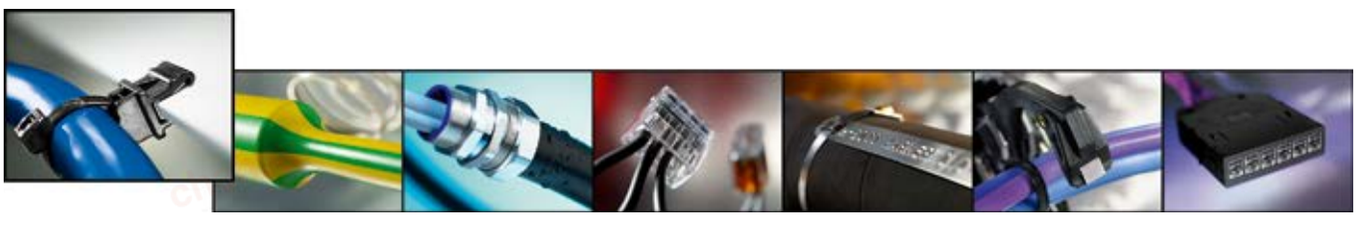
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HellermannTyton



Special Cable Ties for Railway Industry



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Reliability and safety in rail vehicles

As guidelines for fire safety standards in rail vehicle the European EN 45545-2 applies as well as the French NF F 16-101 /102. The EN 45545-2 defines a classification system that specifies requirements for fire behavior of materials and products used in trains. The main criteria of the EN 45545-2 include among others the oxygen index, which must optimally be above 32 %. Another critical aspect is the smoke and toxicity of smoke. The opacity value of 150 (max. 600) ensures the invisibility of smoke in case of fire safely, so that passengers can still orient the train. The toxicity of the resulting smoking for the materials used must not exceed the value of 0.9.

CATEGORIES	Test method	Parameter and unit	Max or Min	Level		
				HL1	HL2	HL3
R22	EN ISO 4589-2	Oxygen index %	Min	28	28	32
	ISO 5659-2: 25 kW/m²	Ds max. (Fumes opacity)	Max	600	300	150
	NF X 70-100-1 & -2, 600 °C	ITC (fumes toxicity)	Max	1.2	0.9	0.75
R23	EN ISO 4589-2	Oxygen index %	Min	28	28	32
	ISO 5659-2: 25 kW/m²	Ds max. (Fumes opacity)	Max	-	600	300
	NF X 70-100-1 & -2, 600 °C	ITC (fumes toxicity)	Max	-	1.8	1.5

Our tailor made cable tie solutions for the special needs of the Railway Industry – certified according to NF F 16-101/102 and EN 45545-2

As one of the world's leading manufacturers of products for fixing, fastening, identifying, isolating and protecting cables and their connecting components HellermannTyton offers a wide range of different fixing solutions for the railway business. But not only different raw materials! We also offer different designs to serve the special needs of the railway market.

Available products and designs:

- T-Series cable ties available in a wide range of sizes made of Polyamide 6.6 weather resistant and Polyamide 6.6 V0 (PA66W+PA66V0)
- KR-Series cable ties with the patented locking system. Very secure and vibration resistant fixing solution made of Polyamide 6.6 and Polyamide 6.6 weather resistant (PA66 NA+PA66W)
- OS-Series cable ties with smooth surface to the bundle made of Polyamide 6.6 weather resistant (PA66W) and Polyamide V0 (PA66V0) for low smoke emission or limited fire hazard
- Other series avaible upon request

Our products and materials have been certified according to NF F 16-101/102 and EN 45545-2 – with the following test results:

MATERIAL	Material Shortcut	Operating Temperature	Colour**	Flammability	Material Properties*	Material Specifications	Test Result
Polyamide 6.6	PA66	-40 °C to +85 °C, (+105 °C, 500 h)	Black (BK), Natural (NA)	UL94 V2	• High yield strength	HF RoHS	R22: HL2 R23: HL3
Polyamide 6.6, UV-resistant	PA66W	-40 °C to +85 °C, (+105 °C, 500 h)	Black (BK)	UL94 V2	• High yield strength • UV-resistant	HF RoHS	R22: HL2 R23: HL2
Polyamide 6.6 V0	PA66V0	-40 °C to +85 °C, (+105 °C, 500 h)	White (WH)	UL94 V0	• High yield strength • Low smoke emission	HF LFH RoHS	R22: HL2 R23: HL3

*These details are only rough guide values. They should not be regarded as a material specification and are no substitute for a suitability test. Please see our datasheets for further details.

**More colours on request.

HF = Halogenfree LFH = Limited Fire Hazard RoHS = Restriction of Hazardous Substances

08/2016 031-93387
BRO Railway Special Cable Ties

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Cable Ties for outdoor use (UV-resistant)

T-Series in PA66W black

T-Series cable ties for bundling and securing cables, pipes and hoses. These cable ties can be used for almost any type of application.

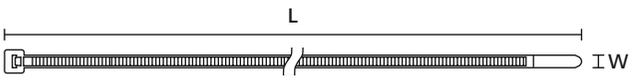
Features and Benefits

- Weather-resistant black cable tie available in a wide range of sizes
- Made from 100% high quality plastic, allows for good recycling
- Inside serration for a strong hold around bundles
- Easy application either manually or with a processing tool
- Simply to insert due to the ergonomically bent tail
- UV-resistant



The Allrounder: T-Series cable ties can be used for almost any type of application.

Test results of the material please see page 2.



T-Series

Other dimensions are available on request.

TYPE	Width (W)	Length (L)	Bundle Ø max.	N	Material	Colour	Pack Cont.	Tools	Article-No.
T18R	2.5	100.0	22.0	80	PA66W	Black (BK)	100 pcs.	2;4-6	111-01692
T18I	2.5	145.0	35.0	80	PA66W	Black (BK)	100 pcs.	2;4-6	111-01972
T18L	2.5	205.0	55.0	80	PA66W	Black (BK)	100 pcs.	2;4-6	111-01973
T30R	3.5	150.0	35.0	135	PA66W	Black (BK)	100 pcs.	2;4-6	111-01974
T30L	3.5	198.0	50.0	135	PA66W	Black (BK)	100 pcs.	2;4-6	111-01962
T30LL	3.5	290.0	80.0	135	PA66W	Black (BK)	100 pcs.	2;4-6	111-01963
T50R	4.6	200.0	50.0	225	PA66W	Black (BK)	100 pcs.	2-10	111-01964
T50I	4.6	300.0	85.0	225	PA66W	Black (BK)	100 pcs.	2-10	111-01975
T50L	4.6	390.0	110.0	225	PA66W	Black (BK)	100 pcs.	2-10	111-01965
T80R	4.7	210.0	55.0	355	PA66W	Black (BK)	100 pcs.	2-12	111-01695
T80I	4.7	300.0	85.0	355	PA66W	Black (BK)	100 pcs.	2-12	111-01694
T80L	4.7	390.0	110.0	355	PA66W	Black (BK)	100 pcs.	2-12	111-01693
T120I	7.6	300.0	80.0	535	PA66W	Black (BK)	100 pcs.	3;9-12	111-01968
T150R	7.6	365.0	100.0	670	PA66W	Black (BK)	100 pcs.	3;9-12	111-01696
T120R(E)	7.6	387.0	100.0	535	PA66W	Black (BK)	100 pcs.	3;9-12	111-01966
T120M	7.6	460.0	125.0	535	PA66W	Black (BK)	100 pcs.	3;9-12	111-01967
T120L	7.6	760.0	225.0	535	PA66W	Black (BK)	50 pcs.	3;9-12	111-01701

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Recommended Tools										
2	3	4	5	6	7	8	9	10	11	12
MK20	MK21	MK3SP	MK3PNSP2	EVO7	MK7HT	MK7P	MK6	MK9/EVO9	MK9HT/ EVO9HT	MK9P

For detailed information on Application Tooling please refer to our Main Catalogue or the Internet.

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Please note! Not all products listed on this page may have this approval. Please check our website for latest approvals.

HellermannTyton

08/2016 031-93387
BRO Railway Special Cable Ties

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Cable Ties for higher fire-protection

T-Series in PA66V0 white

T-Series cable ties for bundling and securing cables, pipes and hoses. These cable ties can be used for almost any type of applications, especially where safety regulations are high, e.g. the reduction of smoke and dangerous gases.



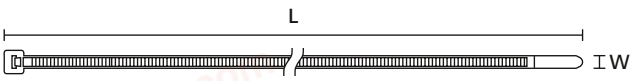
The Allrounder: T-Series cable ties can be used for almost any type of application.

Features and Benefits

- White cable tie for higher fire-protection, available in a wide range of sizes
- Made from 100% high quality plastic, allows for good recycling
- Inside serration for a strong hold around bundles
- Easy application either manually or with a processing tool
- Simple to insert due to the ergonomically bent tail
- High safety rating due to low fire hazard

Test results of the material please see page 2.

Other dimensions are available on request.



T-Series

TYPE	Width (W)	Length (L)	Bundle Ø max.	N	Material	Colour	Pack Cont.	Tools	Article-No.
T18R	2.5	100.0	22.0	80	PA66V0	White (WH)	100 pcs.	2;4-6	111-91819
T18L	2.5	205.0	55.0	80	PA66V0	White (WH)	100 pcs.	2;4-6	111-01557
T30R	3.5	150.0	35.0	135	PA66V0	White (WH)	100 pcs.	2;4-6	111-93019
T50R	4.6	200.0	50.0	225	PA66V0	White (WH)	100 pcs.	2-10	111-95019
T50I	4.6	300.0	85.0	225	PA66V0	White (WH)	100 pcs.	2-10	111-00317
T50L	4.7	390.0	110.0	225	PA66V0	White (WH)	100 pcs.	2-10	111-05438
T120R(E)	7.6	387.0	100.0	535	PA66V0	White (WH)	100 pcs.	3;9-12	111-91210

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Recommended Tools										
2	3	4	5	6	7	8	9	10	11	12
MK20	MK21	MK3SP	MK3PNSP2	EVO7	MK7HT	MK7P	MK6	MK9/EVO9	MK9HT/ EVO9HT	MK9P

For detailed information on Application Tooling please refer to our Main Catalogue or the Internet.

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Cable Ties for thin-walled bundles

OS-Series

OS-Series cable ties are used in many areas where thin-walled or soft insulation wires and cable are being installed. Despite the railway industry these cable ties are used in the automotive and aircraft industry. OS ties made from material PA66V0 are suitable for applications where safety regulations, e. g. reduction of smoke and dangerous gases, are required.

Features and Benefits

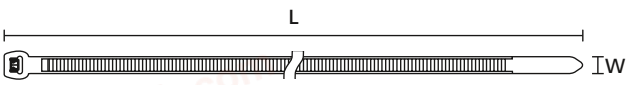
- Outside serrated cable tie with smooth surface to the bundle
- Tie follows the contours of the cable bundle perfectly
- Takes up less space due to curved head
- Easy insertion and high tensile strength
- For limited fire hazard demand: Material PA66V0
- Easy application either manually or with a processing tool



The contoured head needs less installation space, provides low insertion force and offers high strength.

Test results of the material please see page 2.

Other dimensions are available on request.



OS-Series



The curved head design of the OS-Series

TYPE	Width (W)	Length (L)	Bundle Ø min.	Bundle Ø max.	N	Material	Colour	Pack Cont.	Tools	Article-No.
T18ROS	2.5	100.0	1.6	20.0	80	PA66V0	White (WH)	100 pcs.	2;4-6	118-00079
T30LOS	3.4	200.0	1.6	50.0	135	PA66V0	White (WH)	100 pcs.	2;4-6	118-00080
T50ROS	4.6	200.0	1.6	50.0	225	PA66V0	White (WH)	100 pcs.	2;4-8	118-00065
T50MOS	4.6	245.0	1.6	66.0	225	PA66V0	White (WH)	100 pcs.	2;4-8	118-00081
T120ROS	7.6	385.0	5.0	105.0	535	PA66V0	White (WH)	100 pcs.	3;9-12	118-00082

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

TYPE	Width (W)	Length (L)	Bundle Ø min.	Bundle Ø max.	N	Material	Colour	Pack Cont.	Tools	Article-No.
T18ROS	2.5	100.0	1.6	20.0	80	PA66W	Black (BK)	100 pcs.	2;4-6	118-00125
T30LOS	3.4	200.0	1.6	50.0	135	PA66W	Black (BK)	100 pcs.	2;4-6	118-00126
T50ROS	4.6	200.0	1.6	50.0	225	PA66W	Black (BK)	100 pcs.	2;4-8	118-00127
T50MOS	4.6	245.0	1.6	66.0	225	PA66W	Black (BK)	100 pcs.	2;4-8	118-00128
T120ROS	7.6	385.0	5.0	105.0	535	PA66W	Black (BK)	100 pcs.	3;9-12	118-00130

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Recommended Tools										
2	3	4	5	6	7	8	9	10	11	12
MK20	MK21	MK3SP	MK3PNSP2	EVO7	MK7HT	MK7P	MK6	MK9/EVO9	MK9HT/ EVO9HT	MK9P

For detailed information on Application Tooling please refer to our Main Catalogue or the Internet.

08/2016 031-93387
BRO Railway Special Cable Ties

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Cable Tie locked by glass fibre pin

KR-Series, 1-Piece

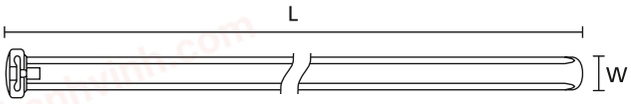
In addition to offering a secure method of bundling cables, the design of the KR-ties makes them ideal for use as a method of securing bellows on steering racks, water hoses and vacuum lines.

Features and Benefits

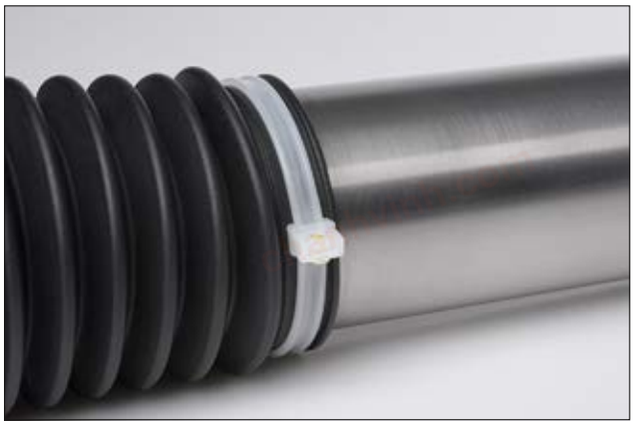
- Patented cable tie system
- Suitable to heavy cable and large diameter harnesses
- Smooth strap which is locked into place with a glass-fibre reinforced pin
- For assembly a special KR-tool is needed
- Very secure and vibration resistant fixing
- KR-ties up to 426 mm are made as one piece

Test results of the material please see page 2.

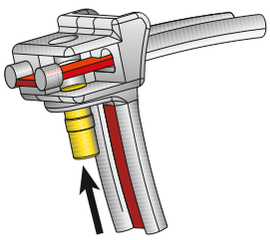
Other dimensions are available on request.



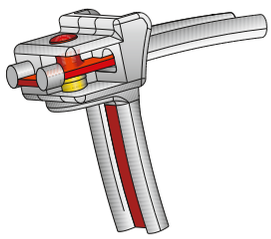
Cable tie KR-Series



The KR-Series has been repeatedly proven in high vibration applications.



The unlocked head of a KR-tie.



The cable tie (red) is locked into place with the pin.

TYPE	Width (W)	Length (L)	Bundle Ø max.	N	Material	Colour	Pack Cont.	Tools	Article-No.
KR6/35	6.1	360.0	93.0	490	PA66	Natural (NA)	50 pcs.	13	121-63519
	6.1	360.0	93.0	490	PA66W	Black (BK)	50 pcs.	13	121-63580
KR8/21	8.0	210.0	47.0	785	PA66W	Black (BK)	50 pcs.	13-14	121-82180
	8.0	210.0	47.0	785	PA66	Natural (NA)	50 pcs.	13-14	121-82119
KR8/33	8.0	337.0	86.0	785	PA66	Natural (NA)	50 pcs.	13-14	121-83319
	8.0	337.0	86.0	785	PA66W	Black (BK)	50 pcs.	13-14	121-83310
KR8/43	8.0	426.0	105.0	785	PA66W	Black (BK)	50 pcs.	13-14	121-84310
KR8/70-Set	8.0	700.0	216.0	785	PA66W	Black (BK)	100 pcs.	13-14	121-07070
KR8/C5	11.7	38.0	-	-	PA66W	Black (BK)	200 pcs.	13-14	121-58570

All dimensions in mm. Subject to technical changes.
Minimum Order Quantity (MOQ) may differ from package content. Other packaging options may also be available.

Recommended Tools	
13	14
KR6/8	KR8PNSE

For detailed information on Application Tooling please refer to our Main Catalogue or the Internet.

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