter, moderate elongation, sinking properties and lower cost, typically vessel, offshore and fish farming mooring, tugging & pulling lines and lifting.



# Test lab facilities

Vessels and offshore installations are growing in size, complexity and value, and the requirements for safety, documentation and certification are similarly increasing.

Our new 300 ton test bench addition enables testing of high performance solutions in accordance with OCIMF, CI, ISO and class company requirements. Our test lab perform general and customer specific testing of i.e strength, loads, elongation and abrasion resistance.

# Acera® standard rope products

## MULTISTRAND SINGLE BRAID

### Acera® Amundsen
12-strand HMPE rope with DNV GL approval

### Acera® Nansen
8-strand HMPE rope with DNV GL approval

## MULTI COVER STRAND

### Acera® Scott
8-cover strand HMPE rope

### Acera® Barentz
12-cover strand HMPE rope

## 3-STRAND

### Acera® Heyerdahl
3-strand HMPE rope

## MULTISTRAND W/COVER

### Acera® daGama
12-strand HMPE rope with cover

## FIBER SHACKLE

### Acera® Soft Shackle
Genuine HMPE fiber –
replacing steel, handmade knots and splicing

*Acera® is a registered trademark owned by Timm AS. All Timm Acera® products are made in our European factory, with HMPE type approval or survey report from DNV GL. Each single yarn is individually coated through a rotating 360° coating process. Acera® ropes meet the ISO 10325 standard for breaking strength and ISO 9554 general specifications.*

ACERA®
Genuine HMPE ropes

# Acera® Amundsen

## 12-strand HMPE rope

Acera® Amundsen is a DNV GL type approved 12-strand high performance rope made from genuine Acera® HMPE yarns, which is individually coated through a rotating 360° Lick-roller process. This cumbersome single yarn coating process demonstrates the uncompromising commitment to the quality standards of Acera®. Single yarn coating is proven to significantly enhance internal and external abrasion resistance, and extend service life and strength.

TYPE APPROVED CERTIFICATE K-5913

DNV·GL

12 strand ropes are regarded as the best rope construction, and has become the most common construction for HMPE ropes.

**Key benefits:**

- Ease of handling
- Easy to splice
- Easy to inspect
- High construction stability
- Well balanced; 6 left and 6 right strands
- Outsized surface contact - better abrasion resistance
- No rotation under load
- Single yarn coating, extended service life

Acera® Amundsen is the alternative to the cumbersome steel wire ropes. It is stronger and safer, with significantly less snap-back/recoil. The corresponding weight is therefore 7 times lower. When replacing conventional fiber ropes, the reduction in diameter leads to significant savings in weight (60%), space and handling. This reduces the total time required for mooring operations and fuel consumption.

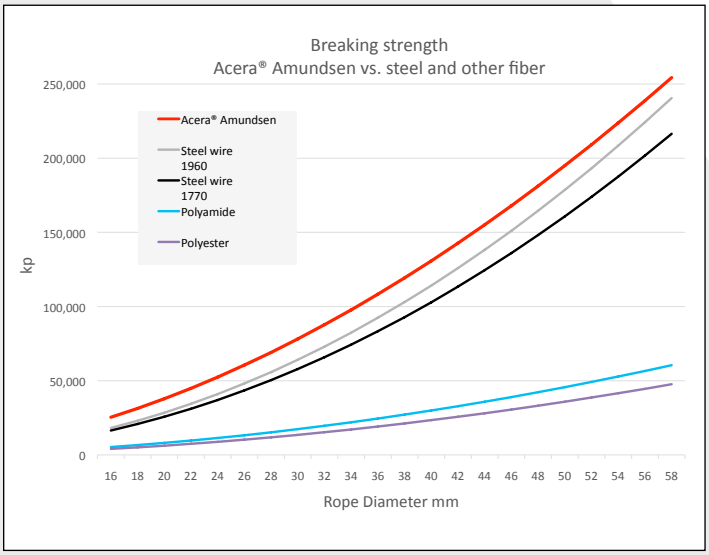
The lightweight, ultra strong Acera® Amundsen is available at a market competitive price and can be customised to suit a number of key applications:

- Mooring - Towing - Lifting - Winching
- Tankers, cruise ships, tug boats
- Offshore and seismic vessels, etc

## TIMM HIGH PERFORMANCE ROPE - TECHNICAL SPECIFICATION

| | |
|---|---|
| CONSTRUCTION | 12-strand plaited |
| FIBER | Acera® HMPE |
| SPECIFIC GRAVITY | 0,97 (floating) |
| OIL CONTENT IN FIBER | <0,1% |
| UV RESISTANCE | Excellent |
| ABRASION RESISTANCE | Excellent |
| ACID RESISTANCE | Excellent |
| ALKALI RESISTANCE | Excellent |
| MOST CHEMICALS RESISTANCE | Excellent |
| COLD & FROST RESISTANCE | Excellent |
| WATER RESISTANCE | Excellent (0% absorption) |
| HEAT RESISTANCE | Low (145-150° melting) |
| ELONGATION | Low (2-3% at break) |
| COLOURS | Platinium |

**Other colours and colour combinations available on request**




| Diameter mm | Minimum strength kp | Minimum strength kN | Diameter mm | Minimum strength kp | Minimum strength kN |
|---|---|---|---|---|---|
| 6 | 3 770 | 37 | 34 | 97 890 | 960 |
| 8 | 6 650 | 65 | 36 | 106 050 | 1 040 |
| 10 | 10 400 | 102 | 38 | 118 280 | 1 160 |
| 12 | 14 980 | 147 | 40 | 128 480 | 1 260 |
| 14 | 20 390 | 200 | 44 | 148 870 | 1 460 |
| 16 | 26 510 | 260 | 48 | 173 350 | 1 700 |
| 18 | 31 610 | 310 | 52 | 200 880 | 1 970 |
| 20 | 38 740 | 380 | 56 | 230 450 | 2 260 |
| 22 | 45 880 | 450 | 60 | 257 980 | 2 530 |
| 24 | 53 020 | 520 | 64 | 289 590 | 2 840 |
| 26 | 61 180 | 600 | 68 | 323 250 | 3 170 |
| 28 | 69 340 | 680 | 72 | 358 940 | 3 520 |
| 30 | 78 510 | 770 | 76 | 396 660 | 3 890 |
| 32 | 88 710 | 870 | 80 | 438 470 | 4 300 |

*Nominal diameter as per definition in ISO 1968. Minimum strength defined as MBF/MBL (Minimum Breaking Force, minimum breakload), and measured in kilogram force/kp, tested according to ISO 2307 and verified by DNV GL. Spliced ropes will on average have 10 % lower minimum strength.*

# Acera® daGama

## 12-strand HMPE rope with cover

Acera® daGama is constructed with a 12-strand core, with a tight 24 or 32 braided cover. The 3-step coating process ensures an outstanding resistance to particle ingress. It also protects against internal and external abrasion and prevents the core and cover from moving independently.

Each yarn is individually coated through a rotating 360° Lick-roller process. This cumbersome single yarn coating process demonstrates the uncompromising commitment to the quality standards of Acera®. Single yarn coating is proven to significantly enhance internal and external abrasion resistance, and extend service life and strength.

Additionally the core is coated with an exclusively developed adhesive coating bonding the core and the cover, to avoid them moving independently. Finally, the braided Acera® cover is coated to increase resistance to particle ingress and external abrasion.

Perfect on single drum winching. For multi-drum winching and applications with bits and capstans we recommend other constructions (i.e the cover stranded Acera® Scott, or 12-stranded Acera® Amundsen).

### Key benefits:

- Resistant to external damage and particle ingress
- Single yarn coating - high abrasion resistance
- Ease of handling
- High construction stability
- Well balanced; 6 left and 6 right strands
- No rotation under load
- Optional HT polyester cover available

Acera® daGama is an alternative to cumbersome steel wire ropes. It is stronger, with significantly less snap-back/recoil, and the corresponding weight is 7 times lower. When replacing conventional fiber ropes, the reduction in diameter leads to significant savings in weight, space and handling. This reduces operation time and fuel consumption.

The lightweight, and ultra strong Acera® daGama is available at a market competitive price and can be customised to suit a number of key applications:

- Mooring - Towing - Lifting - Winching
- Tankers, cruise ships, tug boats
- Offshore and seismic vessels, etc

## TIMM HIGH PERFORMANCE ROPE - TECHNICAL SPECIFICATION

| | |
|---|---|
| CONSTRUCTION | 12-strand plaited core, 24 braided cover |
| FIBER | Acera® HMPE |
| SPECIFIC GRAVITY | 0,973 (floating) |
| OIL CONTENT IN FIBER | <0,1% |
| FIBER TOXICITY | Biologically inert, IARC classified 3 |
| COATING TOXICITY | Water based, solvent free, REACH approved |
| WEATHERING ( ISO 12224 ) | Excellent |
| UV RESISTANCE | Excellent |
| ABRASION RESISTANCE | Excellent |
| ACID RESISTANCE | Excellent |
| ALKALI RESISTANCE | Excellent |
| OIL RESISTANCE | Excellent |
| MOST CHEMICALS RESISTANCE | Excellent |
| COLD & FROST RESISTANCE | Excellent |
| WATER RESISTANCE | Excellent (0% absorption) |
| HEAT RESISTANCE | Low (145-150° melting) |
| BENDING FATIGUE | Excellent |
| TENSION FATIGUE | Excellent |
| ELONGATION | Low (2-3% at break) |
| COLOURS, POLYESTER COVER | White |
| COLOURS, ACERA COVER | Yellow |

**Other colours and colour combinations available on request**

| Diameter mm | Minimum strength kp | Minimum strength kN | Diameter mm | Minimum strength kp | Minimum strength kN |
|---|---|---|---|---|---|
| 20 | 27 630 | 271 | 40 | 116 250 | 1 140 |
| 22 | 34 770 | 341 | 44 | 140 720 | 1 380 |
| 24 | 40 990 | 402 | 48 | 164 170 | 1 610 |
| 26 | 48 030 | 471 | 52 | 195 780 | 1 920 |
| 28 | 55 980 | 549 | 56 | 223 310 | 2 190 |
| 30 | 64 960 | 637 | 60 | 256 960 | 2 520 |
| 32 | 75 050 | 736 | 64 | 293 670 | 2 880 |
| 34 | 84 020 | 824 | 68 | 332 420 | 3 260 |
| 36 | 93 000 | 912 | 72 | 370 150 | 3 630 |
| 38 | 102 990 | 1 010 | | | |

*Nominal diameter as per definition in ISO 1968. Minimum strength defined as MBF/MBL (Minimum Breaking Force, minimum breakload), and measured in kilogram force/kp, tested according to ISO 2307 and verified by DNV GL. Spliced ropes will on average have 10 % lower minimum strength.*

# Acera® Nansen

## 8-strand HMPE rope

Acera® Nansen is made from Acera® genuine HMPE yarns, and has earned a DNV GL type approval . Nansen is the result of a unique 8-strand, back-twisted rope construction process. It is produced from 8 reels in groups of two strands, revolving around each other in pairs to form the 8 strand plaited construction. Our unique back-twisting process ensures identical strands, independent of left or right direction. The result is a more stabilized rope with a higher realization factor – providing a better weight-to-strength ratio.

This Acera® yarn is individually coated through a rotating 360° Lick-roller process.

TYPE APPROVED CERTIFICATE K-5913

DNV·GL

This cumbersome single yarn coating process demonstrates the uncompromising commitment to the quality standards of Acera®. Single yarn coating is proven to significantly enhance internal and external abrasion resistance, and extend service life and strength.

Available in very long lengths and very high diameters.

### Key benefits:

- Single yarn coating, extended service life
- Available in very long lengths
- Available in very high diameters
- Easy to inspect
- Easier to repair
- Very easy to splice
- Ease of handling
- Flexible

Acera® Nansen is an alternative to the cumbersome steel wire ropes. It is stronger and safer, with significantly less snap-back/recoil. The corresponding weight is 7 times lower.

Acera® Nansen is the basis for heavy duty lifting slings (i.e. subsea lifting of over 1100 tonnes breaking strength or subsea pull-in ropes).

The Acera® Nansen properties of low weight, ultra high strength, competitive pricing and availability in high diameters and long lengths make the ropes attractive on a number of applications:

- Mooring - Towing - Lifting - Winching
- Tankers, cruise ships, tug boats
- Offshore and seismic vessels, etc

## TIMM HIGH PERFORMANCE ROPE - TECHNICAL SPECIFICATION

| | |
|---|---|
| CONSTRUCTION | 8-strand plaited |
| FIBER | Acera® HMPE |
| SPECIFIC GRAVITY | 0,97 (floating) |
| OIL CONTENT IN FIBER | <0,1% |
| FIBER TOXICITY | Biologically inert, IARC classified 3 |
| COATING TOXICITY | Water based, solvent free, REACH approved |
| WEATHERING ( ISO 12224 ) | Excellent |
| UV RESISTANCE | Excellent |
| ABRASION RESISTANCE | Excellent |
| ACID RESISTANCE | Excellent |
| ALKALI RESISTANCE | Excellent |
| OIL RESISTANCE | Excellent |
| MOST CHEMICALS RESISTANCE | Excellent |
| COLD & FROST RESISTANCE | Excellent |
| WATER RESISTANCE | Excellent (0% absorption) |
| HEAT RESISTANCE | Low (145-150° melting) |
| BENDING FATIGUE | Excellent |
| TENSION FATIGUE | Excellent |
| ELONGATION | Low (2-3% at break) |
| COLOURS | Platinium |

Other colours and colour combinations available on request

| Diameter mm | Minimum strength kp | Minimum strength kN |
|---|---|---|
| 6 | 3 770 | 37 |
| 8 | 6 650 | 65 |
| 10 | 10 400 | 102 |
| 12 | 14 980 | 147 |
| 14 | 20 390 | 200 |
| 16 | 26 510 | 260 |
| 18 | 31 610 | 310 |
| 20 | 38 740 | 380 |
| 22 | 45 880 | 450 |
| 24 | 53 020 | 520 |
| 26 | 61 180 | 600 |
| 28 | 69 340 | 680 |
| 30 | 78 510 | 770 |
| 32 | 88 710 | 870 |
| 34 | 97 890 | 960 |
| 36 | 106 050 | 1 040 |

| Diameter mm | Minimum strength kp | Minimum strength kN |
|---|---|---|
| 38 | 118 280 | 1 160 |
| 40 | 128 480 | 1 260 |
| 44 | 148 870 | 1 460 |
| 48 | 173 350 | 1 700 |
| 52 | 200 880 | 1 970 |
| 56 | 230 450 | 2 260 |
| 60 | 257 980 | 2 530 |
| 64 | 289 590 | 2 840 |
| 68 | 323 250 | 3 170 |
| 72 | 358 940 | 3 520 |
| 76 | 396 660 | 3 890 |
| 80 | 438 470 | 4 300 |
| 88 | 530 250 | 5 200 |
| 96 | 630 180 | 6 180 |
| 104 | 722 970 | 7 090 |
| 112 | 831 050 | 8 150 |

*Nominal diameter as per definition in ISO 1968. Minimum strength defined as MBF/MBL (Minimum Breaking Force, minimum breakload), and measured in kilogram force/kp, tested according to ISO 2307 and verified by DNV GL. Spliced ropes will on average have 10 % lower minimum strength.*

# Acera® Scott

## 8-cover strand HMPE rope

A heavy duty rope made to withstand rugged conditions.

Acera® Scott is constructed from 8-strand square plait (4x2), with a core of Acera® yarns with less twist and 24 braided covers protecting each individual strand from wear and abrasion.

This special construction provides significantly increased safety properties, as the covers act as snap-back/recoil arrestors. In combination with the low elongation on HMPE fibers, there is minimal risk of potentially damaging backlash if a mooring line breaks.

Acera® Scott is made from Acera® genuine HMPE yarns, which are individually coated through a rotating 360° Lick-roller process. This cumbersome single yarn coating process demonstrates the uncompromising commitment to the quality standards of Acera®. Single yarn coating is proven to significantly enhance internal and external abrasion resistance, and extend service life and strength. Optional HT polyester cover available.

Available in very long, and extra high diameters.

### Key benefits:

- Increased safety, snap-back/ recoil arrestors
- High strength-to-weight
- Available in high diameters
- Available in long lengths
- Excellent abrasion resistance
- Reduced external damage and particle ingress
- Easy to splice and repair
- Easy to inspect
- Extremely good on winches, bits and capstans
- Prevents the core and cover from moving independently
- Better elongation than conventional HMPE rope constructions

Acera® Scott has genuine safety properties and abrasion resistance in addition to the standard Acera® benefits: lightweight, ultra strong and competitive pricing . The availability of polyester covers, extra high diameters and long lengths, make the ropes an attractive choice for several applications:

- Mooring - Towing - Lifting - Winching
- Tankers, cruise ships, tug boats
- Offshore and seismic vessels, etc

## TIMM HIGH PERFORMANCE ROPE - TECHNICAL SPECIFICATION

| | |
|---|---|
| CONSTRUCTION | **8-strand – individually braided covers** |
| FIBER | **Acera® HMPE - optional PES cover** |
| SPECIFIC GRAVITY | **0,973 (floating)** |
| OIL CONTENT IN FIBER | **<0,1%** |
| UV RESISTANCE | **Excellent** |
| ABRASION RESISTANCE | **Excellent** |
| ACID RESISTANCE | **Excellent** |
| ALKALI RESISTANCE | **Excellent** |
| MOST CHEMICALS RESISTANCE | **Excellent** |
| COLD & FROST RESISTANCE | **Excellent** |
| WATER RESISTANCE | **Excellent (0% absorption)** |
| HEAT RESISTANCE | **Low (145-150° melting)** |
| ELONGATION | **Low (2-3% at break)** |
| COLOURS, POLYESTER COVER | **White** |
| COLOURS, ACERA COVER | **Yellow** |

**Other colours and colour combinations available on request**

*Acera® is a registered trademark owned by Timm AS. All Timm Acera® products are made in our European factory, with HMPE type approval or survey report from DNV GL. Each single yarn is individually coated through a rotating 360° coating process. Acera® ropes meet the ISO 10325 standard for breaking strength and ISO 9554 general specifications.*

ACERA®
Genuine HMPE ropes

| Diameter mm | Minimum strength kp | Minimum strength kN |
|---|---|---|
| 20 | 27 630 | 271 |
| 22 | 34 770 | 341 |
| 24 | 40 990 | 402 |
| 26 | 48 030 | 471 |
| 28 | 55 980 | 549 |
| 30 | 64 960 | 637 |
| 32 | 75 050 | 736 |
| 34 | 84 020 | 824 |
| 36 | 93 000 | 912 |
| 38 | 102 990 | 1 010 |
| 40 | 116 250 | 1 140 |
| 44 | 140 720 | 1 380 |

| Diameter mm | Minimum strength kp | Minimum strength kN |
|---|---|---|
| 48 | 164 170 | 1 610 |
| 52 | 195 780 | 1 920 |
| 56 | 223 310 | 2 190 |
| 60 | 256 960 | 2 520 |
| 64 | 293 670 | 2 880 |
| 68 | 332 420 | 3 260 |
| 72 | 370 150 | 3 630 |
| 76 | 409 920 | 4 020 |
| 80 | 459 890 | 4 510 |
| 88 | 545 540 | 5 350 |
| 96 | 640 370 | 6 280 |

*Nominal diameter as per definition in ISO 1968. Minimum strength defined as MBF/MBL (Minimum Breaking Force, minimum breakload), and measured in kilogram force/kp, tested according to ISO 2307 and verified by DNV GL. Spliced ropes will on average have 10 % lower minimum strength.*

# Acera® Barentz

## 12-cover strand HMPE rope

Acera® Barentz is a unique 12-strand rope, with a core of Acera® yarns with less twist for maximum strength. Each strand is protected by a tight 24 braided cover, to ensure each individual strand has maximum protection from wear and abrasion in rugged conditions. This construction results in an evenly round shaped rope.

This special construction provides significantly increased safety properties, as the covers act as snap-back/recoil arrestors. In combination with the low elongation on HMPE fibers, there is minimal risk of potentially damaging backlash if a mooring line breaks.

Acera® Barentz is made from Acera® genuine HMPE yarns, which are individually coated through a rotating 360° Lick-roller process. This cumbersome single yarn coating process demonstrates the uncompromising commitment to the quality standards of Acera®. Single yarn coating is proven to significantly enhance internal and external abrasion resistance, and extend service life and strength.

Optional HT polyester cover available.

Acera® Barentz with Acera® cover will float; while the polyester cover will make it sink.

### Key benefits:

- Increased safety (snap-back arrestor)
- High strength-to-weight
- Available in high diameters
- Available in very long lengths
- Excellent abrasion resistance
- Reduced external damage and particle ingress
- Easy to splice and repair
- Easy to inspect
- Extremely good on winches, bits and capstans
- Prevents the cover and core from moving independently

Acera® Barentz has genuine safety properties and abrasion resistance, in addition to the standard Acera® benefits : lightweight, ultra strong and competitive pricing . The availability of polyester covers and high diameters make the ropes attractive in several applications:

- Mooring - Towing - Lifting - Winching
- Tankers, cruise ships, tug boats
- Offshore and seismic vessels, etc

## TIMM HIGH PERFORMANCE ROPE - TECHNICAL SPECIFICATION

| | |
|---|---|
| CONSTRUCTION | 12-strand – individually braided covers |
| FIBER | Acera® HMPE - optional PES cover |
| SPECIFIC GRAVITY | 0,973 (floating) |
| OIL CONTENT IN FIBER | <0,1% |
| FIBER TOXICITY | Biologically inert, IARC classified 3 |
| COATING TOXICITY | Water based, solvent free, REACH approved |
| WEATHERING ( ISO 12224 ) | Excellent |
| UV RESISTANCE | Excellent |
| ABRASION RESISTANCE | Excellent |
| ACID RESISTANCE | Excellent |
| ALKALI RESISTANCE | Excellent |
| OIL RESISTANCE | Excellent |
| MOST CHEMICALS RESISTANCE | Excellent |
| COLD & FROST RESISTANCE | Excellent |
| WATER RESISTANCE | Excellent (0% absorption) |
| HEAT RESISTANCE | Low (145-150° melting) |
| BENDING FATIGUE | Excellent |
| TENSION FATIGUE | Excellent |
| ELONGATION | Low (2-3% at break) |
| COLOURS, POLYESTER COVER | White |
| COLOURS, ACERA COVER | Yellow |

**Other colours and colour combinations available on request**

| Diameter mm | Minimum strength kp | Minimum strength kN |
|---|---|---|
| 20 | 27 630 | 271 |
| 22 | 34 770 | 341 |
| 24 | 40 990 | 402 |
| 26 | 48 030 | 471 |
| 28 | 55 980 | 549 |
| 30 | 64 960 | 637 |
| 32 | 75 050 | 736 |
| 34 | 84 020 | 824 |
| 36 | 93 000 | 912 |
| 38 | 102 990 | 1 010 |

| Diameter mm | Minimum strength kp | Minimum strength kN |
|---|---|---|
| 40 | 116 250 | 1 140 |
| 44 | 140 720 | 1 380 |
| 48 | 164 170 | 1 610 |
| 52 | 195 780 | 1 920 |
| 56 | 223 310 | 2 190 |
| 60 | 256 960 | 2 520 |
| 64 | 293 670 | 2 880 |
| 68 | 332 420 | 3 260 |
| 72 | 370 150 | 3 630 |

*Nominal diameter as per definition in ISO 1968. Minimum strength defined as MBF/MBL (Minimum Breaking Force, minimum breakload), and measured in kilogram force/kp, tested according to ISO 2307 and verified by DNV GL. Spliced ropes will on average have 10 % lower minimum strength.*

# Acera® Heyerdahl

## 3-strand HMPE rope

An unconventional high performance solution based on a conventional laid construction.

Acera® Heyerdahl is a traditional 3 strand rope made from Acera® genuine HMPE yarns, which is individually coated through a rotating 360° Lick-roller process. This cumbersome single yarn coating process demonstrates the uncompromising commitment to the quality standards of Acera®. Single yarn coating is proven to significantly enhance internal and external abrasion resistance, and extend service life and strength.

A multipurpose rope especially made for applications demanding extensive splicing and confectioning.

**Key benefits:**

- The easiest rope to splice and repair
- Flexible and soft to handle
- High strength-to-weight ratio
- Low bending ratio
- Available in very long lengths
  - 6 – 20mm to unlimited lengths (i.e 30mm – 2 000m)
- Good abrasion resistance
- Low torsion sensitivity

Acera® Heyerdahl provides rope solutions with lightweight, ultra high-strength and competitive pricing. The convenient splicing and availability of very long lengths make these ropes attractive on special mooring and industrial applications (i.e. fish farming and cage mooring).

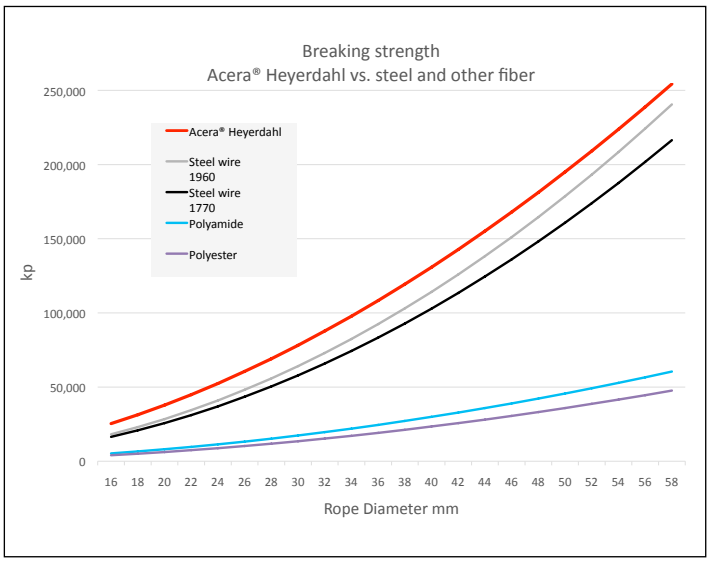
Benefits compared to standard mooring ropes:

- 3 times less weight
- Low elongation – less tightening up efforts
- 1/3 reduction in rope and connector dimensions resulting in
  - More space and cost efficient logistics and laying
  - Less resistance in water
  - Less visual impact

## TIMM HIGH PERFORMANCE ROPE - TECHNICAL SPECIFICATION

| | |
|---|---|
| CONSTRUCTION | **3-strand** |
| FIBER | **Acera® HMPE** |
| SPECIFIC GRAVITY | **0,97** |
| OIL CONTENT IN FIBER | **<0,1%** |
| UV RESISTANCE | **Excellent** |
| ABRASION RESISTANCE | **Excellent** |
| ACID RESISTANCE | **Excellent** |
| ALKALI RESISTANCE | **Excellent** |
| MOST CHEMICALS RESISTANCE | **Excellent** |
| COLD & FROST RESISTANCE | **Excellent** |
| WATER RESISTANCE | **Excellent (0% absorption)** |
| HEAT RESISTANCE | **Low (145-150° melting)** |
| ELONGATION | **Low (2-3% at break)** |
| COLOURS | **Platinium** |

**Other colours and colour combinations available on request**




| Diameter mm | Minimum strength kp | Minimum strength kN | Diameter mm | Minimum strength kp | Minimum strength kN |
|---|---|---|---|---|---|
| 6 | 3 770 | 37 | 34 | 97 890 | 960 |
| 8 | 6 650 | 65 | 36 | 106 050 | 1 040 |
| 10 | 10 400 | 102 | 38 | 118 280 | 1 160 |
| 12 | 14 980 | 147 | 40 | 128 480 | 1 260 |
| 14 | 20 390 | 200 | 44 | 148 870 | 1 460 |
| 16 | 26 510 | 260 | 48 | 173 350 | 1 700 |
| 18 | 31 610 | 310 | 52 | 200 880 | 1 970 |
| 20 | 38 740 | 380 | 56 | 230 450 | 2 260 |
| 22 | 45 880 | 450 | 60 | 257 980 | 2 530 |
| 24 | 53 020 | 520 | 64 | 289 590 | 2 840 |
| 26 | 61 180 | 600 | 68 | 323 250 | 3 170 |
| 28 | 69 340 | 680 | 72 | 358 940 | 3 520 |
| 30 | 78 510 | 770 | 76 | 396 660 | 3 890 |
| 32 | 88 710 | 870 | 80 | 438 470 | 4 300 |

*Nominal diameter as per definition in ISO 1968. Minimum strength defined as MBF/MBL (Minimum Breaking Force, minimum breakload ), and measured in kilogram force/kp, tested according to ISO 2307 and verified by DNV GL. Spliced ropes will on average have 10 % lower minimum strength.*

# Acera® Heyerdahl Ecosink™

## A unique 3-strand sinking HMPE rope – lead free and environmentally friendly

Pollution and the consequences of using lead in fishing gear is a growing concern. Acera® Heyerdahl Ecosink™ is the world's first environmentally friendly sinking HMPE rope. It is a multipurpose rope made especially for applications requiring sinking and environmentally friendly properties, low elongation and extensive splicing and confectioning.

The traditional 3-strand rope is made from Acera® genuine HMPE yarns. Each strand has a unique core made from heavy chopped natural mineral fibers (HMF).

The Acera® yarn and the mineral fibers are individually coated through our rotating 360° Lick-roller process. This cumbersome single yarn coating process demonstrates the uncompromising commitment to the quality standards of Acera®.

Single yarn coating is proven to significantly enhance internal and external abrasion resistance, and extend service life and strength.

The special coating applied has been tested to withstand years of salt water flow impact.

Acera® Heyerdahl Ecosink™ can provide rope solutions with ultra high-strength and competitive pricing. The low elongation, convenient splicing and availability of very long lengths, make these ropes attractive for special mooring and industrial applications, i.e. fish farming and cage mooring solutions. Compared to standard ropes the Ecosink™ reduces rope and connector dimensions with 1/3, offering more space & cost efficient logistics and laying, less resistance in water and less visual impact.

**Key benefits:**

- Sinking
- Lead free – environmentally friendly – recyclable
- Enhanced ease of splicing and repair
- Flexible – soft to handle
- Available in very long lengths
  - 20mm unlimited lengths
  - 30mm – 2 000m
- Abrasion resistance
- Stable - low torsion
- Low elongation
  - less tightening up effort
  - less strain on hardware and equipment

Acera® Heyerdahl Ecosink™ and its production process are being certified by Aquastructures, in accordance with the Norwegian standard NS 9415:2009 and the NYTEK regulations for Marine Fish Farms.

## TIMM HIGH PERFORMANCE ROPE - TECHNICAL SPECIFICATION

| | |
|---|---|
| CONSTRUCTION | 3-strand |
| FIBER | Acera® HMPE |
| FIBER IN CORE | HMF |
| SPECIFIC GRAVITY | 1,18 |
| OIL CONTENT IN FIBER | <0,1% |
| FIBER TOXICITY | Biologically inert, IARC classified 3 |
| COATING TOXICITY | Water based, solvent free, REACH approved |
| WEATHERING ( ISO 12224 ) | Excellent |
| UV RESISTANCE | Excellent |
| ABRASION RESISTANCE | Excellent |
| ACID RESISTANCE | Excellent |
| ALKALI RESISTANCE | Excellent |
| OIL RESISTANCE | Excellent |
| MOST CHEMICALS RESISTANCE | Excellent |
| COLD & FROST RESISTANCE | Excellent |
| WATER RESISTANCE | Excellent (0% absorption) |
| HEAT RESISTANCE | Low (145-150° melting) |
| BENDING FATIGUE | Excellent |
| TENSION FATIGUE | Excellent |
| ELONGATION | Low (2-3% at break) |
| COLOURS | Platinium |

Other colours and colour combinations available on request

| Diameter mm | Meter weight gram | Min. strength kp | Min. strength kN |
|---|---|---|---|
| 32 | 638 | 60 163 | 590 |
| 34 | 711 | 67 302 | 660 |
| 36 | 788 | 74 440 | 730 |
| 38 | 868 | 81 539 | 800 |
| 40 | 951 | 89 735 | 880 |
| 42 | 1 038 | 97 893 | 960 |
| 44 | 1 129 | 106 051 | 1 040 |
| 46 | 1 222 | 114 708 | 1 125 |
| 48 | 1 319 | 123 896 | 1 215 |
| 50 | 1 419 | 133 583 | 1 310 |
| 52 | 1 522 | 142 794 | 1 400 |
| 54 | 1 629 | 152 958 | 1 500 |
| 56 | 1 738 | 163 155 | 1 600 |

| Diameter mm | Meter weight gram | Min. strength kp | Min. strength kN |
|---|---|---|---|
| 58 | 1 851 | 173 352 | 1 700 |
| 60 | 1 967 | 184 569 | 1 810 |
| 62 | 2 086 | 195 786 | 1 920 |
| 64 | 2 208 | 207 003 | 2 030 |
| 66 | 2 333 | 219 240 | 2 150 |
| 68 | 2 461 | 230 457 | 2 260 |
| 70 | 2 592 | 242 693 | 2 380 |
| 72 | 2 726 | 254 930 | 2 500 |
| 74 | 2 863 | 268 187 | 2 630 |
| 76 | 3 003 | 281 443 | 2 760 |
| 78 | 3 146 | 294 699 | 2 890 |
| 80 | 3 292 | 308 465 | 3 025 |

*Nominal diameter as per definition in ISO 1968. Minimum strength defined as MBF/MBL (Minimum Breaking Force, minimum breakload ), and measured in kilogram force/kp, tested according to ISO 2307 and verified by DNV GL. Spliced ropes will on average have 10 % lower minimum strength.*

# Acera® Soft Shackle

## Genuine HMPE fiber - replacing steel, handmade knots and splicing

Acera® Rope Shackle – a step towards metal free solutions. Made from Acera® genuine HMPE yarns, the new generation high tenacity, ultra strong and ultra light HMPE (High Modulus PolyEthylene) yarn. Quick and easy locking. Tightens under tension, but still very easy to release – even with a heavy load. No tools needed.

**Construction:**
12 or 16-strand hollow braided. Handspliced eye and a special handmade diamond knot. Single yarn coating provides excellent abrasion resistance. Optional tubular webbing for additional abrasion resistance.

Available in diameters of up to 100-ton strength. Also available in HT polyester.

**Areas of Use:**
Replacing conventional steel shackles, thimbles, handmade knots and splicing

- Fastening cages and nets
- Fastening anti-bird netting
- Mooring shackles
- Attaching anchors, towing ropes, winch lines
- Lifting

**Key benefits vs steel shackles:**

- 20 times lighter
- No rust
- Safe – will never open by accident
- Soft and easy to use
- Easy to release, even under extreme load
- No damages
  - to the deck etc
  - will not haggle wear points - i.e mooring eyes, thimbles, paint, galvanic corrosion
- Quiet – no metal rubbing sound
- Floating

## TIMM HIGH PERFORMANCE ROPE - TECHNICAL SPECIFICATION

| | |
|---|---|
| CONSTRUCTION | 12 or 16-strand hollow braided |
| FIBER | Acera® HMPE |
| SPECIFIC GRAVITY | 0,973 (floating) |
| UV RESISTANCE | Excellent |
| ABRASION RESISTANCE | Excellent |
| ACID RESISTANCE | Excellent |
| ALKALI RESISTANCE | Excellent |
| MOST CHEMICALS RESISTANCE | Excellent |
| COLD & FROST RESISTANCE | Excellent |
| WATER RESISTANCE | Excellent (0% absorption) |
| HEAT RESISTANCE | Low (145-150° melting) |
| ELONGATION | Low (2-3% at break) |
| COLOUR | Platinum |

**Other colours and colour combinations available on request**

| Diameter (mm) | Minimum strength (kp) | Safe Work load (kp) |
|---|---|---|
| 4 | 1 070 | 535 |
| 5 | 1 610 | 805 |
| 6 | 2 670 | 1 335 |
| 8 | 4 280 | 2 140 |
| 10 | 7 500 | 3 750 |
| 12 | 10 770 | 5 385 |
| 14 | 15 250 | 7 625 |
| 16 | 19 900 | 9 950 |
| 18 | 23 970 | 11 985 |
| 20 | 28 790 | 14 395 |

| Diameter (mm) | Minimum strength (kp) | Safe Work load (kp) |
|---|---|---|
| 22 | 33 880 | 16 940 |
| 24 | 39 800 | 19 900 |
| 26 | 45 730 | 22 865 |
| 28 | 51 660 | 25 830 |
| 30 | 58 430 | 29 215 |
| 32 | 66 050 | 33 025 |
| 34 | 72 830 | 36 415 |
| 36 | 79 600 | 39 800 |
| 38 | 88 070 | 44 035 |

*Nominal diameter, as per definition in ISO 1968, applies on the rope from which the shackle is made, as seen on the eye. Physical diameter on the rest of the shackle is on average around 50% higher. Minimum strength defined as MBF/MBL (Minimum Breaking Force, minimum breakload). Tested according to ISO 2307. Testing procedure include both directions.*

# Timm Signal Master

Our best selling rope – reliable, flexible and tough.

Timm Signal Master is the trusted mooring rope for the world's largest and busiest ship owners.

Made from a mix of our own B5 mixed polyolefin yarn and high performance polyester, Timm Signal Master is the ideal mooring rope for all types of ships.

**Timm Signal Master offers everything anyone can ask of a premium rope:**

- Excellent resistance to abrasion.
- Buoyancy to prevent propeller accidents.
- UV protetction.
- One of the best strength-to-weight ratios on the market.
- Low-torque construction.

Our customers tell us that Timm Signal Master gives them an excellent return on their investment and a low total cost of ownership through:

- A long service life.
- Easy handling.
- Low maintenance.

More than 2000 ships supplied

| Dia. mm. | Circ. Inches | Tested breaking load kp | Tested breaking load kN |
|---|---|---|---|
| 36 | 4,50 | 29 040 | 285 |
| 40 | 5,00 | 35 720 | 350 |
| 44 | 5,50 | 43 080 | 423 |
| 48 | 6,00 | 51 110 | 501 |
| 50 | 6,25 | 55 380 | 543 |
| 52 | 6,50 | 59 820 | 587 |
| 54 | 6,75 | 64 430 | 632 |
| 56 | 7,00 | 69 200 | 679 |
| 60 | 7,50 | 79 250 | 777 |
| 62 | 7,75 | 84 520 | 829 |
| 64 | 8,00 | 89 960 | 882 |
| 68 | 8,50 | 101 340 | 994 |
| 72 | 9,00 | 113 390 | 1112 |
| 76 | 9,50 | 126 100 | 1237 |
| 78 | 9,75 | 132 700 | 1301 |
| 80 | 10,00 | 139 470 | 1368 |
| 84 | 10,50 | 153 500 | 1505 |
| 88 | 11,00 | 168 190 | 1650 |
| 92 | 11,50 | 183 550 | 1800 |
| 96 | 12,00 | 199 560 | 1957 |
| 104 | 13,00 | 233 540 | 2290 |

Product is made according to ISO 10556 and ISO 9554. Tested breaking load is according to ISO 2307 and is measured without eye splices.

MOORING

# Timm Signal Safety

A very durable rope at a reasonable price.

Timm Signal Safety has been one of Timm's trusted products for more than three decades. We make this highly regarded 8-strand rope from our first class B5 mixed polyolefin yarns, which offer excellent value for money.

Timm Signal Safety is suitable for the mooring of all types of ships, including tankers, and is also frequently used as a messenger line, pick-up line and towing line.

**Main properties:**

- Class leading strength-to-weight ratio.
- UV stabilized and OCIMF approved.
- A specific gravity of only 0.91, meaning excellent buoyancy.
- Very good abrasion resistance.

Look for the orange rope with three black marker yarns.

**Timm Signal Safety** will:

- Reduce mooring rope costs.
- Ensure problem free mooring.

| Dia. mm. | Circ. Inches | Tested breaking load kp | Tested breaking load kN |
|---|---|---|---|
| 36 | 4,50 | 24590 | 241 |
| 40 | 5,00 | 30120 | 295 |
| 44 | 5,50 | 36180 | 355 |
| 48 | 6,00 | 42770 | 419 |
| 52 | 6,50 | 49890 | 489 |
| 56 | 7,00 | 57530 | 564 |
| 60 | 7,50 | 65700 | 644 |
| 64 | 8,00 | 74390 | 730 |
| 68 | 8,50 | 83590 | 820 |
| 72 | 9,00 | 93300 | 915 |
| 76 | 9,50 | 103530 | 1015 |
| 80 | 10,00 | 114270 | 1121 |
| 88 | 11,00 | 137260 | 1346 |
| 90 | 11,25 | 143330 | 1406 |
| 96 | 12,00 | 162280 | 1591 |
| 100 | 12,50 | 175530 | 1721 |
| 104 | 13,00 | 189290 | 1856 |
| 108 | 13,50 | 203540 | 1996 |
| 112 | 14,00 | 218290 | 2141 |
| 116 | 14,50 | 233540 | 2290 |
| 120 | 15,00 | 249280 | 2445 |

Product is made according to ISO 10572 and ISO 9554. Tested breaking load is according to ISO 2307 and is measured without eye splices.

Economical
Efficient
Safe

MOORING

# Timm Signal Master

## Mooring Tail

Economical and efficient mooring.


The world's best names in tanker shipping trust Timm Marine to secure their valuable assets with Timm Signal Master Mooring Tails in ports worldwide.

Every year, we ship thousands of mooring tails to a wide range of tankers including LNGs, VLCCs, VLGCs, Suezmaxes, Aframaxes and shuttle tankers.

Our mooring tails are delivered with serial number tags for easy identification and heavy duty eye protection hoses for increased durability.

**Timm Signal Master Mooring Tails are available in different lengths and configurations, including:**

- Standard 11m tails with 2m eyes at each end.
- Standard 7m tails with 0.6m and 1.8m eyes.

One of the best selling tails in the world, the Timm Signal Master Mooring Tail is available from stockists worldwide for your convenience.

| Dia. mm. | Circ. Inches | Tested breaking load kp | Tested breaking load kN |
|---|---|---|---|
| 48 | 6,00 | 51110 | 501 |
| 54 | 6,75 | 64430 | 632 |
| 56 | 7,00 | 69200 | 679 |
| 60 | 7,50 | 79250 | 777 |
| 62 | 7,75 | 84520 | 829 |
| 64 | 8,00 | 89960 | 882 |
| 68 | 8,50 | 101340 | 994 |
| 72 | 9,00 | 113390 | 1112 |
| 76 | 9,50 | 126100 | 1237 |
| 80 | 10,00 | 139470 | 1368 |
| 84 | 10,50 | 153500 | 1505 |
| 88 | 11,00 | 168190 | 1650 |
| 90 | 11,25 | 175790 | 1724 |
| 96 | 12,00 | 199560 | 1957 |
| 104 | 13,00 | 233540 | 2290 |

Product is made according to ISO 10556 and ISO 9554. Tested breaking load is according to ISO 2307 and is measured without eye splices.

SHOCK ABSORBERS

# Timm Signal Master

## Ringtail

Heavy duty and added safety.

The Timm Signal Master Ringtail is one of the world's best selling tails, with thousands sold every year.

The Timm Signal Master Ringtail's combination of high strength, low weight, medium elongation and excellent UV resistance has made it a favorite among tanker operators.

- Double construction: core of Signal B5 mixed polyolefin yarn covered with high-performance polyester.
- High abrasion resistance.
- Buoyant.
- UV stabilized.
- OCIMF-approved product.
- Class leading strength-to-weight ratio.
- PES-protected eyes each end.

**Timm Signal Master Ringtails are available in:**

- Ringtails 11m.
- Ringtails 22m.

| Dia. mm. | Circ. Inches | Tested breaking load kp | Tested breaking load kN |
|---|---|---|---|
| 48 | 6,00 | 81776 | 802 |
| 50 | 6,25 | 88608 | 869 |
| 52 | 6,50 | 95712 | 939 |
| 54 | 6,75 | 103088 | 1011 |
| 56 | 7,00 | 110720 | 1086 |
| 60 | 7,50 | 126800 | 1244 |
| 62 | 7,75 | 135232 | 1326 |
| 64 | 8,00 | 143936 | 1412 |
| 68 | 8,50 | 162144 | 1590 |
| 72 | 9,00 | 181424 | 1779 |
| 78 | 9,75 | 212320 | 2082 |
| 80 | 10,00 | 223152 | 2188 |
| 84 | 10,50 | 245600 | 2409 |
| 88 | 11,00 | 269104 | 2639 |
| 92 | 11,50 | 293680 | 2880 |
| 96 | 12,00 | 319296 | 3131 |
| 104 | 13,00 | 373664 | 3665 |

Product is made according to ISO 10556 and ISO 9554. Tested breaking load is according to ISO 2307 and is measured without eye splices.

SHOCK ABSORBERS

# Terraline® Tress

## Peak Performance 3-strand Polyester rope

Timm® has produced great ropes since 1772, and constructed our first polyester rope in 1952. Polyester is a particularly reliable fiber, and has proven to be the most durable of the conventional fibers used in ropes.

The engineers at Timm have managed to design a unique 3-strand polyester rope, which delivers over twice the strength of conventional polyester ropes – with a breaking strength 170% above ISO standard.

Rope testing with DNV GL - at the Ormen Lange testlab in Norway - also proved that the subsea breaking strength (MBL) transcends the MBL from the standard ISO 2307 dry test procedure.

The peak performance of the Terraline® Tress is obtained mainly through three key elements:

1. Super HT polyester fibers
2. Single yarn marine coating
3. Unique 3-strand MaxLoad design

The Timm engineers have combined the experience from Acera® high performance HMPE ropes, with an innovative "twist" of the traditional 3-strand rope construction.

This MaxLoad design is based on a set of unconventional yarn twist/strand laying/rope design ratios, and the use of new tools for simultaneous tensioning of all filaments, yarns and strands respectively.

The result is an unparalleled high performance solution which outperforms other traditional polyester ropes, while preserving the key benefits of a traditional 3-strand polyester rope:

- High strength, both wet and dry
- Great abrasion and UV resistance
- Easy to splice and repair
- Low bending ratio
- Lower elongation
- Available in very long lengths
- Low coefficient of friction
- High melting point (260°C)

## TIMM HIGH PERFORMANCE ROPE - TECHNICAL SPECIFICATION

| | |
|---|---|
| CONSTRUCTION | 3-strand laid/helical |
| DESIGN | Terraline® MaxLoad |
| FIBER | Polyethylene Terephthalate - Super HT polyester Super High Tenacity and high adhesive |
| SPECIFIC GRAVITY | 1,37 |
| COATING | PU based MarineCoat |
| UV RESISTANCE | Excellent |
| ABRASION RESISTANCE | Good+ |
| ACID, ALKALI RESISTANCE | Good |
| MOST CHEMICALS RESISTANCE | Good |
| COLD & FROST RESISTANCE | Very good + |
| WATER RESISTANCE | Excellent (<0,5% absorption) |
| HEAT RESISTANCE | Exellent (260° melting) |
| ELONGATION | Moderate (10% at break) |
| COLOURS | Platinum, Bamboo, Yellow |

| Diameter mm | Minimum strength kp | Minimum strength kN |
|---|---|---|
| 32 | 41 197 | 404 |
| 34 | 46 193 | 453 |
| 36 | 51 598 | 506 |
| 38 | 57 206 | 561 |
| 40 | 63 120 | 619 |
| 42 | 69 341 | 680 |
| 44 | 75 765 | 743 |
| 46 | 82 495 | 809 |
| 48 | 89 531 | 878 |
| 50 | 96 771 | 949 |
| 52 | 104 317 | 1023 |
| 54 | 112 169 | 1100 |

| Diameter mm | Minimum strength kp | Minimum strength kN |
|---|---|---|
| 56 | 120 225 | 1179 |
| 58 | 128 586 | 1261 |
| 60 | 137 254 | 1346 |
| 62 | 146 125 | 1433 |
| 64 | 155 303 | 1523 |
| 66 | 164 684 | 1615 |
| 68 | 174 473 | 1711 |
| 70 | 184 365 | 1808 |
| 72 | 194 562 | 1908 |
| 74 | 205 065 | 2011 |
| 76 | 215 874 | 2117 |
| 78 | 226 887 | 2225 |

*Nominal diameter is according to ISO 1141. BL/MBF (Minimum Breaking Force) is measured in kN and tested according to ISO 2307 and verified by DNV GL. Spliced ropes will on average have 10 % lower MBF.*

*Terraline® is a trademark owned by Timm AS. All Terraline® products are high performance ropes aiming at delivering the highest strength to cost ratio on the market. The foundation of all Terraline® ropes is the unique MaxLoad design and the use of Super HT polyester.*

TERRALINE®

# Terraline® Duodec²

## Peak Performance 12-strand Polyester rope with cover

Timm® has produced great ropes since 1772, and we constructed the first polyester rope in 1952. Polyester is a particularly reliable fiber, and has proven to be the most durable of the conventional fibers used in ropes.

The engineers at Timm have managed to design a unique double braided, 12-strand polyester rope, which delivers over twice the strength of conventional polyester ropes – with a breaking strength 170% above ISO standard.

Rope testing with DNV GL - at the Ormen Lange testlab in Norway - also proved that the subsea breaking strength (MBL) transcends the MBL from the standard ISO 2307 dry test procedure.

The peak performance of the Terraline® Duodec is obtained mainly through two key elements:

1. Super HT polyester fibers
2. Unique 12-strand MaxLoad design - twisting and laying of yarn and strands

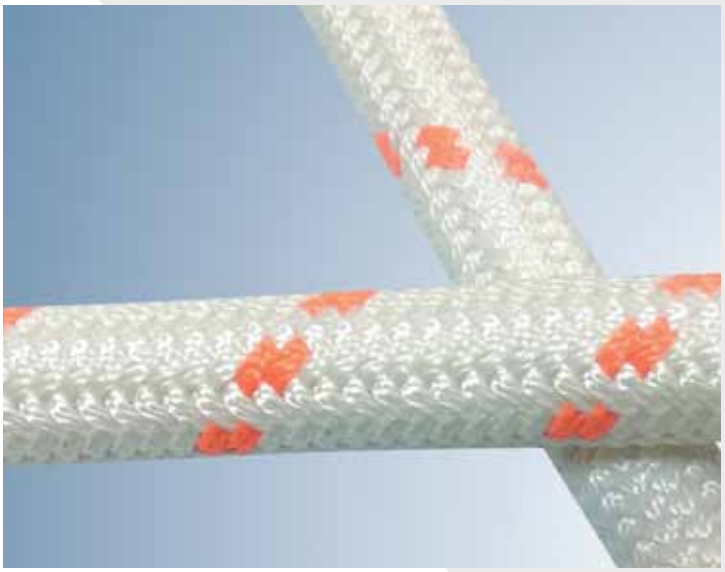
The Timm engineers have combined the experience from Acera® high performance HMPE ropes, with an innovative "twist" of the traditional 12-strand rope construction. This MaxLoad design is based on a set of unconventional yarn twist/strand laying/rope design ratios, and the use of new tools for simultaneous tensioning of all filaments, yarns and strands respectively.

The result is a high performance solution which outperforms other traditional polyester ropes, while preserving the key benefits of a standard double braided polyester rope:

- High strength, both wet and dry
- Increased abrasion resistance
- Easy to handle
- Well balanced; 6 left and 6 right strands
- Low bending ratio

## TIMM HIGH PERFORMANCE ROPE - TECHNICAL SPECIFICATION

| | |
|---|---|
| CONSTRUCTION, CORE | 12-strand |
| DESIGN | Terraline® MaxLoad |
| CONSTRUCTION, COVER | 24 braided |
| FIBER | Polyethylene Terephthalate - Super HT polyester Super High Tenacity and high adhesive |
| SPECIFIC GRAVITY | 1,37 |
| UV RESISTANCE | Excellent |
| ABRASION RESISTANCE | Excellent |
| ACID, ALKALI RESISTANCE | Good |
| MOST CHEMICALS RESISTANCE | Good |
| COLD & FROST RESISTANCE | Very good + |
| WATER RESISTANCE | Excellent (<0,5% absorption) |
| HEAT RESISTANCE | Exellent (260° melting) |
| ELONGATION | Moderate (10% at break) |
| COLOURS | White (other colours available on request) |



| Diameter mm | Minimum strength kp | Minimum strength kN |
|---|---|---|
| 32 | 41 197 | 404 |
| 34 | 46 193 | 453 |
| 36 | 51 598 | 506 |
| 38 | 57 206 | 561 |
| 40 | 63 120 | 619 |
| 42 | 69 341 | 680 |
| 44 | 75 765 | 743 |
| 46 | 82 495 | 809 |
| 48 | 89 531 | 878 |
| 50 | 96 771 | 949 |
| 52 | 104 317 | 1023 |

*Nominal diameter is according to ISO 1141. BL/MBF (Minimum Breaking Force) is measured in kN and tested according to ISO 2307 and verified by DNV GL. Spliced ropes will on average have 10 % lower MBF.*

*Terraline® is a trademark owned by Timm AS. All Terraline® products are high performance ropes aiming at delivering the highest strength to cost ratio on the market. The foundation of all Terraline® ropes is the unique MaxLoad design. Both the core and cover are made from Super HT polyester.*

TERRALINE®

# Acera® Eye-and-Eye Slings

## High Performance slings – up to mbl 750 ton

Slings made from High Modulus PolyEthylene have set new standards for lifting gear. The Acera® slings are made from Acera® Amundsen 12 strand and Acera® Nansen 8 strand ropes.

Acera® Amundsen and Nansen are high performance ropes made from genuine Acera® HMPE yarns, which are individually coated through a rotating 360° Lick-roller process. Single yarn coating is proven to significantly enhance internal and external abrasion resistance, and extend service life and strength.

The sling eyes have Protech™ cover – a proprietary protection made from weaved Acera® yarn. The splices are protected by a weaved polyester Y-cover.

All Acera® slings are produced in accordance with own technical file based on EN 1492-4 standard. The eyes are hand-spliced with our own positive locking tuck variant, ensuring anti-slip under all circumstances.

Acera® slings are the alternative to cumbersome steel wires. They are stronger and safer. The corresponding weight is 7 times lower. Compared to conventional fiber ropes, the resulting reduction in diameter leads to significant savings in weight (60%), space and handling. Acera® slings provide a safer and more productive lifting operation.

**There are numerous benefits to choosing Acera® lightweight slings over wire:**

- Safer operation
  - Less risk to the crew
  - Less injuries
- More productive rigging
  - 1/7 of weight
  - Easier handling - faster operation
  - Less personnel needed
  - Higher lifting capacity
  - Less back injuries
- Less load damage – smooth surface
  - No contact damage
  - No fraying or sharp edges
- Longer service life
  - Superior bending flex fatigue
  - Easy to inspect and repair

The lightweight, ultra strong Acera® slings are available at a market competitive price and can be customised to suit numerous applications. Minimum lengths will vary depending on rope and pin diameters, consult your Acera dealer.

## ACERA HIGH PERFORMANCE SLINGS - TECHNICAL SPECIFICATION

| | |
|---|---|
| FIBER | **Acera® HMPE** |
| EYE PROTECTION | **Protech™, weaved Acera® HMPE** |
| SPLICE PROTECTION | **Weaved PES** |
| SPECIFIC GRAVITY | **0,973 (positive buoyancy)** |
| OIL CONTENT IN FIBER | **<0,1%** |
| UV RESISTANCE | **Excellent** |
| ABRASION RESISTANCE | **Excellent** |
| ACID RESISTANCE | **Excellent** |
| ALKALI RESISTANCE | **Excellent** |
| MOST CHEMICALS RESISTANCE | **Excellent** |
| COLD & FROST RESISTANCE | **Excellent** |
| WATER RESISTANCE | **Excellent (0% absorption)** |
| HEAT RESISTANCE | **Low (145-150° melting)** |
| ELONGATION | **Low (2-3% at break)** |
| COLOURS, ROPE | **Platinium** |
| COLOUR PROTECH™ EYE PROTECTION | **Yellow** |
| COLOUR SPLICE PROTECTION | **Red** |

**Other colours and colour combinations available on request**

| Diameter mm | Minimum strength metrics tons Spliced rope | Work Load Limits ( WLL ) in metric tons. Vertical, choker and basket hitches at varying angles. Safety factor 7:1. Minimum bending ratio: D/d =1:2 (vertical lift) | | | | | |
|---|---|---|---|---|---|---|---|
| | | Vertical | Choker | 90° | 30° | 45° | 60° |
| **Construction Acera® Amundsen** | | | | | | | |
| 6 | 3,3 | 0,5 | 0,4 | 0,9 | 0,8 | 0,7 | 0,5 |
| 8 | 5,9 | 0,8 | 0,7 | 1,7 | 1,4 | 1,2 | 0,8 |
| 10 | 9,3 | 1,3 | 1,1 | 2,7 | 2,3 | 1,9 | 1,3 |
| 12 | 13,4 | 1,9 | 1,5 | 3,8 | 3,3 | 2,7 | 1,9 |
| 14 | 18,3 | 2,6 | 2,1 | 5,2 | 4,4 | 3,7 | 2,6 |
| 16 | 23,8 | 3,4 | 2,7 | 6,8 | 5,8 | 4,8 | 3,4 |
| 18 | 28,4 | 4,1 | 3,2 | 8,1 | 6,9 | 5,7 | 4,1 |
| 20 | 34,8 | 5,0 | 4,0 | 9,9 | 8,5 | 7,0 | 5,0 |
| 22 | 41,9 | 6,0 | 4,8 | 12,0 | 10,2 | 8,4 | 6,0 |
| 24 | 47,7 | 6,8 | 5,5 | 13,6 | 11,6 | 9,5 | 6,8 |
| 26 | 55,1 | 7,9 | 6,3 | 15,7 | 13,4 | 11,0 | 7,9 |
| 28 | 62,4 | 8,9 | 7,1 | 17,8 | 15,2 | 12,5 | 8,9 |
| 30 | 70,6 | 10,1 | 8,1 | 20,2 | 17,1 | 14,1 | 10,1 |
| 32 | 79,8 | 11,4 | 9,1 | 22,8 | 19,4 | 16,0 | 11,4 |
| 34 | 88,1 | 12,6 | 10,1 | 25,2 | 21,4 | 17,6 | 12,6 |
| 36 | 95,4 | 13,6 | 10,9 | 27,3 | 23,2 | 19,1 | 13,6 |
| 38 | 106,4 | 15,2 | 12,2 | 30,4 | 25,8 | 21,3 | 15,2 |
| 40 | 115,6 | 16,5 | 13,2 | 33,0 | 28,1 | 23,1 | 16,5 |
| 44 | 133,9 | 19,1 | 15,3 | 38,3 | 32,5 | 26,8 | 19,1 |
| 48 | 156,1 | 22,3 | 17,8 | 44,6 | 37,9 | 31,2 | 22,3 |
| 52 | 180,7 | 25,8 | 20,7 | 51,6 | 43,9 | 36,1 | 25,8 |
| 56 | 207,4 | 29,6 | 23,7 | 59,3 | 50,4 | 41,5 | 29,6 |
| 60 | 232,2 | 33,2 | 26,5 | 66,3 | 56,4 | 46,4 | 33,2 |
| 64 | 260,6 | 37,2 | 29,8 | 74,5 | 63,3 | 52,1 | 37,2 |
| 68 | 290,9 | 41,6 | 33,2 | 83,1 | 70,6 | 58,2 | 41,6 |
| 72 | 323,1 | 46,2 | 36,9 | 92,3 | 78,5 | 64,6 | 46,2 |
| 76 | 357,0 | 51,0 | 40,8 | 102,0 | 86,7 | 71,4 | 51,0 |
| 80 | 394,6 | 56,4 | 45,1 | 112,7 | 95,8 | 78,9 | 56,4 |
| **Acera® Nansen** | | | | | | | |
| 88 | 477,2 | 68,2 | 54,5 | 136,3 | 115,9 | 95,4 | 68,2 |
| 96 | 567,1 | 81,0 | 64,8 | 162,0 | 137,7 | 113,4 | 81,0 |
| 104 | 650,6 | 92,9 | 74,4 | 185,9 | 158,0 | 130,1 | 92,9 |
| 112 | 747,9 | 106,8 | 85,5 | 213,7 | 181,6 | 149,6 | 106,8 |

*Nominal diameter as per definition in ISO 1968. Minimum strength defined as MBF/MBL (Minimum Breaking Force, minimum breakload) of spliced application, and measured in kilogram force/kp, tested according to ISO 2307 and verified by DNV GL. Work Load Limits ( WLL ) is measured in metric tons, based on a safety factor 7:1, as defined by the Machinery Directive 2006/42/EC.*
***NOTE!** Consult your Acera® dealer regarding the min. lengths available.*

# Acera® Grommets

## High Performance roundslings – up to mbl 1 300 ton

Slings made from High Modulus PolyEthylene have set new standards for lifting gear. The Acera® slings are made from Acera® Amundsen 12 strand and Acera® Nansen 8 strand ropes.

Acera® Amundsen and Nansen are high performance ropes made from genuine Acera® HMPE yarns, which are individually coated through a rotating 360° Lick-roller process. Single yarn coating is proven to significantly enhance internal and external abrasion resistance, and extend service life and strength.

The sling eyes have Protech™ cover – a proprietary protection made from weaved Acera® yarn.

All Acera® slings are produced in accordance with own technical file based on EN 1492-4 standard. The eyes are hand-spliced with our own positive locking tuck variant, ensuring anti-slip under all circumstances.

Acera® slings are the alternative to cumbersome steel wires. They are stronger and safer. The corresponding weight is 7 times lower. Compared to conventional fiber ropes, the resulting reduction in diameter leads to significant savings in weight (60%), space and handling. Acera® slings provide a safer and more productive lifting operation.

**There are numerous benefits to choosing Acera® lightweight slings over wire:**

- Safer operation
  - Less risk to the crew
  - Less injuries
- More productive rigging
  - 1/7 of weight
  - Easier handling - faster operation
  - Less personnel needed
  - Higher lifting capacity
  - Less back injuries
- Less load damage – smooth surface
  - No contact damage
  - No fraying or sharp edges
- Longer service life
  - Superior bending flex fatigue
  - Easy to inspect and repair

The lightweight, ultra strong Acera® grommets are available at a market competitive price and can be customised to suit numerous applications. Minimum lengths will vary depending on rope and pin diameters, consult your Acera dealer.

## ACERA HIGH PERFORMANCE SLINGS - TECHNICAL SPECIFICATION

| | |
|---|---|
| FIBER | Acera® HMPE |
| EYE PROTECTION | Protech™, weaved Acera® HMPE |
| SPECIFIC GRAVITY | 0,973 (positive buoyancy) |
| OIL CONTENT IN FIBER | <0,1% |
| UV RESISTANCE | Excellent |
| ABRASION RESISTANCE | Excellent |
| ACID RESISTANCE | Excellent |
| ALKALI RESISTANCE | Excellent |
| MOST CHEMICALS RESISTANCE | Excellent |
| COLD & FROST RESISTANCE | Excellent |
| WATER RESISTANCE | Excellent (0% absorption) |
| HEAT RESISTANCE | Low (145-150° melting) |
| ELONGATION | Low (2-3% at break) |
| COLOURS, ROPE | Platinium |
| COLOUR PROTECH™ EYE PROTECTION | Yellow |

**Other colours and colour combinations available on request**

| Diameter mm | Minimum strength metrics tons Ropes | Work Load Limits ( WLL ) in metric tons Vertical, choker and basket hitches at varying angles. Safety factor 7:1. Minimum bending ratio: D/d =1:8 (vertical lift) | | | | | |
|---|---|---|---|---|---|---|---|
| | | Vertical | Choker | 90° | 30° | 45° | 60° |
| Construction Acera® Amundsen | | | | | | | |
| 6 | 5,9 | 0,8 | 0,7 | 1,7 | 1,4 | 1,2 | 0,8 |
| 8 | 10,6 | 1,5 | 1,2 | 3,0 | 2,6 | 2,1 | 1,5 |
| 10 | 16,6 | 2,4 | 1,9 | 4,7 | 4,0 | 3,3 | 2,4 |
| 12 | 23,9 | 3,4 | 2,7 | 6,8 | 5,8 | 4,8 | 3,4 |
| 14 | 32,6 | 4,7 | 3,7 | 9,3 | 7,9 | 6,5 | 4,7 |
| 16 | 42,4 | 6,1 | 4,8 | 12,1 | 10,3 | 8,5 | 6,1 |
| 18 | 50,5 | 7,2 | 5,8 | 14,4 | 12,3 | 10,1 | 7,2 |
| 20 | 61,9 | 8,8 | 7,1 | 17,7 | 15,0 | 12,4 | 8,8 |
| 22 | 73,4 | 10,5 | 8,4 | 21,0 | 17,8 | 14,7 | 10,5 |
| 24 | 84,8 | 12,1 | 9,7 | 24,2 | 20,6 | 17,0 | 12,1 |
| 26 | 97,8 | 14,0 | 11,2 | 27,9 | 23,8 | 19,6 | 14,0 |
| 28 | 110,9 | 15,8 | 12,7 | 31,7 | 26,9 | 22,2 | 15,8 |
| 30 | 125,6 | 17,9 | 14,4 | 35,9 | 30,5 | 25,1 | 17,9 |
| 32 | 141,9 | 20,3 | 16,2 | 40,5 | 34,5 | 28,4 | 20,3 |
| 34 | 156,6 | 22,4 | 17,9 | 44,7 | 38,0 | 31,3 | 22,4 |
| 36 | 169,6 | 24,2 | 19,4 | 48,5 | 41,2 | 33,9 | 24,2 |
| 38 | 189,2 | 27,0 | 21,6 | 54,1 | 45,9 | 37,8 | 27,0 |
| 40 | 205,5 | 29,4 | 23,5 | 58,7 | 49,9 | 41,1 | 29,4 |
| 44 | 238,2 | 34,0 | 27,2 | 68,1 | 57,8 | 47,6 | 34,0 |
| 48 | 277,3 | 39,6 | 31,7 | 79,2 | 67,3 | 55,5 | 39,6 |
| 52 | 321,4 | 45,9 | 36,7 | 91,8 | 78,1 | 64,3 | 45,9 |
| 56 | 368,7 | 52,7 | 42,1 | 105,3 | 89,5 | 73,7 | 52,7 |
| 60 | 412,7 | 59,0 | 47,2 | 117,9 | 100,2 | 82,5 | 59,0 |
| 64 | 463,3 | 66,2 | 52,9 | 132,4 | 112,5 | 92,7 | 66,2 |
| 68 | 517,2 | 73,9 | 59,1 | 147,8 | 125,6 | 103,4 | 73,9 |
| 72 | 574,3 | 82,0 | 65,6 | 164,1 | 139,5 | 114,9 | 82,0 |
| 76 | 634,6 | 90,7 | 72,5 | 181,3 | 154,1 | 126,9 | 90,7 |
| 80 | 701,5 | 100,2 | 80,2 | 200,4 | 170,4 | 140,3 | 100,2 |
| Acera® Nansen | | | | | | | |
| 88 | 848,4 | 121,2 | 97,0 | 242,4 | 206,0 | 169,7 | 121,2 |
| 96 | 1008,2 | 144,0 | 115,2 | 288,1 | 244,8 | 201,6 | 144,0 |
| 104 | 1156,7 | 165,2 | 132,2 | 330,5 | 280,9 | 231,3 | 165,2 |
| 112 | 1329,6 | 189,9 | 152,0 | 379,9 | 322,9 | 265,9 | 189,9 |

*Nominal diameter as per definition in ISO 1968. Minimum strength defined as MBF/MBL (Minimum Breaking Force, minimum breakload) of spliced application, and measured in kilogram force/kp, tested according to ISO 2307 and verified by DNV GL. Work Load Limits ( WLL ) is measured in metric tons, based on a safety factor 7:1, as defined by the Machinery Directive 2006/42/EC.*
***NOTE!** Consult your Acera® dealer regarding the min. lengths available.*

# ACERA®

## Genuine HMPE ropes

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