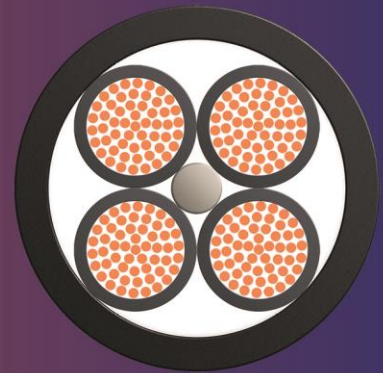
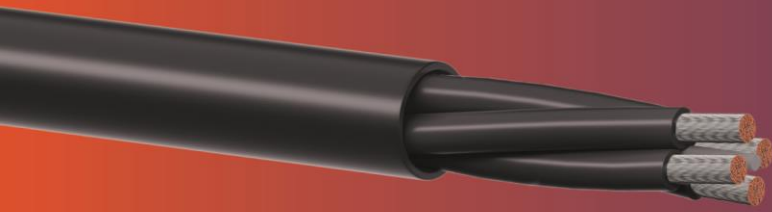


ROLLING STOCK - POWER CABLES
BETAtans® 3 GKW-ENX flex EN 50264-3-2 600 V MM
Multicore sheathed cable


Application

This multicore sheathed cable is designed for protected installations inside and outside of rail vehicles and buses. It is used for the connection of fixed and moved parts, lamps, heating- and electrical appliances. For installation the guidelines of EN 50355 and EN 50343 must be considered.

Construction

Conductor	Tinned fine copper strand acc. to VDE 0295 / IEC 60228, class 5
Insulation	Polyolefin Copolymer, Comp 752, electron beam cross-linked
Colour	Black, further colours upon request
Sheath	Polyolefin Copolymer, Comp 752, electron beam cross-linked
Colour	Black

Advantages

- Halogen free
- Electron beam cross-linked
- Very long lifetime
- Infusible
- Good media resistance
- High level cold resistance
- Low fire load

Electrical properties

Rated value	U ₀ /U	0.6 / 1 kV AC
Maximum voltage	U _{0m}	0.72 kV AC
Maximum voltage	U _m	1.2 kV AC
Maximum voltage	V ₀	0.9 kV DC
Maximum voltage	V _m	1.8 kV DC
Test voltage		3.5 kV, 50 Hz / 5 Min.

Thermal properties

Max. operating temperature	fixed installation	+120°C
Max. ambient temperature	occasionally moved	+90°C
Min. ambient temperature	fixed installation	-50°C
Max. short circuit temperature		+280°C (max. 5s)

Mechanical properties

Bending radius	fixed installation	∅ < 10 mm: > 3 x ∅ (-40°C)
Bending radius	fixed installation	∅ ≥ 10 mm: > 4 x ∅ (-40°C)
Bending radius	fixed installation	all cables > 5 x ∅ (-50°C)
Bending radius	occasionally moved	all cables > 10 x ∅ (-40°C)

Material properties / Standards

Material properties	EN 50264-3-2 hazard level MM
Resistance to ozone	EN 50305
High resistance to cold	EN 60811-504
High resistance to oil	EN 60811-404
High resistance to fuel	EN 60811-404
Resistance to acid	EN 60811-404

Material properties / Standards

Resistance to alkaline	EN 60811-404
Low fire load	DIN 51900
Limiting oxygen index (LOI)	ISO 4589-2 ASTM D 2863
Resistance to UV	EN 50618
Fire performance for rolling stock	EN 45545-2 HL1 - HL3
Fire performance for rolling stock	EN 50264-1
Vertical flame propagation for a single insulated wire or cable	EN 60332-1-2
vertical flame spread of bunched wires or cables ≥ 12 mm	EN 60332-3-24
Vertical flame spread of bunched wires or cables > 6 < 12 mm	EN 60332-3-25
Vertical flame spread of bunched wires or cables ≤ 6 mm	EN 50305
Smoke density	EN 61034-2
Toxicity of gases	EN 50305
Absence of halogens	EN 60754-1 EN 60684-2
Corrosivity of gases	EN 60754-2
Fire performance for rolling stock	NFPA130
Vertical flame propagation for bunched wires or cables	FT 4/IEEE 1202
Smoke release	UL 1685
Technical prescriptions concerning the burning behaviour	UN/ECE-R 118
Resistance to flame propagation	ISO 14572

Approvals

Swiss Federal Railways

Construction Cross-sec. [n x mm ²]	Color code	Conductor-Ø [mm]	R ₂₀ [mΩ/m]	Outer-Ø [mm]	Weight [kg/km]	Fire load [kWh/m]	Part no.
3 x 0.33	rd, bl, ye	0.75	57.21	5.40 ± 0.20	35	0.102	316462
2 x 0.5	NR	0.85	40.1	5.30 ± 0.20	38	0.115	313571
3 x 0.5	NR	0.85	40.1	5.70 ± 0.20	47	0.132	313577
4 x 0.5	NR	0.85	40.1	6.30 ± 0.20	57	0.163	313578
4 x 0.5	bl, rd, wh, ye	0.85	40.1	6.30 ± 0.20	57	0.163	316457
4 x 0.5	bl, br, bk, gnye	0.85	40.1	6.30 ± 0.20	57	0.163	316456
5 x 0.5	NR	0.85	40.1	6.90 ± 0.20	71	0.192	313580
6 x 0.5	NR	0.85	40.1	7.50 ± 0.20	84	0.226	313581
6 x 0.5	bl, br, bk, ye, wh, gy	0.85	40.1	7.50 ± 0.20	84	0.226	316452
6 x 0.5	bl, br, bk, ye, or, rd	0.85	40.1	7.50 ± 0.20	84	0.226	316455
6 G 0.5	bl, br, bk, gy, gy, gnye	0.85	40.1	7.50 ± 0.20	84	0.226	316458
8 x 0.5	NR	0.85	40.1	9.00 ± 0.20	116	0.320	316633
10 x 0.5	NR	0.85	40.1	9.10 ± 0.20	121	0.301	313582
36 x 0.5	NR	0.85	40.1	15.90 ± 0.30	378	0.863	313583
2 x 0.75	NR	1.1	26.7	5.90 ± 0.20	49	0.140	313592
3 x 0.75	NR	1.1	26.7	6.20 ± 0.20	58	0.153	313593
4 x 0.75	NR	1.1	26.7	6.90 ± 0.20	74	0.192	313596
5 x 0.75	NR	1.1	26.7	7.70 ± 0.20	92	0.232	313597
5 G 0.75	3LNPE	1.1	26.7	7.70 ± 0.20	92	0.232	316454
6 x 0.75	NR	1.1	26.7	8.30 ± 0.20	108	0.272	*
6 G 0.75	bl, br, gy, gy, gnye, bk	1.1	26.7	8.30 ± 0.20	108	0.272	316459
8 x 0.75	NR	1.1	26.7	10.00 ± 0.20	153	0.394	313600
9 x 0.75	NR	1.1	26.7	10.70 ± 0.20	160	0.401	*
9 G 0.75	br, gn, bl, yl, gy, gy, gnye, bk, wh	1.1	26.7	10.70 ± 0.20	160	0.401	316463
12 x 0.75	NR	1.1	26.7	10.80 ± 0.30	185	0.417	313601
24 x 0.75	NR	1.1	26.7	15.10 ± 0.30	337	0.710	313602
2 x 1	NR	1.2	20	6.40 ± 0.20	59	0.163	313603
3 x 1	NR	1.2	20	6.90 ± 0.20	74	0.188	313604
3 x 1	NRPE	1.2	20	6.90 ± 0.20	74	0.188	313605
4 x 1	NR	1.2	20	7.60 ± 0.20	92	0.226	313606
4 G 1	NRPE	1.2	20	7.60 ± 0.20	92	0.226	313607
5 G 1	br, bk, rd, gnye	1.2	20	7.60 ± 0.20	92	0.226	316453
5 x 1	NR	1.2	20	8.40 ± 0.20	114	0.276	313608

Construction Cross-sec. [n x mm ²]	Color code	Conductor-Ø [mm]	R ₂₀ [mΩ/m]	Outer-Ø [mm]	Weight [kg/km]	Fire load [kWh/m]	Part no.
5 G 1	NRPE	1.2	20	8.40 ± 0.20	114	0.276	316213
5 G 1	gnye, wh1, wh2, rd, bl	1.2	20	8.40 ± 0.20	114	0.276	316460
5 G 1	gnye, wh1,wh2, bk, bl	1.2	20	8.40 ± 0.20	114	0.276	316461
7 x 1	NR	1.2	20	10.20 ± 0.30	154	0.370	313609
7 G 1	NRPE	1.2	20	10.20 ± 0.30	154	0.370	313610
8 x 1	NR	1.2	20	11.20 ± 0.30	184	0.448	316634
12 x 1	NR	1.2	20	12.00 ± 0.30	234	0.507	313612
12 G 1	NRPE	1.2	20	12.00 ± 0.30	234	0.507	313613
18 x 1	NR	1.2	20	14.50 ± 0.30	349	0.753	313614
2 x 1.5	NR	1.45	13.7	7.40 ± 0.20	81	0.217	313615
3 x 1.5	NR	1.45	13.7	7.90 ± 0.20	101	0.245	313616
3 G 1.5	NRPE	1.45	13.7	7.90 ± 0.20	101	0.245	313617
3 G 1.5	bk, bl, gnye	1.45	13.7	7.90 ± 0.20	101	0.245	313618
4 x 1.5	NR	1.45	13.7	8.70 ± 0.20	126	0.294	313619
4 G 1.5	NRPE	1.45	13.7	8.70 ± 0.20	126	0.294	313620
4 G 1.5	bl, br, bk, gnye	1.45	13.7	8.70 ± 0.20	126	0.294	313621
5 x 1.5	NR	1.45	13.7	9.00 ± 0.20	148	0.332	313622
5 G 1.5	NRPE	1.45	13.7	9.00 ± 0.20	148	0.332	313623
6 x 1.5	NR	1.45	13.7	10.50 ± 0.30	185	0.430	313624
7 x 1.5	NR	1.45	13.7	11.70 ± 0.30	209	0.471	313625
7 G 1.5	NRPE	1.45	13.7	11.70 ± 0.30	209	0.471	313628
10 x 1.5	NR	1.45	13.7	13.30 ± 0.30	280	0.598	313629
12 x 1.5	NR	1.45	13.7	13.70 ± 0.30	319	0.652	313631
12 G 1.5	NRPE	1.45	13.7	13.70 ± 0.30	319	0.652	313632
14 x 1.5	NR	1.45	13.7	14.60 ± 0.30	352	0.682	316861
32 x 1.5	NR	1.45	13.7	21.80 ± 0.40	796	1.530	313633
36 x 1.5	NR	1.45	13.7	22.90 ± 0.40	888	1.689	313634
2 x 2.5	NR	1.95	8.21	8.20 ± 0.20	107	0.254	313635
3 x 2.5	NR	1.95	8.21	8.70 ± 0.20	134	0.278	313636
3 G 2.5	NRPE	1.95	8.21	8.70 ± 0.20	134	0.278	313638
4 x 2.5	NR	1.95	8.21	9.60 ± 0.20	170	0.336	313639
4 G 2.5	NRPE	1.95	8.21	9.60 ± 0.20	170	0.336	313640
5 x 2.5	NR	1.95	8.21	11.10 ± 0.30	222	0.456	313641

Construction Cross-sec. [n x mm ²]	Color code	Conductor-Ø [mm]	R ₂₀ [mΩ/m]	Outer-Ø [mm]	Weight [kg/km]	Fire load [kWh/m]	Part no.
5 G 2.5	NRPE	1.95	8.21	11.10 ± 0.30	222	0.456	313642
6 x 2.5	NR	1.95	8.21	12.20 ± 0.30	267	0.552	313643
7 x 2.5	NR	1.95	8.21	13.70 ± 0.30	304	0.616	313644
7 G 2.5	NRPE	1.95	8.21	13.70 ± 0.30	304	0.616	313645
2 x 4	NR	2.55	5.09	9.40 ± 0.20	149	0.321	313507
3 x 4	NR	2.55	5.09	10.00 ± 0.30	190	0.349	313646
4 x 4	NR	2.55	5.09	11.30 ± 0.30	247	0.442	313647
4 G 4	NRPE	2.55	5.09	11.30 ± 0.30	247	0.442	313508
5 x 4	NR	2.55	5.09	12.80 ± 0.30	315	0.578	313648
5 G 4	NRPE	2.55	5.09	12.80 ± 0.30	315	0.578	313649
5 G 4	NRNPE	2.55	5.09	12.80 ± 0.30	315	0.578	313650
6 x 4	NR	2.55	5.09	14.10 ± 0.30	380	0.699	313651
7 x 4	NR	2.55	5.09	15.80 ± 0.30	432	0.777	*
7 G 4	NRPE	2.55	5.09	15.80 ± 0.30	432	0.777	313652
2 x 6	NR	3.1	3.39	10.70 ± 0.30	204	0.403	313653
2 x 6 + 2 x 1	bk, br, wh, ye	3.1	0.565	10.70 ± 0.30	206	0.346	317603
3 x 6	NR	3.1	3.39	11.40 ± 0.30	263	0.436	313654
4 x 6	NR	3.1	3.39	13.10 ± 0.30	349	0.578	313655
4 G 6	NRPE	3.1	3.39	13.10 ± 0.30	349	0.578	315341
5 x 6	NR	3.1	3.39	14.40 ± 0.30	429	0.694	313656
6 x 6	NR	3.1	3.39	16.00 ± 0.30	523	0.860	313657
2 x 10	NR	4.1	1.95	13.30 ± 0.30	297	0.513	313658
3 x 10	NR	4.1	1.95	14.00 ± 0.30	411	0.623	313659
4 x 10	NR	4.1	1.95	15.70 ± 0.30	488	0.600	313660
4 x 10	NRN	4.1	1.95	15.70 ± 0.30	488	0.600	313661
4 G 10	NRPE	4.1	1.95	15.70 ± 0.30	488	0.600	313509
5 x 10	NR	4.1	1.95	17.70 ± 0.30	626	0.811	313662
2 x 16	NR	5	1.24	15.20 ± 0.30	434	0.657	313663
3 x 16	NR	5	1.24	16.30 ± 0.30	549	0.589	313510
4 x 16	NR	5	1.24	18.30 ± 0.30	730	0.777	313664
5 x 16	NR	5	1.24	20.50 ± 0.40	929	1.033	*
5 G 16	NRPE	5	1.24	20.50 ± 0.40	929	1.033	313665
5 x 25	NR	6.2	0.795	24.90 ± 0.40	1461	1.680	316635

Construction Cross-sec. [n x mm ²]	Color code	Conductor-Ø [mm]	R ₂₀ [mΩ/m]	Outer-Ø [mm]	Weight [kg/km]	Fire load [kWh/m]	Part no.
3 x 35	NR	7.7	0.565	24.40 ± 0.40	1310	1.591	316028
3 x 35 + 3 x 6	NR	7.7	0.565	24.40 ± 0.40	1424	1.513	315986
4 x 35	NR	7.7	0.565	26.70 ± 0.40	1687	1.927	*

Note:

* Upon request