



INSTALLATION PRODUCTS FOR THE PHOTOVOLTAIC INDUSTRY

Certified cable management



OUR PRODUCTION

75
injection
moulding machines

14 million
cable ties
produced per day

150
km tube
extruded per day

8
extrusion
lines

5
facilities



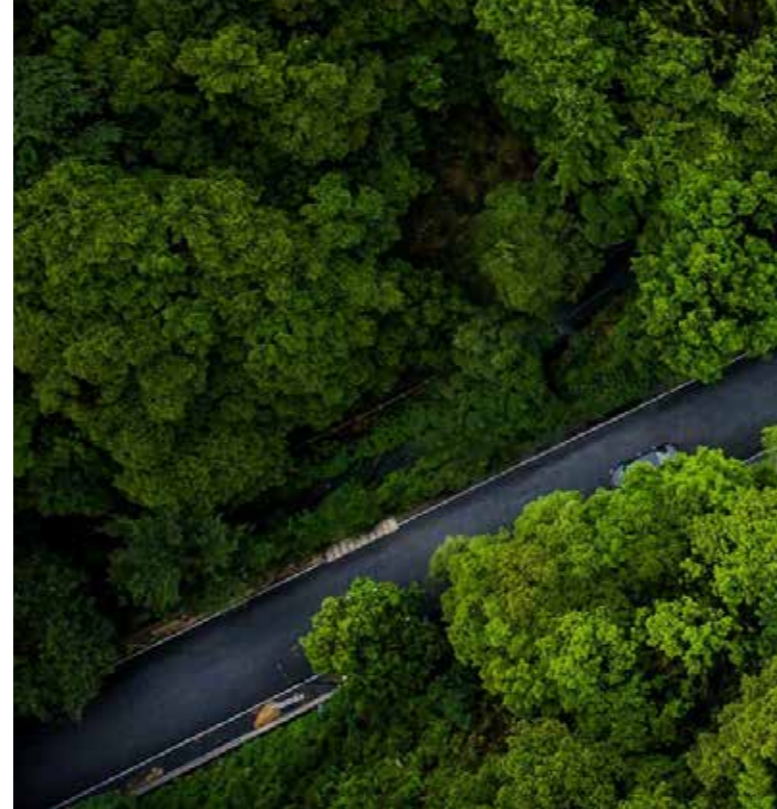
ELEMATIC

**ADVANCED
FASTENING
SOLUTIONS**

We **DEVELOP** and **PRODUCE** solutions dedicated to different types of industry, combining our Italian and European **COMPETENCES**.
The only multi-product and multi-solution offer for your profession.

THE STRENGTH
OF A **GLOBAL
GROUP**

Elematic is part of **ITW**, an American **MULTINATIONAL** group with over 100 years of history: the **IDEAL PARTNER** for every professional looking for innovative, differentiating, and high-quality products.



SYSTEM CERTIFICATIONS



The company is certified **ISO 9001:2015** for the design and manufacturing of cable ties and fixing systems with technopolymers, and trading of cabling and fixing accessories.

The certification guarantees the **quality of the production processes** thanks to the implementation of strict operational procedures and quality controls at all levels.

ENVIRONMENTAL CERTIFICATIONS



Aware of the importance of our impact on the environment, we undertook an environmental certification procedure to reduce our impact as much as possible. All our Italian sites are certified according to **ISO 14001: 2015** standard for the design and production of cable ties and fixing systems in technopolymers by injection moulding, and trading of cabling and fixing accessories.

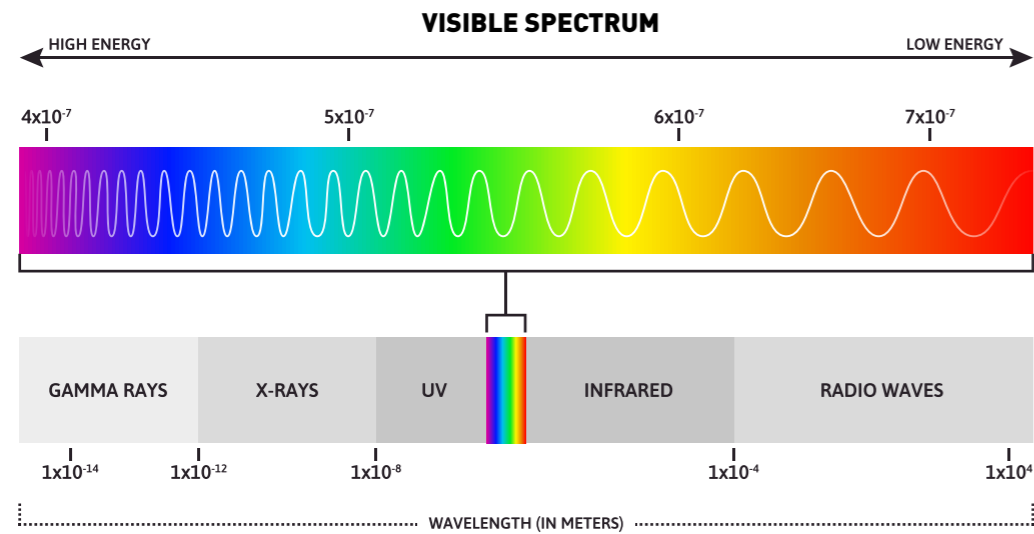
WHY CHOOSING



- Elematic products are tested periodically to comply with the latest **safety standards** and regulations, always offering the best solutions certified to keep the electrical system safe;
- Producing our cable ties with **durable materials** makes them resistant to the toughest weather conditions and widely increases the product longevity;
- Because your time is precious, we developed a **simpler installation process**;
- Our product range gives you the possibility to choose the **right solutions** accordingly to the different types of climates;
- Elematic produces in Europe and **guarantees full traceability**;
- As an Elematic partner, you will save time working with a single company to **satisfy all your needs** for a UV resistant electrical system.

WHAT ARE UV RADIATIONS?

Every second the sun discharges an immense amount of energy on our planet through solar radiations.



In nature ultraviolet radiation is constantly produced by the sun but most of it does not reach earth as its absorbed by the upper atmosphere (stratosphere).

The **Ultraviolet radiation** that does reach earth's surface is mainly made by UVA radiation, with longest wavelength **320-400 nm**. This UV energy can be absorbed by plastics used in outdoor environments putting your projects and its components at risk.

For this reason, **Elematic produces a range of wiring systems specially designed and tested to withstand ultraviolet radiation** particularly suited for **photovoltaic and telecommunication** systems that are continuously exposed to the sunlight. In these specific applications, the use of resistant UV cable ties is required to avoid this deterioration.

SOLAR RADIATIONS IN EUROPE

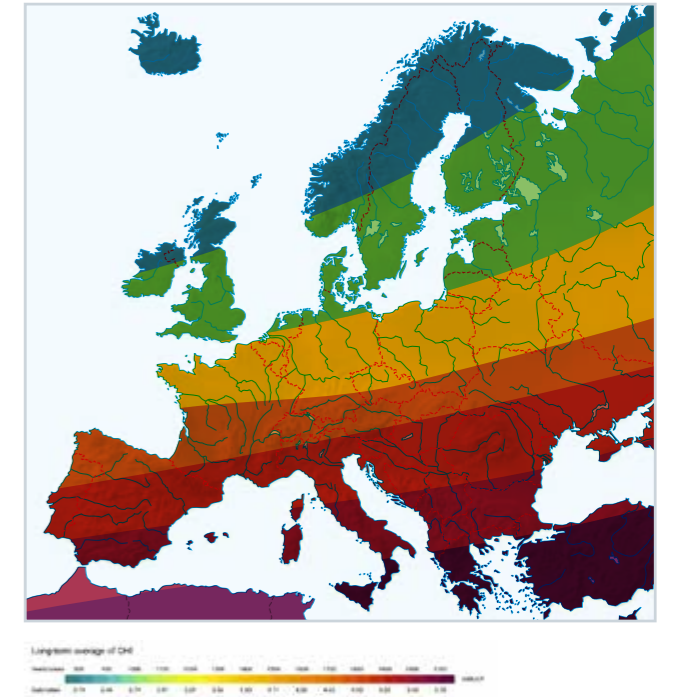
Global Horizontal Irradiation (GHI) is usually used, definable as the total irradiation of the sun on a horizontal surface on Earth.

Given that **solar radiation** arrives indiscriminately almost everywhere on the surface of our planet, it is equally true that the morphology and latitude of a continent can easily influence the amount of ultraviolet that affects a specific area.

To better understand this phenomenon, **Global Horizontal Irradiation (GHI)** is usually used, definable as the total irradiation of the sun on a horizontal surface on Earth.

It is evident that we must take into account the degree of sun exposure characteristic of the place where the cable tie is installed. For example, a cable tie on a cable tray located outdoors in southern Spain could require more attention than the same cable tie installed on a solar panel in Sweden. Be careful, though: this does not mean that a UV certification is not required.

Every single case should be thoroughly investigated with an electrical designer.

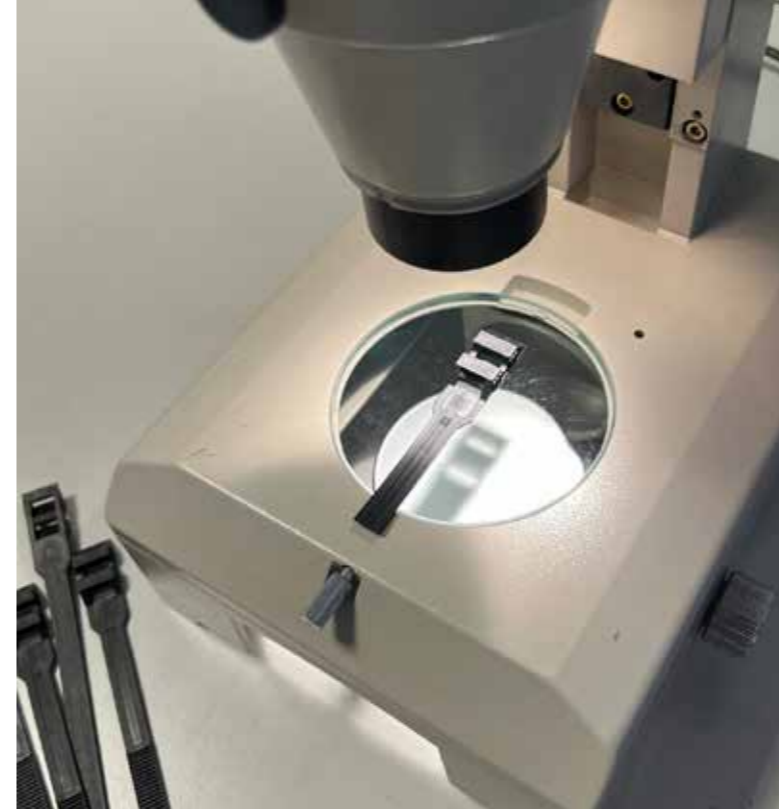


UV RADIATIONS IMPACTS

UV radiations: impacts on outdoor installations in photovoltaic & telecom applications. Why is it so important to use cable ties certified to resist ultraviolet rays?

In a few technical terms, solar radiation causes photooxidative degradation, which breaks the plastic polymer chains and reduces its mechanical properties. These properties include:

- **Strength:** measure the resistance to external stress
- **Stiffness:** measure the resistance to deformation
- **Toughness:** measure the capacity to absorb impacts



By choosing any cable tie for wiring cables in outdoor photovoltaic or telecom installations, the UV light will progressively reduce the performance of the cable tie, making it more and more fragile until it cracks. This is due to the fact that the UV portion of the solar spectrum especially affects plastic materials, as it can break their chemical bonds.

Finally, one of the most unpleasant consequences of choosing a cable tie unsuitable for outdoor is the possibility that it breaks, causing a contamination of the material in the environment, with the consequent presence of hanging or loosened cables that might suffer breakage, cuts, and further damages.

At a glance, **the effects over time of UV rays** on plastic cable ties are:

- FRAGILITY
- LOWER GLOSS
- LOSS OF ELASTICITY
- ROUGHNESS



1000 h

2500 h

For these reasons, it becomes **essential to understand how the material** chosen to make the cable tie will behave after years of exposure to sunlight.

TESTING FOR SAFETY

Weathering effects on products - **ISO 4892-2: Methods of exposure to laboratory light sources – part 2: xenon arc lamps.**

To define a cable tie as UV resistant, the latter must comply with the international standard **IEC 62275** (Cable management systems – Cable ties for electrical installations) which refers, in the chapter on “Environmental influences”, to the **ISO 4892-2** standard – **Methods of exposure to laboratory light sources – part 2: xenon arc lamps.**

ISO 4892-2 is a standard that specifies **test conditions that replicate the effects of weathering on plastics** through the use of moisture and xenon arc light. After this artificial process of accelerated aging, each sample undergoes a tensile test. Only if this last test is passed, the cable tie can be **certified as resistant to the outside and therefore UV resistant.**

The **UV resistance** test is defined as a **Type Test**, that is, it does not require continuous repetition as it happens for normal tractions. Once executed, this has continuous validity.

Elematic wiring products comply with ISO 4892—2 thanks to tests carried out by **internationally recognized specialized institutes.**

RAW MATERIAL SELECTION

PERFORMANCE GUARANTEED

As a reliable partner since 1976 for your electrical systems, Elematic offers a range of cable ties suitable for outdoor applications and tested to resist UV radiations.

According to our **Research & Development experts**, polyamide 6.6 is still the techno-polymer that best combines production needs and mechanical performance of the products made, guaranteeing uses that can vary within a wide temperature range.

The material defined as "UV" (remaining within the family of polyamides) is **characterized by a superior reinforcement of carbon black inside with the addition of antioxidants** that allow to preserve the polymeric bonds from the aging effect that UV rays tend to create in the long term.

If this were not the case, the durability of the artifacts, exposed to the action of UV rays outside, would not be guaranteed.

In a geographical area of medium irradiation this duration would not exceed 2-3 years while, with a specific UV material, this resistance extends well beyond 5 years.

Only by treating the cable ties with chemical additives that withstand the UV effect, these cable ties are ready to become UV resistant. Offering the highest level of protection from solar rays, Elematic resistant UV cable ties are the perfect solution for direct and prolonged exposure to high amounts of ultraviolet rays, outdoors and in the long term.

In the next table you can find the products suggested by us based on the amount of UV rays that reach the environment where you want to install your cable tie.

Plastic materials and their approximate performance under UV exposure:

MATERIAL	LOW UV	STANDARD UV	MODERATE UV
STAINLESS STEEL	[Full coverage]		
PA66 BLACK UV STABILIZED	[Full coverage]		[Partial coverage]
PA66BLACK	[Full coverage]	[Partial coverage]	[No coverage]
PA66NATURAL	[Full coverage]	[No coverage]	[No coverage]



BELTURING PLUS



Outside serrated cable ties with low profile head and manufactured with UV-resistant polymer. For high resistance outdoor application



CHALLENGES

High resistance to UV in outdoor, temporary locking position allows re-opening of the ties for addition or removal of cables.

FEATURES AND BENEFITS

- High resistance to ultraviolet radiation and in outdoor conditions with significant thermal excursion
- The external rack and the parallel locking system offer a smooth surface to the fastened cables avoiding any damages to the insulation
- Temporary locking position allows re-opening of the ties for addition or removal of cable
- Packed in special box, with hanging system and re-closing top, for the best using confort and protection in the jobsite

MATERIALS

Material: techno-polymer black UV stabilized and weather resistant

Halogen free

Material flammability rating: UL 94-HB

Excellent resistance to: aromatic solvents, oils, greases and derivates

Good resistance to: bases

Limited resistance to: acids

Not resistant to: phenols and to chlorinated solvents

Installation temperature: -30°C ÷ 60°C

Working temperature: -40°C ÷ 85°C

Suitable for outdoor application

LAYING INSTRUCTIONS



PRODUCTS CONFORMITY



CE marking: CE marking: our products comply with the Low Voltage Directive 2014/35/EU and the cable ties are tested in accordance with CEI EN IEC 62275 "Cable management system - Cable ties for electrical installations".

UKCA marking: our products comply with the UK SI 2016 No. 1101 The Electrical Equipment (Safety) Regulation and the cable ties are tested in accordance with BS IEC 62275 "Cable management system - Cable ties for electrical installations" ed.2019.

Type 1

REACH: the materials used to produce the cable ties comply with 1907/2006/CE (REACH)

PRODUCTS CERTIFICATIONS



Type Approval Certificate n. TAE00001DU (reference standard IEC 62275; DNV Type Approval)

BELTURING PLUS SINGLE HEAD



Description	Width (mm)	Length (mm)	Ø bundle min (mm)	Ø bundle max (mm)	Tensile Strength (N)	Pack (pcs.)	Code
Belturing plus 6x115	6	115	5	25	280	100	6449X
Belturing plus 6x180	6	180	9	45	280	100	6450X
Belturing plus 6x290	6	290	20	78	280	100	6452X
Belturing plus 6x360	6	360	20	100	280	100	6454X
Belturing plus 9x132	9	132	8	27	390	100	6447X
Belturing plus 9x180	9	180	10	40	390	100	6451X

BELTURING PLUS DOUBLE HEAD



Description	Width (mm)	Length (mm)	Ø bundle min (mm)	Ø bundle max (mm)	Tensile Strength (N)	Pack (pcs.)	Code
Belturing plus 9x260	9	260	26	60	540	100	6453X
Belturing plus 9x300	9	300	26	80	540	100	6448X
Belturing plus 9x360	9	360	26	93	540	100	6455X
Belturing plus 9x510	9	510	70	140	540	100	6456X
Belturing plus 9x760	9	760	70	220	540	100	6457X

EASY BELTURING



Outside serrated cable ties with low profile head and manufactured with UV-resistant polymer. Tool-free installation.



FEATURES AND BENEFITS

- Easy insertion with low effort: maximum installation speed and important time saving
- Easy Belturing cableties can be installed without any tool: ideal for overhead lines or when working in difficult positions
- High resistance to ultraviolet radiation and in outdoor exposure conditions
- The external rack and the parallel locking system offer a smooth surface to the fastened cables avoiding any damages to the insulation
- Easy installation even at very low temperatures up to -30° C
- Temporary locking position allows re-opening of the ties for addition or removal of cables

MATERIALS

Material: techno-polymer black UV stabilized and weather resistant

Halogen free

Material flammability rating: UL 94-HB

Excellent resistance to: aromatic solvents, oils, greases and derivatives

Good resistance to: bases

Limited resistance to: acids

Not resistant to: phenols and to chlorinated solvents

Installation temperature: -30°C ÷ 60°C

Working temperature: -40°C ÷ 85°C

LAYING INSTRUCTIONS



PRODUCTS CONFORMITY



CE marking: CE marking: our products comply with the Low Voltage Directive 2014/35/EU and the cable ties are tested in accordance with CEI EN IEC 62275 "Cable management system – Cable ties for electrical installations".

UKCA marking: our products comply with the UK SI 2016 No. 1101 The Electrical Equipment (Safety) Regulation and the cable ties are tested in accordance with BS IEC 62275 "Cable management system – Cable ties for electrical installations" ed.2019.

Type 1

REACH: the materials used to produce the cable ties comply with 1907/2006/CE (REACH)

EASY BELTURING BLACK - UV-RESISTANT



Description	Width (mm)	Length (mm)	Ø bundle min (mm)	Ø bundle max (mm)	Tensile Strength (N)	Pack (pcs.)	Code
Easy belturing 8,8x180 single head	8,8	180	10	38	390	100	6551
Easy belturing 8,8x270 double head	8,8	270	25	63	560	100	6553
Easy belturing 8,8x360 double head	8,8	360	25	93	560	100	6555

UV-RESISTANT CABLE TIES



Technical cable ties, in polyamide 6.6 uv-resistant, suitable for outdoor applications



FEATURES AND BENEFITS

- Excellent resistance to ultraviolet radiation; cable ties passed the tests, for UV resistance, defined by the CEI EN 62275 standard, maintaining, after the test conditions, the 100% of the tensile declared strength (ISO 4892 - 2 - A method - 1000 hours at the xenon arc - equivalent to about 10 years of solar irradiation typical of southern European regions)
- Also suitable for installations at high operating temperatures (up to 85°C)

MATERIALS

Material: polyamide 6.6 black UV stabilized

Halogen free

Material flammability rating: UL 94-V2

High resistance to UV rays

Excellent resistance to: aromatic solvents, oils, greases and derivatives

Good resistance to: bases

Limited resistance to: acids

Not resistant to: phenols and to chlorinated solvents

Installation temperature: -10°C ÷ 60°C

Working temperature: -40°C ÷ 85°C

PRODUCTS CONFORMITY



CE marking: our products comply with the Low Voltage Directive 2014/35/EU and the cable ties are tested in accordance with CEI EN IEC 62275 "Cable management system – Cable ties for electrical installations".

UKCA marking: our products comply with the UK SI 2016 No. 1101 The Electrical Equipment (Safety) Regulation and the cable ties are tested in accordance with BS IEC 62275 "Cable management system – Cable ties for electrical installations" ed.2019.

Type 1

REACH: the materials used to produce the cable ties comply with 1907/2006/CE (REACH)

PRODUCTS CERTIFICATIONS



RECOGNIZED PRODUCTS
Prodotti Type 11
File E86244 (reference standard UL 62275)



Type Approval Certificate n.
TAE00001DU (reference standard IEC 62275; DNV Type Approval)

UV-RESISTANT BLACK



Description	Width (mm)	Length (mm)	Ø bundle min (mm)	Ø bundle max (mm)	Tensile Strength (N)	Pack (pcs.)	Code
UV-resistant cable tie 2,5x98	2,5	98	1	21	80	100	5303CUV
UV-resistant cable tie 3,5x140	3,6	140	2	32	180	100	5309CUV
UV-resistant cable tie 3,5x200	3,6	200	3	50	180	100	5314CUV
UV-resistant cable tie 4,8x200	4,5	200	3	50	220	100	5315CUV
UV-resistant cable tie 4,5x290	4,8	290	3,5	78	220	100	5317UV
UV-resistant cable tie 7,5x365	7,5	365	8	100	540	100	5327UV

2-LOCK CABLE TIES



Professional cable ties, in polyamide 6.6, having an innovative double locking system in stainless steel: maximum performance and reliability



CHALLENGES

UV resistance/ great resistance to cold temperatures -40°/ high tensile strength/ smooth profile not to damage the cables / easy insertion

FEATURES AND BENEFITS

- The special AISI 316 stainless steel locking system, directly incorporated into the head during the injection manufacturing process, allows the highest performances and reliability
- The double tooth mechanism allows a double locking, on both side of ties, for an ultimate tightening of the bundles
- Perfect wiring: the smooth profile without racks offers infinite adjustment along the length of the tie and always a correct tensioning for any bundling diameters
- Resistance and reliability at low operating temperature up to -40 ° C
- 2-LOCK™ cable ties, in black color, are manufactured of special UV-resistant polyamide, for extreme outdoor applications
- 2-LOCK™ cable ties are packed in an innovative resealable bag: this avoids any dispersion after the first opening, maintaining the superior characteristics of the ties.

MATERIALS

Material: polyamide 6.6 natural and black UV stabilized

Halogen free

Material flammability rating: UL 94-V2

Locking system: cage with double tooth in stainless steel AISI 316

UV resistant: black version

Excellent resistance to: aromatic solvents, oils, greases and derivates

Good resistance to: bases

Limited resistance to: acids

Not resistant to: phenols and to chlorinated solvents

Installation temperature: -40°C ÷ 60°C

Working temperature: -40°C ÷ 85°C

PRODUCTS CONFORMITY



CE marking: the Low Voltage Directive 2014/35/EU and the cable ties are tested in accordance with CEI EN IEC 62275 "Cable management system – Cable ties for electrical installations".

Width 2,5 and 3,5 mm: Type 1

Width 4,5 and 7,5 mm: Type 2

REACH: The materials used to produce the cable ties comply with 1907/2006/CE (REACH)

PRODUCTS CERTIFICATIONS



LISTED PRODUCTS - Products Type 21
Width 4,5 and 7,5 mm, File E86244
(reference standard UL 62275)



RECOGNIZED PRODUCTS - Products
Type 11
Width 2,5 e 3,5 mm, File E86244
(reference standard UL 62275)



Type Approval Certificate
ELE120817CS001 (reference
standard IEC 62275, UL 62275, IEC
60092-10: "Electrical installations
in ships - Part 101: Definitions and
general requirements")



Type Approval Certificate
n. TAE000000G (reference
standard IEC 62275; DNV
Type Approval)

*Fire Protection
on railway vehicles*

Tests report n. 1116-
1117.11S0040/21 (reference
standard UNI EN 45545-2:
"Railway applications - Fire
protection on railway vehicles
Part 2 - Requirements for fire
behaviour of materials and
components").

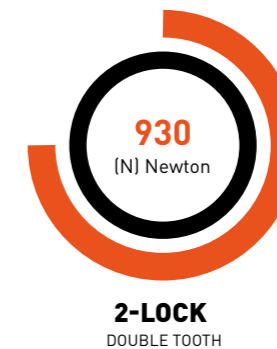
2-LOCK™ BLACK - UV-RESISTANT

Description	Width (mm)	Length (mm)	Ø bundle min (mm)	Ø bundle max (mm)	Tensile Strength (kg)	Tensile Strength (N)	Pack (pcs.)	Code
2-LOCK 2,5x100	2,5	100	1,5	21	15,3	150	100	1303
2-LOCK 2,5x200	2,5	200	1,5	50	15,3	150	100	1307
2-LOCK 3,5x140	3,5	140	2	35	25,5	250	100	1309
2-LOCK 3,5x205	3,5	205	2	50	25,5	250	100	1314
2-LOCK 3,5x295	3,5	295	3	80	25,5	250	100	1310
2-LOCK 4,5x200	4,5	200	3	50	36,72	360	100	1315
2-LOCK 4,5x255	4,5	255	3	68	36,72	360	100	1316
2-LOCK 4,5x290	4,5	290	3,5	80	36,72	360	100	1317
2-LOCK 4,5x365	4,5	365	3,5	101	36,72	360	100	1319
2-LOCK 7,5x220	7,5	220	10	55	79,56	780	100	1325
2-LOCK 7,5x360	7,5	360	12	100	79,56	780	100	1327

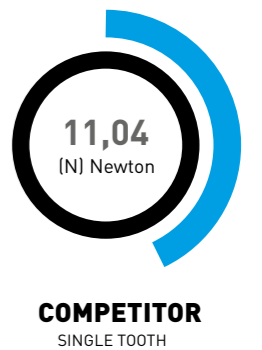
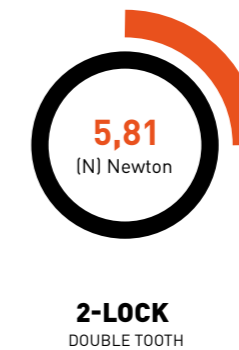
COMPARISON BETWEEN 2-LOCK WITH METALLIC DOUBLE TOOTH CABLE TIE AND COMPETITOR'S SINGLE TOOTH CABLE TIES



TENSILE
STRENGTH
+ 53%



EASY
TO APPLY
+ 47%



COLSTEEL CABLE TIES



Completely stainless steel cable tie with high mechanical strength, resistant to fire and corrosion



FEATURES AND BENEFITS

- Quick installation, by manual tightening and tensioning with the specific tool
- The ball locking mechanism and the smooth surface offer a very low insertion effort and a infinitely calibrated closing adjustment along all the length of the tie
- High mechanical strength: for safety and high performance applications, which can be guaranteed, only with a metal tie
- The total-smooth profiles and surfaces avoid any damage to the insulation of the electrical cables to be bundled
- Fire resistant, suitable for very high operating temperatures
- Available in 304 and also in 316 stainless steel grade for the highest corrosion and chemical resistance

PRODUCTS CONFORMITY



TYPE 2

CE marking: CE marking: our products comply with the Low Voltage Directive 2014/35/EU and the cable ties are tested in accordance with CEI EN IEC 62275 "Cable management system – Cable ties for electrical installations".

Type 2

MATERIALS

Material: AISI316 (A4) or AISI304 (A2)

Halogen free

Material flammability rating: not flammable

Resistance to external agents

Outstanding resistance to: acids, oils, greases, chemical, solvents

High resistance to: seawater and corrosive atmosphere

UV resistant: for indoor and outdoor applications

Min. installation temperature: -60°C

Working temperature: -60°C ÷ 300°C

COLSTEEL AISI 304

Description	Width (mm)	Length (mm)	Ø bundle max (mm)	Tensile Strength (kg)	Tensile Strength (N)	Pack (pcs.)	Code	Recommended tool
Colsteel 4,6x127 - AISI 304	4,6	127	25	45,4	445	100	6701	5407
Colsteel 4,6x201 - AISI 304	4,6	201	51	45,4	445	100	6703	5407
Colsteel 4,6x266 - AISI 304	4,6	266	69	45,4	445	100	6706	5407
Colsteel 4,6x362 - AISI 304	4,6	362	102	45,4	445	100	6708	5407
Colsteel 4,6x521 - AISI 304	4,6	521	152	45,4	445	50	6710	5407
Colsteel 4,6x838 - AISI 304	4,6	838	254	45,4	445	50	6712	5407
Colsteel 7,9x201 - AISI 304	7,9	201	51	113,4	1.112	100	6719	5407
Colsteel 7,9x266 - AISI 304	7,9	266	69	113,4	1.112	100	6720	5407
Colsteel 7,9x362 - AISI 304	7,9	362	102	113,4	1.112	100	6722	5407
Colsteel 7,9x521 - AISI 304	7,9	521	152	113,4	1.112	50	6724	5407
Colsteel 7,9x838 - AISI 304	7,9	838	254	113,4	1.112	50	6726	5407
Colsteel 7,9x1.067 - AISI 304	7,9	1.067	304	113,4	1.112	50	6728	5407

COLSTEEL AISI 316

Description	Width (mm)	Length (mm)	Ø bundle max (mm)	Tensile Strength (kg)	Tensile Strength (N)	Pack (pcs.)	Code	Recommended tool
Colsteel 4,6x201 - AISI 316	4,6	201	51	91,8	445	100	6753	5407
Colsteel 4,6x266 - AISI 316	4,6	266	69	91,8	445	100	6756	5407
Colsteel 4,6x362 - AISI 316	4,6	362	102	91,8	445	100	6758	5407
Colsteel 4,6x521 - AISI 316	4,6	521	152	91,8	445	50	6760	5407
Colsteel 7,9x201 - AISI 316	7,9	201	51	204	1.112	100	6769	5407
Colsteel 7,9x266 - AISI 316	7,9	266	69	204	1.112	100	6770	5407
Colsteel 7,9x362 - AISI 316	7,9	362	102	204	1.112	100	6772	5407

TENSIONING TOOL 5407

Description	Length (mm)	Weight (gr)	Tensile Strength (N)	Pack (pcs.)	Code
Stainless steel tensioning tool for ties 7,9 max	178	560	445	1	5407



TENSIONING TOOL 5407

Automatic tensioning tool for stainless steel cable ties up to 7,9 mm maximum width



REGISTERED OFFICE

ITW Construction Products Italy srl

Viale Regione Veneto 5 35127 Padova Z.I. (Pd) - Italy

COMMERCIAL OFFICE

Via Lombardia, 10 30030 Cazzago di Pianiga (Ve) - Italy

T. (+39) 041 51 35 511

F. (+39) 041 51 35 568

info@itw-italy.com

www.itw-elematic.com

