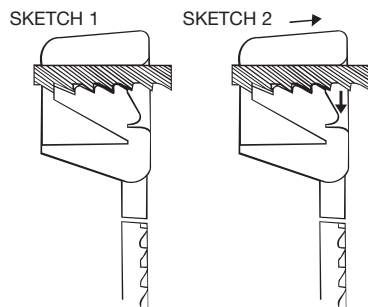


Design and technology

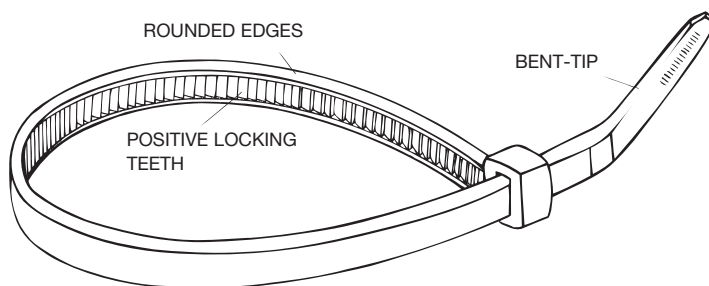
The loop tensile test according to DIN EN 50146 shows that the pressure point most subject to damage for nylon cable ties is the plastic tongue. A compromise must be found between easy insertion of the cable tie and the tensile strength of the cable tie. The stronger the plastic tongue, the more strength is needed to feed the cable tie and to pull it through. The cable tie must be manufactured such that it can be inserted easily and still correspond to all strength requirements.

The following picture shows the complete locking of all four teeth of the plastic tongue with the catch under load.

The one-piece cable ties manufactured in the injection moulding process provide the maximum in strength.



The extra properties such as rounded edges and bent-tip point make installation fast, exact and secure.



Smooth rounded edges do not cut the insulation or hands and are comfortable to handle. The bent-tip point allows easy insertion.

The testing of the tensile strength is carried out according to MIL-S-23190E. The test conditions are exactly specified:

- conditioning the test pieces
- building up the test apparatus
- Applying the tie to a separate test thorn
- Test speed

Cable ties of polyamide 6.6 (nylon)

Polyamide 6.6 (nylon) was first made in 1935. The American chemist Wallace Hume Carothers developed the basics for the manufacture of polyamide 6.6. In 1939, the US Du Pont Company produced the first nylon stockings and within 4 days 6 million pairs were sold.

Polyamide is distinguished by its high degree of tearing resistance and excellent elasticity. Properties that are very advantageous for cable ties.

Polyamide absorbs water and discharges it again.

Saturation is reached at 2.5%. The flexibility and holding strength are dependent on the water content. For this reason, proper storage of the product is decisive.

User manual for polyamide 6.6 cable ties

The best way of fixing with a cable tie:

Use a cable tie pistol and cut off the protruding ends. The strength of the pull of the cable tie pistol must be set to the respective measurement of the cable tie.

Suitable working environment and practice:

A suitable installation temperature is -10°C to $+60^{\circ}\text{C}$.
The permanent temperature range is -40°C to $+85^{\circ}\text{C}$.

Storing the cable tie:

The cable tie should always be stored in a plastic bag.
The recommended room temperature is $+23^{\circ}\text{C}$ and 50% humidity.
Avoid direct sunshine and direct heat application.
After breaking open the bag, the cable ties should be used within 5 days.

The testing of our cable ties for tensile strength, humidity and structure is carried out for us by the Ostthüringische Materialprüfgesellschaft für Textil und Kunststoffe mbH.

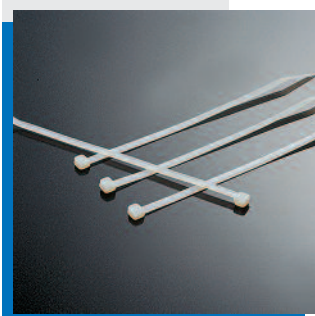
SN - cable ties with plastic tongue, natural

Material: polyamide 6.6, halogen-free, silicon-free

Temperature resistance: -40°C to +85°C

Approval: UL, ML

Flammability class: UL 94 V-2



Art. No.	Type	Dimension	Tensile strength N	Bundle Ø	Pack/pcs.
30.772	SN 1-16	60 x 2,4	80	12	100
30.774	SN 1-18	80 x 2,4	80	19	100
30.000	SN 1-20	102 x 2,5	80	25	100
30.776	SN 1-22	120 x 2,5	80	30	100
30.760	SN 1-40	142 x 2,5	80	35	100
30.714	SN 1-25	165 x 2,5	80	44	100
30.001	SN 1-50	202 x 2,5	80	55	100
30.778	SN 1-60	400 x 2,5	80	117	100
30.780	SN 2-12	120 x 3,2	180	30	100
30.002	SN 2-35	150 x 3,6	180	39	100
30.782	SN 2-18	180 x 3,6	180	49	100
30.003	SN 2-50	205 x 3,6	180	55	100
30.784	SN 2-25	250 x 3,6	180	74	100
30.728	SN 2-55	265 x 3,6	180	78	100
30.004	SN 2-75	295 x 3,6	180	78	100
30.721	SN 2-85	330 x 3,6	180	96	100
30.723	SN 2-100	368 x 3,6	180	102	100
30.786	SN 3-12	120 x 4,8	220	30	100
30.719	SN 3-40	160 x 4,8	220	42	100
30.005	SN 3-50	200 x 4,8	220	52	100
30.702	SN 2-40	250 x 4,8	220	74	100
30.006	SN 3-75	282 x 4,8	220	81	100
30.007	SN 3-100	368 x 4,8	220	102	100
30.765	SN 3-90	385 x 4,8	220	102	100
30.767	SN 4-30	432 x 4,8	220	125	100
30.711	SN 4-50	450 x 4,8	220	150	100
30.742	SN 5-50	500 x 4,8	220	150	100
30.788	SN 5-55	550 x 4,8	220	166	100
30.730	SN 9-50	914 x 4,8	220	270	100
30.790	SN 4-12	120 x 7,6	550	30	100
30.792	SN 4-15	150 x 7,6	550	39	100
30.700	SN 2-80	200 x 7,6	550	55	100
30.794	SN 4-24	240 x 7,6	550	66	100
30.717	SN 3-80	280 x 7,6	550	78	100
30.736	SN 3-85	300 x 7,6	550	88	100
30.796	SN 4-34	340 x 7,6	550	99	100
30.008	SN 4-100	380 x 7,6	550	110	100
30.704	SN 4-80	450 x 8	800	133	100
30.798	SN 5-70	500 x 8	800	150	100
30.706	SN 5-80	550 x 8	800	166	100
30.726	SN 6-100	610 x 9	800	185	100
30.741	SN 8-100	710 x 9	800	220	100
30.708	SN 7-100	762 x 9	800	236	100
30.769	SN 9-100	812 x 9	800	246	100
30.009	SN 5-225	914 x 9	800	270	100
30.812	SN 9-95	950 x 9	800	285	100
30.738	SN 11-100	1168 x 9	800	360	100
30.715	SN 12-100	1219 x 9	800	380	100
30.814	SN 9-150	1500 x 9	800	464	100

SN - cable ties with plastic tongue, natural, extra heavy duty

Material: polyamide 6.6, halogen-free, silicon-free
 Temperature resistance: -40°C to +85°C
 Approval: UL, ML
 Flammability class: UL 94 V-2

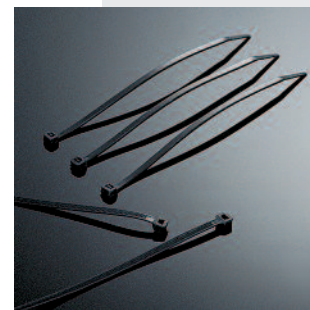
Art. No.	Type	Dimension	Tensile strength N	Bundle Ø	Pack/pcs.
30.744	SN 1-120	230 x 12,7	1140	63	100
30.746	SN 2-120	280 x 12,7	1140	80	100
30.748	SN 3-120	380 x 12,7	1140	110	100
30.750	SN 4-120	480 x 12,7	1140	140	100
30.716	SN 5-120	550 x 12,7	1140	166	100
30.752	SN 6-120	580 x 12,7	1140	175	100
30.754	SN 7-120	730 x 12,7	1140	225	100
30.756	SN 8-120	880 x 12,7	1140	267	100
30.758	SN 9-120	1030 x 12,7	1140	317	100

SN - cable ties with plastic tongue, black, UV-stabilized

Material: polyamide 6.6, halogen-free, silicon-free
 Temperature resistance: -40°C to +85°C
 Approval: UL, ML
 Flammability class: UL 94 V-2

Art. No.	Type	Dimension	Tensile strength N	Bundle Ø	Pack/pcs.
30.773	SNX 1-16	60 x 2,4	80	12	100
30.775	SNX 1-18	80 x 2,4	80	19	100
30.010	SNX 1-20	102 x 2,5	80	25	100
30.777	SNX 1-22	120 x 2,5	80	30	100
30.761	SNX 1-40	142 x 2,5	80	35	100
30.735	SNX 1-25	165 x 2,5	80	44	100
30.011	SNX 1-50	202 x 2,5	80	55	100
30.779	SNX 1-60	400 x 2,5	80	117	100
30.781	SNX 2-12	120 x 3,2	180	30	100
30.012	SNX 2-35	150 x 3,6	180	39	100
30.783	SNX 2-18	180 x 3,6	180	49	100
30.013	SNX 2-50	205 x 3,6	180	55	100
30.785	SNX 2-25	250 x 3,6	180	74	100
30.729	SNX 2-55	265 x 3,6	180	78	100
30.014	SNX 2-75	295 x 3,6	180	78	100
30.722	SNX 2-85	330 x 3,6	180	96	100
30.724	SNX 2-100	368 x 3,6	180	102	100
30.787	SNX 3-12	120 x 4,8	220	30	100
30.720	SNX 3-40	160 x 4,8	220	42	100
30.015	SNX 3-50	200 x 4,8	220	52	100
30.703	SNX 2-40	250 x 4,8	220	74	100
30.016	SNX 3-75	282 x 4,8	220	81	100
30.017	SNX 3-100	368 x 4,8	220	102	100
30.766	SNX 3-90	385 x 4,8	220	102	100
30.768	SNX 4-30	432 x 4,8	220	125	100
30.710	SNX 4-50	450 x 4,8	220	150	100

Continued on P. 10





(Continuation)

SN - cable ties with plastic tongue, black, UV-stabilized

Material: polyamide 6.6, halogen-free, silicon-free
 Temperature resistance: -40°C to +85°C
 Approval: UL, ML
 Flammability class: UL 94 V-2

Art. No.	Type	Dimension	Tensile strength N	Bundle Ø	Pack/pcs.
30.743	SNX 5-50	500 x 4,8	220	150	100
30.789	SNX 5-55	550 x 4,8	220	166	100
30.731	SNX 9-50	914 x 4,8	220	270	100
30.791	SNX 4-12	120 x 7,6	550	30	100
30.793	SNX 4-15	150 x 7,6	550	39	100
30.701	SNX 2-80	200 x 7,6	550	55	100
30.795	SNX 4-24	240 x 7,6	550	66	100
30.718	SNX 3-80	280 x 7,6	550	78	100
30.737	SNX 3-85	300 x 7,6	550	88	100
30.797	SNX 4-34	340 x 7,6	550	99	100
30.018	SNX 4-100	380 x 7,6	550	110	100
30.705	SNX 4-80	450 x 8	800	133	100
30.799	SNX 5-70	500 x 8	800	150	100
30.707	SNX 5-80	550 x 8	800	166	100
30.727	SNX 6-100	610 x 9	800	185	100
30.725	SNX 8-100	710 x 9	800	220	100
30.709	SNX 7-100	762 x 9	800	236	100
30.770	SNX 9-100	812 x 9	800	246	100
30.019	SNX 5-225	914 x 9	800	270	100
30.813	SNX 9-95	950 x 9	800	285	100
30.739	SNX 11-100	1168 x 9	800	360	100
30.712	SNX 12-100	1219 x 9	800	380	100
30.815	SNX 9-150	1500 x 9	800	464	100

SN - cable ties with plastic tongue, black, UV-stabilized, extra heavy duty

Material: polyamide 6.6, halogen-free, silicon-free
 Temperature resistance: -40°C to +85°C
 Approval: UL, ML
 Flammability class: UL 94 V-2

Art. No.	Type	Dimension	Tensile strength N	Bundle Ø	Pack/pcs.
30.745	SNX 1-120	230 x 12,7	1140	63	100
30.747	SNX 2-120	280 x 12,7	1140	80	100
30.749	SNX 3-120	380 x 12,7	1140	110	100
30.751	SNX 4-120	480 x 12,7	1140	140	100
30.713	SNX 5-120	550 x 12,7	1140	166	100
30.753	SNX 6-120	580 x 12,7	1140	175	100
30.755	SNX 7-120	730 x 12,7	1140	225	100
30.757	SNX 8-120	880 x 12,7	1140	267	100
30.759	SNX 9-120	1030 x 12,7	1140	317	100

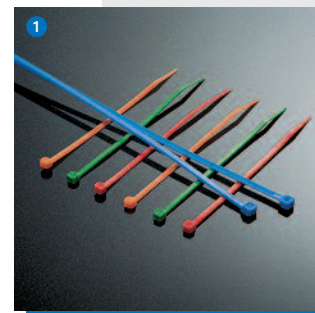
SN - cable ties with plastic tongue, coloured

Material: polyamide 6.6, halogen-free, silicon-free
 Temperature resistance: -40°C to +85°C
 Flammability class: UL 94 V-2

Available colours: red, blue, white, yellow, green, orange, grey, brown

Please also state the colour with the standard article number, e.g. 102 x 2,5 in orange colour = 30.000.ORANGE

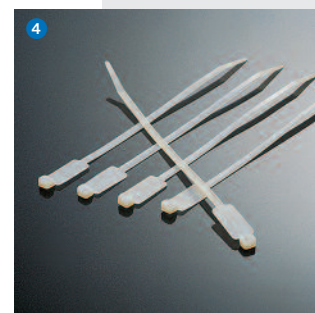
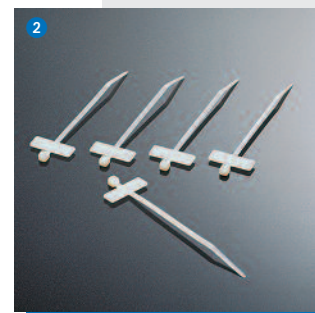
Art. No.	Type	Dimension	Tensile strength N	Bundle Ø	Pack/pcs.
30.000 ①	SN 1-20	102 x 2,5	80	25	100
30.002	SN 2-35	150 x 3,6	180	39	100
30.005	SN 3-50	200 x 4,8	220	52	100
30.007	SN 3-100	368 x 4,8	220	102	100



SN - cable ties with plastic tongue and marking surface, natural

Material: polyamide 6.6, halogen-free, silicon-free
 Temperature resistance: -40°C to +85°C
 Flammability class: UL 94 V-2

Art. No.	Type	Dimension	Marking pad	Tensile strength N	Bundle Ø	Pack/pcs.
30.023 ②	SN 2-20 FK with integrated marking surface	100 x 2,5	8 x 25	80	25	100
30.025 ③	SN 2-20 K with raised marking surface	110 x 2,5	8 x 25	80	25	100
30.025.Y ③	SN 2-20 KY with raised marking surface	110 x 2,5	9 x 20	80	25	100
30.771 ③	SN 2-20 LK with raised marking surface	130 x 2,5	20 x 28	80	25	100
30.834 ②	MCV 200 S with integrated marking surface	200 x 2,5	15 x 30	80	50	100
30.024 ④	SN 5-50 K with integrated marking surface	200 x 4,6	28 x 13	220	50	100
30.835 ④	MCV 270 with integrated marking surface	270 x 4,6	28 x 13	220	75	100



SN - CABLE TIES

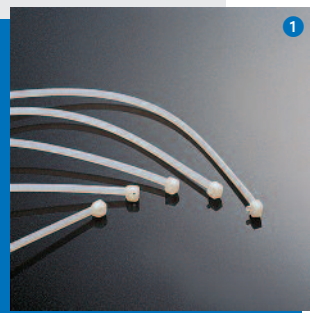
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SN - releasable cable ties with plastic tongue, natural

Material: polyamide 6.6, halogen-free, silicon-free

Temperature resistance: -40°C to +85°C, Flammability class: UL 94 V-2

Art. No.	Type	Dimension	Tensile strength N	Bundle Ø	Pack/pcs.
30.900 ①	RCV 100	100 x 3,6	180	25	100
30.901	RCV 150	150 x 4,7	220	39	100
30.902	RCV 200	200 x 4,7	220	55	100
30.903	RCV 250	250 x 4,8	220	74	100
30.904	RCV 300	300 x 4,8	220	88	100
30.905	RCV 370	370 x 4,8	220	102	100

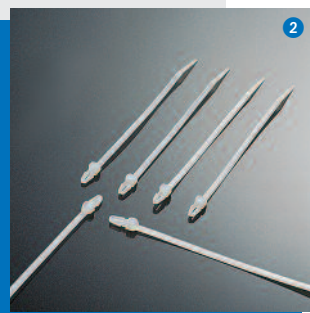


SN - releasable cable ties with plastic tongue, black

Material: polyamide 6.6, halogen-free, silicon-free

Temperature resistance: -40°C to +85°C, Flammability class: UL 94 V-2

Art. No.	Type	Dimension	Tensile strength N	Bundle Ø	Pack/pcs.
30.920	RCVX 100	100 x 3,6	180	25	100
30.921	RCVX 150	150 x 4,7	220	39	100
30.922	RCVX 200	200 x 4,7	220	55	100
30.923	RCVX 250	250 x 4,8	220	74	100
30.924	RCVX 300	300 x 4,8	220	88	100
30.925	RCVX 370	370 x 4,8	220	102	100

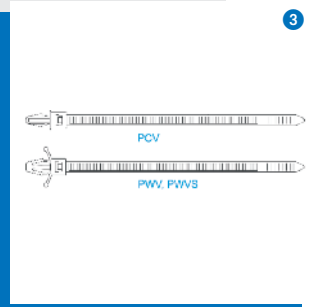


SN - push mount cable ties with plastic tongue, natural

Material: polyamide 6.6, halogen-free, silicon-free

Temperature resistance: -40°C to +85°C, Flammability class: UL 94 V-2

Art. No.	Type	Dimension	Hole dia.	Tensile strength N	Bundle Ø	Pack/pcs.
30.733 ②	PCV 155	155 x 3,5	4,8	180	40	100
30.734	PCV 200	200 x 4,8	6,3	220	50	100
30.829 ③	PWVS 100	112 x 2,5	4,6	80	25	100
30.830	PWVS 130	133 x 4,8	4,6	220	30	100
30.831	PWVS 155	155 x 3,5	4,6	180	36	100
30.832	PWV 130	130 x 4,8	6,0	220	30	100
30.833	PWV 200	200 x 4,8	6,0	220	50	100

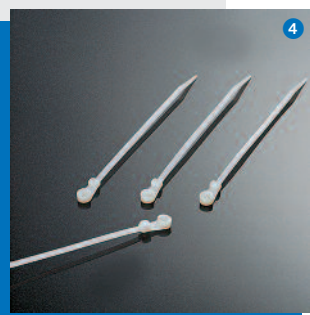


SN - mountable head ties with plastic tongue, natural

Material: polyamide 6.6, halogen-free, silicon-free

Temperature resistance: -40°C to +85°C, Flammability class: UL 94 V-2

Art. No.	Type	Dimension	Hole dia.	Tensile strength N	Bundle Ø	Pack/pcs.
30.914 ④	TCV 100	100 x 2,5	3,0	80	25	100
30.910	TCV 155	155 x 3,7	4,8	180	40	100
30.911	TCV 205	205 x 4,2	4,6	220	60	100
30.915	TCV 300	300 x 4,8	4,8	220	85	100
30.912	TCV 370	370 x 4,8	4,8	220	102	100
30.913	TCV 400	398 x 7,9	6,0	550	120	100

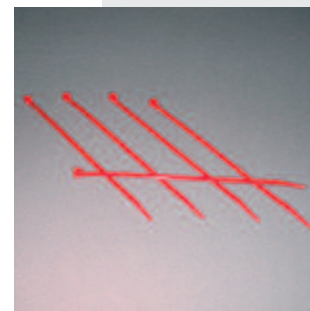


SN - cable ties with plastic tongue, ruby red (RAL 3003) heat-stabilized

Material: heat-stabilized polyamide 6.6

Temperature resistance: -20°C to +130°C, short-term +160°C

Art. No.	Type	Dimension	Tensile strength N	Bundle Ø	Pack/pcs.
31.400	SNH 1-20	100 x 2,5	80	22	100
31.401	SNH 1-25	160 x 2,5	80	38	100
31.402	SNH 2-35	140 x 3,6	180	33	100
31.403	SNH 2-50	200 x 3,6	180	53	100
31.404	SNH 2-75	290 x 3,6	180	76	100
31.405	SNH 2-100	360 x 3,6	180	102	100
31.406	SNH 3-40	160 x 4,8	220	38	100
31.407	SNH 3-50	200 x 4,8	220	50	100
31.408	SNH 3-75	290 x 4,8	220	76	100
31.409	SNH 3-100	360 x 4,8	220	102	100
31.410	SNH 4-100	360 x 7,6	540	102	100



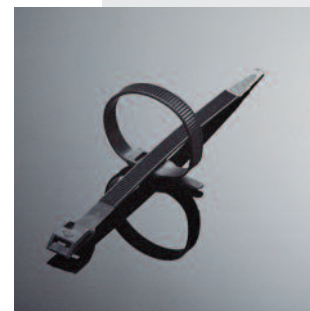
LPT - flat-profile cable ties

- flat sealing head
- ideal for very difficult and very demanding environments
- no damage to cable due to exterior teeth

Material: polyamide 6.6, black

Temperature resistance: -40°C to +80°C

Art. No.	Type	Dimension	Tensile strength N	Bundle Ø	Pack/pcs.
31.100	LPT 180-9	180 x 9	400	10 - 45	100
31.101	LPT 265-9	265 x 9	500	15 - 65	100
31.102	LPT 360-9	360 x 9	500	25 - 93	100
31.103	LPT 500-9	500 x 9	500	85 - 135	100
31.104	LPT 750-9	750 x 9	500	67 - 215	100



SN - cable ties-SET NEON

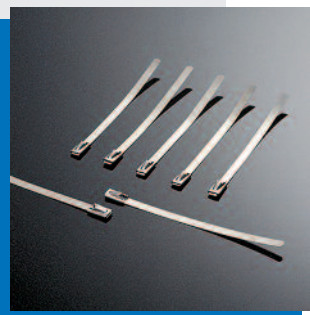
Art. No.	Type	Dimension	Pack/pcs.
31.900			1
200 pcs.	type SN 1-20	102x2,5mm	(each 50 pcs. pink, orange, green, yellow)
100 pcs.	type SN 2-35	150x3,6mm	(each 25 pcs. pink, orange, green, yellow)
100 pcs.	type SN 3-50	200x4,8mm	(each 25 pcs. pink, orange, green, yellow)



Steel ties with ball lock, resistant against high temperatures and chemicals.

Material: stainless steel 304

Temperature resistance: -80°C to +538°C, UV-resistant, flame-resistant



Art. No.	Type	Dimension	Tensile strength N	Bundle Ø	Pack/pcs.
31.200	SK 3-20	100 x 4,6	450	20	100
31.201	SK 3-25	125 x 4,6	450	25	100
31.202	SK 3-40	150 x 4,6	450	44	100
31.203	SK 3-50	200 x 4,6	450	50	100
31.204	SK 3-75	290 x 4,6	450	75	100
31.205	SK 3-100	360 x 4,6	450	102	100
31.206	SK 3-150	520 x 4,6	450	152	25
31.207	SK 3-200	680 x 4,6	450	203	25
31.208	SK 3-250	840 x 4,6	450	254	25
31.209	SK 3-310	1000 x 4,6	450	318	25
31.220	SK 4-50	200 x 7,9	1140	50	100
31.221	SK 4-75	290 x 7,9	1140	75	100
31.222	SK 4-100	360 x 7,9	1140	102	100
31.223	SK 4-150	520 x 7,9	1140	152	25
31.224	SK 4-200	680 x 7,9	1140	203	25
31.225	SK 4-250	840 x 7,9	1140	254	25
31.226	SK 4-310	1000 x 7,9	1140	318	25
31.240	SK 7-75	290 x 12	2180	75	25
31.241	SK 7-100	360 x 12	2180	102	25
31.242	SK 7-150	520 x 12	2180	152	25
31.243	SK 7-200	680 x 12	2180	203	25
31.244	SK 7-250	840 x 12	2180	254	25
31.245	SK 7-310	1000 x 12	2180	318	25

Steel ties with ball lock and epoxy-resin-polyestercoating, resistant to high temperatures and chemicals, halogen-free, non-poisonous.

Material: stainless steel 304

Temperature resistance: steel -80°C to +538°C, UV-resistant, flame resistant
Polyester-coating -80°C to +150°C

Art. No.	Type	Dimension	Tensile strength N	Bundle Ø	Pack/pcs.
31.260	SKB 3-20	100 x 4,6	450	20	100
31.261	SKB 3-25	125 x 4,6	450	25	100
31.262	SKB 3-40	150 x 4,6	450	44	100
31.263	SKB 3-50	200 x 4,6	450	50	100
31.264	SKB 3-75	290 x 4,6	450	75	100
31.265	SKB 3-100	360 x 4,6	450	102	100
31.266	SKB 3-150	520 x 4,6	450	152	25
31.267	SKB 3-200	680 x 4,6	450	203	25
31.268	SKB 3-250	840 x 4,6	450	254	25
31.269	SKB 3-310	1000 x 4,6	450	318	25
31.280	SKB 4-50	200 x 7,9	1140	50	100
31.281	SKB 4-75	290 x 7,9	1140	75	100
31.282	SKB 4-100	360 x 7,9	1140	102	100
31.283	SKB 4-150	520 x 7,9	1140	152	25
31.284	SKB 4-200	680 x 7,9	1140	203	25
31.285	SKB 4-250	840 x 7,9	1140	254	25
31.286	SKB 4-310	1000 x 7,9	1140	318	25
31.300	SKB 7-75	290 x 12	2180	75	25
31.301	SKB 7-100	360 x 12	2180	102	25
31.302	SKB 7-150	520 x 12	2180	152	25
31.303	SKB 7-200	680 x 12	2180	203	25
31.304	SKB 7-250	840 x 12	2180	254	25
31.305	SKB 7-310	1000 x 12	2180	318	25



SN - CABLE TIES

1

SN – velcro cable ties

The Velcro cable ties are especially suited for bundling sensitive cables and wires. They are ideal for areas of application where changes are frequently necessary.

Adhesive material: polyethylene
 Nap material: polyamide
 Temperature resistance: -20°C to +75°C

Standard colour: black
 Available colours: blue, yellow, green, red, white

Please state the desired colour with your order or amend the article number with the desired colour.
 E.g.: type GTH 20300 A in red = 31.700.RED



Velcro cable ties

Art. No.	Type	Dimension	Max. bundle Ø	Pack/pcs.
31.708 ①	GT 12300 Y	300 x 12	80	100
31.709	GT 13150 Y	150 x 13	37	100
31.710	GT 13200 Y	200 x 13	55	100
31.711	GT 13250 Y	250 x 13	70	100

Velcro cable ties with fixing loop

Art. No.	Type	Dimension	Max. bundle Ø	Pack/pcs.
31.700 ②	GTH 20300 A	300 x 20	70	10
31.701	GTH 30400 A	400 x 30	110	10
31.702	GTH 30600 A	600 X 30	175	10

Velcro tape on roll

Art. No.	Type	Dimension	Max. bundle Ø	Pack/pcs.
31.718 ③	GT 1210 B	10 M x 12	any type	1
31.719	GT 1303 B	3 M x 13	any type	1
31.720	GT 1910 B	10 M x 19	any type	1
31.721	GT 2003 B	3 M x 20	any type	1