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FIV



AGGIORNAMENTO ISTRUTTORI

FVP - Peschiera del Garda, 30 Gennaio 2026 - FVR - Riva del Garda, 27 febbraio 2026

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- INTRO
- STORIA
- I MATERIALI
- TERMINOLOGIA
- ... PROGETTIAMO
- ... COMPARAZIONE
- LAVORAZIONI BASE
- PRODOTTI OD

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FIBRE NATURALI

Fino agli anni 50 le cime per uso marino ed il cordame in genere erano prodotte usando fibre tipo:

- CANAPA
- LINO
- SISAL
- IUTA
- MANILA
- COCCO



Periodo / Data	Materiale principale	Evoluzione / Uso
~40.000 a.C.	Fibre naturali grezze	Prime corde primitive ottenute intrecciando erbe e cortecce
4000–3000 a.C.	Lino, fibre vegetali	Antico Egitto: edilizia, sollevamento, navigazione
~2800 a.C.	Canapa	Cina: diffusione della canapa per corde resistenti
Antichità classica	Canapa, lino, crine	Navi, agricoltura, macchine belliche
Medioevo (V–XV sec.)	Canapa	Materiale dominante in Europa, soprattutto marinera
XVIII–XIX sec.	Canapa catramata	Primo trattamento su una fune
1831–1834	Acciaio	Invenzione della fune metallica per miniere e industria
1935	Nylon	Wallace Carothers della DuPont sintetizza il nylon
1940–1945	Nylon	Sostituzione della canapa in ambito militare
Anni '50	Poliestere, polipropilene	Diffusione delle corde sintetiche industriali
Anni '60–'70	Aramidiche (Kevlar)	Alte prestazioni: resistenza e bassa elasticità
Anni '80	HMPE (Dyneema, Spectra)	Corde ultraleggere e ultrasistenti
Anni '90	LCP (Vectran)	Ulteriore sviluppo delle fibre tecniche
XXI secolo	Fibre tecniche avanzate	Nautica, alpinismo, industria, aerospazio



Dal 1950 l'avvento delle fibre sintetiche convenzionali ricavate dal petrolio ed i loro derivati tecnici...

- POLIESTERE – PET 1941----- VECTRAN - LCP
- POLIAMMIDI – PA 1935--- NYLON – vari moduli NYLON - CORDURA
- POLIAMMIDI – PA 1935----- ARAMIDI – KEVLAR / NOMEX
- POLIETILENE – PE 1898---- UHMWP 1983 – SPECTRA / DYNEEMA - BIO
- POLIOLEFINA – PO 1931----- POLIPROPILENE - PP
- PoliparafenilenBenzobisOxazolo 1983----- PBO

1

2

3

FIBRE CONVENZIONALI	FIBRE TECNICHE	FIBRE TECNICHE HIGH PERFORMANCE
<u>PET (POLIESTERE)</u> DACRON TREVIRA DIOLLEN	<u>LCP</u> VECTRAN	<u>Ultra High Molecular Weight Polyethylene</u> SPECTRA DYNEEMA
<u>PA (POLIAMMIDI NYLON)</u> NYLON CORDURA PERLON	<u>PA (POLIAMMIDI ARAMIDI)</u> KEVLAR TWARON TECHNORA	<u>PBO</u> ZYLON

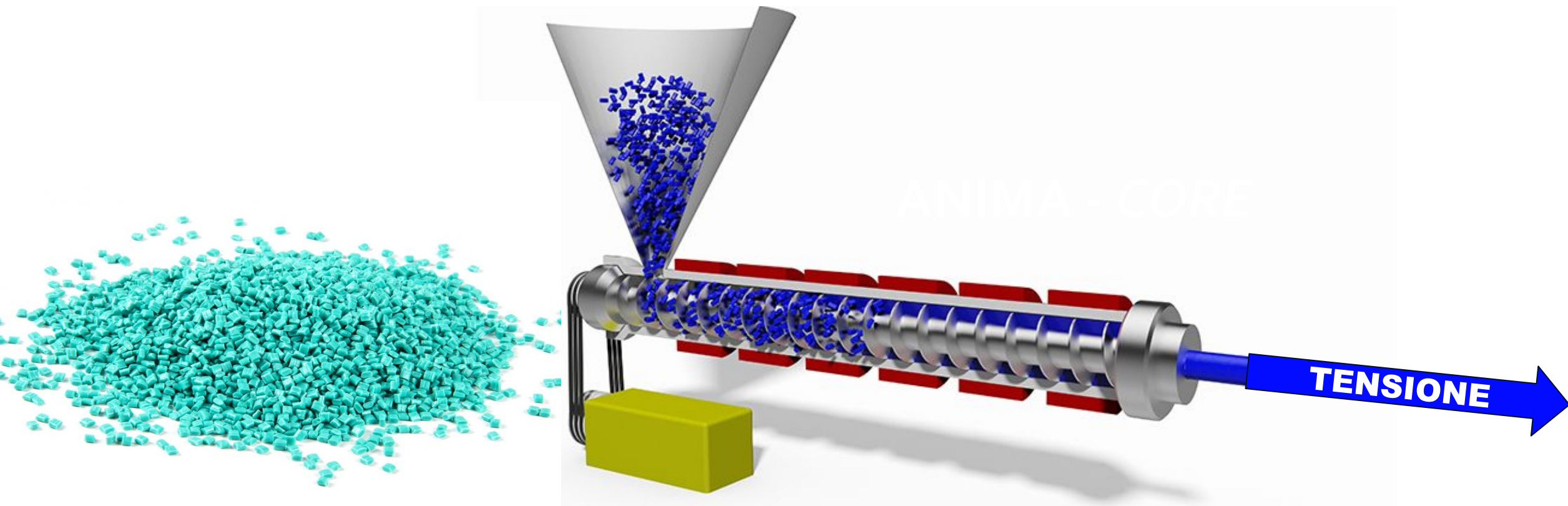
PROPRIETA' DELLE FIBRE TECNICHE

FIBRA	MATERIALE	ALL.TO %	PESO Kg/dm ³	FUSIONE C°	TENACITA' cN/dtex	ABRASIONE	METEO
DYNEEMA DM 20	UHMWP	3,5	0,975 *	147	35,1	*****	****
DYNEEMA SK 99	UHMWP	3,2	0,975 *	147	42,5	*****	****
DYNEEMA SK 78	UHMWP	3,5	0,975 *	147	35,1	*****	****
KEVLAR	ARAMID	2,4	1,44	430	20,8	**	**
ZYLON	PBO	2,5	1,56	660	37	*	**
VECTRAN	LCP	3,3	1,41	330	24,2	**	**
TECHNORA	ARAMID	4,0	1,39	500	22,3	**	*
POLIESTERE	PET	12,3	1,38	260	7,6	***	****

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COM'E' FATTO IL FILATO...



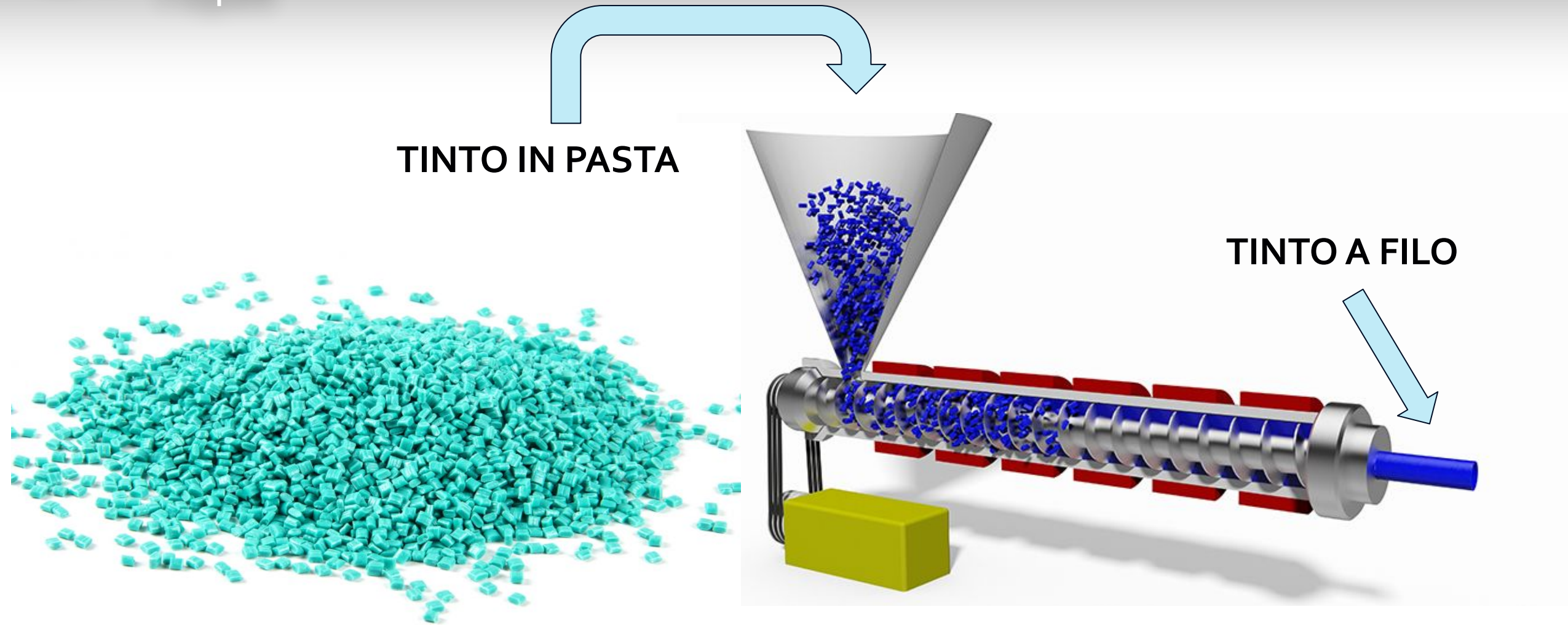
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FILATO COLORATO...

TINTO IN PASTA

TINTO A FILO



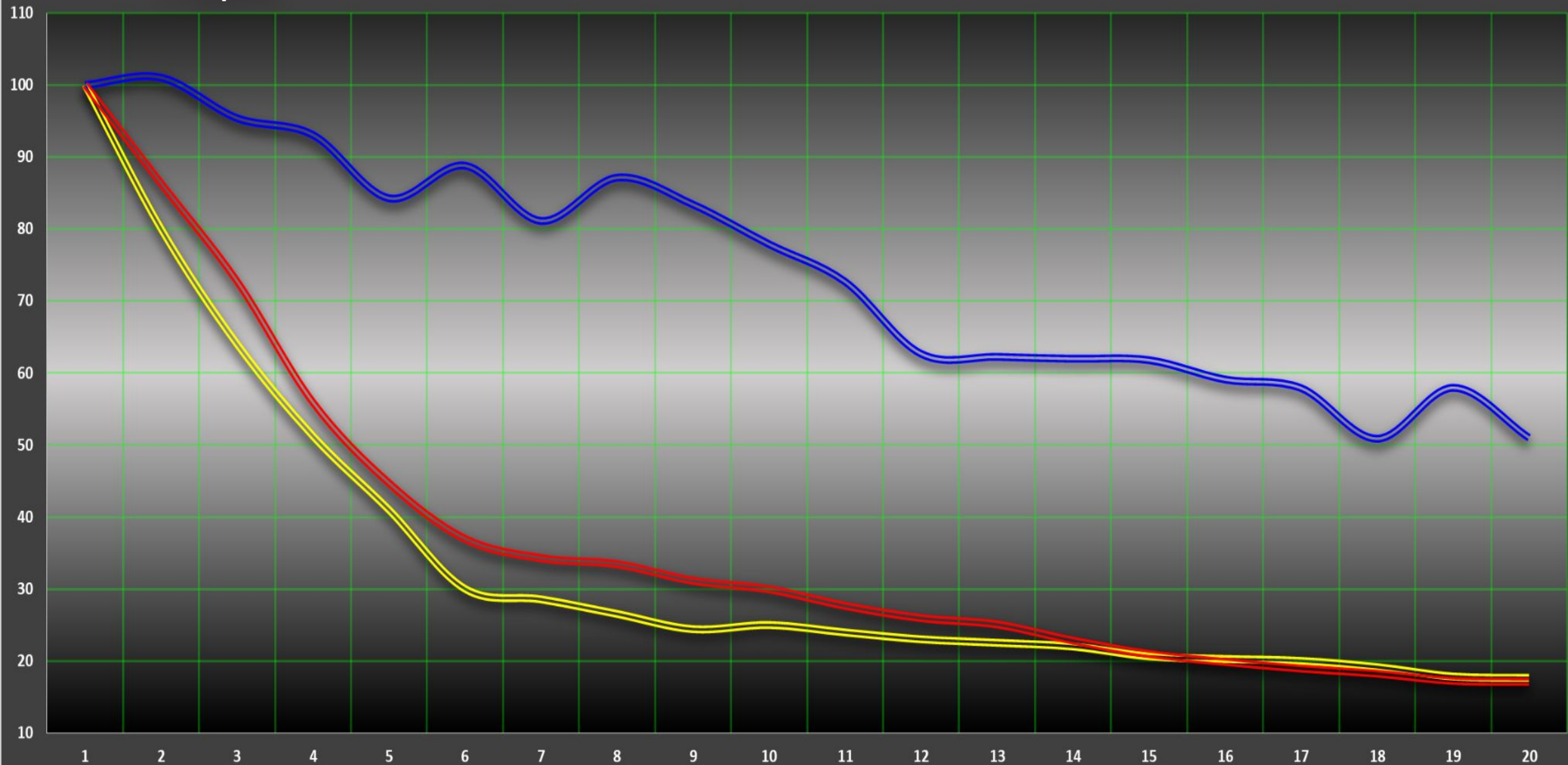


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COMPARAZIONE FIBRE ESPOSIZIONE UV

— % DYN — % PBO — % VECTRAN



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STRETCH

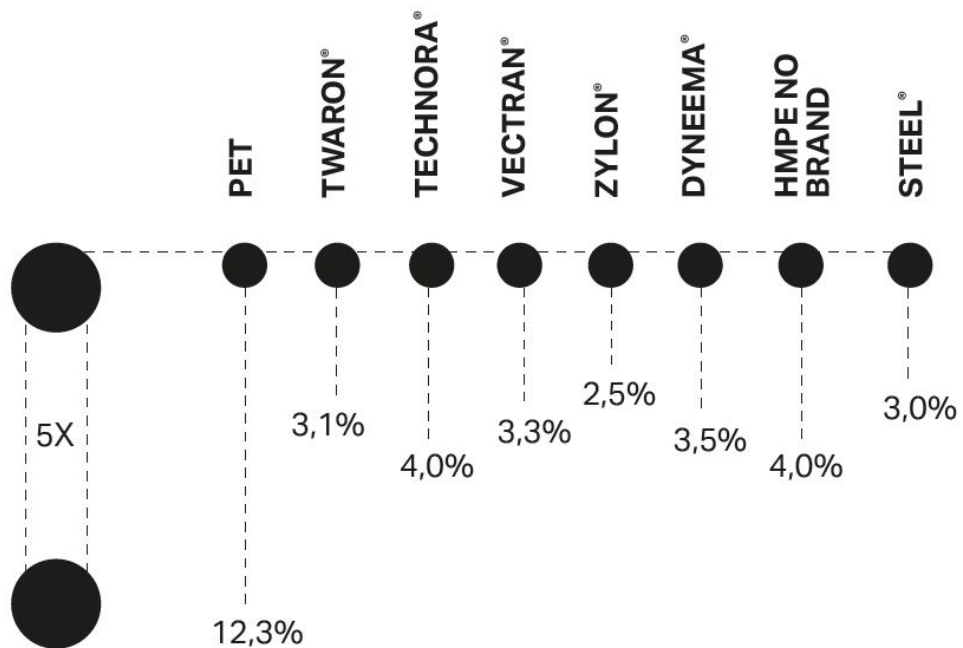
ALLUNGAMENTO REVERSIBILE o ELASTICO

CREEP

ALLUNGAMENTO PLASTICO

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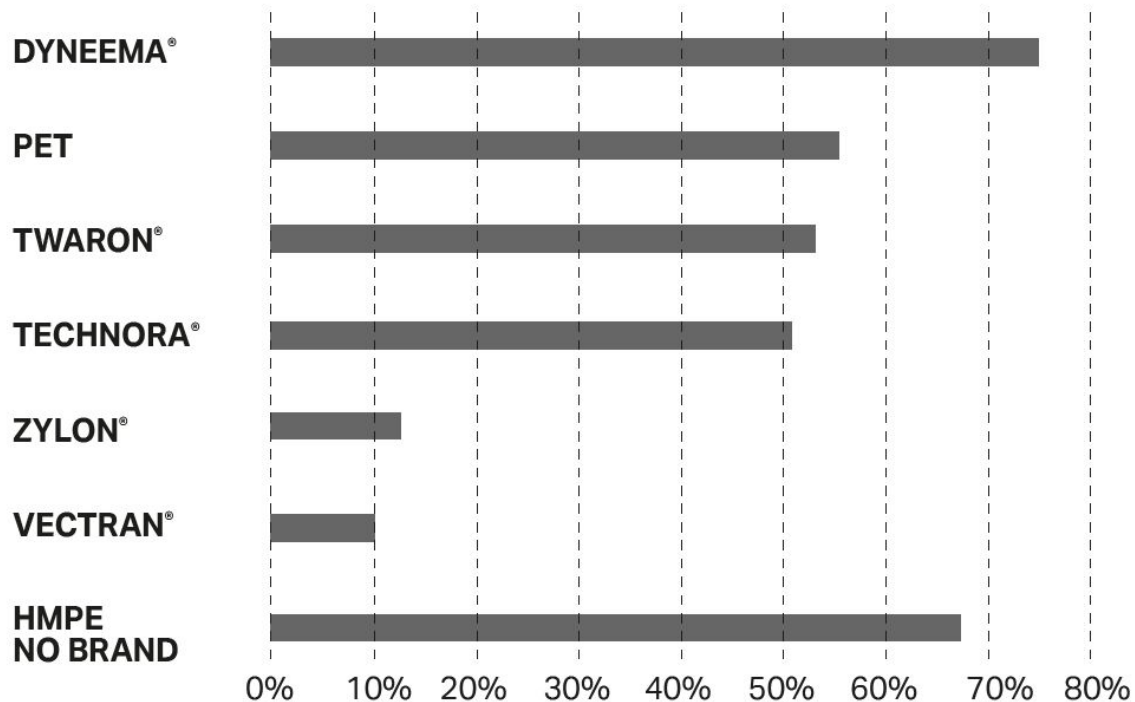
TECHNICAL FIBERS: ELONGATION AT BREAK

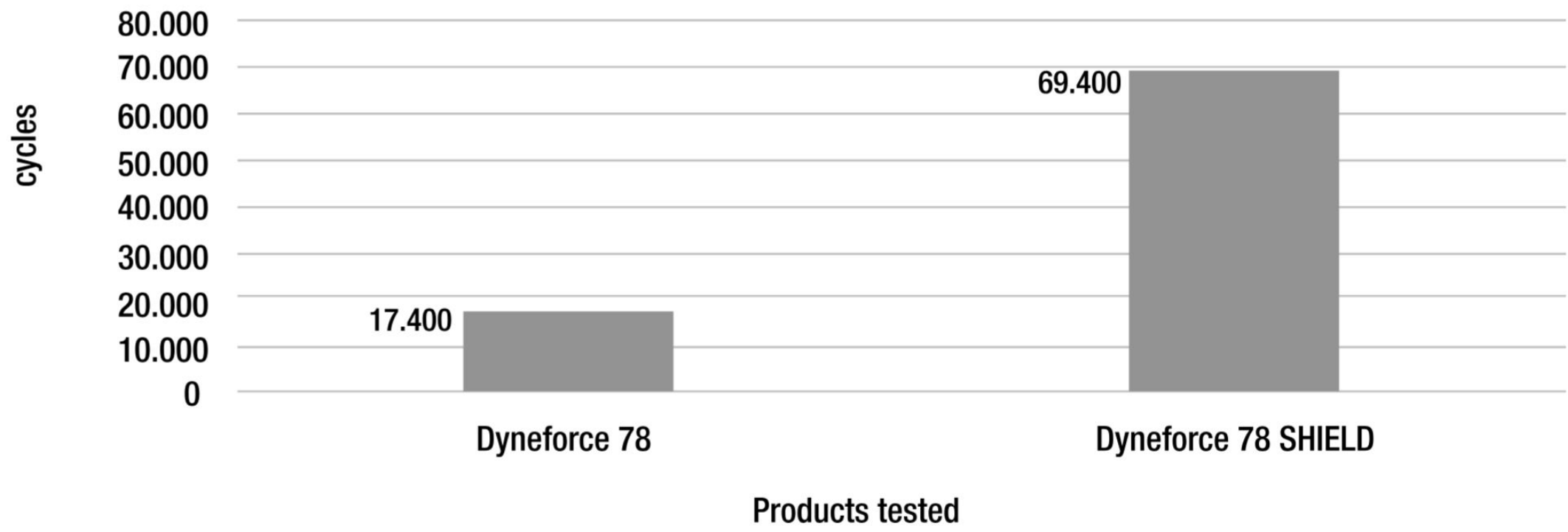


Synthetic fibers tested in accordance with ISO 2062

RESIDUAL STRENGTH OF TECHNICAL FIBERS

% of original tenacity after 336 hours of exposure to atmospheric agents





NOTE: The above test was made in Armare facilities on new 8 mm ropes, same construction and same test conditions

CARICO DI LAVORO (WL)...

è il valore al quale il campione si sottopone quando in uso

FATTORE SICUREZZA (FoS)... 1,25:1 - 8:1...

è un rapporto che indica di quanto una cima è più "forte" rispetto il WL

CARICO DI ROTTURA (BL)...

è il valore registrato alla rottura del campione

Emirates
TEAM NEW ZEALAND

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DINAMOMETRO

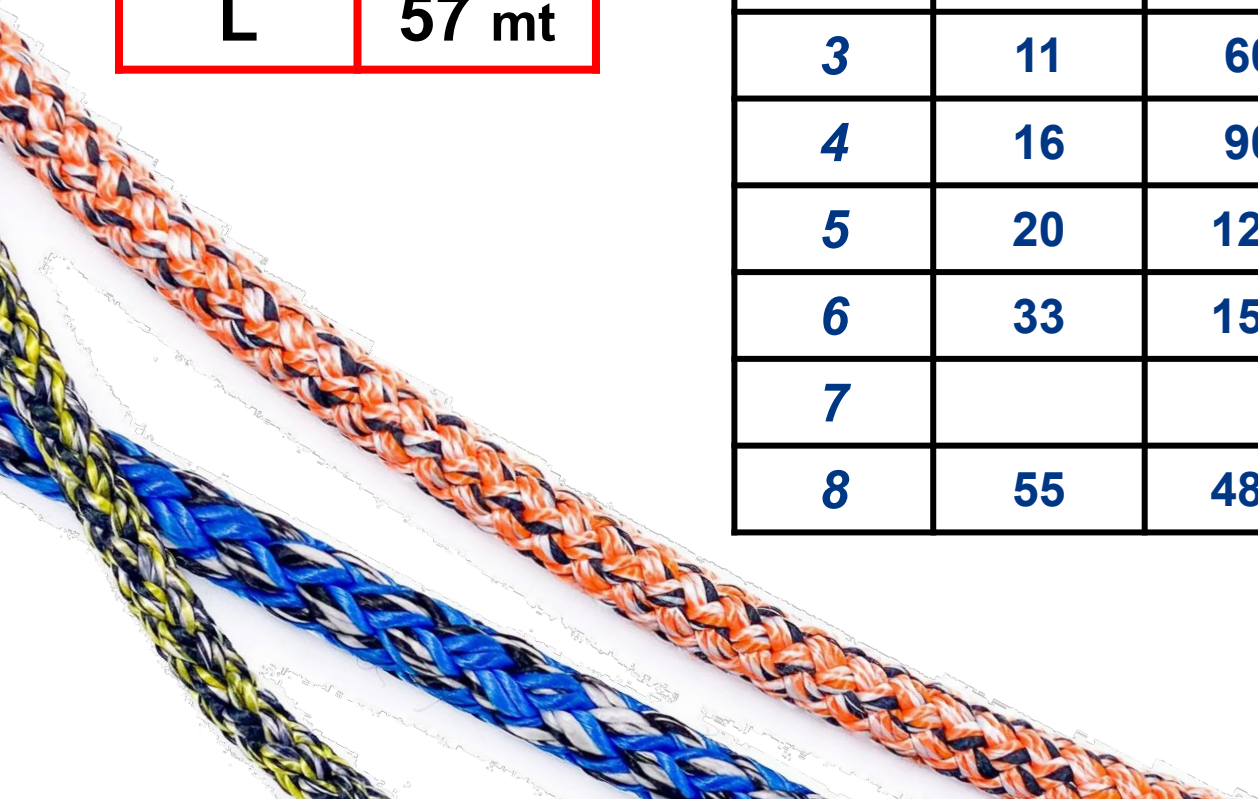
AVG: 25 Kg

WL= 100/125 Kg



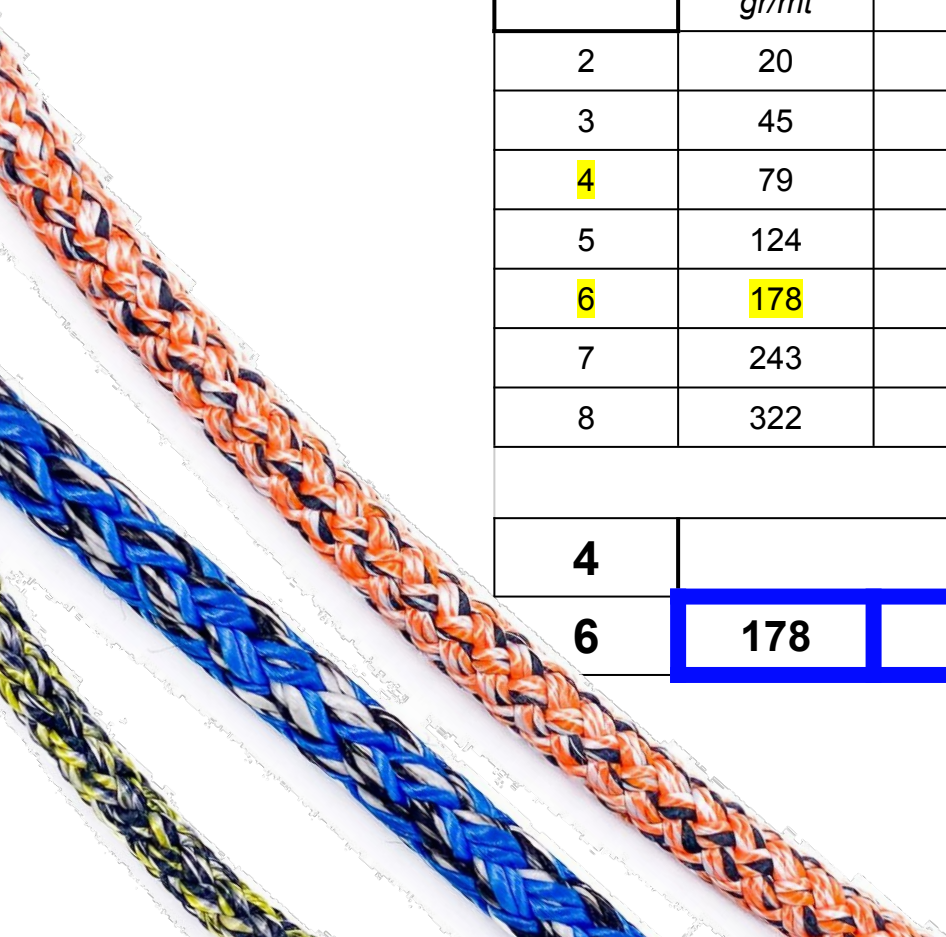
WL	950 kg
FoS	3:1
L	57 mt

Ø	CANAPA		WIRE 1X19		DYN SK99 HPS PU	
	gr/mt	BL/Kg	gr/mt	BL/Kg	gr/mt	BL/Kg
2			20	355	2,4	615
3	11	60	45	765	6	1400
4	16	90	79	1420	11,2	3000
5	20	120	124	2100	18,1	4282
6	33	150	178	3000	22,9	6200
7			243	4100	29,9	8080
8	55	485	322	5400	38,8	9836



WL * FoS = BL della cima/cavo che ci serve
950*3 = 2850 ... 3000

Ø	WIRE 1X19		DYN SK99 HPS PU		DYN SK99 HPS PU VS WIRE 1X19	
	gr/mt	BL/Kg	gr/mt	BL/Kg	peso	carico
2	20	355	2,4	615	-88,0	73,2
3	45	765	6	1400	-86,7	83,0
4	79	1420	11,2	3000	-85,8	111,3
5	124	2100	18,1	4282	-85,4	103,9
6	178	3000	22,9	6200	-87,1	106,7
7	243	4100	29,9	8080	-87,7	97,1
8	322	5400	38,8	9836	-88,0	82,1
4			11,2	3000	638	-93,7
6	178	3000			10.146	



Quando é più consigliato piombare una cima?



CAMPIONE BL Kg	NODO	ROTTURA Kg	PERDITA %
2.450	SEMPLICE	1.169	52.29
2.450	CAPPUCCINO DOPPIO	1.146	53.22
2.450	SAVOIA	1.128	53.96
2.450	CAPPUCCINO	1.232	49.71
2.450	CAPPIO	1.233	49.67
2.450	GASSA D'AMANTE	1.280	47.76
2.450	AUSTRALIANA	1.847	24.61
2.450	BRUMMEL	1.795	26.73

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SUDDIVISIONE DEL CARICO...

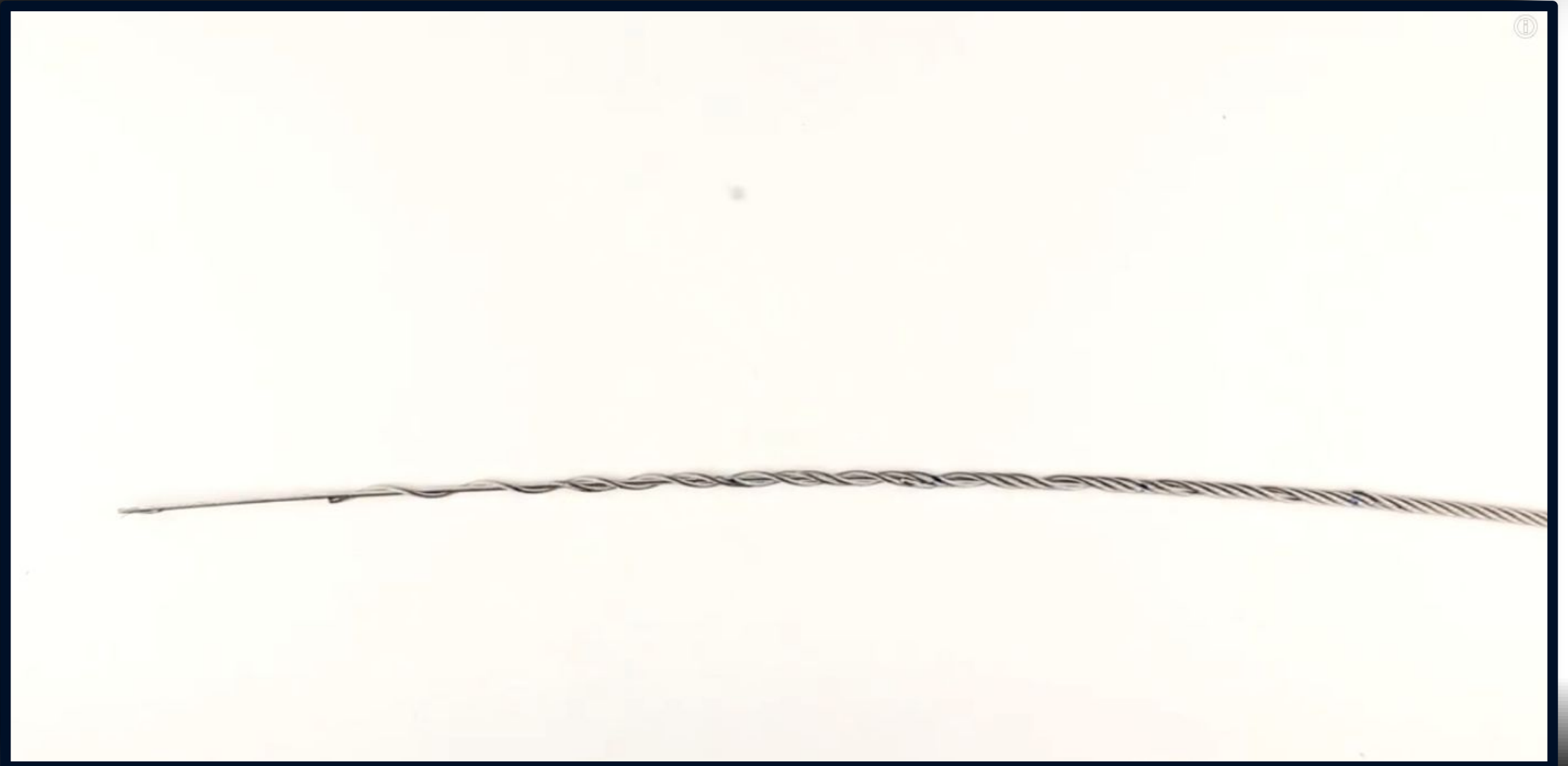


	<i>core</i>		<i>cover</i>	
<i>id</i>	<i>materiale</i>	<i>% carico</i>	<i>materiale</i>	<i>% carico</i>
1	PET	40	PET	60
2	DYN	100	PET	0
3	PP	10	HMPE/DYN	90

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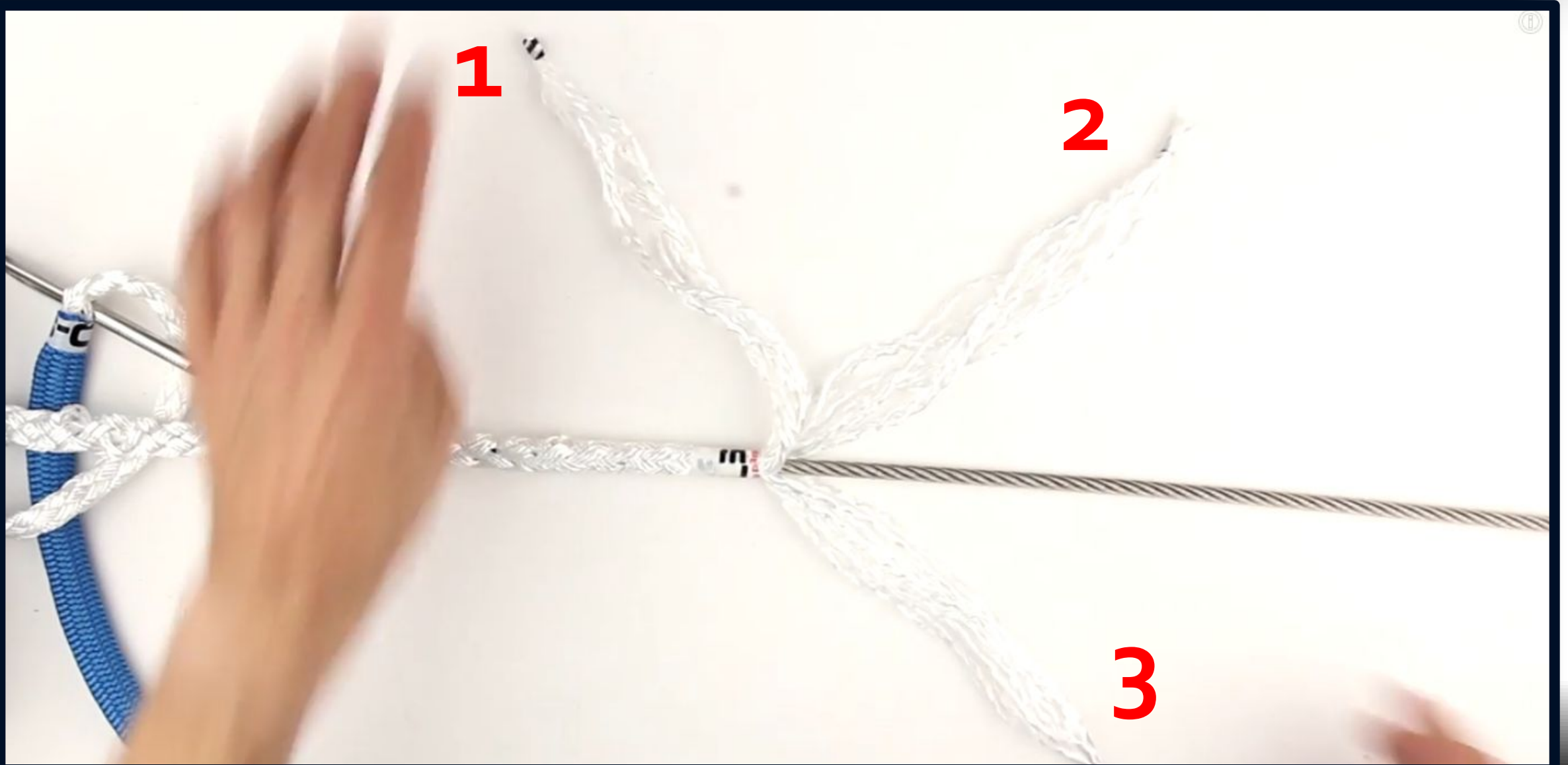
ACCIAIO - TESSILE



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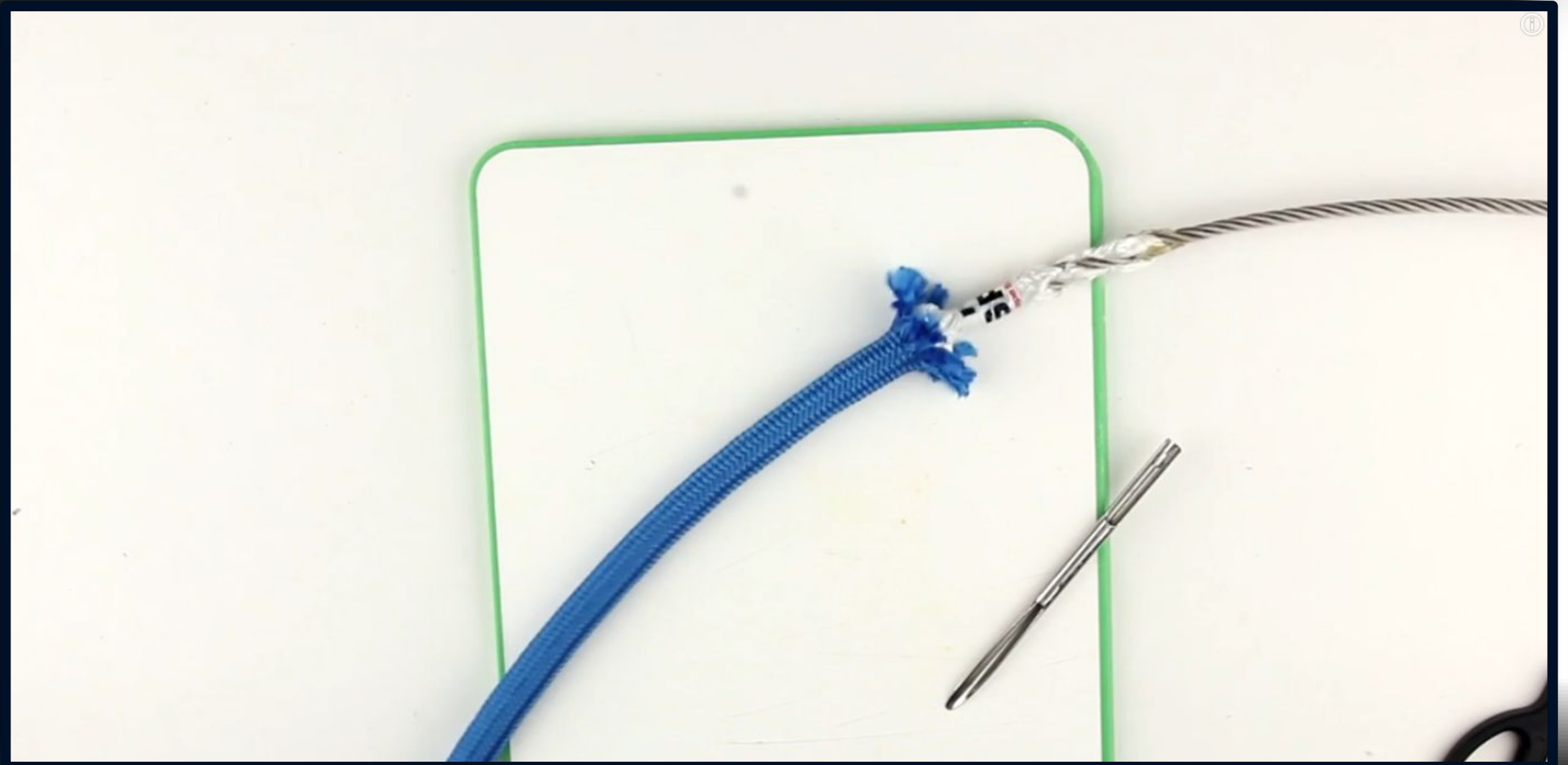
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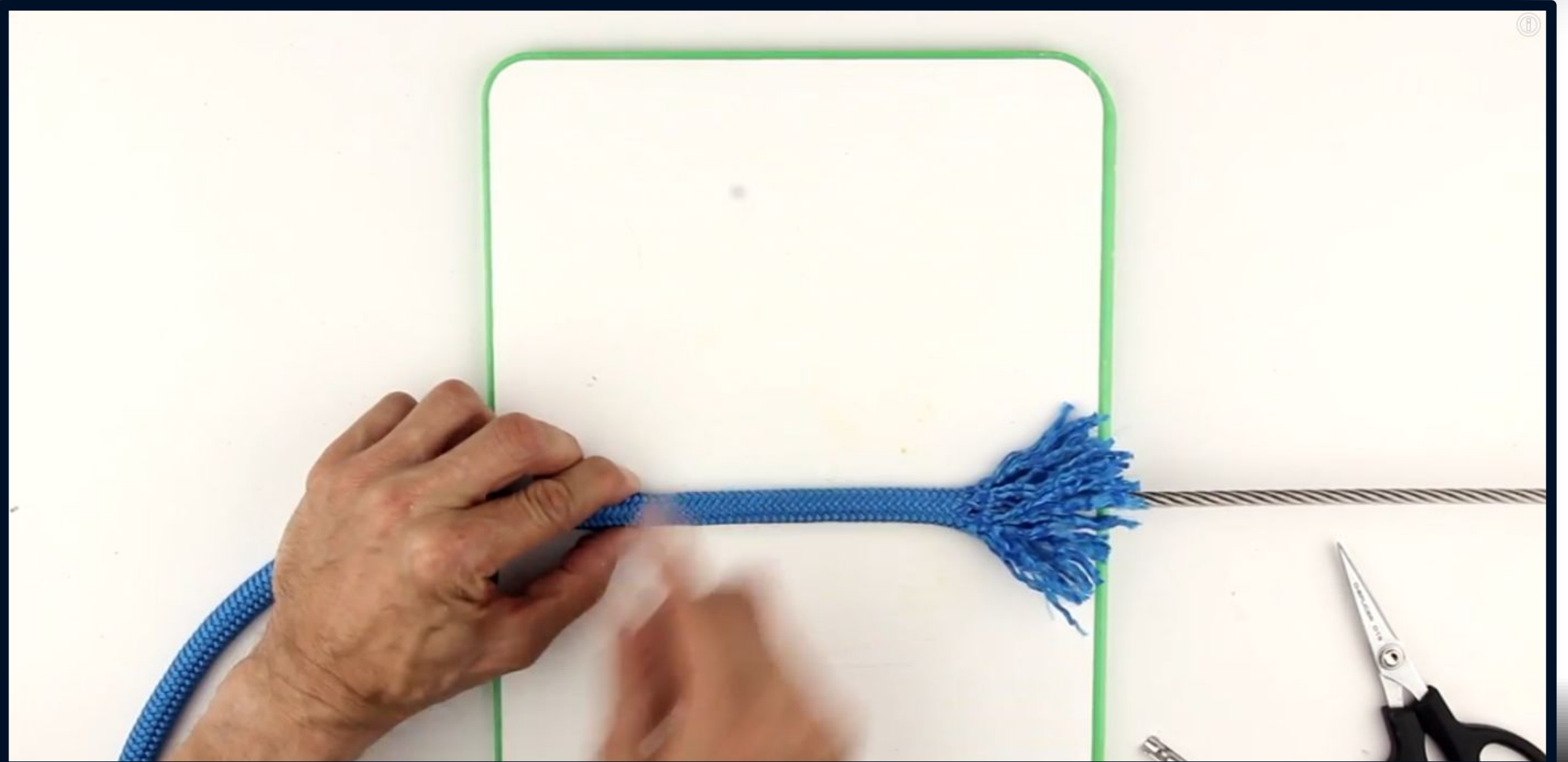
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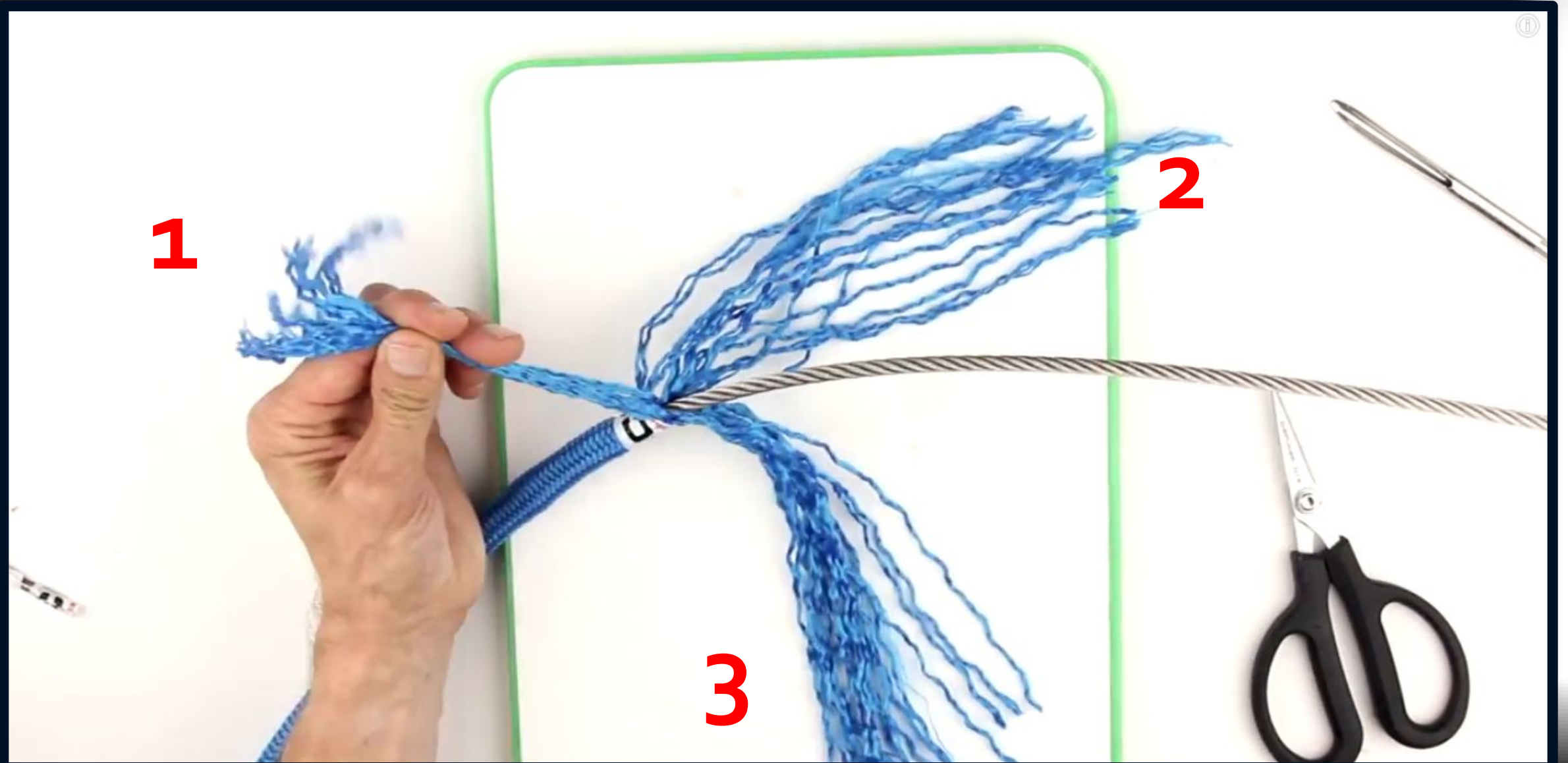
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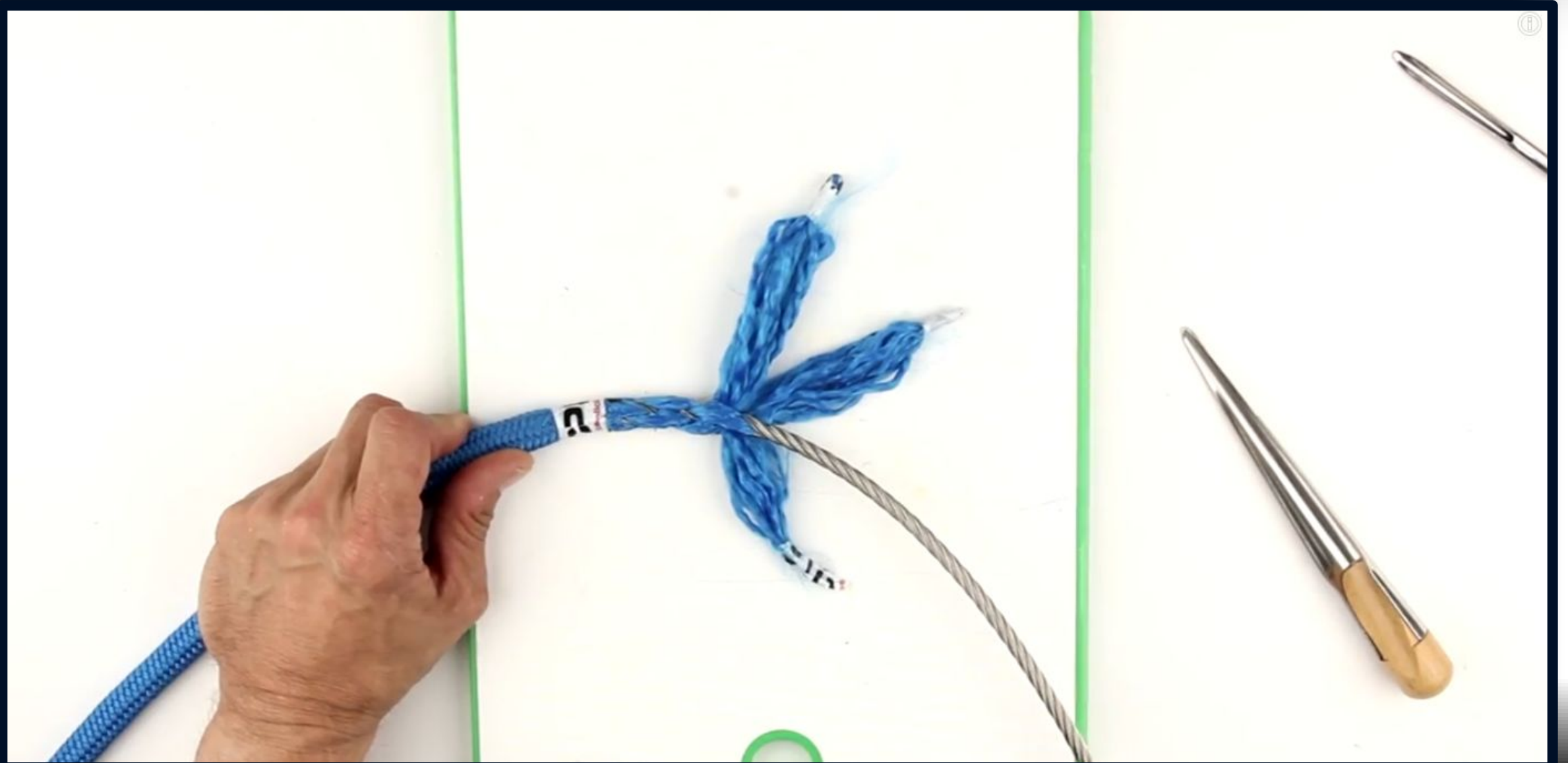
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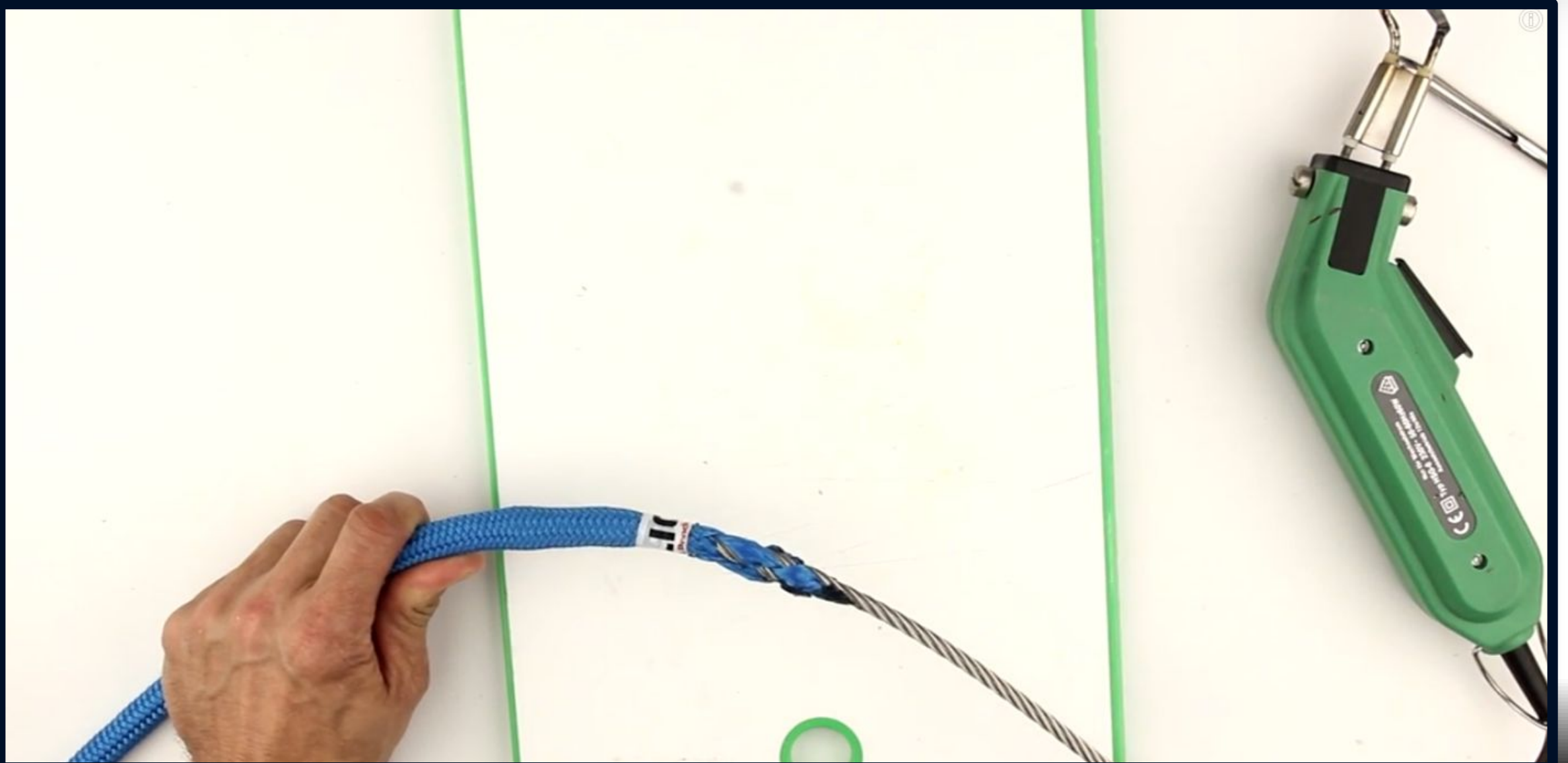
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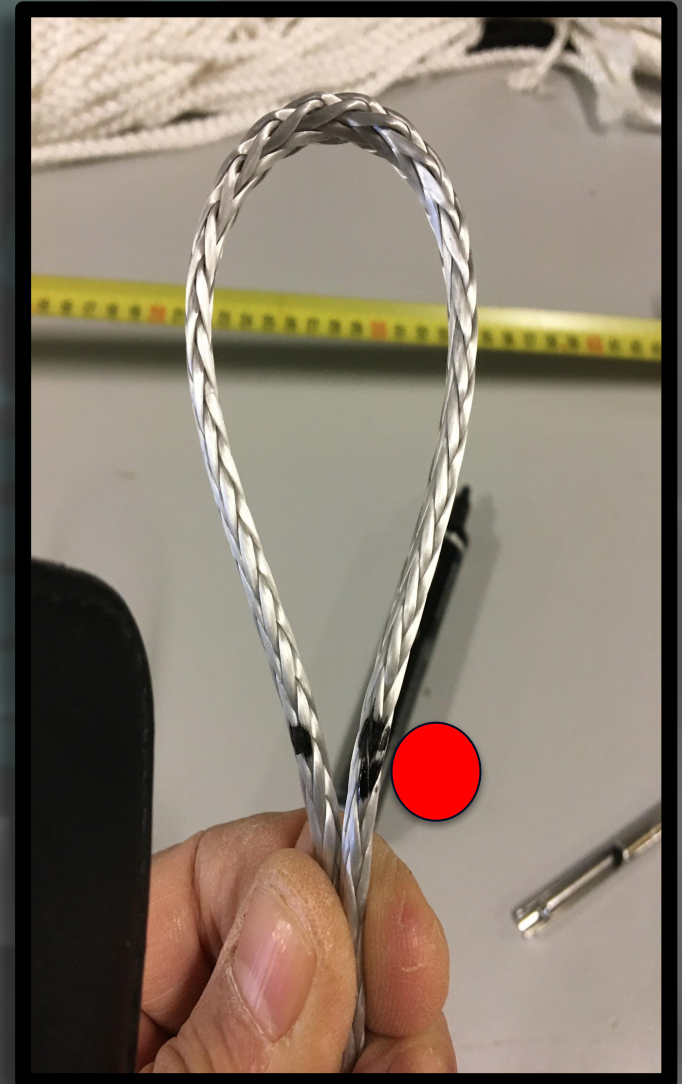
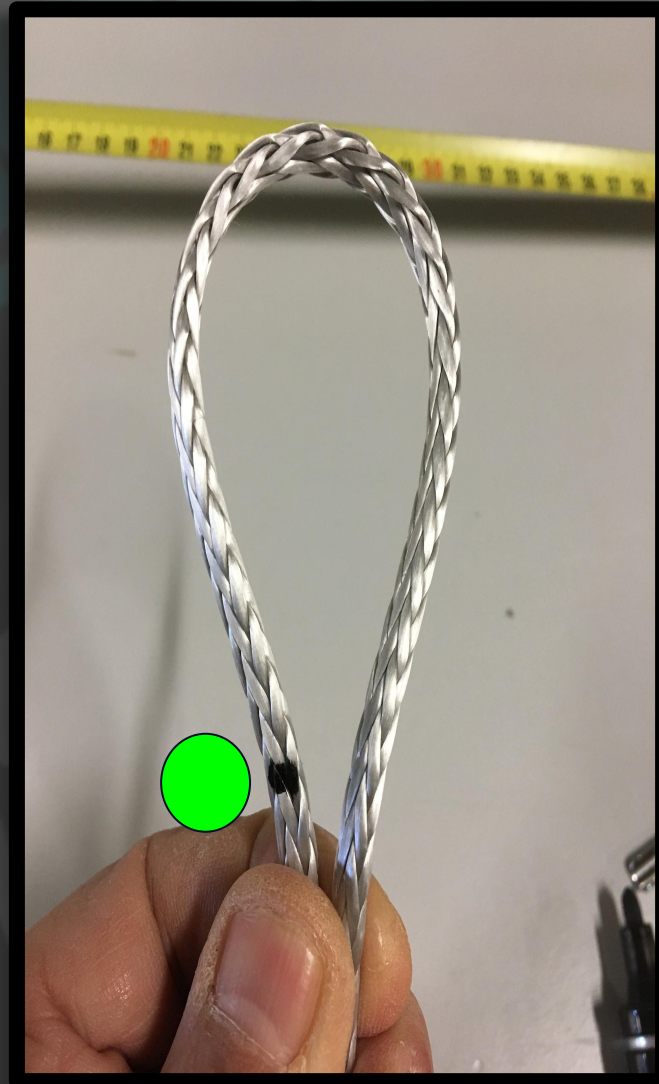
ACCIAIO - TESSILE



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AUSTRALIANA



A hand is pulling the top of a white sock, stretching it to show its elasticity. The sock is white with a ribbed cuff and a grey reinforced patch on the heel and toe. The background is dark blue with glowing blue lines.

**QUALE PRINCIPIO REGOLA LA
TENUTA DI UNA CIMA
PIOMBATA?**

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**POCO ATTRITO... SFILO IL
CALZINO!!!**

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TENUTA % rispetto alla lunghezza dell'innesto



K è un valore multiplo di 10 che serve a determinare la lunghezza dell'innesto del corrente

**D: ...DI QUANTO SI ACCORCIA LA
CIMA DOPO LA PIOMBA?**

R: ...CIRCA IL 10% DELL'INNESTO

il "CIRCA" dipende dal passo della cima che stò usando...

Ø 1	Ø 2
2	3,3
3	4,9
4	6,5
5	8,1
6	9,8
7	11,4
8	13,0
9	14,6
10	16,3
11	17,9
12	19,5

**D: ...DI QUANTO AUMENTA IL
DIAMETRO DOPO LA PIOMBA?**

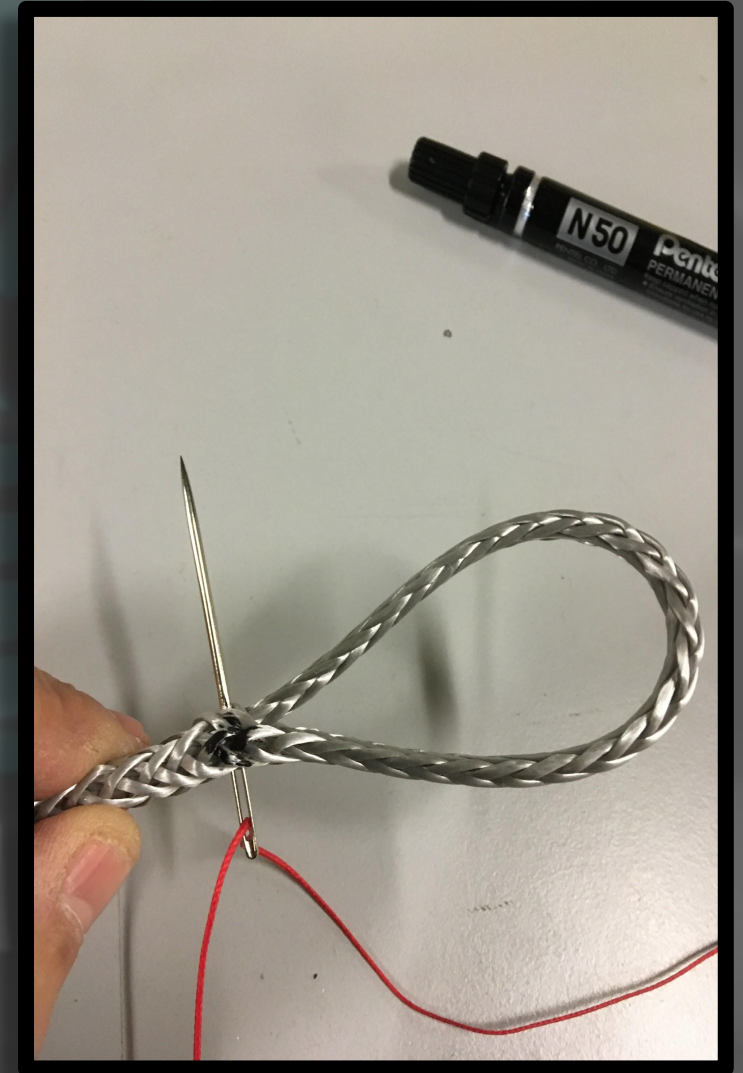
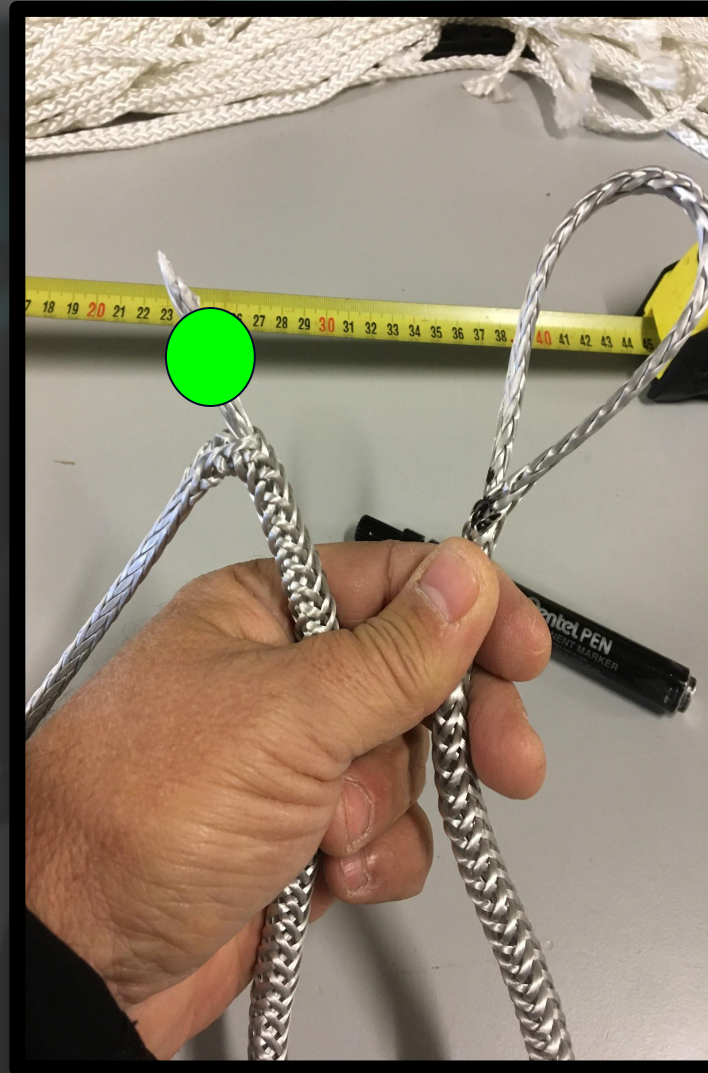
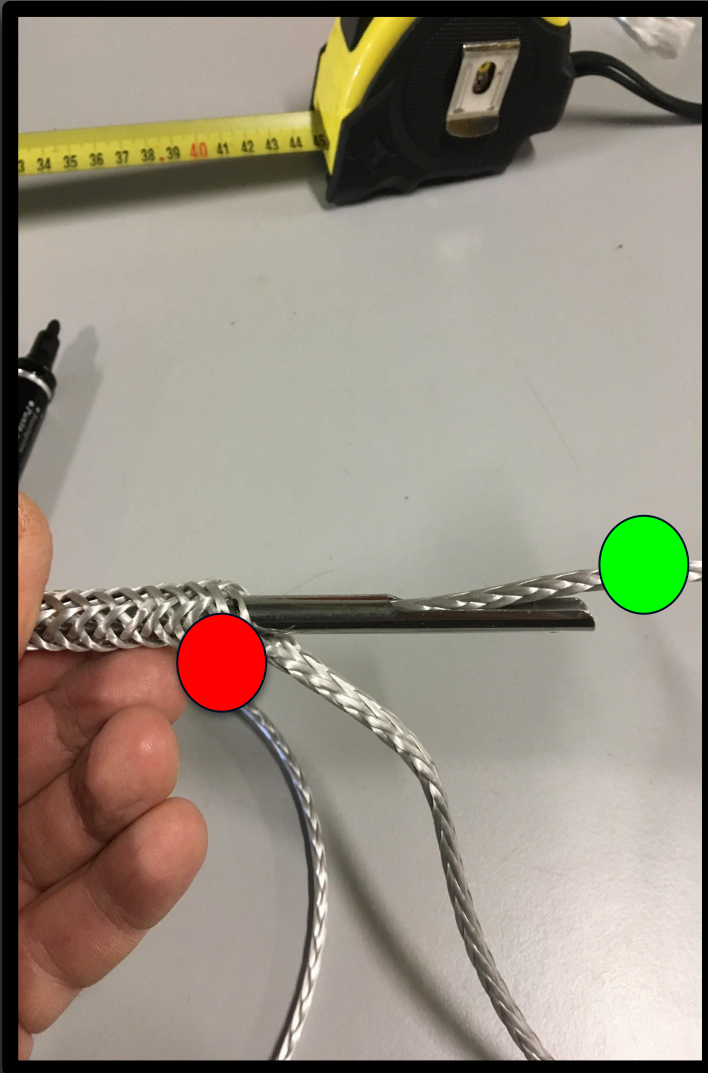
R: CIRCA IL 60%

il "CIRCA" dipende dal passo della cima che stò usando...

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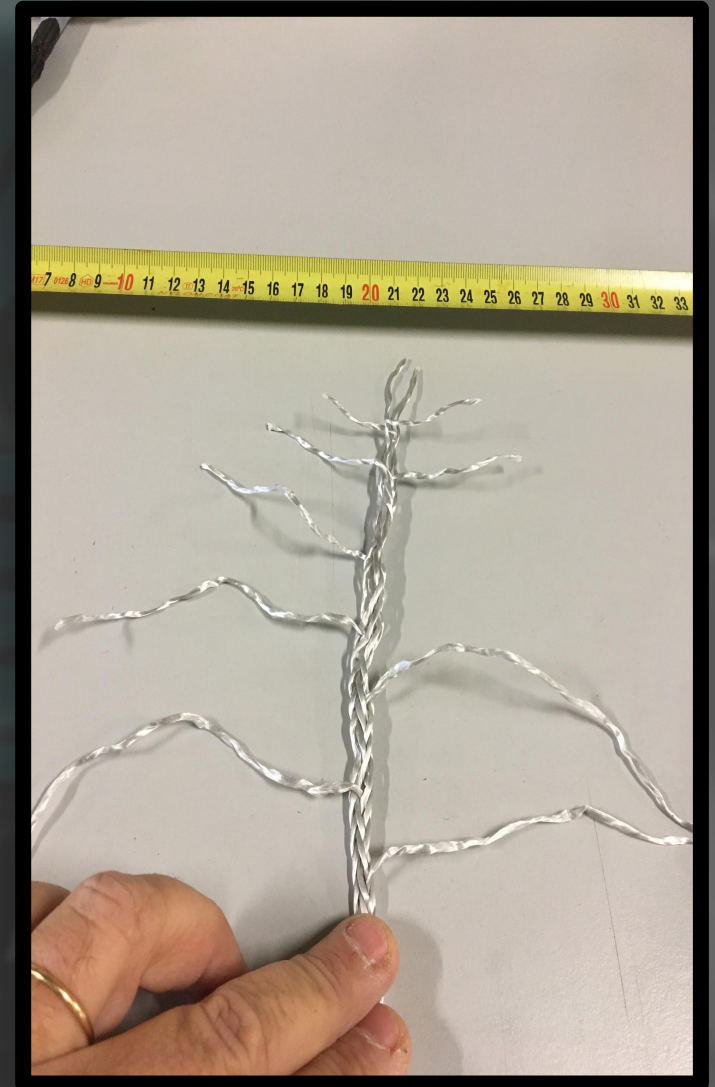
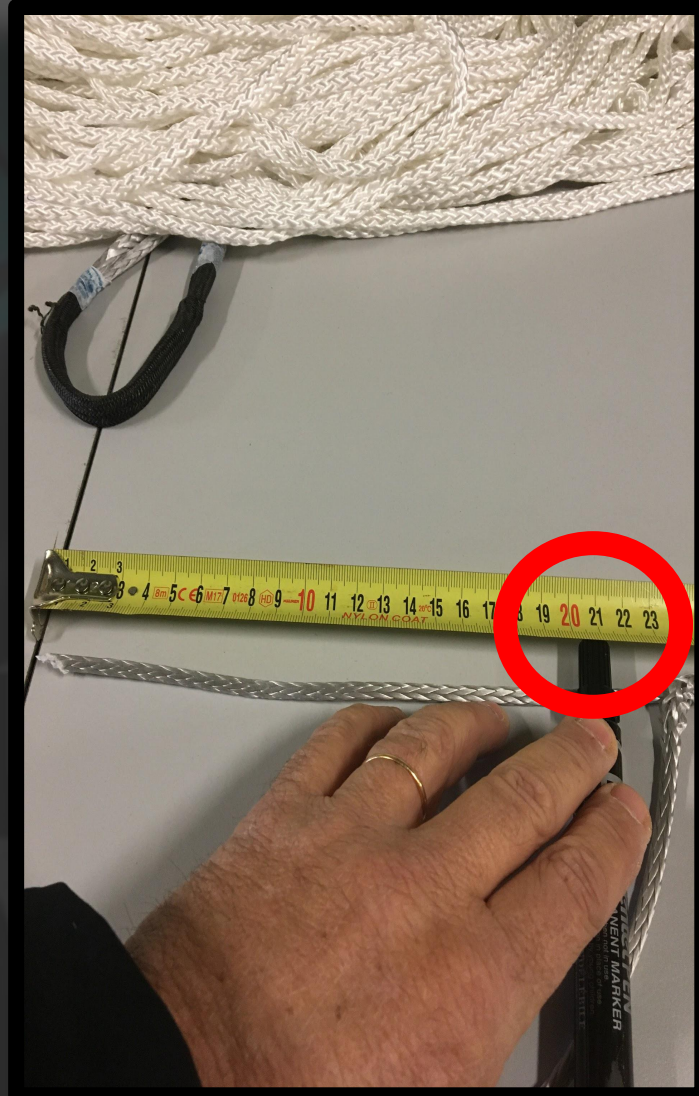
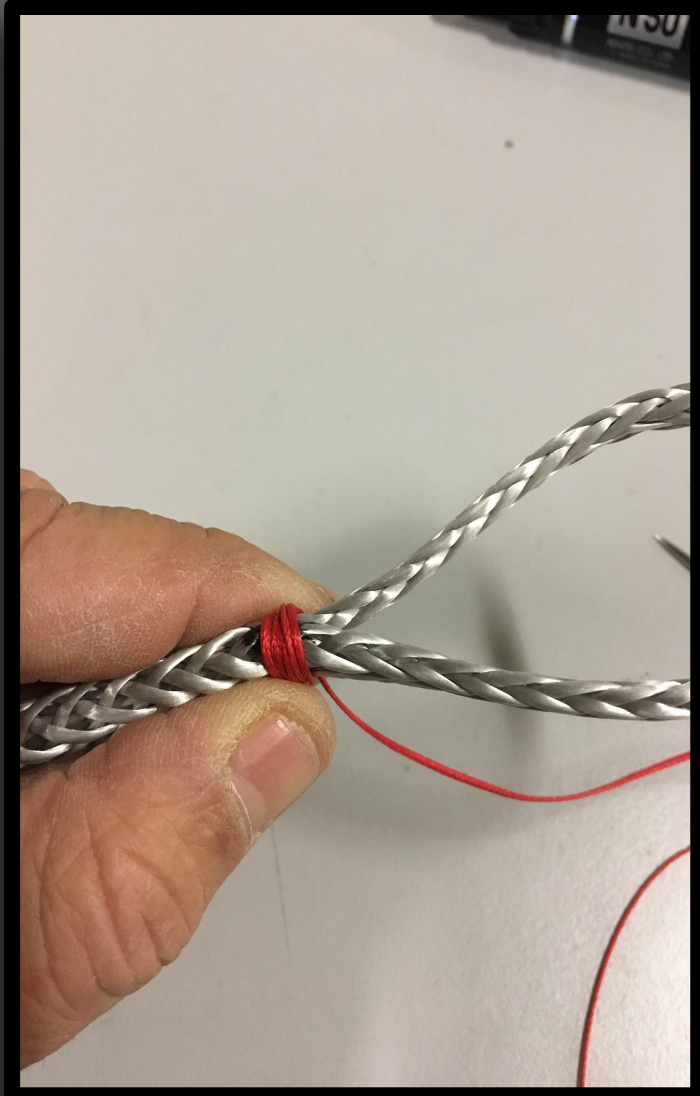
AUSTRALIANA



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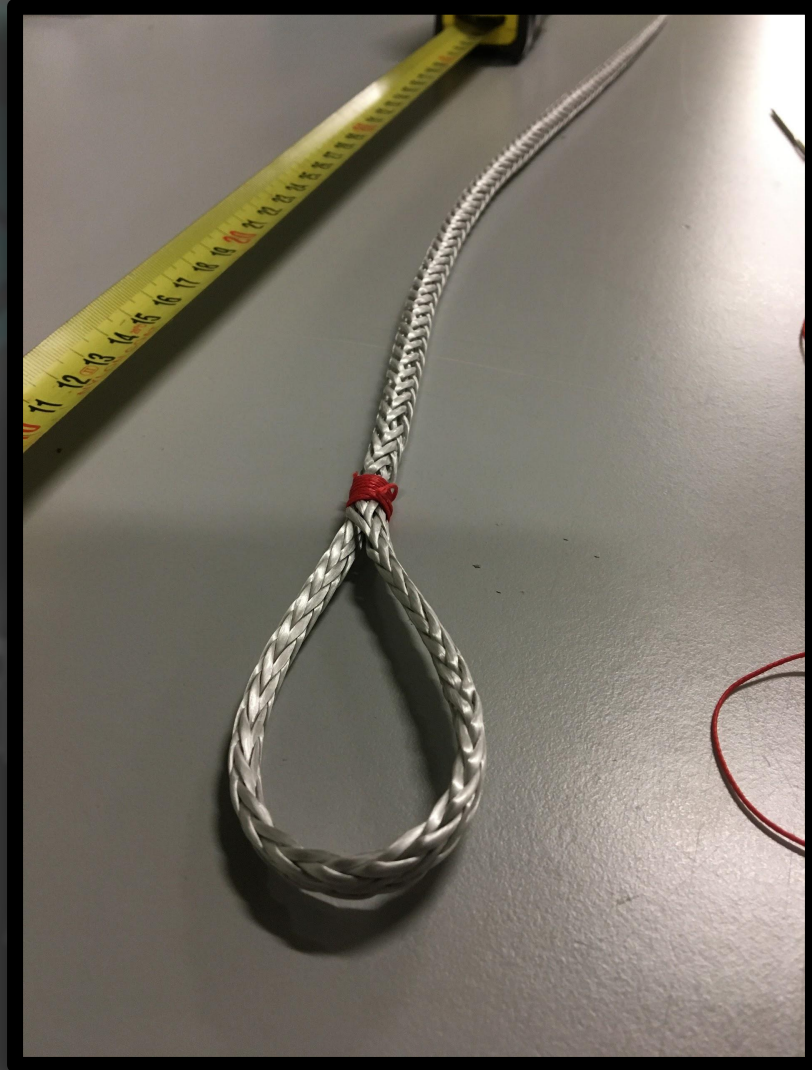
AUSTRALIANA



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AUSTRALIANA

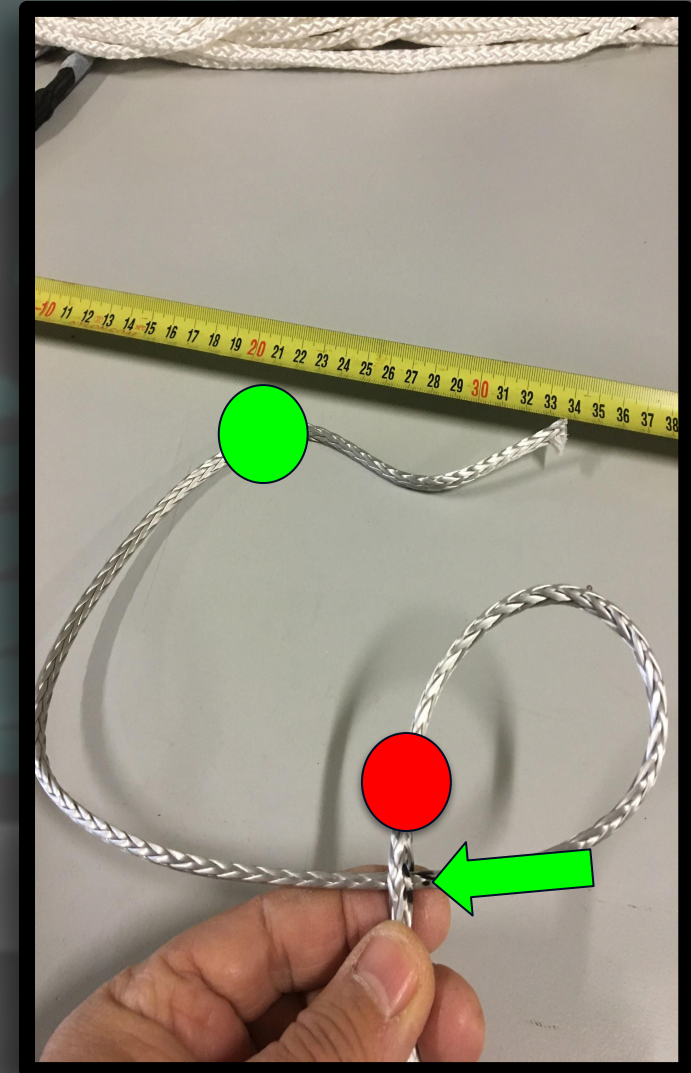
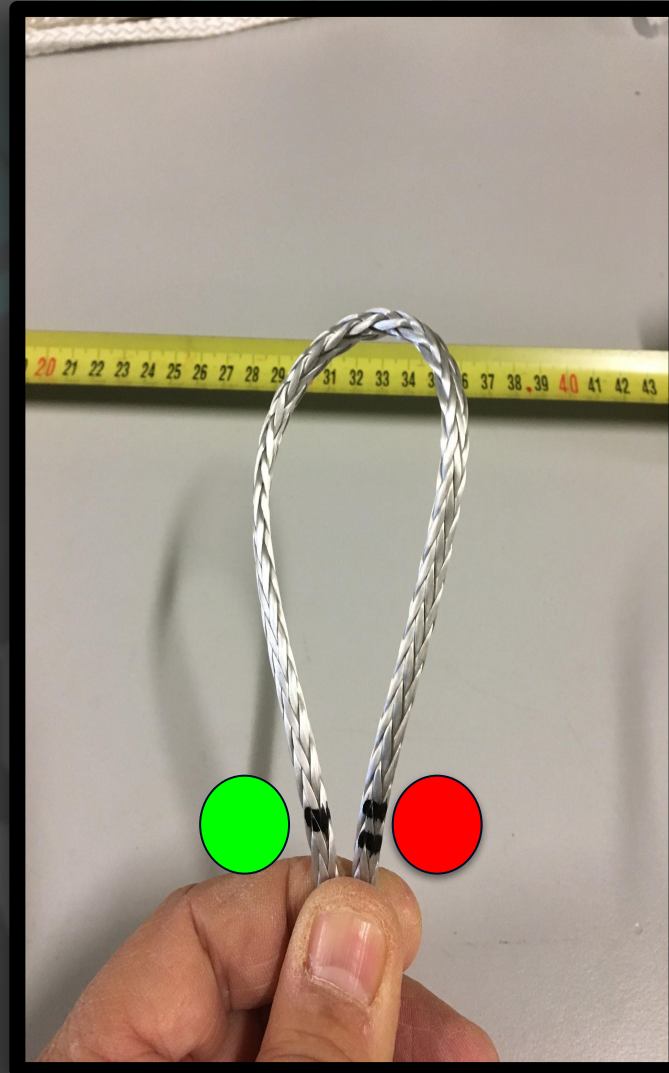


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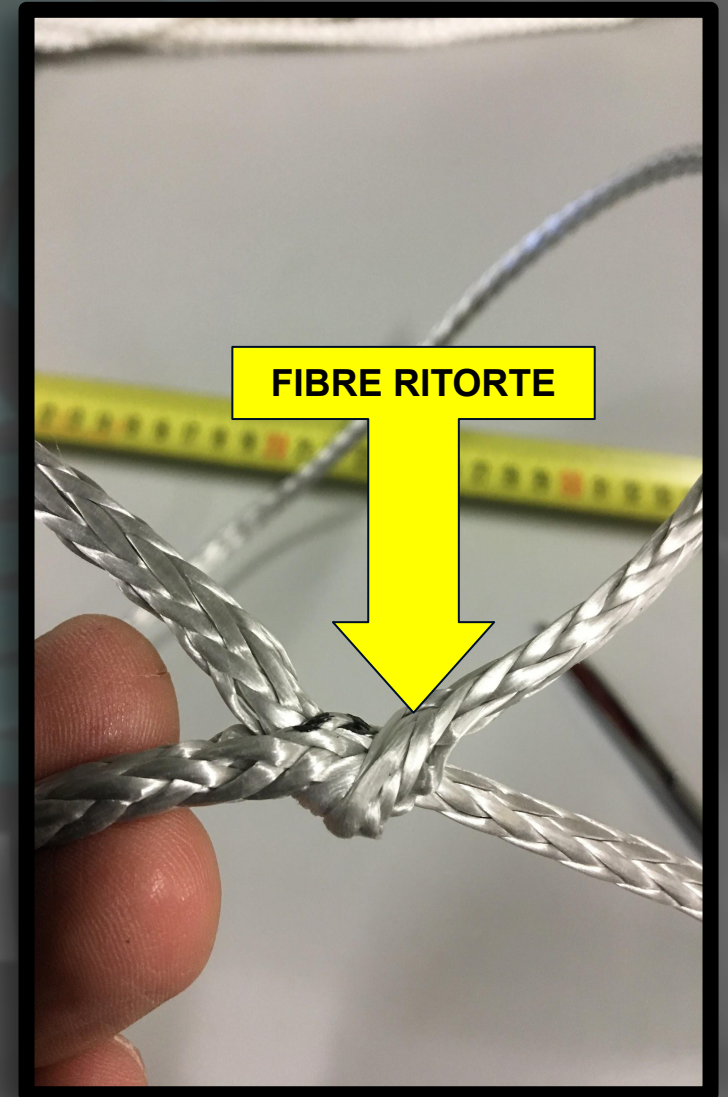
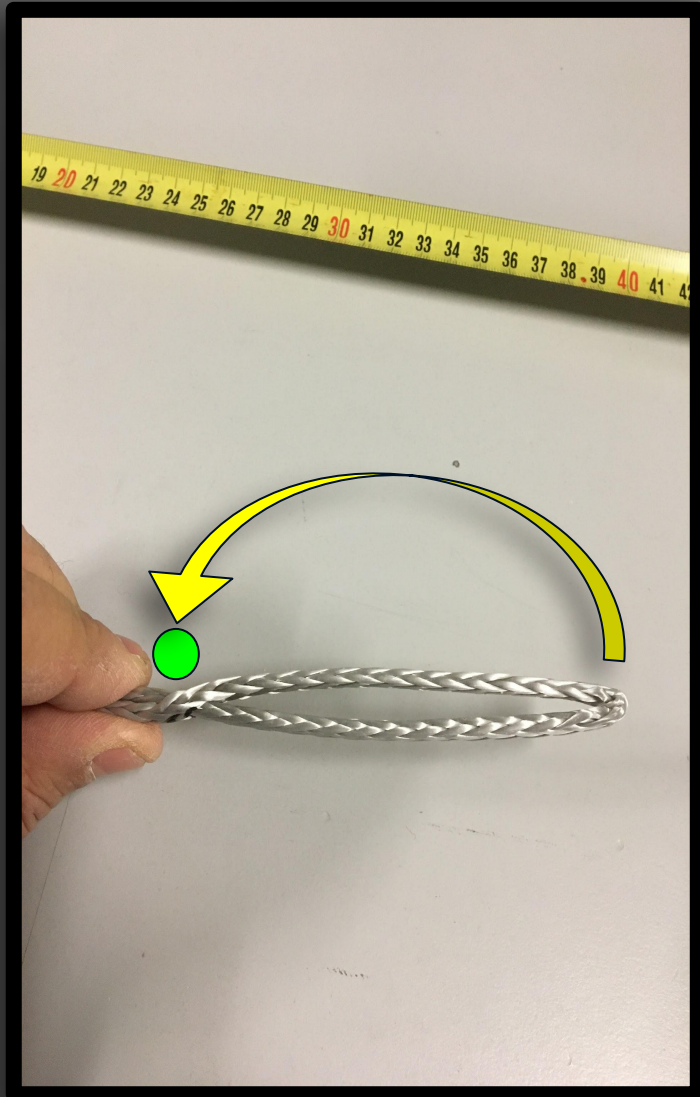
BRUMMEL



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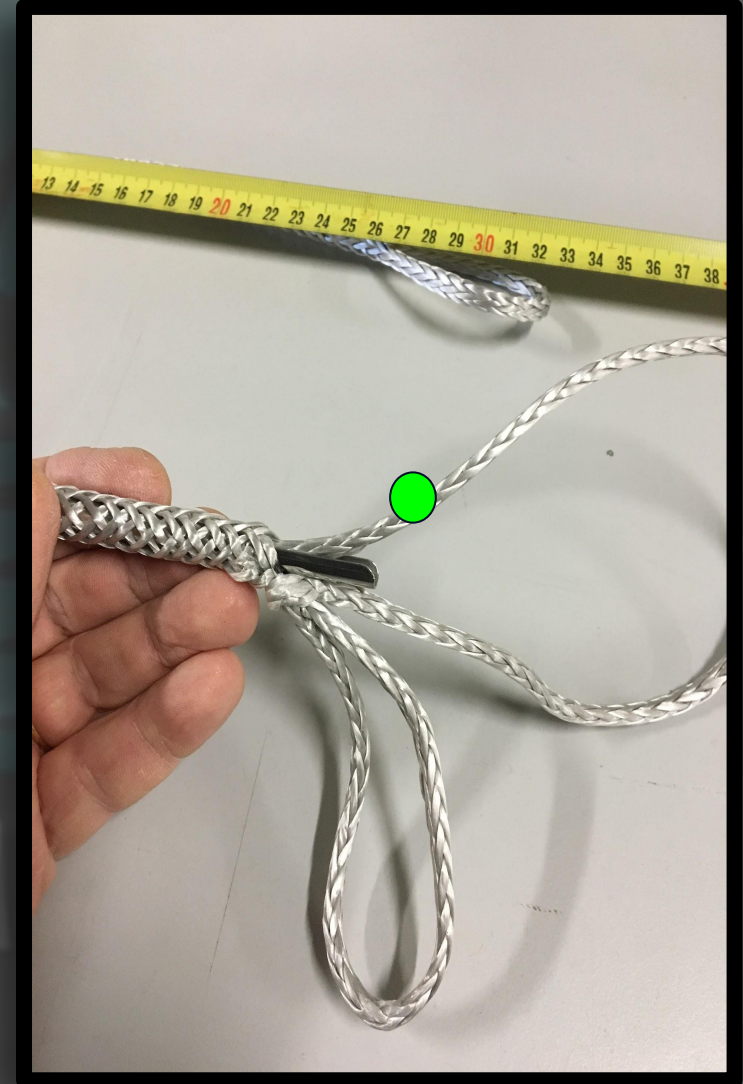
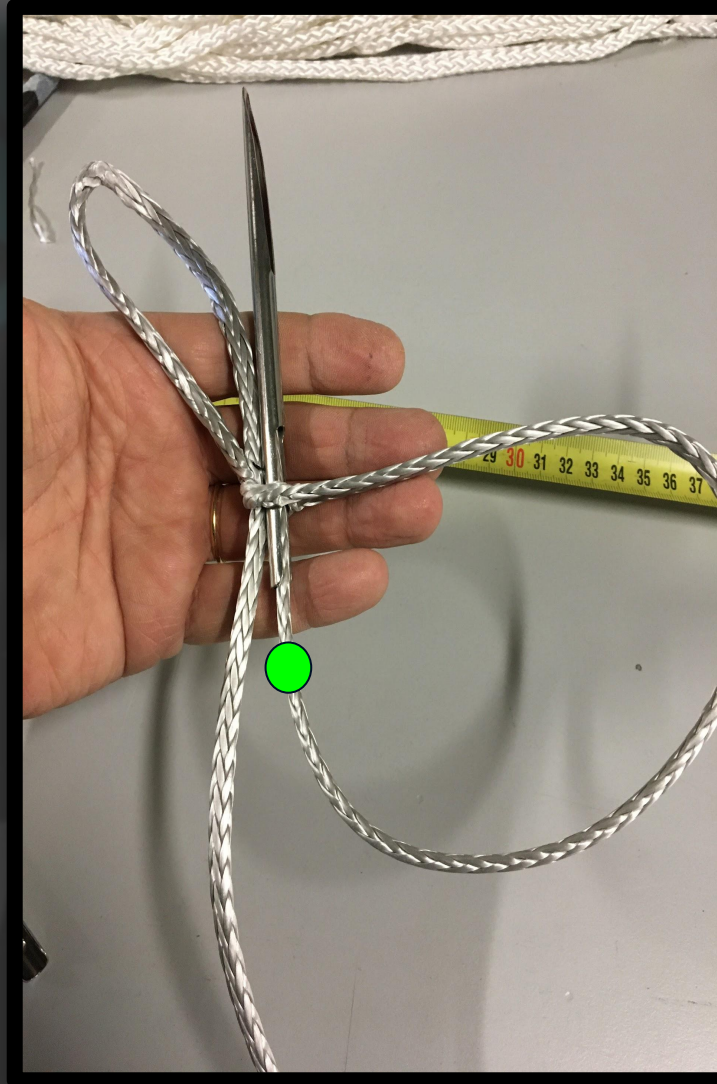
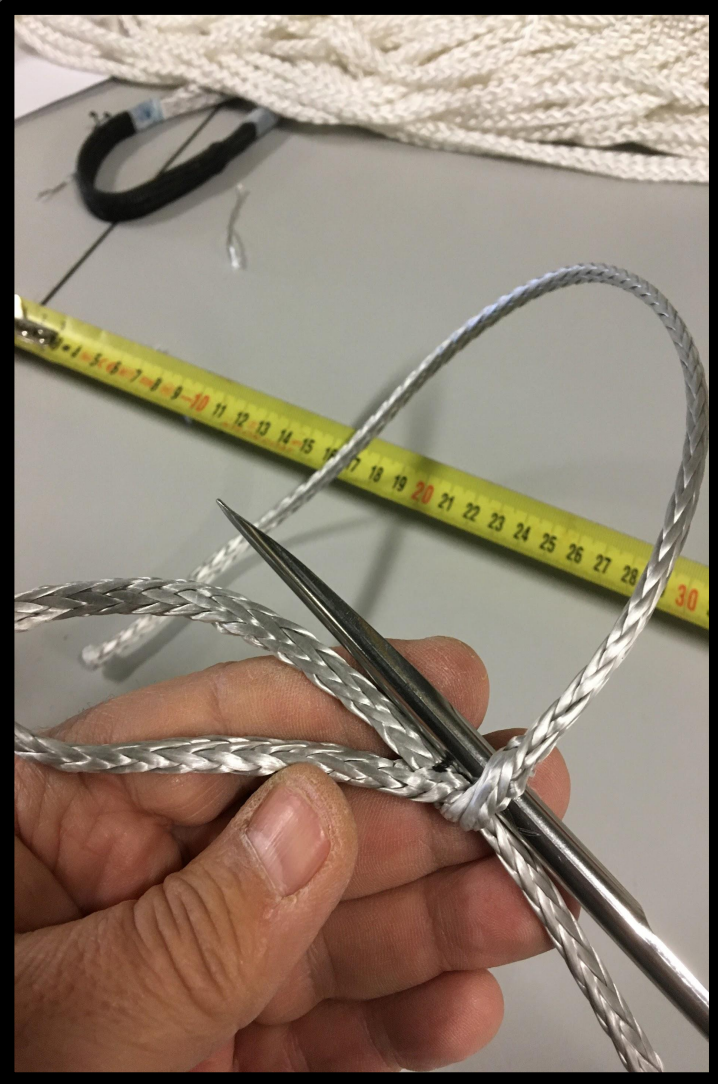
BRUMMEL



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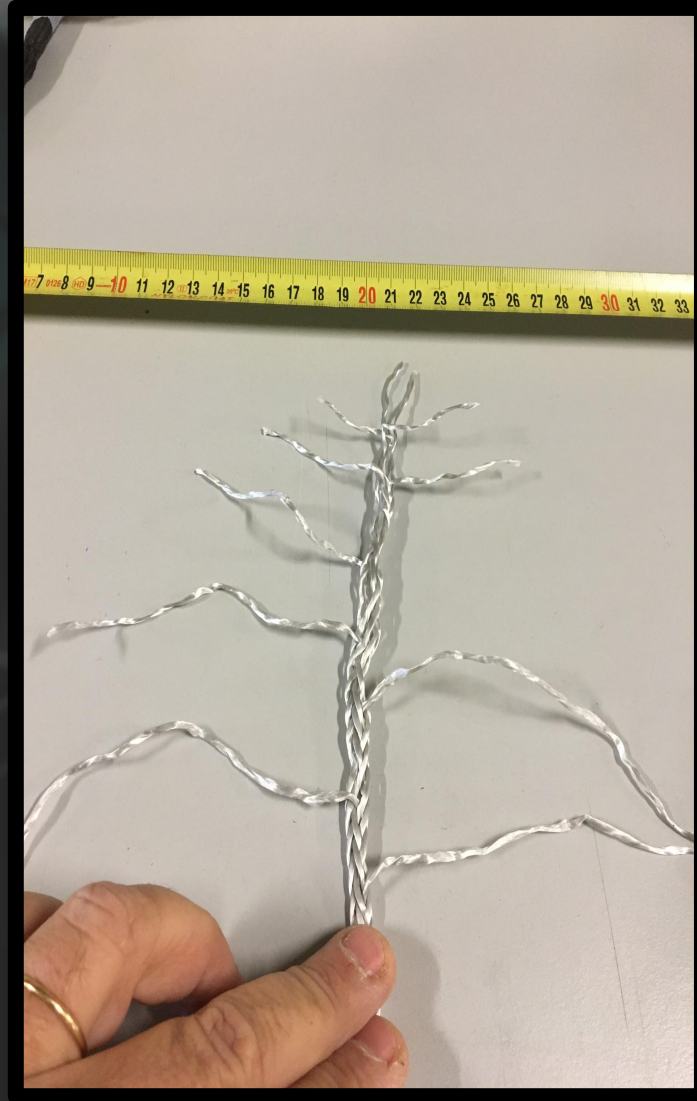
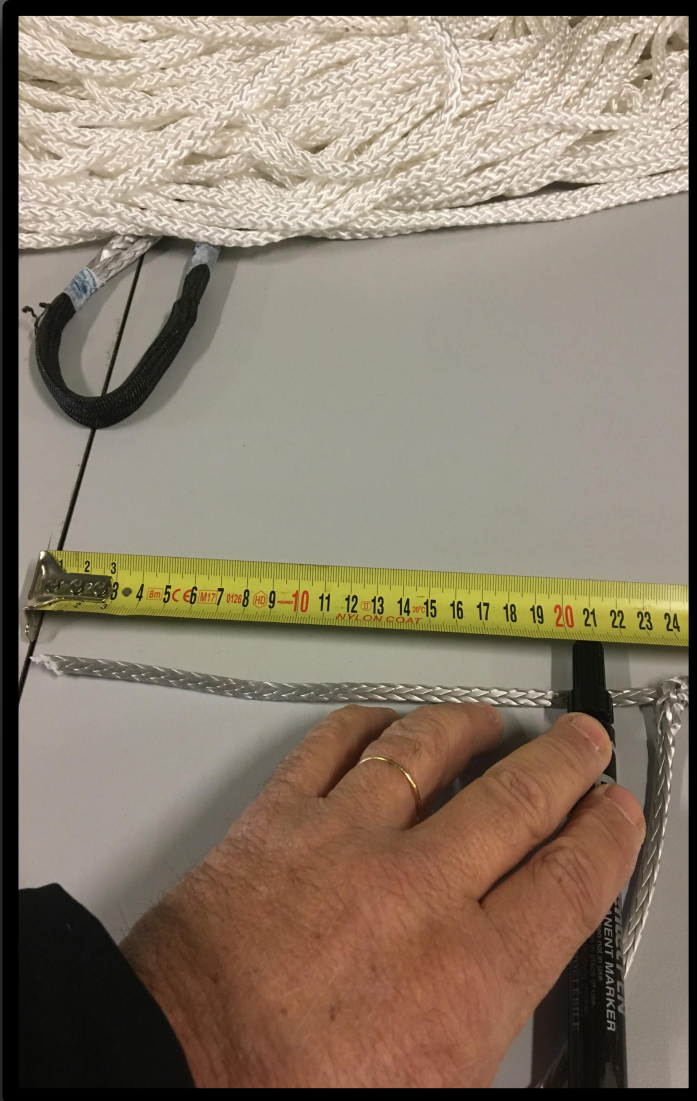
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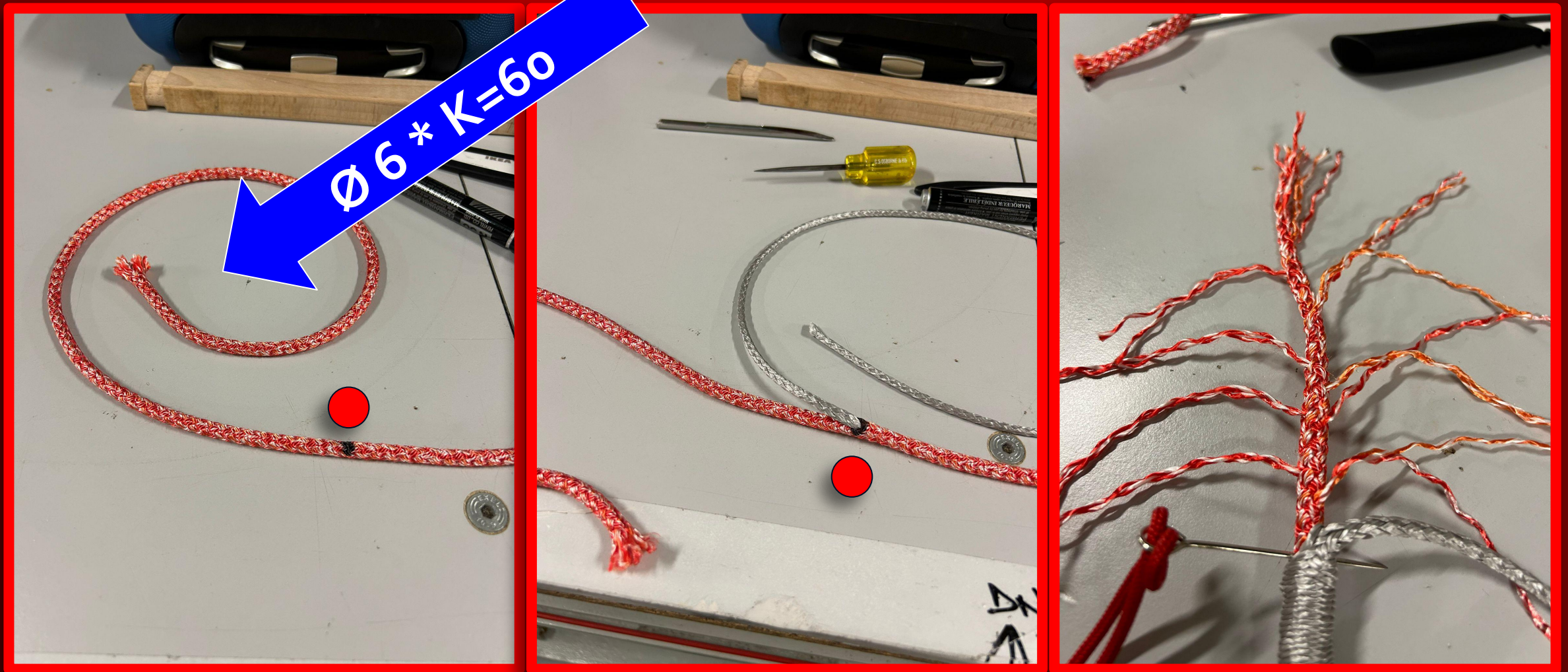


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RASTREMARE - metodo A

ES. CIMA Ø 6 - K=60



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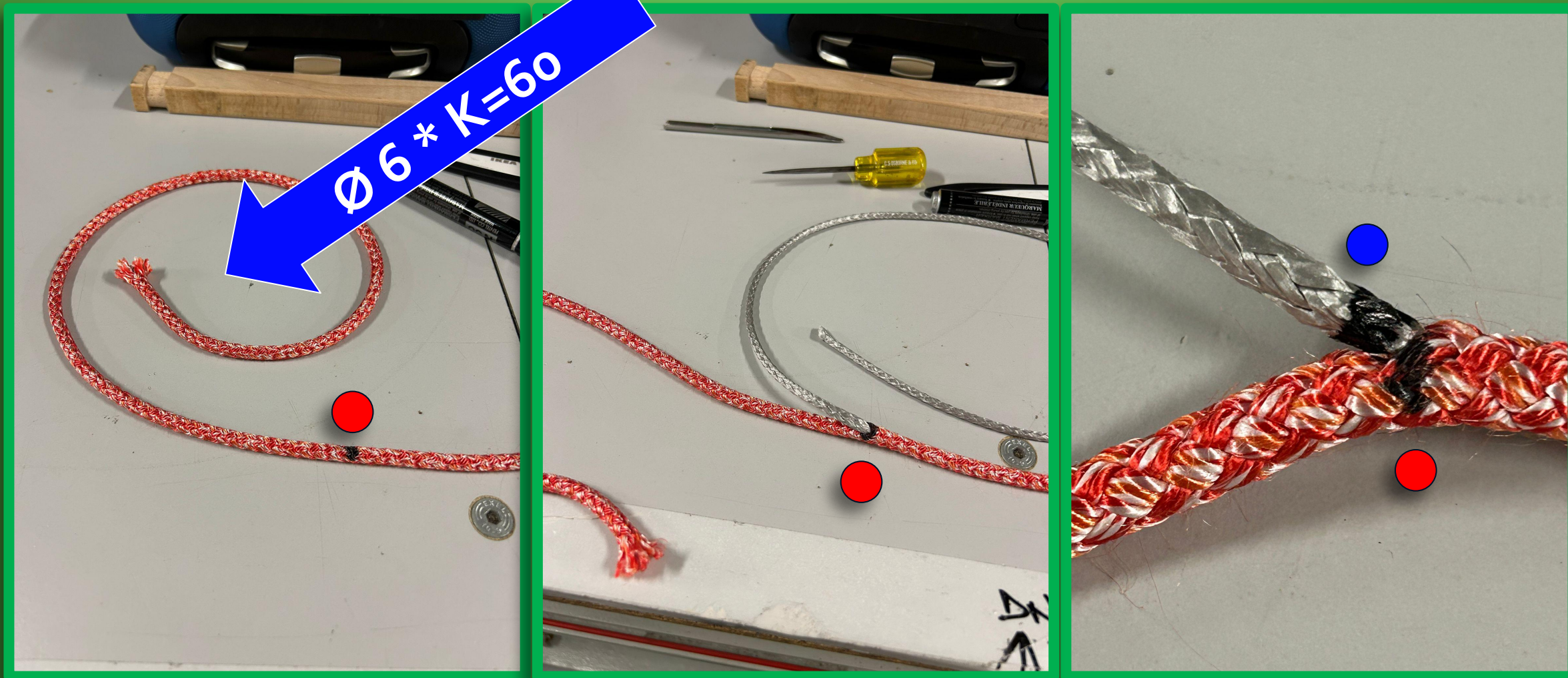


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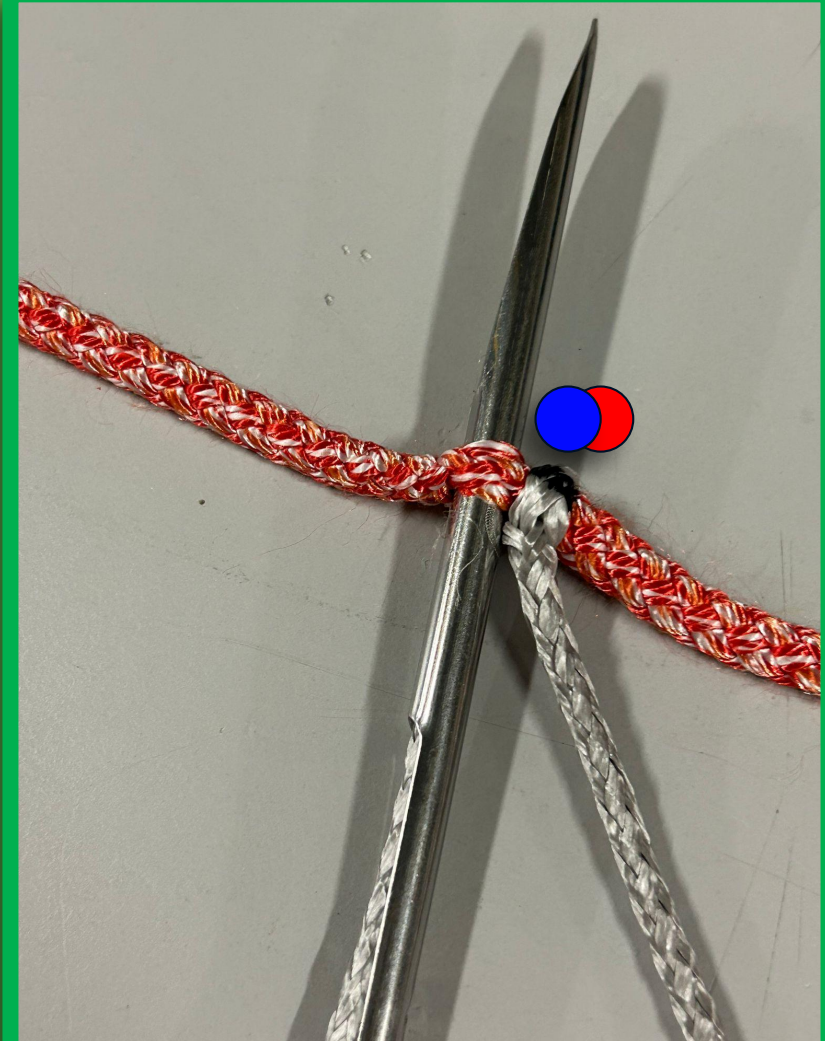
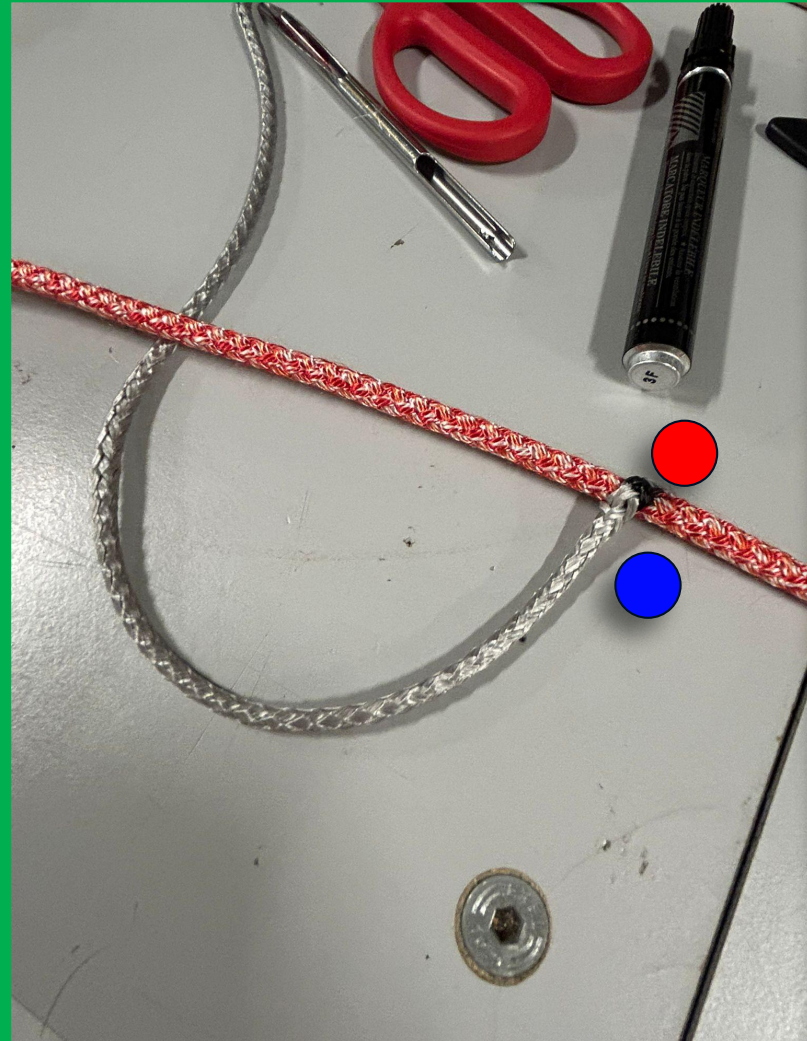
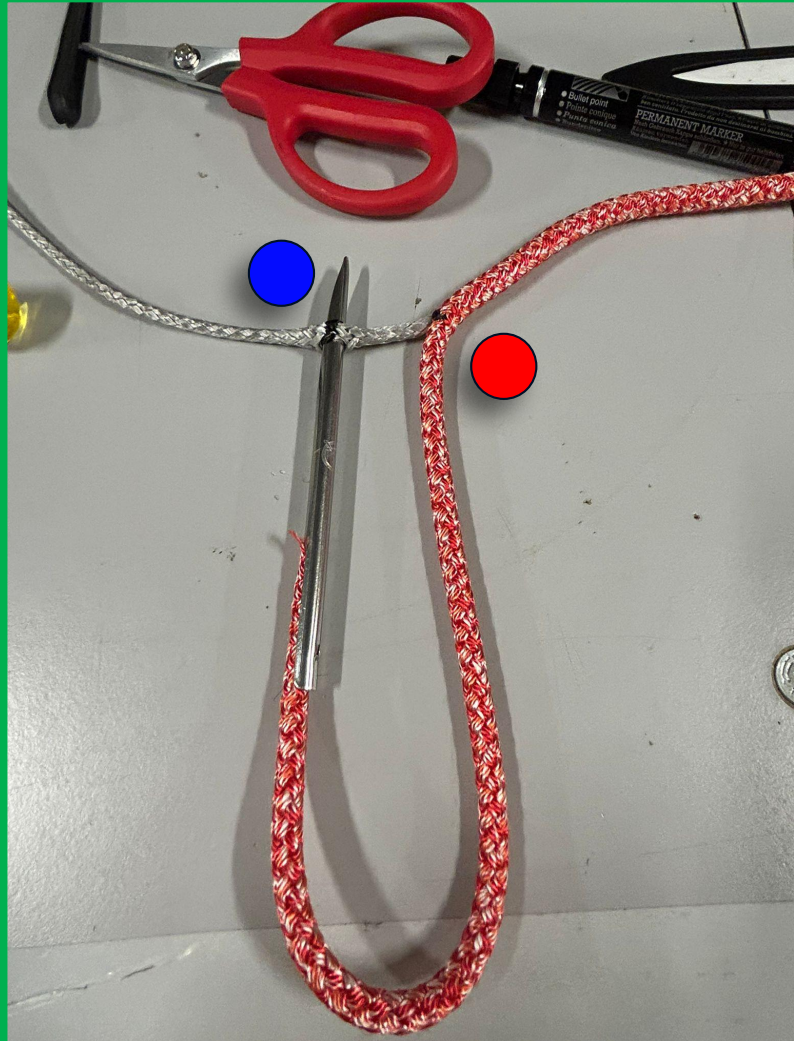
RASTREMARE - metodo B

ES. CIMA Ø 6 - K=60



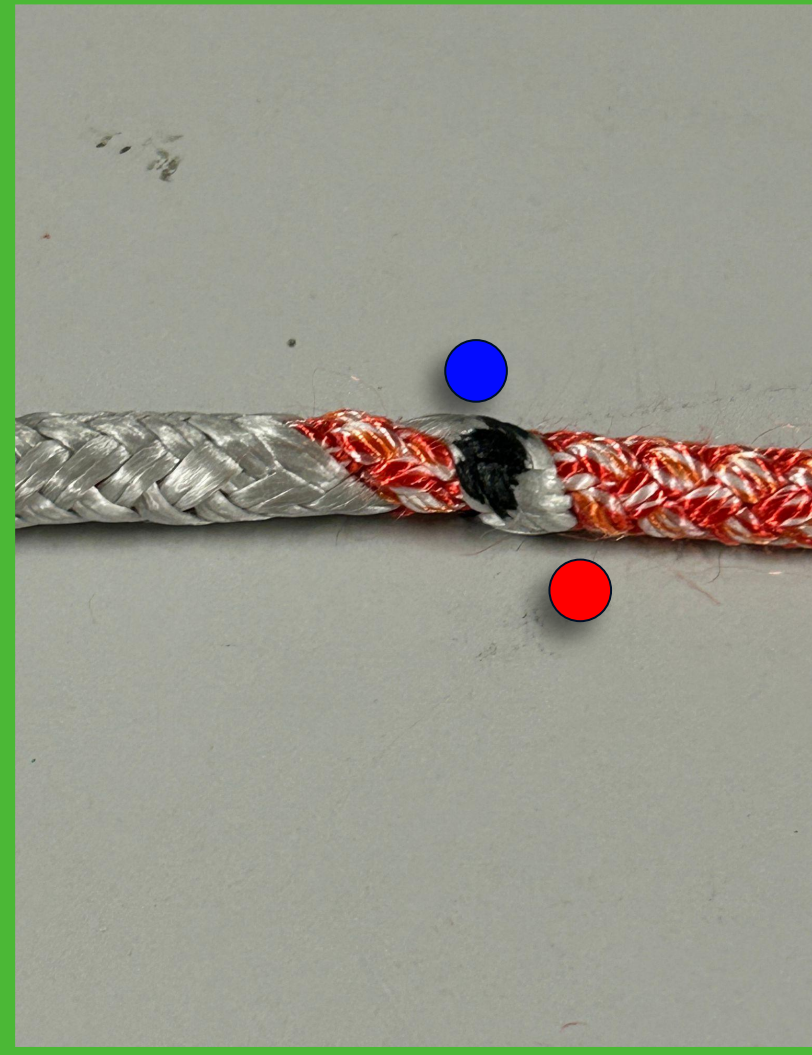
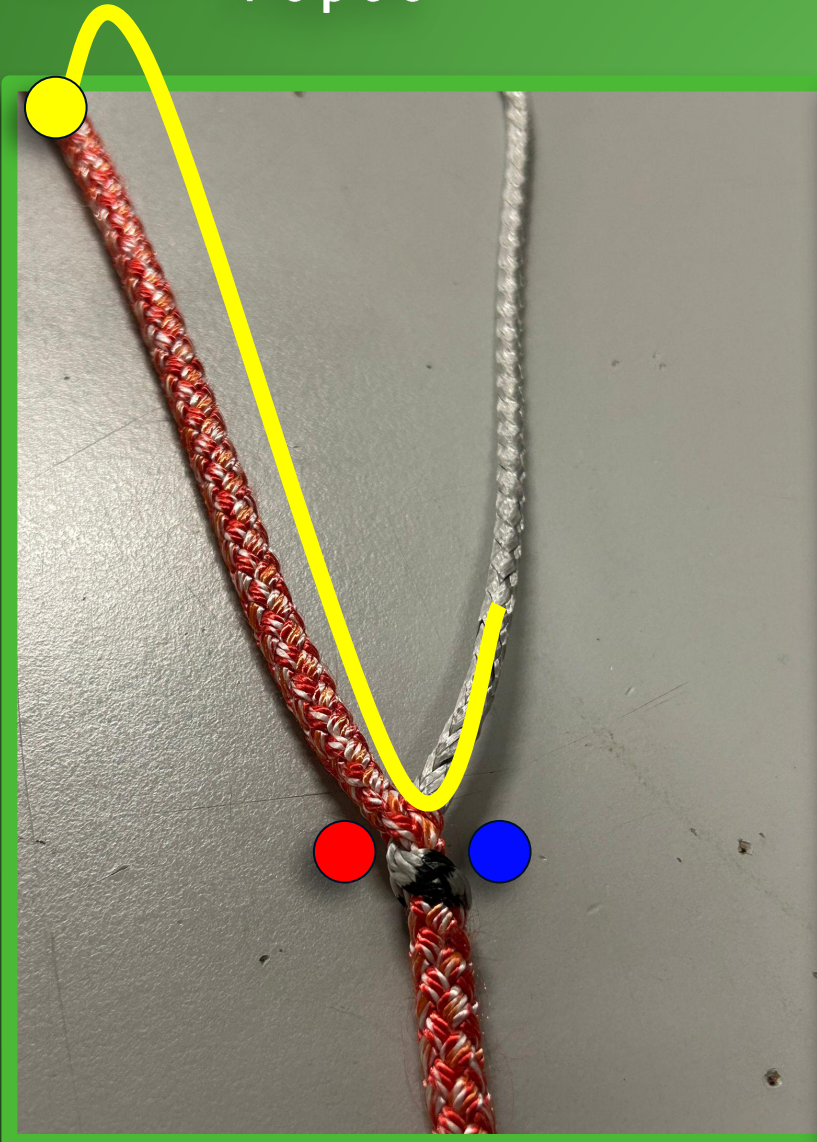
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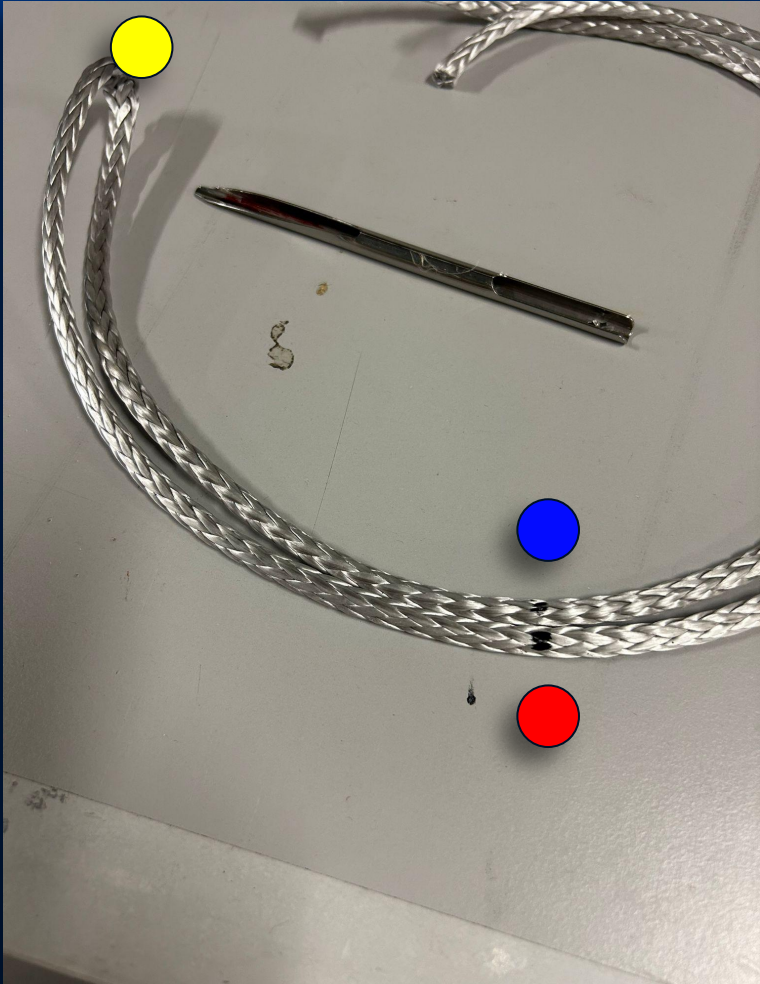
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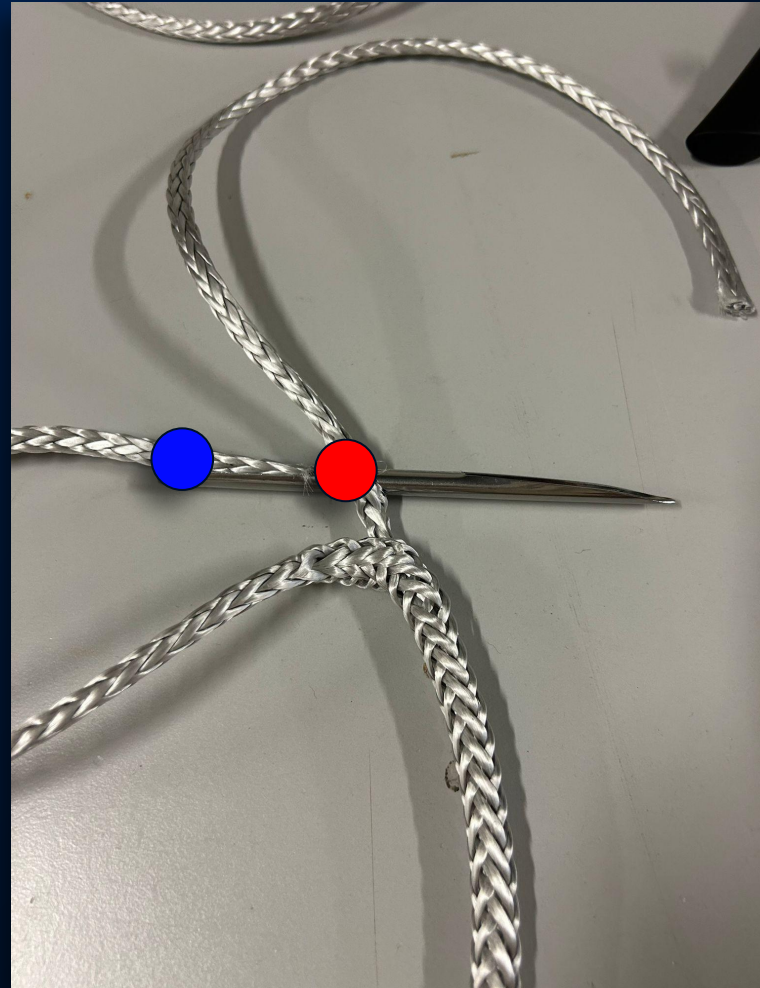
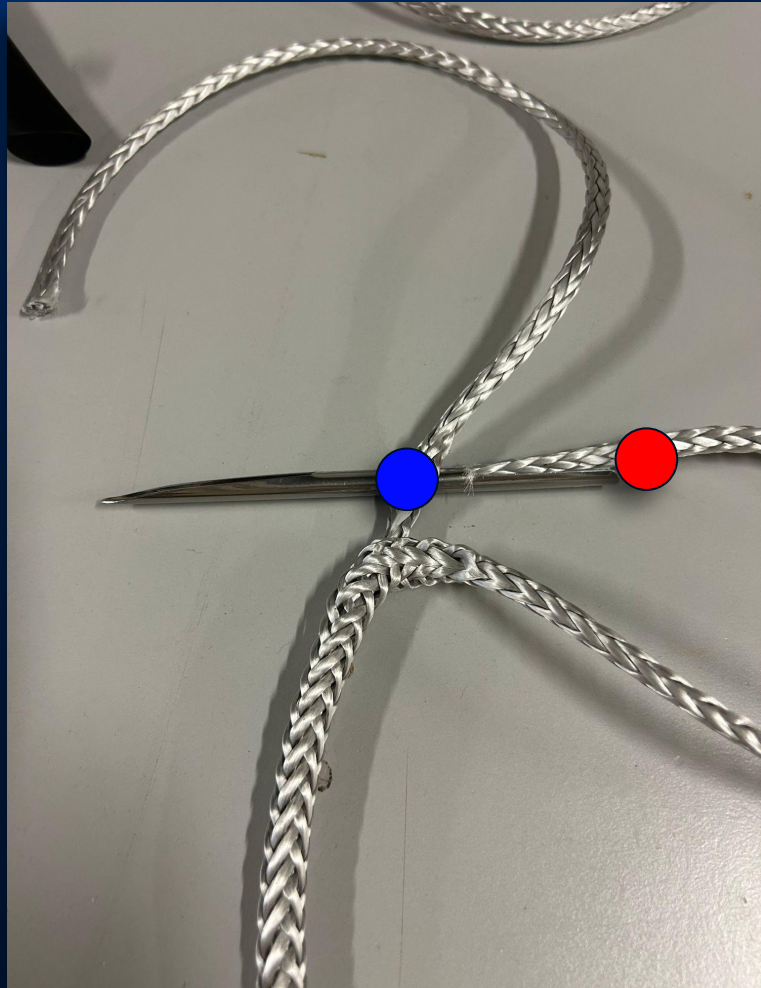
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SOFT SHACKLES - 1



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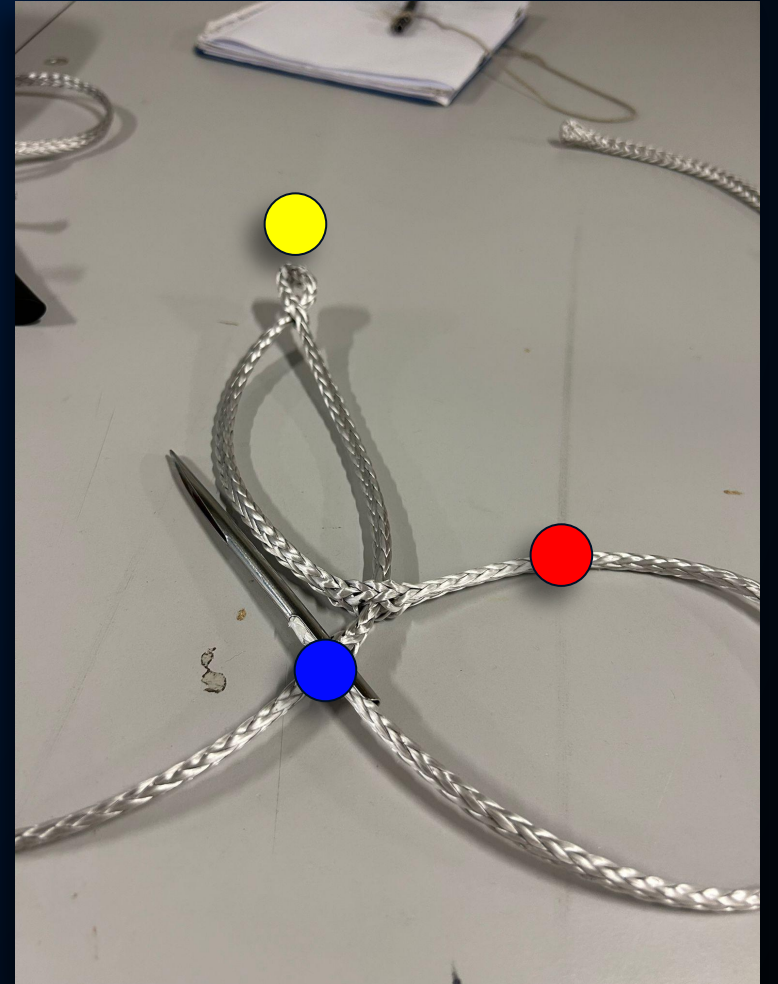
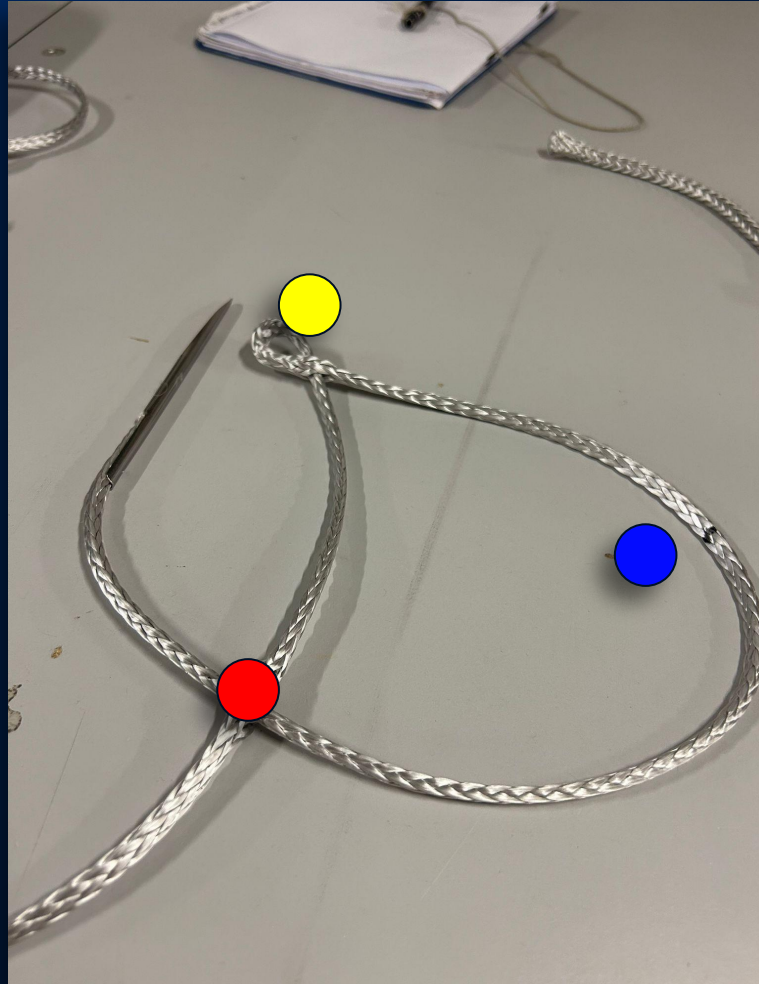
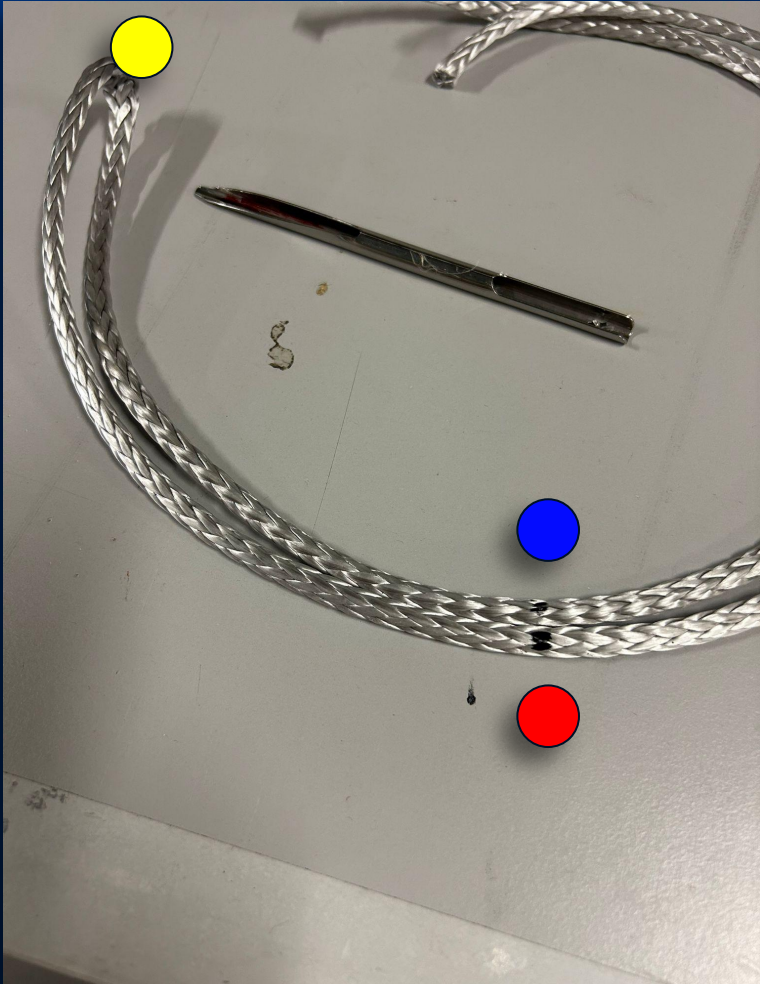
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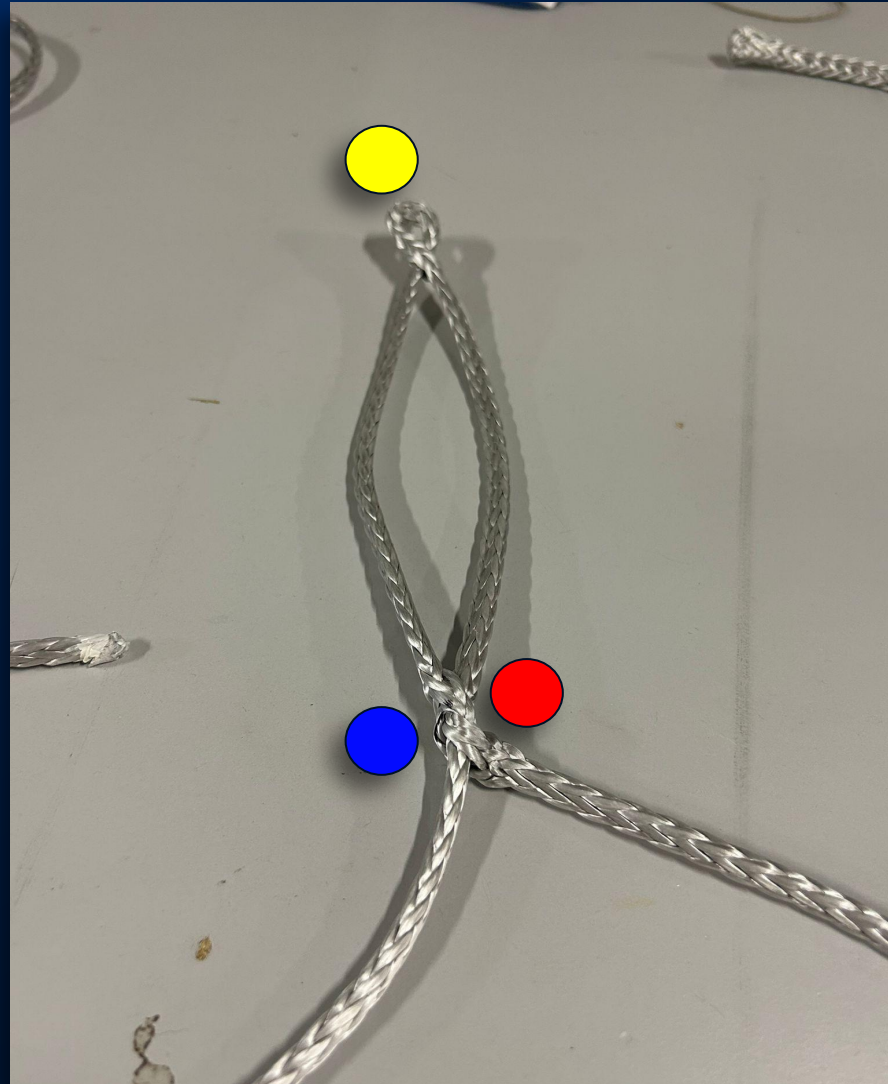
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SOFT SHACKLES - 2



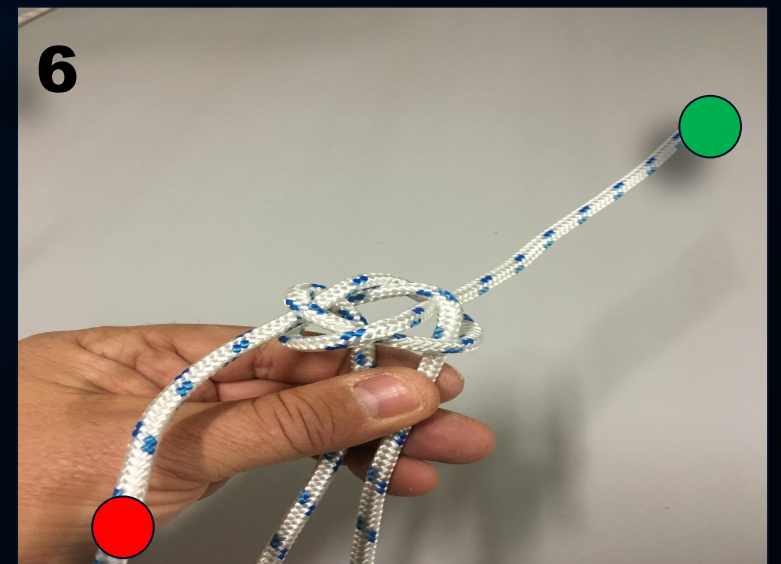
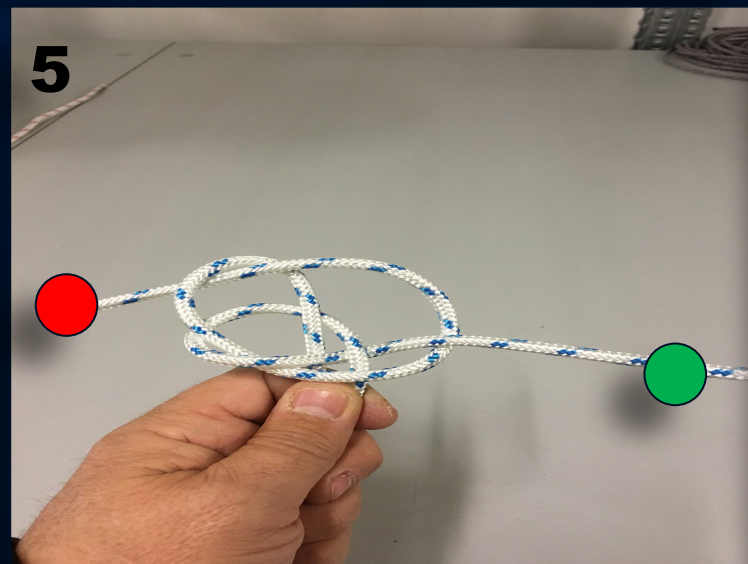
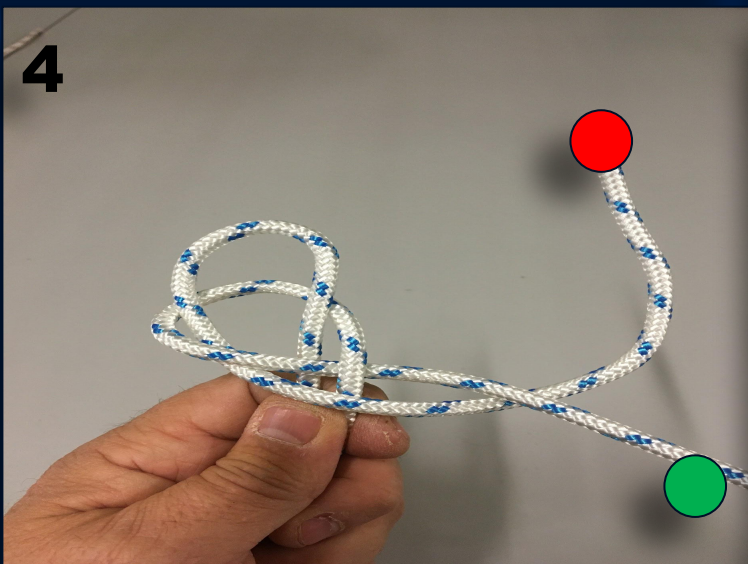
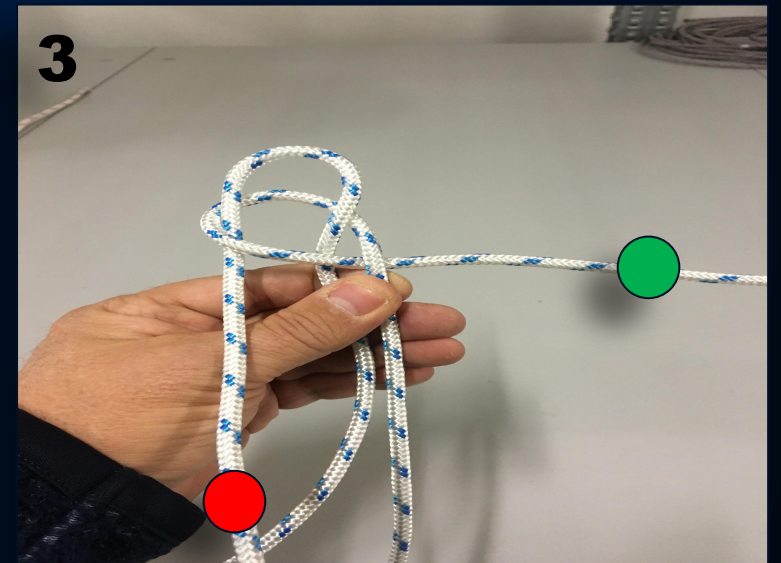
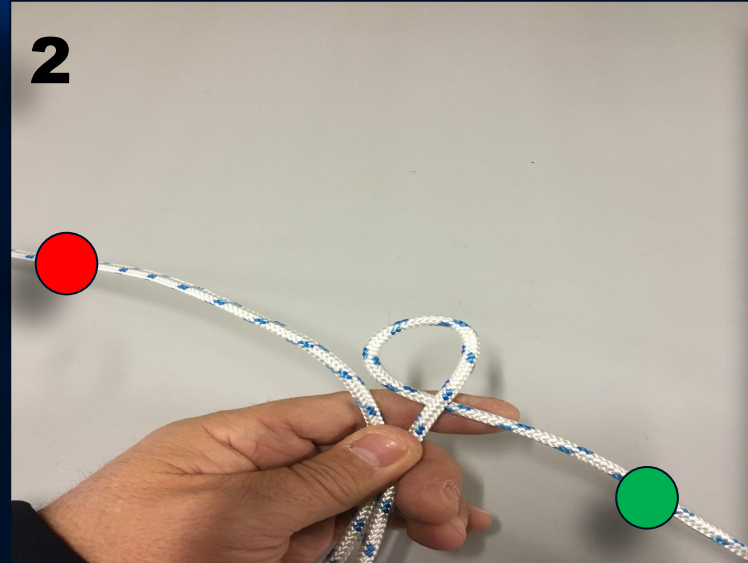
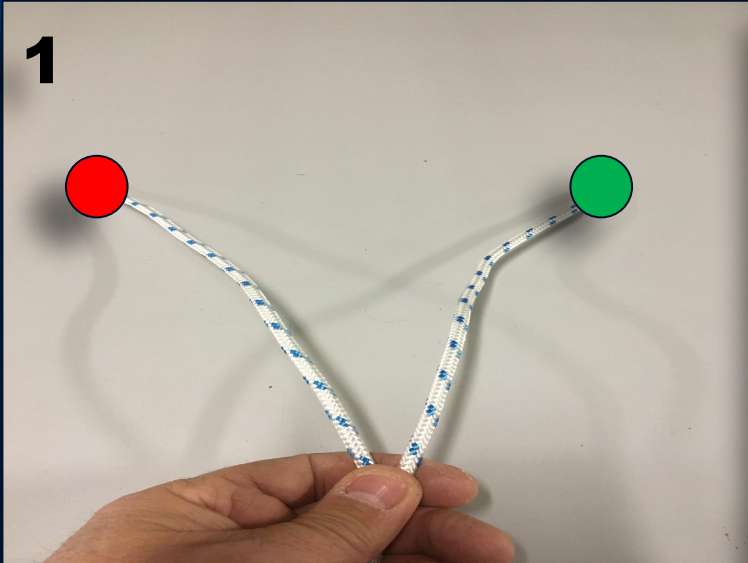
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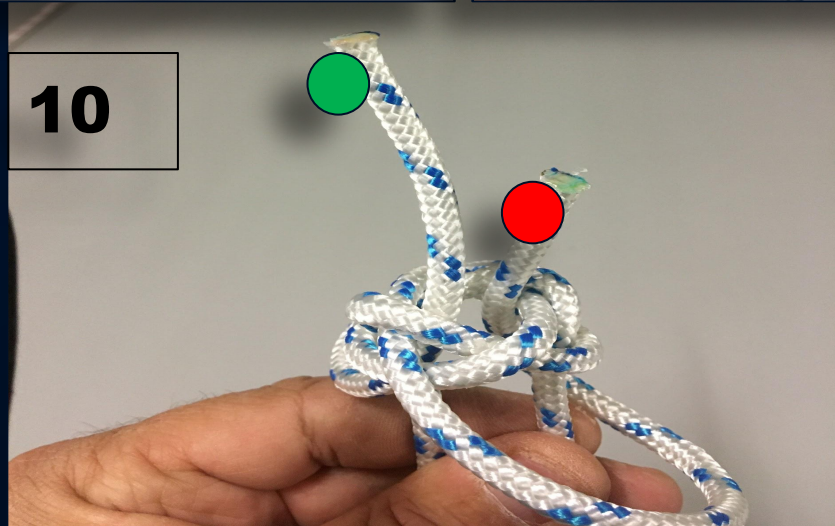
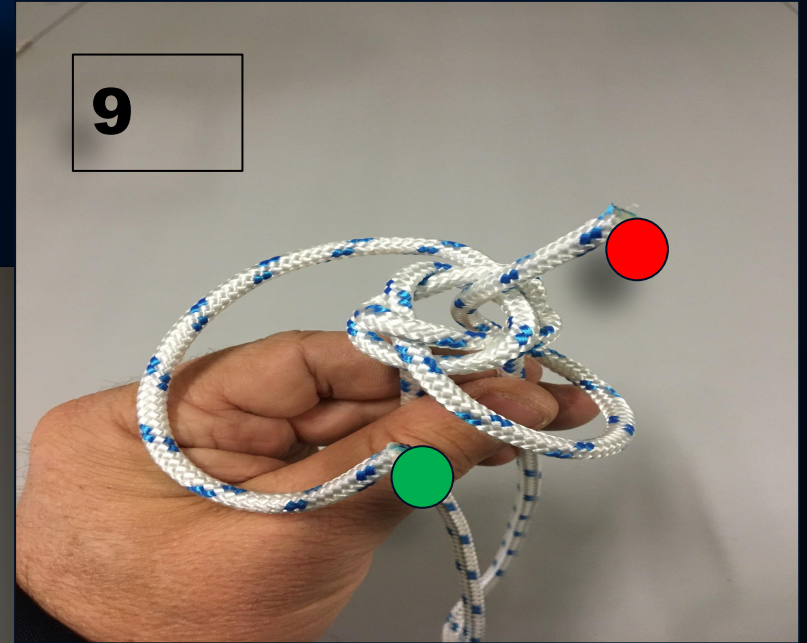
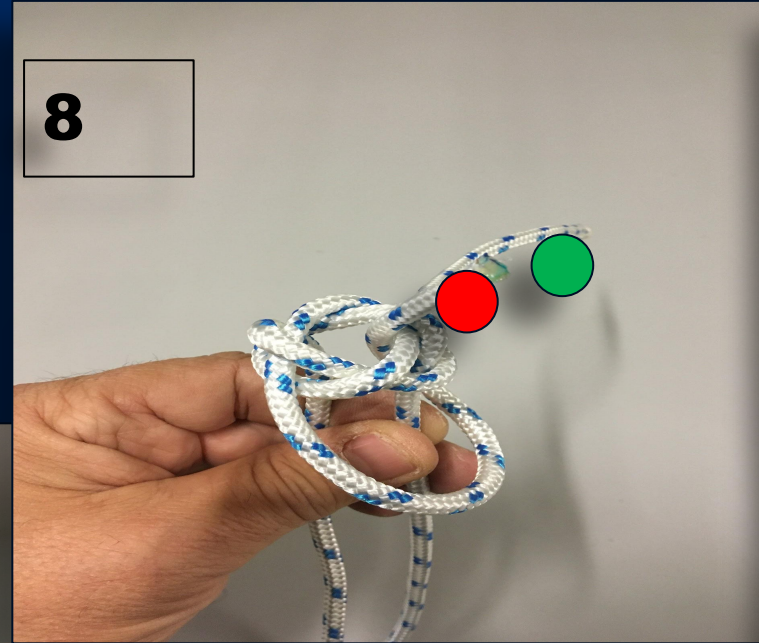
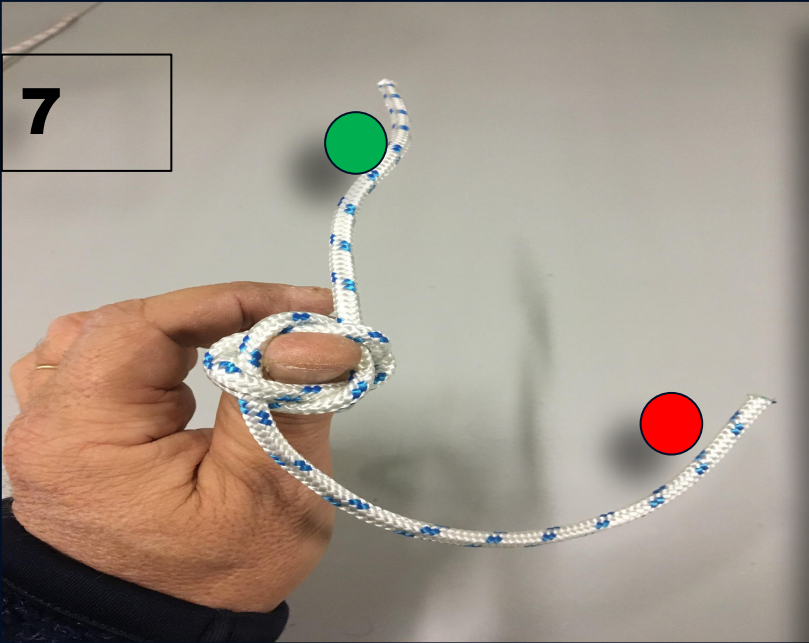
One Design line

armare
ropes



One Design line

armare
ropes



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ropes

SR
OPTICORE



<i>MAINSHEET</i>	DRY	WET	%
GAMBERUS 2.0	230.0	352.6	153.3%
SR OPTICORE	167.6	225.4	134.5%
COMPETITOR	237.7	390.2	164.2%

<i>MAINSHEET</i>	DRY	WET
GAMBERUS 2.0	137.2%	156.4%
SR OPTICORE	100.0%	100.0%
COMPETITOR	141.8%	173.1%

49er - 29er - Waszp - Switch - 420 - 470

420 ITA - Equipaggio Giovanile 2026

<i>sheets weight (gr)</i>	Ing	tap	Ø	std	WK3	%
MAIN	710	100	7	208	203	-2
JIB	633	23	5	103	90	-13
SPI	1035	230	6	233	207	-11

	std	WK3	%
DRY	544	500	-8
WET	916	625	-32

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WK3 line Ø 5-6-7



BASE

VANG

CUNNINGHAM

SCOTTA

2026 ILCA Under-21 World Championships

Antonio Pascali – Oro ILCA 7 U21
Ginevra Caracciolo – Oro ILCA 6 U21
Alessandro Cirinei – Oro ILCA 7 U19

ARCHETTO

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LINEA GENERICA PER SCOTTE E LINEE



Soft Braid 3

Anima DYN SK78 + PU
Calza PET / CRD / DYN



Soft Braid 4

Anima DYN SK78 + PU
Calza PET / CRD / DYN / **KEV**



LINEA GENERICA PER DRIZZE Ø 4/5 E LINEE



Stop 1

Anima DYN SK78 + HPS + PU
Calza PET

Stop 2

Anima DYN SK78 + HPS + PU
Calza KEV / PET

Stop 3

Anima DYN SK99 + HPS + PU
Calza CRD / PET

Stop 4

Anima DYN SK99 + HPS + PU
Calza BTEC / CRD / PET

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APPLICAZIONI VARIE



esempio: **GS 40 2007 race - rig in BTEC DYN PET / SK 78 HPS PU**

ø 10 RIG ASCIUTTO CALZATO					ø 10 RIG BAGNATO CALZATO				
drizze	mt/drizza	mt totali	kg		drizze	mt/drizza	mt totali	kg	
1 x RANDA	40	40	2,8		1 x RANDA	40	40	4,7	
1 x FIOCCO	38	38	2,6		1 x FIOCCO	38	38	4,4	
2 X SPI	40	80	5,6		2 X SPI	40	80	9,3	
	TOTALE	158	11,0			TOTALE	158	18,5	
ø 10 RIG ASCIUTTO SCALZATO (16 mt)					ø 10 RIG BAGNATO SCALZATO (16 mt)				
drizza	calzato	scalzato	mt totali	kg	drizza	calzato	scalzato	mt totali	kg
RANDA	24	16	40	7,9	RANDA	24	16	40	3,5
FIOCCO	22	16	38	3,9	FIOCCO	22	16	38	3,3
SPI	64	32	80	9,2	SPI	64	32	80	8,9
		TOTALE	158	9,2			TOTALE	158	15,6

esempio: **GS 40 2007 race - rig in BTEC DYN DET / OK 70 HPS PU**

ø 7 RIG ASCIUTTO CALZATO					ø 7 RIG BAGNATO CALZATO				
drizze	mt/drizza	mt totali	kg		drizze	mt/drizza	mt totali	kg	
1 x RANDA	40	40	1,5		1 x RANDA	40	40	2,6	
1 x FIOCCO	38	38	1,5		1 x FIOCCO	38	38	2,4	
2 X SPI	40	80	3,1		2 X SPI	40	80	5,1	
	TOTALE	158	6,0			TOTALE	158	10,1	
ø 7 RIG ASCIUTTO SCALZATO					ø 7 RIG BAGNATO SCALZATO				
drizze	calzato	scalzato	mt totali	kg	drizza	calzato	scalzato	mt totali	kg
RANDA	24	16	40	1,1	RANDA	24	16	40	1,9
FIOCCO	22	16	38	1,0	FIOCCO	22	16	38	1,8
SPI	64	32	80	2,9	SPI	64	32	80	4,9
		TOTALE	158	5,0			TOTALE	158	8,6

esempio: **GS 40 2007 race - rig in BTEC DYN PET / SK 78 HPS PU**

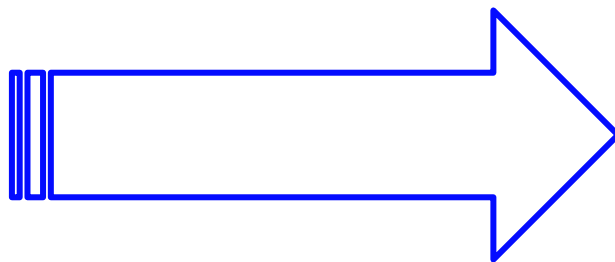
Ø 7 - 1.800 - 0

Ø 10 - 3.000 - 550



ACETO BIANCO

1L



ACQUA TIEPIDA

3L

BUON LAVORO



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