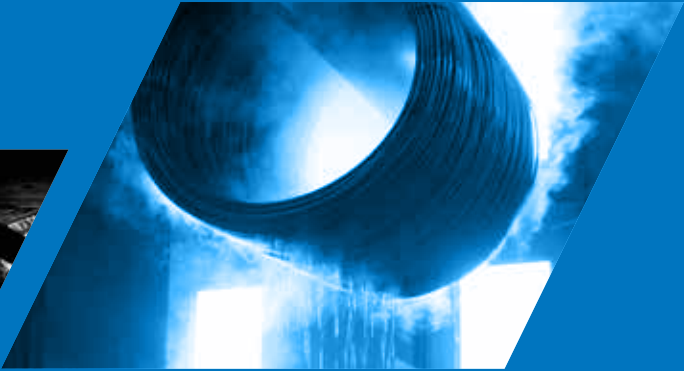


PC WIRE AND STRAND



PC Wire and Strand





PC WIRE AND STRAND

Our plant, that covers an area of 40.000 m², is located in north-eastern Italy, in Tezze sul Brenta (VI), 50 km from Venice, close to the major ports and to the main motorways that connect to the rest of Europe.

This richly industrial area has positively influenced the growth of our company, characterizing its achievements under a profile of technological and organizational progress.

CB Trafilati Acciai S.p.A. has earned the reputation of best producer of PC wire and 2-3-7 wire strands.

These low relaxation products are used in the building of various structures:

- **in pre-stressed concrete, such as industrial sheds and civil offices, railway sleepers, pipes for high pressure ducts, multi-level parking, prefabricated floor space and girders**
- **post tensioned such as highway and railway viaducts, guyed and suspension bridges, and large-scale works in general.**



7-WIRE STRAND

Standard diameters

D.M. 17/01/2018 / prEN 10138 / NF A 35-045 / NEN 3868
NBN 1 10-003 / UNE 36094 / BS 5896 / SIA 262 / ÖNORM B 4758

Diameter		Tensile Strength (Class)	Cross-sectional area	Characteristic value of maximum force	Characteristic value of 0,1% proof force
mm	inch	MPa	mm ²	kN	kN
6,85	1/4"S	2060	28,2	58,1	51,7
6,85	1/4"S	2160	28,2	60,9	54,2
6,9	1/4"	1770	29	51,3	45,1
6,9	1/4"	1860	29	53,9	47,4
8,0	5/16"	1860	38	70,7	62,2
9,3	3/8"	1770	52	92	81
9,3	3/8"	1860	52	96,7	85,1
9,6	3/8"S	1770	55	97,4	85,7
9,6	3/8"S	1860	55	102	89,8
11,0	7/16"	1770	70	124	109
11,0	7/16"	1860	70	130	114
11,3	7/16"S	1860	75	140	123
12,5	1/2"	1770	93	165	145
12,5	1/2"	1860	93	173	152
12,5	1/2"	1960	93	182	162
12,9	1/2"S	1770	100	177	156
12,9 (13*)	1/2"S	1860	100	186	164
12,9	1/2"S	1960	100	196	174
13,0	1/2"S	1860	102	190	167
13,0	1/2"S	1960	102	200	178
15,2	0,6"	1770	139	246	216
15,2 compacted	0,6" compacted	1820	165	300	264
15,2	0,6"	1860	139	259	228
15,2 compacted	0,6" compacted	1860	165	307	270
15,2	0,6"	1960	139	272	242
15,3 (15,2**)	0,6"	1770	140	248	218
15,3 (15,2**)	0,6"	1860	140	260	229
15,3 (15,2**)	0,6"	1960	140	274	244
15,7	0,6"S	1770	150	266	234
15,7	0,6"S	1860	150	279	246
15,7	0,6"S	1960	150	294	262

*: In some countries 12,9 is known as 13 mm **: In some countries 15,3 is known as 15,2 mm

Standard diameters (ASTM A416)

Diameter		Tensile Strength (Class)	Cross-sectional area	Characteristic value of maximum force	Characteristic value of 1% proof force
mm	inch	MPa [ksi]	mm ²	kN	kN
9,5	3/8"	1725 [250]	52	89	80,1
9,53		1860 [270]	55	102	92,1
11,1	7/16"	1725 [250]	69,7	120	108,1
11,1		1860 [270]	74,2	138	124,1
12,7	1/2"	1725 [250]	92,9	160	144,1
12,7		1860 [270]	98,7	184	165,3
15,2	0,6"	1725 [250]	139	240	216,2
15,2		1860 [270]	140	261	234,6
15,7	0,6"S	1860 [270]	150	279	251,4
17,8	0,7"	1860 [270]	190	353	318

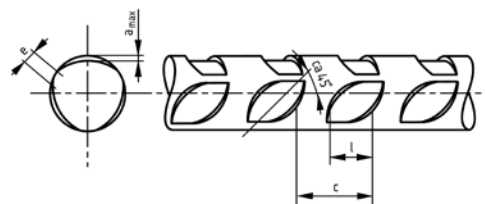


Guaranteed performances

Elongation at maximum force [Agt]		min 3,5%	
Modulus of Elasticity [E]		190÷210 GPa	
Curvature of the strand		max 25 mm/m	
Relaxation after 1000 h under 70% of Fmax (20°C)		max 2,5%	
Deflected Tensile test behaviour		Plain Strand	max D28
Axial Fatigue test behaviour at 70% Fmax	$\Delta = 190$ MPa	Plain Strand	2 M cycles without breakage
	$\Delta = 170$ MPa	Indented Strand	
Stress Corrosion resistance under solution with 25% of Ammonium Thiocyanate at 80% of Fmax (50°C)		Strand $\leq 9,3$ mm	min 1,5 h med 3 h
		Strand $> 9,3$ mm	min 2 h med 5 h

Indentation outer wires - strand

depth a [mm]	depth a [mm]	0,06 ± 0,03	Strand ≤ 12 mm
depth a [mm]	depth a [mm]	0,07 ± 0,03	Strand > 12 mm
length l [mm]	length l [mm]	3,5 ± 0,5	
spacing c [mm]	spacing c [mm]	5,5 ± 0,5	
$\sum e \leq 0,4 \pi \cdot d_{sw}$			



ON REQUEST

Particular class or diameter

INDENTATION OF EXTERNAL WIRES			
ZINC COATING			
PLASTIC SHEATHING WITH GREASE or WAX FILLER			
Deflected Tensile test behaviour		Plain Strand	max D20
Relaxation after 1000 h under 80% of Fmax (20°C)		max 4,5%	
Axial Fatigue test behaviour at 80% Fmax	$\Delta = 200$ MPa	Plain Strand	2 M cycles without breakage
	$\Delta = 180$ MPa	Indented Strand	
Axial Fatigue test behaviour at 45% Fmax	$\Delta = 300$ MPa	Plain Strand	2 M cycles without breakage
NORMAL RELAXATION			



2 AND 3-WIRE STRAND



Standard diameters 2-wire strand

D.M. 17/01/2018 / prEN 10138

Diameter		Tensile Strength (Class)	Cross-sectional area	Characteristic value of maximum force	Characteristic value of 0,1% proof force
mm	Formation	MPa	mm ²	kN	kN
4,5	2 x 2,25 mm	1860	7,95	14,8	13*

* Characteristic value of 1% proof force is 13,3 kN



Standard diameters 3-wire strand

D.M. 17/01/2018 / prEN 10138
NF A 35-045 / NEN 3868 / NBN 110-003

Diameter		Tensile Strength (Class)	Cross-sectional area	Characteristic value of maximum force	Characteristic value of 0,1% proof force
mm	Formation	MPa	mm ²	kN	kN
4,8	3 x 2,25 mm	1960	12	23,5	20,9
4,85	3 x 2,25 mm	1860	11,9	22,1	19,4
4,85	3 x 2,25 mm	1860	11,93	22,2	19,9*
5,2	3 x 2,40 mm	1860	13,6	25,3	22,7*
5,2	3 x 2,40 mm	1960	13,6	26,7	23,8
5,2	3 x 2,40 mm	2060	13,6	28	24,9
5,2	3 x 2,40 mm	2160	13,6	29,4	26,2
6,5	3 x 3,00 mm	1860	21,2	39,4	34,7
6,5	3 x 3,03 mm	1860	21,63	40,2	36,1*
6,5	3 x 3,00 mm	1920	21,2	40,7	35,8
6,5	3 x 3,00 mm	1960	21,2	41,6	37
6,9	3 x 3,15 mm	1860	23,4	43,5	38,3
7,5	3 x 3,50 mm	1860	29	53,9	47,4

* Characteristic value of 1% proof force



Standard diameters (ASTM A910 - LOW RELAXATION)

Diameter		Tensile Strength (Class)	Cross-sectional area	Characteristic value of maximum force	Characteristic value of 1% proof force
mm	Formation	MPa [ksi]	mm ²	kN	kN
4,8	3 x 2,25 mm	1725 [250]	12	21,1	19
4,8	3 x 2,25 mm	1860 [270]	12	22,8	20,5
5,2	3 x 2,40 mm	1725 [250]	13,6	23,4	21
5,2	3 x 2,40 mm	1860 [270]	13,6	25,2	22,7
6,5	3 x 3,00 mm	1725 [250]	21,3	36,7	33
6,5	3 x 3,00 mm	1860 [270]	21,3	39,6	36
7,5	3 x 3,50 mm	1725 [250]	29	50	45
7,5	3 x 3,50 mm	1860 [270]	29	54	45

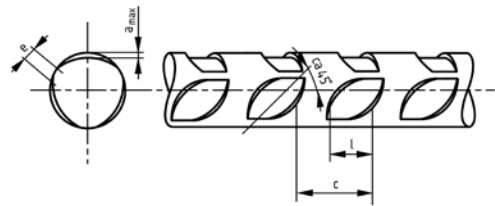


Guaranteed performances

Elongation at maximum force [Agt]		min 3,5%
Modulus of Elasticity [E]		190÷210 GPa
Curvature of the strand		max 25 mm/m
Relaxation after 1000 h under 70% of Fmax (20°C)		max 2,5%
Axial Fatigue test behaviour at 70% Fmax	$\Delta = 190$ MPa	Plain Strand
	$\Delta = 170$ MPa	Indented Strand
		2 M cycles without breakage
Stress Corrosion resistance under solution with 25% of Ammonium Thiocyanate at 80% of Fmax (50°C)		Strand < 7,5 mm
		min 1,5 h med 3 h
Stress Corrosion resistance under solution with 25% of Ammonium Thiocyanate at 80% of Fmax (50°C)		Strand \geq 7,5 mm
		min 2 h med 5 h

Indentation outer wires - strand

depth a [mm]	depth a [mm]	0,06 ± 0,03
length l [mm]	length l [mm]	3,5 ± 0,5
spacing c [mm]	spacing c [mm]	5,5 ± 0,5
$\sum e \leq 0,4 \pi \cdot d_{sw}$		



ON REQUEST

Particular class or diameter

INDENTATION		
Relaxation after 1000 h under 80% of Fmax (20°C)		max 4,5%
Axial Fatigue test behaviour at 80% Fmax	$\Delta = 200$ MPa	Plain Strand
	$\Delta = 180$ MPa	Indented Strand
		2 M cycles without breakage
NORMAL RELAXATION		



WIRE

Standard diameters

D.M. 17/01/2018 / prEN 10138 / NF A 35-045
NEN 3868 / BS 5896

Diameter	Tensile Strength (Class)	Cross-sectional area	Characteristic value of maximum force	Characteristic value of 0,1% proof force
mm	MPa	mm ²	kN	kN
5,00	1670	19,6	32,7	28,8
5,00	1770	19,6	34,7	30,5
5,00	1860	19,6	36,5	32,5
6,00	1570	28,3	44,4	39,1
6,00	1620	28,28	45,81	40,16
6,00	1670	28,3	47,3	41,6
6,00	1770	28,3	50,1	44,1
6,90	1670	37,4	62,5	55
7,00	1570	38,5	60,4	53,2
7,00	1620	38,5	62,37	54,67
7,00	1670	38,5	64,2	56,6
7,03	1620	38,82	62,89	55,12
7,11	1620	39,7	64,31	56,37
7,50	1670	44,2	73,8	64,9
8,00	1570	50,3	79	69,5
8,00	1620	50,3	81,49	71,43
8,00	1670	50,3	84	73,9
8,80	1570	60,8	95,5	83,1
8,80	1570	60,82	95,49	86,36
9,40	1570	69,4	109	94,8
9,40	1620	69,4	112,43	98,55
9,50	1570	70,9	111	96,6
10,00	1570	78,5	123	107

Standard diameters (ASTM A421)

Diameter		Tensile Strength (Class)	Cross-sectional area	Characteristic value of maximum force	Characteristic value of 1% proof force
mm	inch	MPa	mm ²	kN	kN
4,88	0,192	1725	18,7	32,26	27,4
4,98	0,196	1655	19,48	32,24	27,41
4,98	0,196	1725	19,48	33,6	28,54
6,35	0,25	1655	31,67	52,41	44,56
7,01	0,276	1620	38,59	62,52	53,14

All wires BA or WA Type



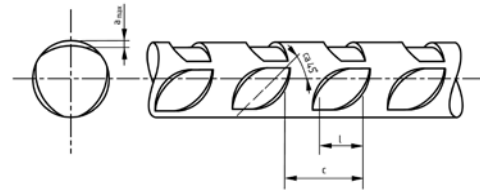
Guaranteed performances

Elongation at maximum force [Agt]		min 3,5%
Modulus of Elasticity [E]		190÷210 GPa
Alternate Bendings (until 10 mm)		Plain Wire min 4
		Indented Wire T1 min 3
		Indented Wire T2 min 2
Curvature of the wire		max 25 mm/m
Relaxation after 1000 h under 70% of Fmax (20°C)		max 2,5%
Axial Fatigue test behaviour at 70% Fmax	$\Delta = 200$ MPa	Plain Strand
	$\Delta = 1800$ MPa	Indented Strand
Stress Corrosion resistance under solution with 25 % of Ammonium Thiocyanate at 80% of Fmax (50°C)		All wires min 2 h med 5 h
		2 M cycles without breakage

Indentation - Wire T1

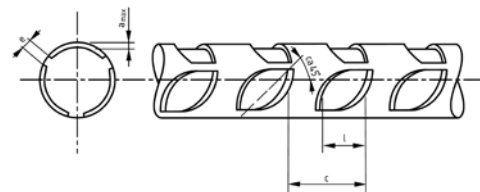
depth a [mm]	0,06 ± 0,03	$\varnothing \leq 5$ mm
length l [mm]	3,5 ± 0,5	
spacing c [mm]	5,5 ± 0,5	

depth a [mm]	0,9 ± 0,04	$\varnothing > 5$ to 8 mm
depth a [mm]	0,10 ± 0,05	$\varnothing > 8$ to 11 mm
length l [mm]	5,0 ± 0,5	
spacing c [mm]	8,0 ± 0,5	



Indentation - Wire T2

depth a [mm]	0,10 ± 0,05	$\varnothing > 5$ to 6 mm
depth a [mm]	0,12 ± 0,05	$\varnothing > 6$ to 11 mm
length l [mm]	3,5 ± 0,5	
spacing c [mm]	5,5 ± 0,5	
$e \leq 0,2\pi \cdot dsw$		



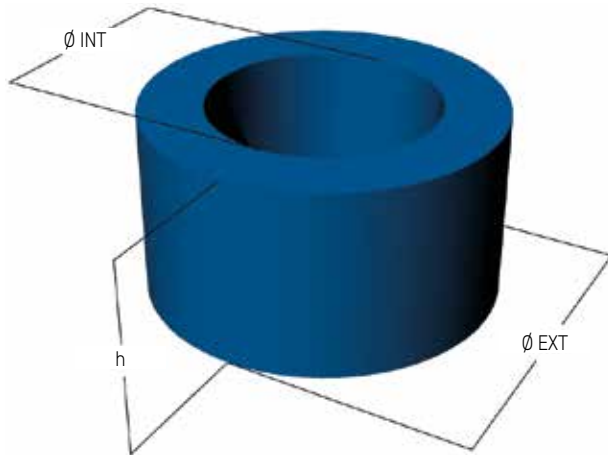
ON REQUEST

Particular class or diameter

INDENTATION OF EXTERNAL WIRES		
THREAD ON BOTH ENDS		
Relaxation after 1000 h under 80% of Fmax (20°C)		max 4,5%
Axial Fatigue test behaviour at 80% Fmax	$\Delta = 200$ MPa	Plain Strand
	$\Delta = 180$ MPa	Indented Strand
NORMAL RELAXATION		2 M cycles without breakage



PACKAGING



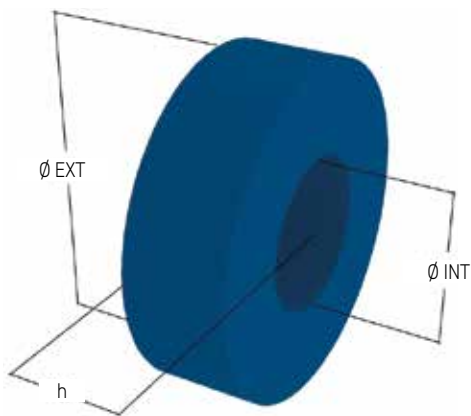
7 - Wire Strand standard coil dimensions

Weight		max 5000 kg
Internal Ø	Ø INT	900 mm (750 mm)*
External Ø	Ø EXT	max 1600 mm
Nominal Height	h	520 mm
		700 mm
		730 mm
		750 mm

2-3 - Wire Strand + Wire Ø 5,00 mm standard coil dimensions

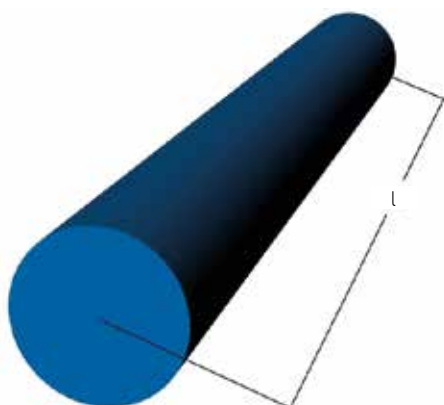
Weight		max 3500 kg
Internal Ø	Ø INT	900 mm (750 mm)*
External Ø	Ø EXT	max 1600 mm
Nominal Height	h	520 mm
		550 mm
		750 mm

*: with this internal diameter, other dimensions to be agreed



2-3 - Wire Strand small coil dimensions

Weight		max 200 kg
Internal Ø	Ø INT	300 mm
External Ø	Ø EXT	max 700 mm
Nominal Height	h	190 mm
		220 mm



Wire Bars pack dimensions


Weight		max 2500 kg
Length	L	max 6000 mm

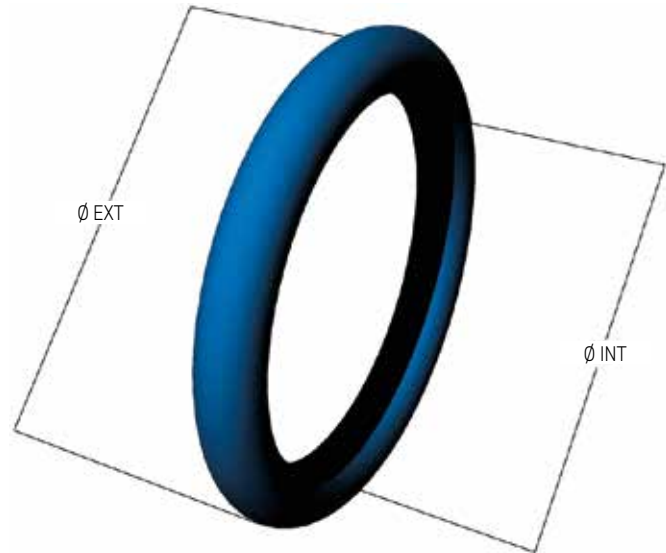


Wire - Bundle
standard coil dimensions

Weight		max 2400 kg
Internal \emptyset	\emptyset INT	min 1500 mm
		max 1900 mm
External \emptyset	\emptyset EXT	min 1900 mm
		max 2350 mm

Steel / Pvc Strappings		
Wood blocks (10x10 cm)	Short	100 cm
	Long	140 cm

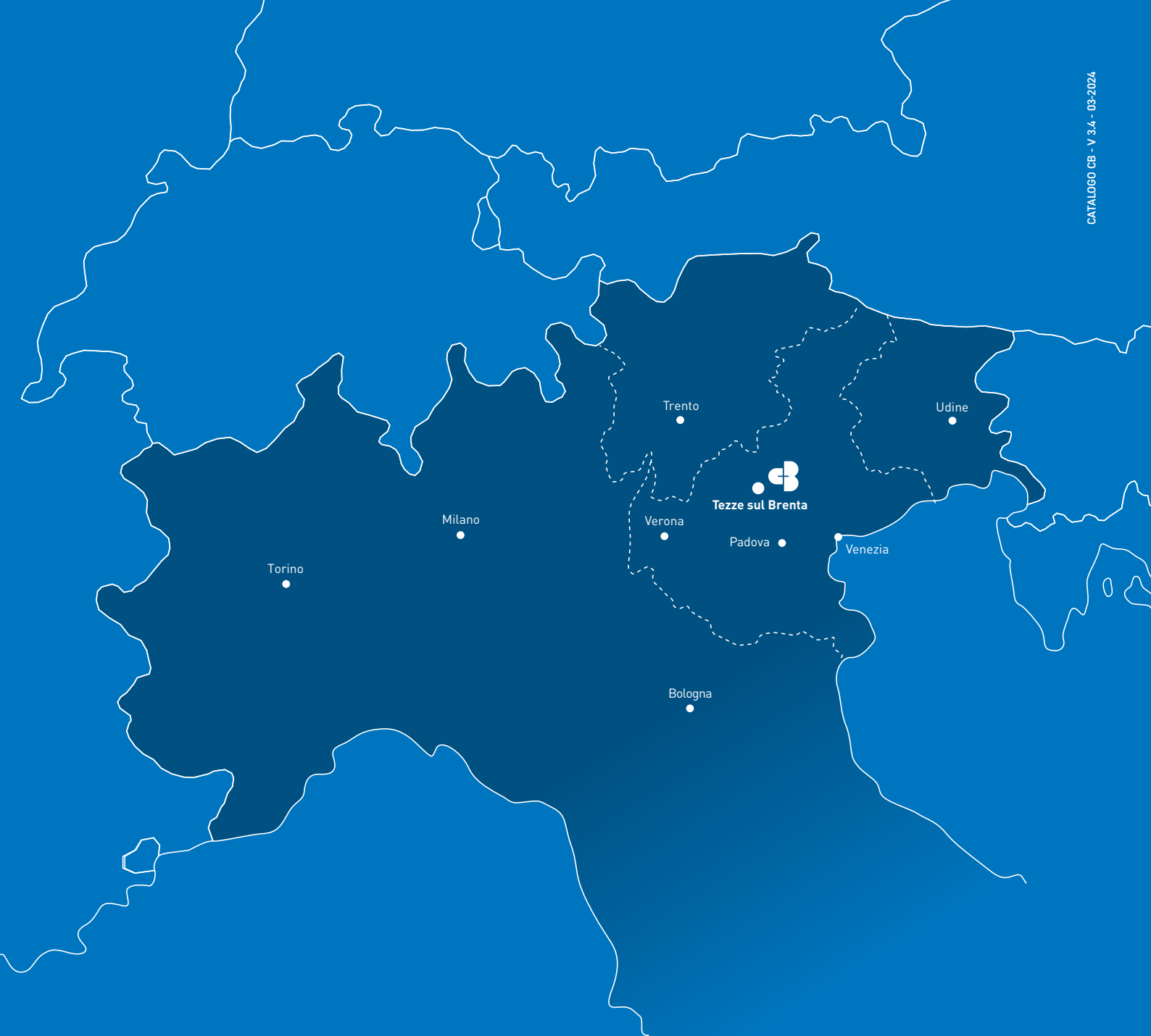
START  Start tape indicates the correct sense of decoiling from the inside of the coil



ON REQUEST

PRODUCT ON PALLET
PRODUCT ON WOODEN REEL
ISPM 15 TREATED WOOD BLOCKS / PALLETS / WOODEN REELS
VCI PROTECTION (VOLATILE CORROSION INHIBITOR)
EXTERNAL / ALL AROUND CELLOPHANE WRAPPING
JUTA / PLASTIC WRAPPING
AVAILABLE CUSTOM MADE DIMENSIONS FOR COILS / WOOD BLOCKS / PALLETS / WOODEN REELS
AVAILABLE SPECIAL PROTECTIONS (e.g. OIL , GREASE, WAX)





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con socio unico

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