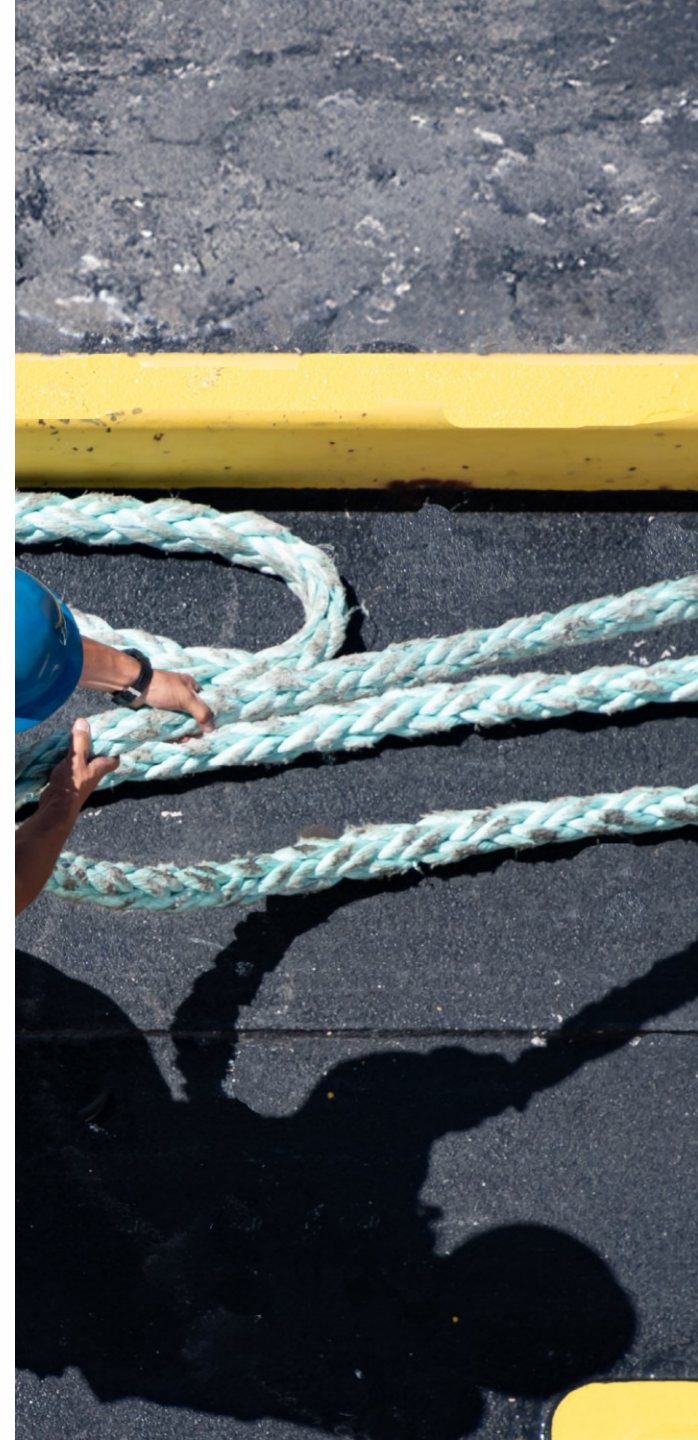


# Certification integrity and the Risk of Misleading Claims in the Mooring industry



Veronika Aspelund  
Vice President Mooring & Towing Solutions



# Mooring Safety

## - an ongoing industry concern

Serious deficiencies in mooring equipment and rope management remain widespread.

Ports and operators face the challenge of ensuring their equipment is safe, reliable, and compliant with evolving regulations.

Key Insights:

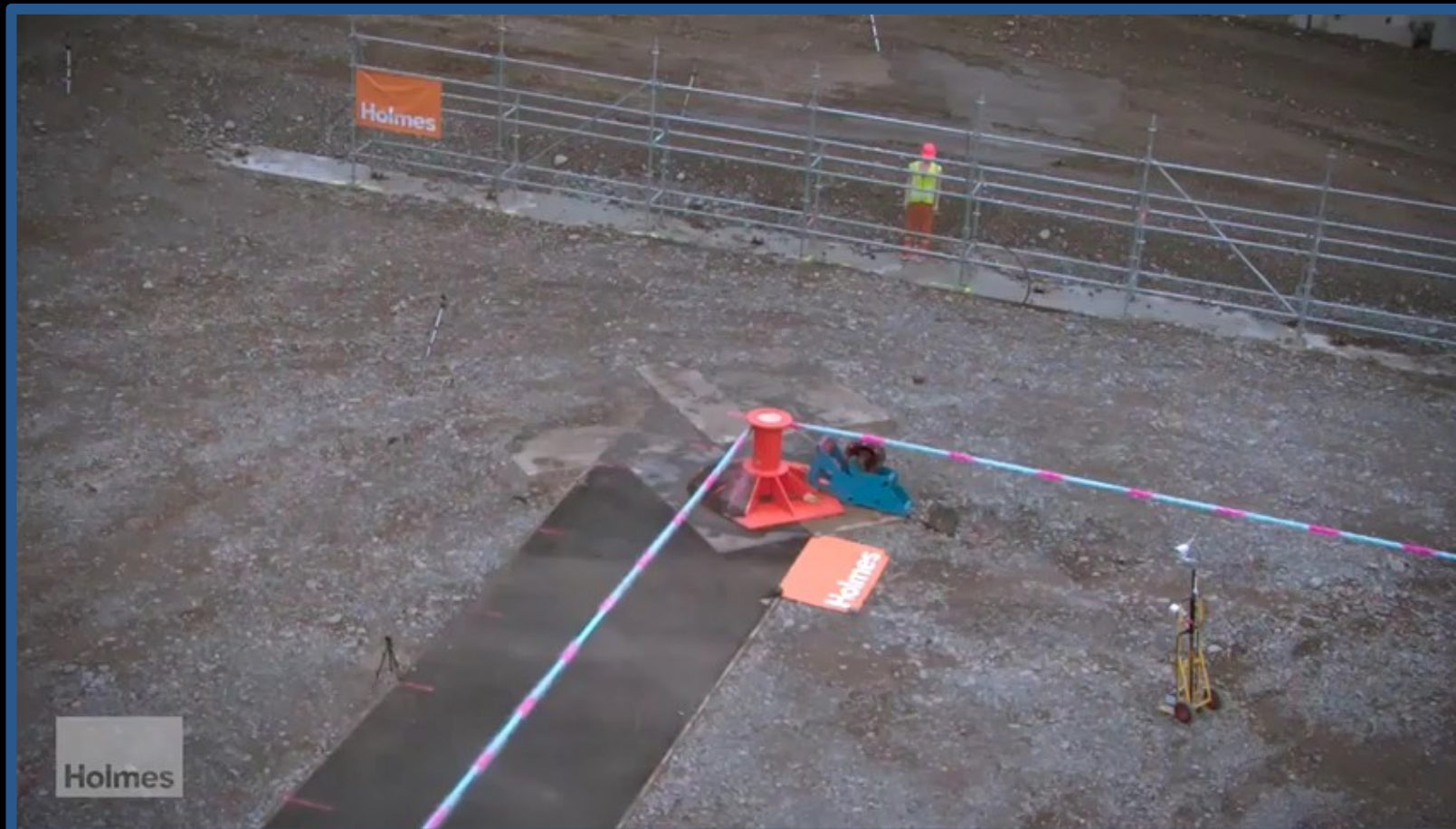
- Top 5 finding in Section 10 of RightShip's RISQ
- Terminals report poor mooring line condition as a major safety issue.



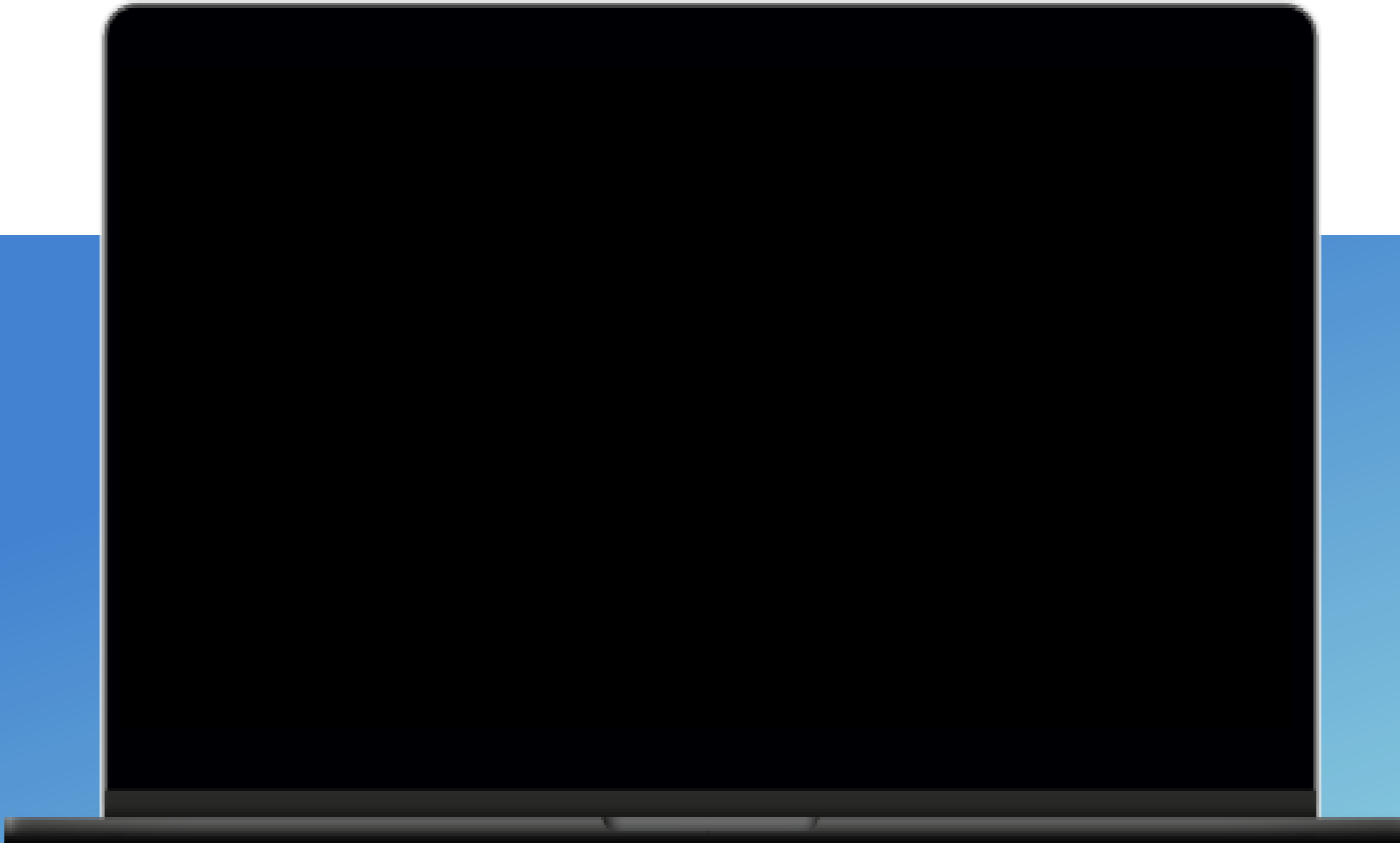
Source: RightShip Safety Insights Series – Mooring Safety May 2025  
<https://rightship.com/safety-insights>



# What is the Snap Back?



What is the Snap Back Arrestor (SBA) feature?



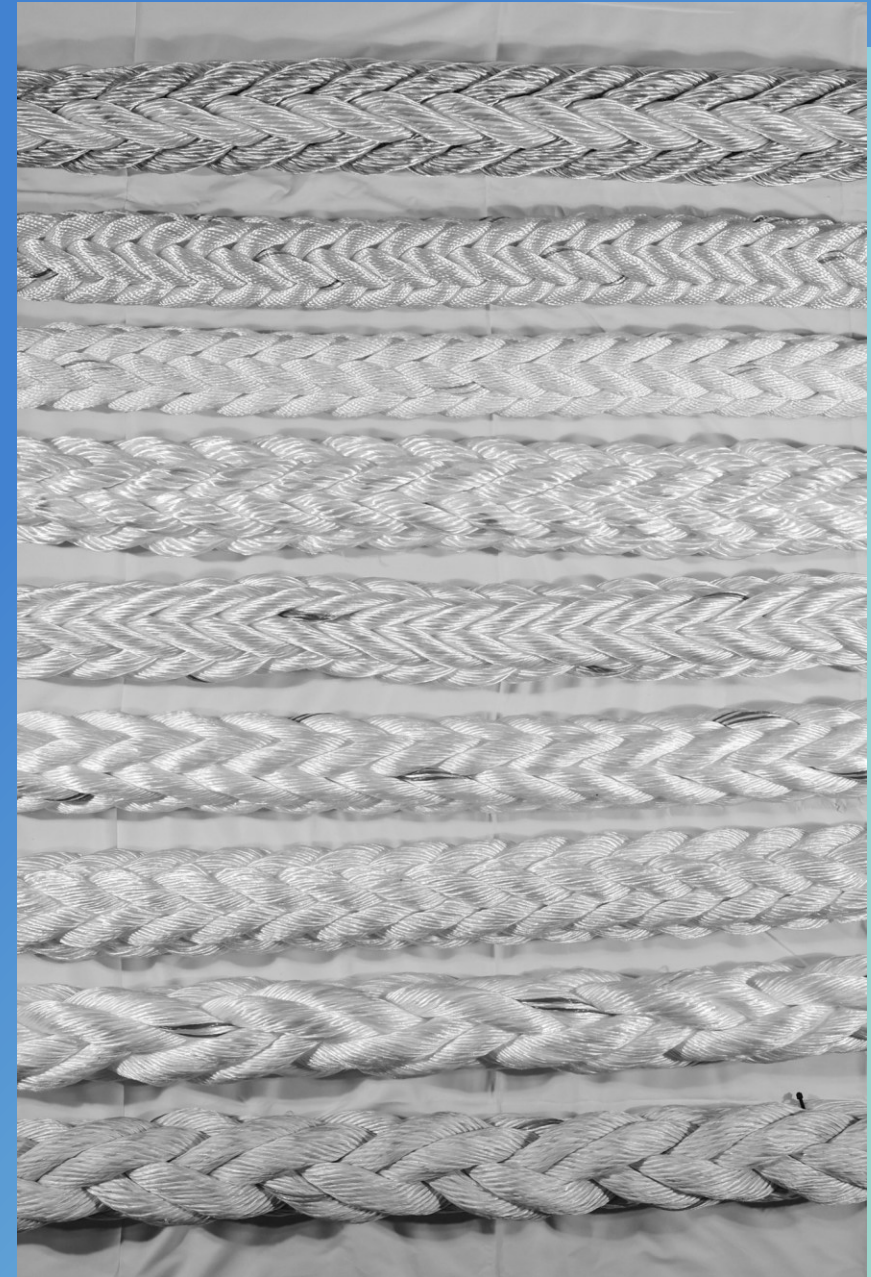
# Tested ropes

## Mixed composition ropes (PP/PES)

- 7 manufacturer 30-40mm dia
- 8 manufacturers above 70mm dia

## HMPE

- 3 manufacturers



# Methodology for testing and comparison



Rope design and technical parameters

- strength, relative strength, abrasion resistance, UV resistance, stiffness, buoyancy etc.



SBA function



Product certification

- Ropes - TAC, MEG4 etc. by an independent certification body associated to IACS.
- SBA function - certified by a class society as a product qualification



System certification

- Certified by independent and accredited certification bodies according to the following standards:
  - ISO 9001 Quality Management System
  - ISO 14001 Environmental Management System
  - ISO 45001 Occupational Health and Safety Management System



After-sales service

# List of tests

750 hours of testing



## Rope tests acc to ISO 2307



- Linear density
- Diameter
- Lay length
- Elongation
- Breaking force
- Length of rope
- Tenacity

## Internal test method



- Humidity of ropes
- Floating ability
- Abrasion resistance under constant load
- Abrasion resistance with anti-slip surface
- Car test - Abrasion of rope

## “SBA ropes” tests acc to ISO 2307



- Linear density
- Diameter
- Lay length times
- Elongation
- Breaking force

## “SBA” internal test method



- Material and construction determination

# Results – highlights 1/3



## Calculated length

Weight of coil/mtr weight in reference tension with SBA (The limit deviation acc to ISO 9554 shall be  $\pm 3\%$ ):

2 manufacturers with deviations outside the limit:

**-7% to +8%**  
**-10% to +10%**

## Linear density (g/m)

Difference certificates/measured values (Tolerance acc to ISO 10556 and ISO 10325 shall be  $\pm 5\%$ ):

2 manufacturers with deviations outside the limit:

**Up to -20%**  
**Up to -27%**

## Measured Breaking force

Difference average results/certificate (%) (Recommended retirement limit acc to MEG4 is 75% of original LDBF)

6 manufacturers with significant differences:

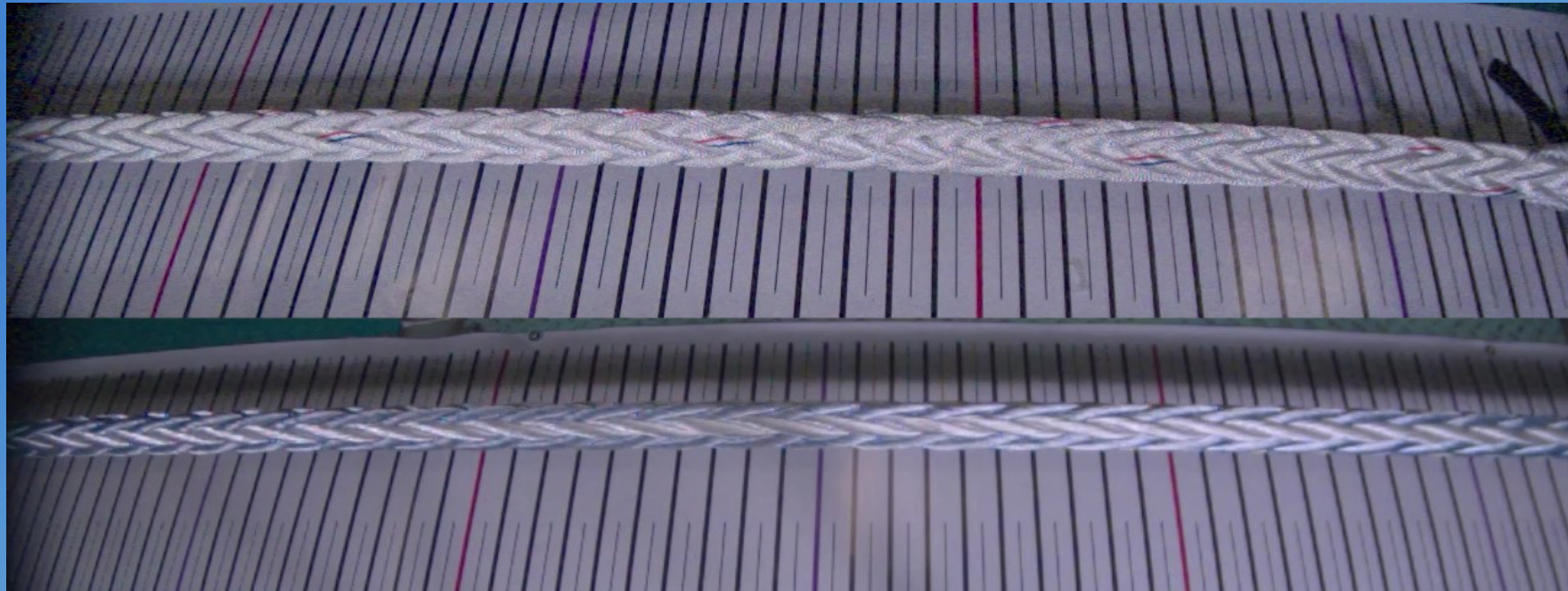
**Manufacturer 1: -6%**  
**Manufacturer 2: up to -14%**  
**Manufacturer 4: -7%**  
**Manufacturer 5: up to -9%**  
**Manufacturer 7: up to -35%**  
**Manufacturer 8: up to -32%**

# Results – highlights 2/3



## Function of “SBA” element

- No consistently performing solution except of SBA™
- 1 manufacturer – missing “SBA” element in the product



# Results – highlights 3/3



Floating ability:

1 manufacturer - sinking



Humidity of ropes:

- danger of mold formation – coating washing out

3 manufacturers with high values:

Manufacturer 1: 22-24%

Manufacturer 3: 12-38%

Manufacturer 7: 11-51%



Melted rope:

1 manufacturer with melted fibers



Faulty rope construction:

1 manufacturer



Faulty construction of “SBA” element:

2 manufacturers



Different serial number on certificate and on rope:

1 manufacturer

# Other observations



Poor manufacturing processes

Eyes at the bottom

Melted / damaged parts



Poor manufacturing

Protection ripping off

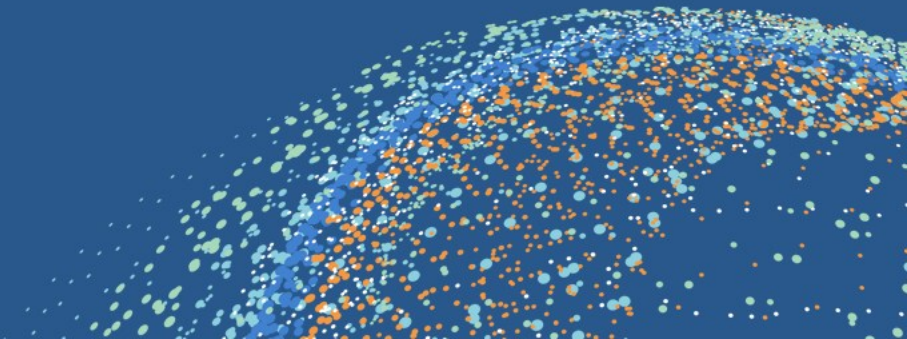
Loose eye protection



Certification

Products

Mooring ropes



# The importance of correct certification



**Proper certification is essential to ensure rope quality and compliance with port regulations.**

Risks of relying on unreliable or incorrect certifications: Increased risk of equipment failure, damaged infrastructure, and reduced safety standards.

**Valid certificates** – Complying standards are clearly listed and have a third-party signature.

**Mill certificate** – manufacturer is the certifier, no ISO standards or other guidelines are referenced for testing and inspection, no indication of MBL as per MEG4 & SOLAS.

**DNV**  
TYPE APPROVAL CERTIFICATE

Certificate No: TAC000004  
Revision No: 6

This is to certify:  
That the Synthetic Fibre Ropes  
with type designation(s)  
**Timon Master 12, Timon Master 12 SBA™**  
issued to  
**Wilhelmsen Ships Service AS**  
Lysaker, Norway  
is found to comply with  
DNV class programme DNV-CP-0100 – Type approval – Synthetic fibre ropes for towing, mooring and anchoring  
ISO 16516:2009 "Fibre ropes of polyesters/polyolefin dual fibres"  
CCMR Mooring Equipment Guidelines (MEGA), Fourth Edition 2018 (best requirements)

Application:  
Mooring and Towing of Ships and HELCs.  
Products approved by this certificate herein accepted for installation on all vessels classed by DNV.

Issued in Hamburg on 2024-08-23  
This Certificate is valid until 2029-07-08  
DNV local unit: Oslo Maritime and CAP  
Approved Engineer: Ole Martin

**Ships Service**  
Mooring line base design certificate TS CERT 7806 E

General information  
Issue date: 09.07.2024  
Line manufacturer: Wilhelmsen Ships Service  
Line design designation: Timon Master 12 SBA™, Timon Master 12  
Line construction: 12x1 - braided/polyester  
Design range: 120 tons

Base design performance indicators

Performance Indicators	Standard Diameter	Large Diameter
Mooring	Design (DNV)	Measured (Jens)
Line Break Break Force (kN)	2874	2763
Line Linear Density (kN/m)	6.502 kg/m	6.507 kg/m
Line Breaking Linear Density (kN/m)	6.506 kg/m	6.507 kg/m
Line Tenacity (kN)	35.41 kN/m	33.51 kN/m

Angle Break Force (kN) % Avg MBL  
Angle Endurance (kN) % Avg MBL

Temperature (°C)	80 °C	85 °C	90 °C	95 °C	100 °C	105 °C	110 °C	115 °C
Temperature (°C) % MBL	100%	100%	100%	100%	100%	100%	100%	100%
Axial Compression Resistance (kN/m)	100%	100%	100%	100%	100%	100%	100%	100%
Average Residual Strain (%)	1.80%	2.33%	3.33%	4.66%	5.33%			

Issue type: TM 12 (SBA/120)  
Maximum Line Tenacity: 35.41 kN/m

Base design testing information  
Name and address of test facility:  
Wilhelmsen Ships Service  
Tromsø, Norway  
Northdokka 1180/17, 911 04 Tromsø, Slovakia  
Independent Inspector:  
DNV, Rutviksgade 1159, 94522 Karmøyen, Slovak Republic

Base design sample and product documentation reviewed  
Independent Inspector: Ole Martin  
Date of review: 09.07.2024

**Quality Certificate**  
XYZ Ropes

Manufacturer: XYZ Ropes

This Certificate is issued to the above client to certify that the below mentioned products have been inspected strictly and found in conformity with the following specifications

Product Description	XYZ 12 Str and Anti Snap Back Rope
Material	Polyester & Polypropylene Mixed Rope
Qty	20 coils
	Serial Number: 1234567890
<b>Specifications</b>	
Brand	XYZ Ropes
Construction	12 Strand
Nominal Diameter	72mm
Linear Density	2800ktx
MBL	790kN
<b>Testing &amp; Inspection</b>	
Tensile test	Good
Finished inspection	Good
Quality Department	Name: XYZ Ropes
Date of issue	YYYY/MM/DD

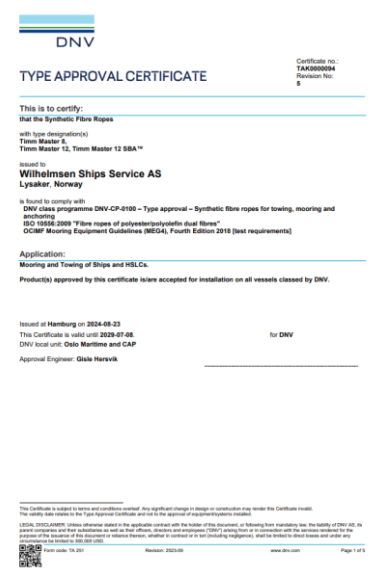
# Product certificates and how to chose the right one



 Mill certificate / Works certificate

 Type Approval Certificate

 Batch certificate



**DNV**  
TYPE APPROVAL CERTIFICATE

Certificate no.: **TAK0000014**  
Revision: **1.0**

This is to certify:  
that the Synthetic Fibre Ropes  
with type designation(s)  
**Titan Master A,  
Titan Master 12, Titan Master 12 SBA™**

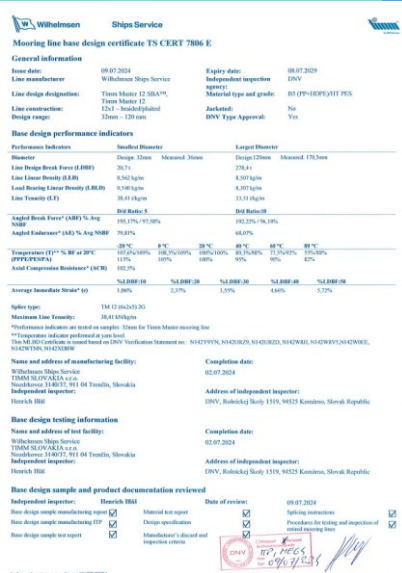
issued by:  
**Wilhelmsen Ships Service AS  
Lysaker, Norway**

is found to comply with:  
DNV class programme DNV-CP-0100 – Type approval – Synthetic fibre ropes for towing, mooring and anchoring  
ISO 15550:2009 “Fibre ropes of polyethylene/polypropylene fibre ropes”  
OCIMF Mooring Equipment Guidelines (MEGL), Fourth Edition 2018 [test requirements]

Application:  
Mooring and Towing of Ships and HSLCs.

Product(s) approved by this certificate is/are accepted for installation on all vessels classed by DNV.

Issued at **Hamburg on 2024-08-23**  
This Certificate is valid until **2029-01-08**  
DNV local unit: **Oslo Maritime and CAP**  
Approval Engineer: **Gisle Harvick**



**Wilhelmsen Ships Service**  
Mooring line base design certificate TS CERT 7806 E

**General information**

Issue date: 09.07.2024      Expiry date: 08.07.2029  
Line manufacturer: Wilhelmsen Ships Service      Independent inspection: DNV  
Line design designation: Titan Master 12 SBA™      Material type and grade: 33 (PP) HDPE/33T PES  
Line construction: Titan Master 12      Jacketed: No  
12A1 – Standard/Standard      DNV Type Approval: Yes  
Design range: 12mm – 120 mm

**Base design performance indicators**

Performance Indicator	Standard Indicator	Target Indicator
Breaker	Design Stress      Maximal Stress	Design Stress      Maximal Stress
Line Design Break Force (dBDF)	20.7t	278.4t
Line Load Capacity (LLC)	6.502 kN/m	8.307 kN/m
Load Bearing Factor (LBF)	0.540 kN/m	0.707 kN/m
Line Tensile (FT)	10.41 kN/m	13.51 kN/m
Anchor Break Force* (ABF) % Avg NBBP	100.0% / 100.0%	100.0% / 100.0%
Anchor Endurance* (AE) % Avg NBBP	70.0%	60.0%

Average Breakdown Stress\* (BS)

BS	1.0%	2.0%	3.0%	4.0%	5.0%
Line type	10.41 kN/m	10.41 kN/m	10.41 kN/m	10.41 kN/m	10.41 kN/m
Maximum Line Tensile:	10.41 kN/m	10.41 kN/m	10.41 kN/m	10.41 kN/m	10.41 kN/m

Temperature (T) % BS at 20°C

T	20°C	40°C	60°C	80°C	100°C
PP/PE/HDPE	100.0%	100.0%	100.0%	100.0%	100.0%
PP/PE/HDPE/33	100.0%	100.0%	100.0%	100.0%	100.0%
Anchor Endurance* (AE) %	100.0%	100.0%	100.0%	100.0%	100.0%

**Name and address of manufacturing facility:**  
Wilhelmsen Ships Service  
TITAN SLEIPVÅLKS s.r.o.  
Nepřeláskova 1480/7, 011 04 Trenčín, Slovakia  
Independent inspector:  
Horváth IMB

**Completion date:**  
02.07.2024

**Name and address of test facility:**  
Wilhelmsen Ships Service  
TITAN SLEIPVÅLKS s.r.o.  
Nepřeláskova 1480/7, 011 04 Trenčín, Slovakia  
Independent inspector:  
Horváth IMB

**Completion date:**  
02.07.2024

**Base design testing information**

**Base design sample and product documentation reviewed**

Independent inspector: **Horváth IMB**      Date of review: 09.07.2024

Base design sample manufacturing report       Material test report       Signing instructions

Base design sample manufacturing test       Change specifications       Procedures for testing and inspection of tested testing item

Base design sample test report       Manufacturer's record and inspection sheets

**DNV**      **TS CERT 7806 E**      **09.07.2024**

# Practical guide – how to find Type Approval



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Related Pages



You can search for approved materials and equipment.

search keyword

all of these words  any of these words

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# Practical guide – how to find Type Approval

[Type Approval Database Search](#)



## TYPE APPROVAL DATABASE

SEARCH CRITERIA

<input type="text"/>	<input type="text"/>	<input type="text"/>
Product	Certificate Number	Keyword (Include Rules & Specifications)
<input type="text"/>	All <input type="text"/>	All <input type="text"/>
Company	Country/Region	City

Help Assistance  
For all the free text fields,

- Enter "EC" in Certificate Number for all EU MED certificates
- Enter "EU Mutual Recognition" in Keyword for products conforming to

SEARCH NOW

# Practical guide – how to find Type Approval

## CMC Approval Finder



DNV Maritime [Contact](#)

### Search approvals



Current  Historic

### Approval type

Select approval type

### Country/Region

Search

### Company

Enter 2 or more search charac...

### City

Search

## Approvals

Export

Certificate number  | Product name  | Expires  | Company  | Country/Region  | City

# Practical guide – how to find Type Approval



**Wilhelmsen**

**Mooring line certificate**

Demonstrating that the product has been manufactured, tested, and documented following the guidelines in appendix B of the OCIMF Mooring Equipment Guidelines, Fourth Edition (2018). This mooring line and its certificate are compliant with RightShip Risq 2.0, Intertanko Guidance on Line Management Plans 2019, and IMO SOLAS MSC.1-Circ. 1619/1620.

**by Wilhelmsen**

Wilhelmsen Ships Service AS,  
Strandveien  
20, Postbox 33, 1366  
Lysaker, Norway.

**GENERAL INFORMATION**

Client: [REDACTED]  
Vessel name: [REDACTED]  
Order No: [REDACTED]  
Customer order No: [REDACTED]  
DNV GL Type Approval: **TAK0000094**  
IMO No: [REDACTED]  
Certificate No: [REDACTED]  
Manufactured acc. to: [REDACTED]  
Tested acc. to: [REDACTED]

**LINE SUPPLY INFORMATION**

Ship design MBL: 56.5 t  
NSBF (if tested): Not requested  
Diameter: 55  
Length: 220  
Jacketed: No  
Splice type and design: TM12 2G  
Material: Mixed polyolefins (B5 yarn) and HT PES  
Manufacturer's part code and unique line identifier: 411040 - 2370122102  
Line design designation (product name): TIMM MASTER 12 SBA F55 [55MM] 220M

**DNV**

DNV Maritime Contact DNV Approval File

**Search approvals**

Current  Historic

**Approval type** **Country/Region** **Company** **City**

Select approval type Search Enter 2 or more search charac... Search [Clear filters](#)

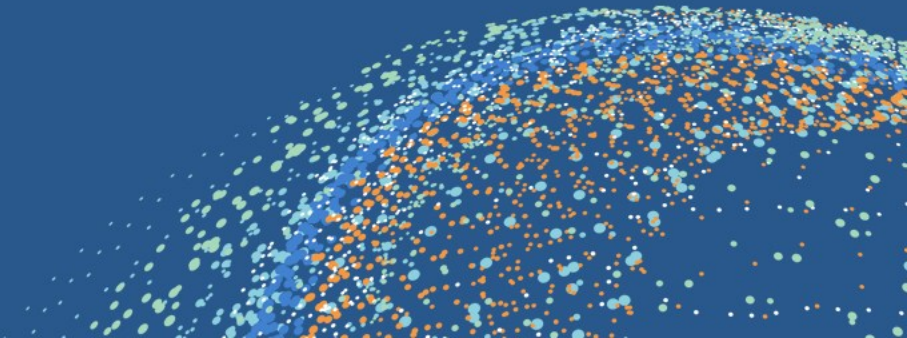
**Approvals**

[Export](#)

Certificate number	Product name	Expires	Company	Country/Region	City	Approval group
✓ TAK0000094	Timm Master 8, Timm Master 12, Timm Master 12 SBA™	2029-07-08	Wilhelmsen Ships Service AS	Norway	Lysaker	TA

Certification

New technology  
SBA





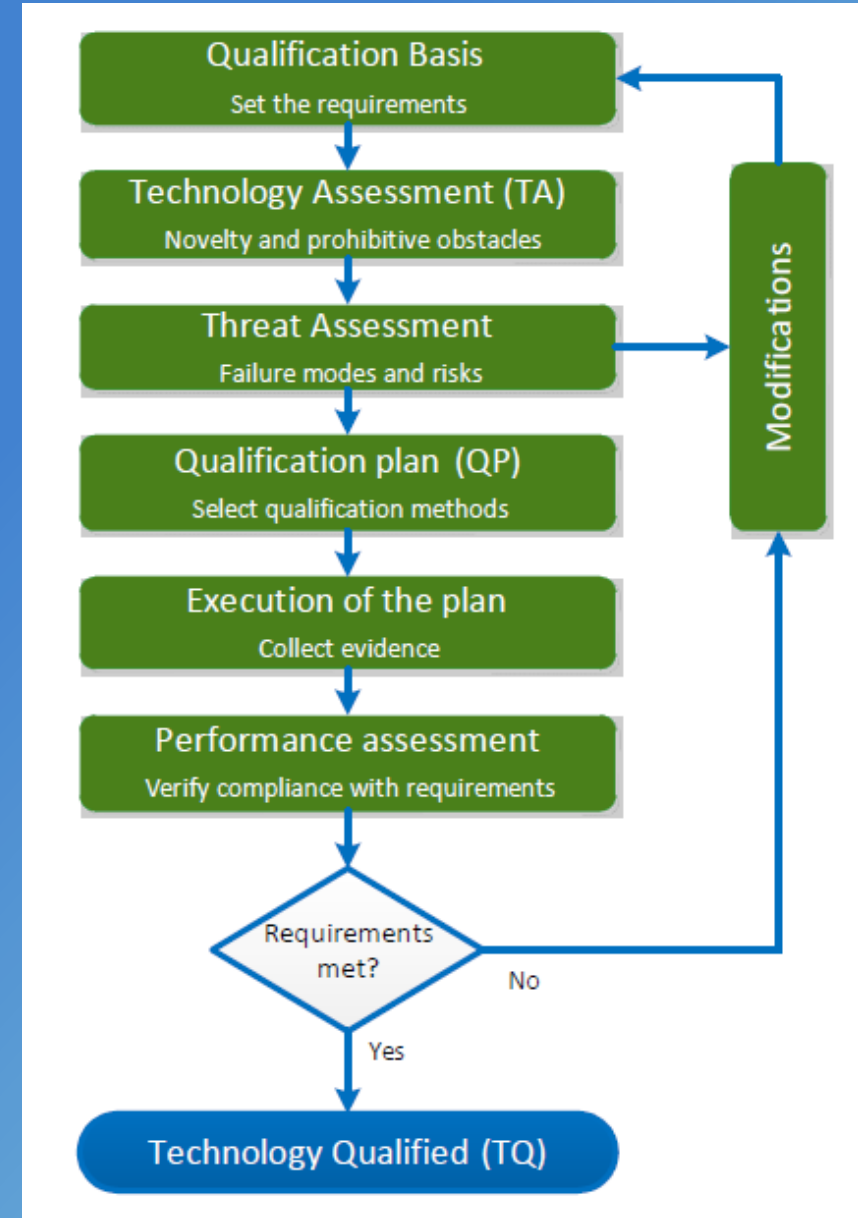
# DNV RP-A203 Process

## Technology Qualification

“The objective of this recommended practice (RP) is to provide a **systematic approach to technology qualification** in a manner that ensures traceability throughout the process, from the determination of functions, targets and expectations to relevant failure modes, qualification activities and evidence.

Its aim is to ensure that **the failure modes and the qualification activities are relevant and complete**. This, in turn, should **improve confidence in novel technology**, and improve the likelihood of its commercialization.”

Source : DNV



# Residual risks



## Residual risks

Following the completion of the test program defined in the TQP, and the evaluation of the results detailed in the TQE, the risks were reevaluated, and their residual rating are stated in Table 2. The successful completion of the qualification program confirms that the likelihood of the risks defined during the threat assessment is lower than anticipated, and therefore the total risk ratings can be lowered.

Probability of failure/consequence	Have heard of such failure	Expected within the service life of a rope	Expected within 1 year of service of a rope
Minor or first aid	Low	Low	Medium
Medical attention or lost time incident	Low	Medium	High
Permanently disables or death	Medium	High	High

Table 1: Risk matrix (OHSAS 18001) applied during the threat assessment

# Examples of the risks - SBA



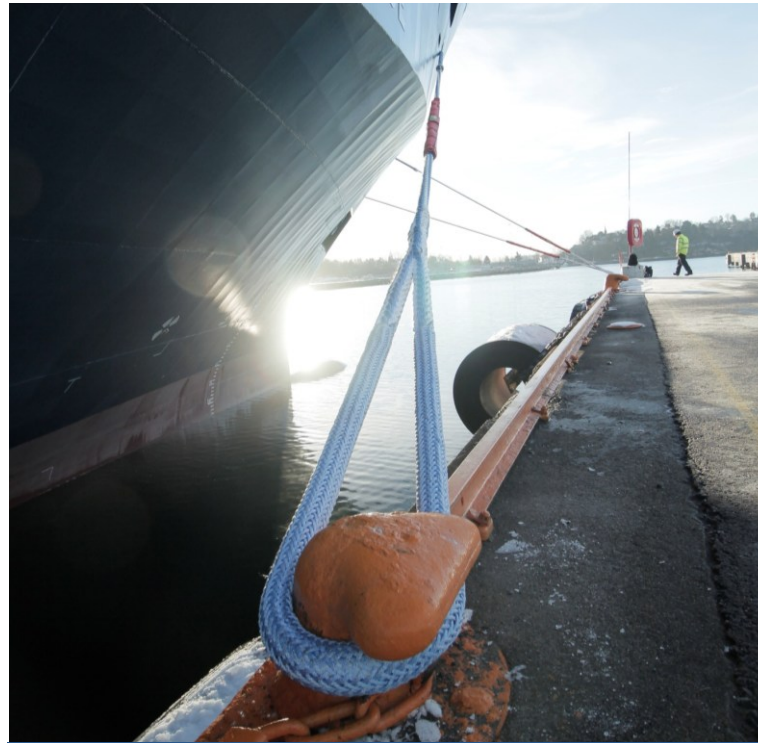
Activity no.	Activity description	Related failure mode(s) from threat assessment	Initial risk rating	Acceptance criteria / Performance target	Performance assessment	Residual risk rating	Comment
1	Prepare a communication procedure, describing how information about the product is communicated <u>in</u> all channels.	Personnel gain trust in <u>product</u> and omit to <u>follow</u> the written procedures due e.g., faulty marketing and wrong perception by customer. Threat assessment no.: 5 & 6	High	N/A	Successful	Medium	The information is communicated to customers and the personnel responsible for safety onboard the vessels is responsible for including relevant safety measures in their standard operating procedures.  A statement has been included in our use and care manuals stating that the SBA reduces but does not eliminate the snap back effect.

6	Testing of contaminated rope/SBA	Threat assessment no.: 8	Medium	SBA intact after break test, following an extensive cycling period with "contaminated" rope.	Successful	Low	Rope contaminated with iron ore, cycling done in laboratory and in real life operation.
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# Best practice



Development



Real life test

**DNV**

STATEMENT OF QUALIFIED TECHNOLOGY

Statement No:  
P.No.10284453  
Doc. ID 1726851

This is to state:  
that the technology designated  
**Synthetic fibre ropes with Snap Back Arrestor (SBA) functionality**  
has been qualified for its designated use with basis in DNV-RP-A203 /1/ as defined in /2/.

Owner: **Wilhelmsen Ships Service AS**

Description: **Reduced recoil risk feature applied in synthetic fibre ropes as further detailed in /3/**

Designated use: **To be applied for mooring of ships and HSLCs to quay to potentially limit the effect of snap-back in case of a rope failure as further detailed in /3/**

Involvement: **DNV has been involved in the qualification process in accordance with /2/ and as described in /3/.**

Limitations: **Acceptance criteria for products and limits to operation are stated in /3/, the main ones being:  
- SBA element will work as intended, minimizing the risk and reducing the effect of snap-back  
- Ropes with SBA do not trigger any relaxation on safety precautions and safety zones**

Conditions: **Information which may affect the technology qualification status shall be brought to the attention of the below signatories immediately.**

Reference documents: /1/ DNV-RP-A203, Technology qualification, September 2019  
/2/ DNV-SE-0160, Technology qualification management and verification, February 2018  
/3/ Technology qualification status report, DNV-2018-0335 (Rev. 4), 2022-09-23

This Statement is valid until: **2026-10-28**

Issued at HØVIK, Norway on **2022-10-28**

Digitally signed by  
Landheim, Tor Jo  
Date: 2022.10.28  
14:50:25 +02'00'

for DNV

Digitally signed by  
Ingrid Skutle Høgsæt  
Date: 2022.10.28  
13:27:19 +02'00'

Tor Jo Landheim  
Head of Section

Ingrid Skutle Høgsæt  
Project Manager

Certification

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**Thank you!**

