

Polyurethane belts for conveying applications:

Backings

The unique chemical and mechanical features of ELATECH® belts together with the possibility of a wide range of backings in different materials make ELATECH® belts ideal for all conveying applications where synchronization is required. The engineer designer has unlimited possibilities to make a unique design.

Minimum pulley diameter

The minimum pulley diameter can be calculated by means of the "pulley multiplier" shown for each type of backing.

Minimum pulley diameter = backing thickness x pulley multiplier C_D

As a general rule, we may say that the smaller the pulley, the thinner the backing has to be.

The diameters obtained are valid for application with speed up to 1 m/s and a temperature of 20° C.

If smaller pulley diameters are needed, please contact Elatech's technical dept.

Drive with reverse bending

ELATECH® polyurethane timing belts are suitable for drives with reverse bending. Tension should be adjusted, depending on backing hardness.

Temperature range

The choice of the correct backing may allow the conveying of hot items. However, the toothed structure of the belt must not be exposed to temperatures over 80° C.

The minimum contact temperature should be -10 $^{\circ}$ C for all backing materials, however, special material compounds may be available for lower temperatures. In such cases, please check with Elatech's technical department.

Coefficient of friction

The values shown in the table refer to the approximate static coefficient of friction against steel.

In order to reduce the pulley's diameter, it is possible to splice the backing allowing a better flexibility. Pulley diameter, should never be smaller than the minimum diameter recommended for the standard belt.

Please ask ELATECH's technical dept. for further details on coefficient of friction with other materials.

Colours

Standard colours shown in the table may change without notice. Special/personalized colours are available on request.

Chemical resistance

The values given in the table for the resistance to oils and fat of each backing material are purely indicative and may vary depending on the concentration and the temperature of chemical agents. When in doubt, please check with Elatech's technical department.

General remarks

ELATECH's wide range of different backings can be grouped into four main categories: cellular, PVC & PU, rubber, and special. Each different category provides special features and top quality performance and endurance making the various backings especially suitable for specific applications. These features include different degrees of hardness, cellular, fabric, felt or solid material compounds, different levels of grip, FDA-compliant materials, antistatic materials, different resistance to oils and fats, and different resistance to abrasion, tear and wear.

Such variety, combined with top quality mechanical and technical properties and state of the art manufacturing systems and techniques including the application of different flights and cleats, the combination of different backing materials, the slitting and grinding of the final product to match exact dimensions and shapes without any burrs or any other imperfections left on the surface, as well as water jet cutting for extremely precise perforations, make ELATECH®'s coated belts the best and the most reliable solution for specific applications in the most diversified fields of industry.

FABRIC

Polyamide fabric backings

The special polyamide fabric backings allow a reduction of the friction coefficient and when applied on teeth, decrease noise in high speed drives. They are very useful in applications with sliding surfaces or product accumulation.

Polyamide fabrics with antistatic properties are available.

PAZ: Polyamide backing on tooth side.

Reduces coefficient of friction and allows a smoother

tooth engagement.

PAR: Polyamide backing on back side.

Reduces coefficient of friction.

PAZ-PAR: Polyamide backing on both tooth and back side

Coefficient of static friction

• Polyurethane on steel $\approx = 0.7$ • Polyamide on steel $\approx = 0.35$

Elatech Code		Description	
TZ11	PAZ Standard		Nylon fabric on teeth
TZ21	PAR Standard		Nylon fabric on back
TZ15	PAZ Antistatic		Antistatic nylon fabric on teeth
TZ25	PAR Antistatic		Antistatic nylon fabric on back





CELLULAR

Polyurethane / Rubber foam backings are easily compressible according to the cellular structure of the material. Due to this main characteristic, common applications are: labelling equipment, light and/or fragile materials conveying, glass and paper industry, vacuum conveyors.

Pulley diameter: C_D • Backing Thickness

Elatech Code	Description		Material	Color	Hardness [°Sh A]	Standard thickness [mm]	Max contact temperature	Oil and fat resistance	Coefficient of static friction on steel	FDA food grade	Pulley multiplier CD
CFX	CELLOFLEX		Microcellular elastomeric polyurethane	brown / yellow	-	3 - 10	+80°C	medium	0,3	No	16
POR	POROL		cellular rubber	black	ca 15	3, 5, 8,10,15	+70°C	medium	0,8	No	6
PY50	PU YELLOW 50		polyurethane	yellow	50	2, 3, 4, 5 6 ,8,10	+70°C	high	0,8	No	20
PY70	PU YELLOW 70		polyurethane	yellow	70	2, 3, 4, 5, 6, 8,10	+80°C	high	0,75	No	25
SYL-B	SYLOMER BLU		Elastomeric PUR	blue	-	6, 12, 25	+70°C	medium	0,5	No	12
SYL-V	SYLOMER GREEN		Elastomeric PUR	green	-	6, 12, 25	+70°C	medium	0,5	No	14
SYL-M	SYLOMER BROWN		Elastomeric PUR	brown	-	6, 12, 25	+70°C	medium	0,5	No	15

PVC and **PU**

PVC has a high coefficient of friction and a good resistance to acids. Due to its versatility, it is used in many applications in the paper, glass, ceramic industry, labelling and packing equipment. FDA quality allows the application in food industry processes.

Among all synthetic materials and rubber compounds, polyurethane is the material which offers the best resistance to abrasion. Polyurethane films of different thickness and different shore hardness, applied on ELATECH® belts, are an ideal solution in many applications in the wood processing, ceramic and glass industry. On request it is possible to supply polyurethane backings FDA approved.

Pulley diameter: C_D • Backing Thickness

Elatech Code	Description		Material	Color	Hardness [°Sh A]	Standard thickness [mm]	Max contact temperature	Oil and fat resistance	Coefficient of static friction on steel	FDA food grade	Pulley multiplier Co
FBPU	FISHBONE PU		PU	transparent	70 / 85	4	+70°C	medium	0,7	No	18
FBPVC	FISHBONE PVC		PVC	white	65	4	+80°C	high	0,7	Yes	18
PUR70	PUR70		PU	transparent	70	2 - 5	+70°C	high	0,7	No	25
PUR85	PUR85		PU	transparent	85	2 - 5	+70°C	high	0,6	No	30
PVCW	PVC WHITE		PVC	white	ca 60	2,3	+90°C	medium	1,0	Yes	35
PVCG	PVC GREEN		PVC	green	ca 40	1	+90°C	high	0,9	No	40
SG50R	SUPERGRIP 50 R		Thermoplastic compound	red	55	4,5 - 12	+80°C	medium	0,9	No	12
SG60	SUPERGRIP 60 GL		PVC	green	60	4,5	+90°C	medium	0,9	No	12
SG70	SUPERGRIP 70 Y		PU	yellow	70	4,5	+80°C	high	0,8	No	12
MG	MINIGRIP PVC		PVC	green	ca 65	1,5	+100°C	medium	0,4	No	40



RUBBER

Many different rubber backings in both synthetic and natural rubber are available. Due to rubber's high friction coefficient and high temperature resistance, ELATECH® polyurethane belt with rubber backing is used in many different conveying application: paper industry, ceramic industry, wood processing industry, glass industry, labelling and packaging machines.

Pulley diameter: C_D • Backing Thickness

Elatech Code		Description	Material	Color	Hardness [°Sh A]	Standard thickness [mm]	Max contact temperature	Oil and fat resistance	Coefficient of static friction on steel	FDA food grade	Pulley multiplier Co
SG50T	SUPERGRIP 50 RT		natural rubber	red	40	4,5	+80°C	low	1,0	No	15
LTX	LINATEX		natural rubber	red	ca 40	2,4 - 3,2 - 4,8 6,4 - 8,0 - 9,6	+70°C	low	1,1	No	15
LNP	LINAPLUS		natural rubber	white	ca 40	2,4 - 3,2 - 4,8 6, 4 - 8,0 - 9,6	+70°C	low	1,1	Yes	15
LTR	LINATRILE		nitrile rubber	orange	ca 55	3 - 6	+110°C	medium	1,0	No	20
NBR	NITRILE		nitrile rubber	black	65	-	+110°C	high	0,7	No	18
NBR-W	NITRILE		nitrile rubber	white	65	-	+80°C	high	0,7	No	18
TNX	TENAX / ISOGUM		rubber	red	40	2 - 15	+60°C	low	0,75	No	15
VTN	VITON		FKM Fluoroelastomer	black	ca 75	2/4	+275°C	high	0,7	No	30
RP400	YELLOW RUBBER		natural rubber	yellow	ca 35	3 - 4 - 5 - 6 - 8 10 - 12 - 15 20 - 25 - 30	+65°C	low	1,2	No	13
CRX	CORREX		para rubber	brown	ca 40	6 - 10	+60°C	low	0,9	No	15

SPECIAL

Special backings are available in quite a different range of materials to cover even the most demanding design requirements.

Pulley diameter: $C_D \bullet Backing Thickness$

Elatech Code	Description		Material	Color	Hardness [°Sh A]	Standard thickness [mm]	Max contact temperature	Oil and fat resistance	Coefficient of static friction on steel	FDA food grade	Pulley multiplier CD
APL	APL		Thermoplastic compound	red-purple	55	3,5	+60°c	high	0,7	No	25
SLC	SILICONE		Silicone rubber	transparent	30	3 - 10	+200°C	high	1,0	No	20
SLCF	SILICONE FDA		Silicone rubber	blue	30	3 - 10	+220°C	high	1,1	Yes	20
TG50	TECNOGUM 50		Thermoplastic rubber compound	red	ca 50	1 - 6	+80°C	high	0,7	No	20
TG70	TECNOGUM 70		Thermoplastic rubber compound	red	ca 70	1 - 6	+80°C	high	0,6	No	25
CHRL	CHROME LEATHER		Chrome leather	grey / blue	-	3	+80°C	high	0,8	No	30
TZ26	TZ PAR		HDPE	green	-	0,3	+80°C	high	0,18	No	-
APLM	MULTIRIB		Thermoplastic compound	red	60	3,5	+80°C	medium	-	No	-
APLM-T	MULTIRIB		Thermoplastic compound	trasparent	60	3,5	+80°C	medium	-	No	-

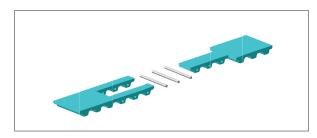


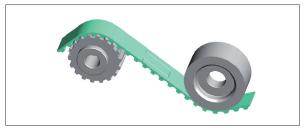
ELATECH® EMF - Mechanical Fastening System

(patent pending)

ELATECH® EMF - Mechanical Fastening System allows in many conveying applications cost savings associated with being able to design equipment around the installation principle of EMF.







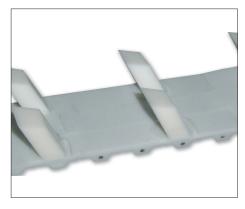
Features

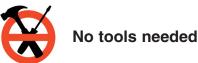
- EMF has no exposed metal parts, therefore no metal contact is made with pulleys, so it runs very quietly. Since there are no exposed metal parts, EMF will not damage conveyed products like competing metal based mechanical fastening alternatives.
- EMF maintains the same minimum pulley requirements as the belt and can operate with back bend idlers.
- It is excellent for belt applications with special backings such as Linatex, Supergrip, PVC, Fishbone, etc. EMF fits snug, which eliminates gaps otherwise seen in competing designs.
- It is suitable for belts with profiles for quick installation, saving time and money.

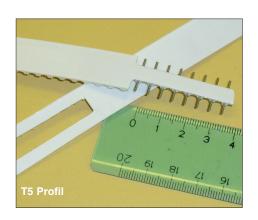
• EMF installs in seconds, making it the fastest timing belt installation for product conveyance.

There is no need for time-consuming field welding.

- It is simple to install and requires no cumbersome or expensive field welding equipment.
- It can be custom designed according to the application strength needed. EMF can reach the same strength as the traditional welding.
- It is available on all pitches, making it a "must have" for all of your customer's conveying applications.







ELATECH® EMF - Module

Profile	Width [mm]	Number of pins	Max working tension [N]
	10	5	96
	16	5	144
	16	8	224
	-00	5	176
	20	8	232
T 5		5	176
	25	8	256
		5	304
	32	8	450
		5	360
	50	8	480
		4	216
	16	8	320
		12	640
	20	4	240
		4	304
	25	8	504
		11	680
		4	400
	32	8	576
T 10		12	880
		4	624
	50	8	1120
		11	1480
		4	800
	75	8	1600
	, ,	11	1760
		4	1040
	100	8	2000
	100	11	2280
		4	536
	25	11	1600
		4	784
	32	6	1200
		4	960
T 20	50	11	3040
		4	1600
	75	11	3560
	—	4	2130
	100	11	7600
	10	5	144
		5	168
	16	8	240
		5	280
	20	8	320
AT 5		5	208
	25	8	288
		5	320
	32	8	380
		5	440
	50	8	600
		4	256
	16	12	960
	20	4	344
	É	4	384
	25	8	624
		11	904
		4	640
	32	8	800
		12	1200
AT 10		4	880
	50	8	1680
		11	2160
		4	1040
	75	8	2320
		11	2640
		4	1440
	100	8	2720
	100		2120

Profile	Width [mm]	Number of pins	Max working tension [N]
	25	4	800
		11	1760
	32	4	1200
	02	6	1520
AT 20	50	4	1600
		11	4400
	75	4	1920
		11	6080
	100	4	2700
		11	7700
	10	5	120
	16	5	168
		8	240
	20	5	224
		8	296 280
	25	5 8	280 376
HT 5		5	376
піэ	32	_	
		8 5	510 480
	50	8	640
		4	728
	75	8	1096
		5	800
	100	8	1520
	15	5	256
	20	5	360
		5	376
	25	10	784
		14	960
		5	400
	30	11	960
		5	800
		10	1440
HT 8	50	14	2080
		22	2300
		5	1320
	75	10	2400
		14	2880
	85	9	2320
		5	1760
	100	10	3200
		14	3600
	40	5	1120
UTAL		5	1600
HT 14	55	16	-
	85	5	2400

Profile	Width [mm]	_	Max working tension [N]						
	10	5	120						
	16	5	168						
		8	240						
	20	5	224						
		8	296						
	25	5	280						
RP 5		8	376						
	32	5	320						
	50	5	480						
		8	640						
	75	4	728						
	,,,	8	1096						
	100	5	800						
		8	1520						
	15	5	256						
	20	5	360						
		5	376						
	25	10	784						
		14	960						
	30	5	400						
	30	11	960						
		5	800						
RP 8	50	10	1440						
nr o	50	14	2080						
		22	2300						
		5	1320						
	75	10	2400						
		14	2880						
	85	9	2320						
		5	1760						
	100	10	3200						
		14	3600						
	40	5	1120						
RP 14	55	5	1600						
AP 14	၁၁	16	-						
	85	5	2400						

Profile	Width [mm]	Number of pins	Max working tension [N]
	10	5	120
	16	5	168
	10	8	240
	20	5	224
		8	296
	25	5	280
ST 5		8	376
	32	5	320
	50	5	480
		8	640
	75	4	728
		8	1096
	100	5	800 1520
	15	8 5	1520 256
	20	5	360
	20	5	376
	25	10	784
	25	14	960
		5	400
	30	11	960
		5	800
		10	1440
ST 8	50	14	2080
		22	2300
		5	1320
	75	10	2400
		14	2880
	85	9	2320
		5	1760
	100	10	3200
		14	3600
	40	5	1120
ST 14	55	5	1600
31 14	33	16	-
	85	5	2400
	12,7	4	144
	19,05	5	256
	25,4	5	288
L	38,1	5	480
	50,8	5	560
	76,2	5	1000
	101,6	5	1200
	12,7	3	120
	19,05	4	240 304
н	25,4	4	520
п	38,1 50,8	4	640
	76,2	4	880
	101,6	4	1120
ХН	50,8	10	3060
2511	55,5		5500

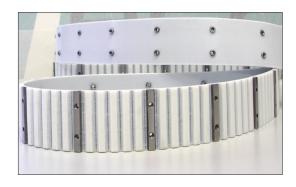


ELATECH® EFT - False Tooth System

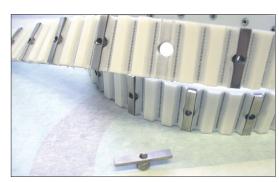
EFT is ELATECH's mechanical profile application system specially designed for fastening cleats that cannot be welded onto polyurethane timing belts.

Zinc-coated or stainless steel teeth are available, either with our embedded tooth or total tooth design. With the total tooth design, the EFT replaces the entire tooth of the belt and is safely secured by means of two threaded holes. The embedded tooth design prevents any metal-to-metal contact, ensuring more silent operation.

Total tooth design



Embedded tooth design



Many are the advantages offered by ELATECH® EFT:

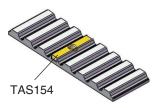
- EFT allows to apply cleats that cannot be welded onto polyurethane timing belts because of their overall dimension and/or material (such as steel, stainless steel, plastic, urethane, wood etc.)
- EFT is in stock in stainless suitable for food and pharmaceutical industry and humid environments
- EFT design has a self-centering effect on profile positioning, which makes it more precise than welded profiles
- EFT can handle much higher loads than welded profiles, making it a strong solution
- EFT is the precise solution eliminating any welded profile positioning tolerances. The profile positioning tolerance for EFT mirrors the ELATECH® timing belt tooth pitch tolerance

- EFT is flexible, allowing customers to reposition cleats for regularly scheduled application changes
- EFT is economical because customers can replace worn profiles without having to replace the entire belt.
- EFT is available in any of the following pitches: AT10, AT20, H, XH with or without self-tracking guide.
- EFT allows to use basic belts in all their possible executions: Flex, welded, with PAZ or PAR, FDA PU, steel, aramid or stainless steel cord.

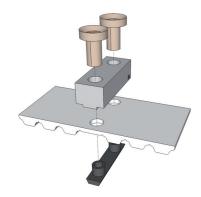




TAS154 - suitable for AT10 and H profile 25 mm wide, one pin

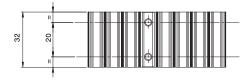




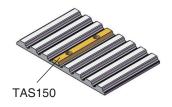


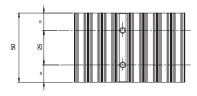
TAS210 - suitable for AT10 profile 32 mm wide, two pins at 20 mm centre distance





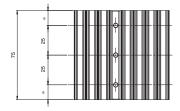
TAS150 - suitable for AT10 profile, 50 mm wide, two pins at 25 mm centre distance



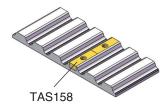


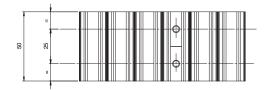
TAS155 - suitable for AT10 profile, 75 mm wide, three pins at 25 mm centre distance



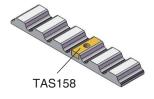


TAS158 - suitable for AT20 and XH belt 50 mm wide, two pins





TAS158 - suitable for AT20 and XH profile, multiple of 25 mm width, two or more pins at 25 mm centre distance





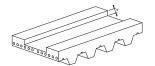


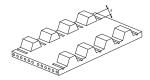
Mechanical processing

Thanks to top-quality, state-of-the-art machinery and techniques such as water jet cutting, ELATECH® timing belts can be mechanically processed to perform special and complex tasks. The extremely precise machining and finishing operations guarantee the respect of the strictest tolerance requirements and the maximum reliability of ELATECH® timing belts in all the most complex and demanding industrial applications.

Depending on the application requirements, mechanical processing may include longitudinal milling of the teeth and/or of the back, back and side grinding, teeth removal, belt surface perforation and/or engraving, as well as surface preparation for the application of special profiles.







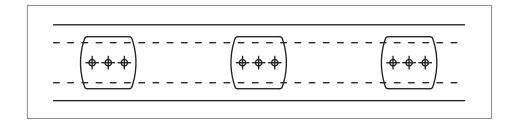


The great precision and the versatility of water jet cutting technology allow the creation of bores of any dimensions and shapes, from the smallest to the largest, from perfectly circular to oval or square.

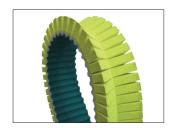




Special backings can also be machined to optimize the performance of the belts in special applications. A typical example is the hollow milling of the backing to create a "vacuum cup effect" and maximize the suction provided by water jet cut bores. In this case, perfect suction is also granted by the absence of any tension members within the vacuum areas.



In another application, the thick V-shaped yellow PU backing on a belt used for transporting aluminium bars is slitted transversely to enhance the flexibility of the belt itself and to improve its revolution around smaller pulleys.





ELATECH® polyurethane belts with profiles

It is possible to attach profiles on all ELATECH®, ELA-flex SD™ and iSync™ polyurethane belts for conveying, handling and positioning applications. The cleats are produced in the same material of the belts in order to guarantee the maximum strength. The belts with profiles allow a syncronised translation of the products at very high speeds and low noise.

A very wide range of profiles is available. If the required profile is not shown in the following pages, please contact our technical office.

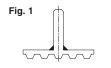


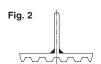
Pitch

It is recommended to choose the pitch of the profile corresponding to the belt profile or multiple. This allows to minimize the effects of the belt overall length tolerance on profile spacing.

Position

Profile position may be over the tooth or not over the tooth. Belt Flexibility is maximized when the profiles are applied over the tooth





Arc of contact

It is to be noted that the belt's arc of contact may be restricted by the jointed profile. It is therefore recommended to select profiles with the minimum allowable thickness "U".





Tolerances

The tolerance of position of the profiles is \pm 0,5 mm. If required it is possible to reduce the tolerance down to \pm 0,2 mm with an extra machining. During the welding process a bead of polyure-thane of about 0,5-1 mm develops at the meeting point between the profile and the belt. Should it be necessary for the application, it is possible to remove the bead with mechanical machining.

											Profile	thickne	ess "L	J" [mm]									
Belt type	2		3 5 6		8	8		0	12		14		16		20		25		3	0				
.,,,,,									Reco	mmen	ded mi	nimum	pulley	numb	er of te	eth z								
T5	14	20	14	30	20	45	25	50	40	60	60	100	80	-	100	-	-	-	-	-	-	-	-	-
T10	16	20	16	20	16	30	16	40	20	50	25	50	35	60	50	70	80	80	100	100	120	120	-	-
T20	20	20	18	20	18	25	18	40	18	50	20	50	25	50	30	60	40	60	50	60	70	80	-	-
AT5	12	20	12	30	20	45	25	50	40	60	60	100	-	-	100	-	-	-	-	-	-	-	-	-
AT10	18	20	18	20	18	30	18	40	20	50	25	50	35	60	50	70	80	80	100	100	120	120	-	-
AT20	20	20	20	20	20	25	20	40	20	50	20	50	25	50	40	40	50	50	50	60	70	80	100	100
XL	10	20	10	30	20	45	25	50	40	60	50	100	60	100	-	-	-	-	-	-	-	-	-	-
L	12	16	12	20	12	40	20	50	30	60	40	60	50	70	60	80	100	100	-	-	-	-	-	-
Н	14	16	14	16	14	25	14	30	20	50	25	50	40	60	50	70	80	80	100	100	120	120	-	-
XH	18	18	18	20	18	20	18	30	18	40	20	50	20	50	25	55	35	60	50	60	70	80	-	-
HTD5M	12	20	12	30	20	45	25	50	40	60	60	100	80	-	100	-	-	-	-	-	-	-	-	- 1
HTD8M	18	18	18	18	18	24	18	32	18	40	20	40	28	48	40	56	64	64	80	80	100	100	-	-
HTD14M	28	28	28	28	28	28	28	40	28	50	28	50	28	50	30	60	40	50	50	60	100	100	110	110
STD5M	12	20	12	30	20	45	25	50	40	60	60	100	80	-	100	-	-	-	-	-	-	-	-	-
STD8M	18	18	18	18	18	24	18	32	18	40	20	40	28	48	40	56	64	64	80	80	100	100	-	-

Minimum number of teeth when the profile is welded on tooth gap (fig. 2)

Minimum number of teeth when the profile is welded on tooth (fig. 1)

Ordering

When ordering it is necessary to indicate: type of belt (width, profile, pitch, length), the belt length in number of teeth, the belt and profile drawing with the number and the pitch of the requested profiles



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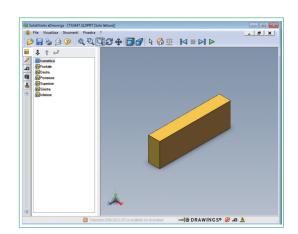
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ST = Square Top: flat faces at right angles to each other





RT = Round Top: the upper part of the cleat has a rounded shape





TR = Triangular or Trapezoidal: flat faces, some of which are not at right angles to other faces; cross-sections can be triangular, trapezoidal, pentagonal, etc.





TT = "T" Shaped: a portion of the cleat (usually the upper one) is wider than the rest, so that a cross-section resembles the shape of a capital "T"





AN = Angular Shape: two portions of the cleat are set at an angle to each other





GB = Gusset Back: having a fin on one side that is not attached to the belt but rests on it and increases rigidity when the cleat is pushed in one direction





CR = Cradle Shape: "U" or "V" shaped so that an object can rest in the seat created by the sides of the cleat





CY = Cylindrical Shape: a cylinder with vertical or horizontal axis





SP = Special Shape: any other shape, usually a structure especially designed for a specific use