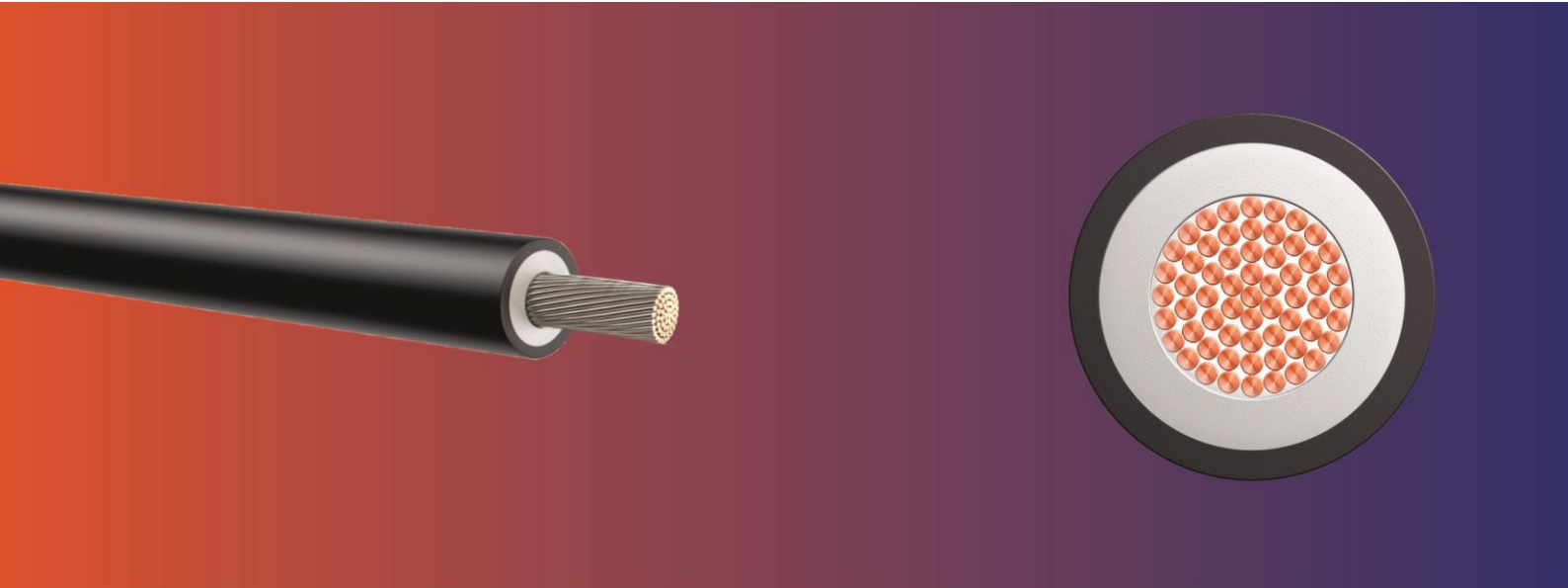


**ROLLING STOCK – AUXILIARY - AND MAINPOWER CABLE**
**BETrans® 9 GKW-ENX R 3600 V M**  
Core based on EN 50264-1


## Application

These cables are used for protected installations inside and outside of rail vehicles and buses and other rail vehicles for the connection of fixed and moved parts. These cables have optimised outer diameter and therefore they are applied in applications where space is very limited. Cables are suitable for the wiring of electric engines, switch and auxiliary boards, converters and distribution boxes. Due to the double-insulated design, these cables are qualified for short circuit and earth fault-proof applications. For installation the guidelines of EN 50355 and EN 50343 must be considered.

## Construction

Conductor	Tinned copper strands
Insulation	Polyolefin Copolymer, Comp 752, electronbeam cross-linked
Core colour	White
Sheath	Polyolefin Copolymer, Comp 752, electronbeam cross-linked
Sheath colour	Black, further colours upon request

## Advantages

- Halogen free
- Electron-beam cross-linked
- Weight and volume-optimised
- Very long lifetime
- Good media resistance
- Short circuit and fault proof
- High level cold resistance
- Low fire load

## Electrical properties

Rated value	U <sub>0</sub> /U	3.6 / 6 kV AC
Maximum voltage	U <sub>0m</sub>	4.32 kV AC
Maximum voltage	U <sub>m</sub>	7.2 kV AC
Maximum voltage	V <sub>0</sub>	5.4 kV DC
Maximum voltage	V <sub>m</sub>	10.8 kV DC
Test voltage		11 kV, 50 Hz / 5 min.

## Thermal properties

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

## 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 > 8 x ∅ (-40 °C)

## Material properties / Standards

Material properties	EN 50264-3-1 hazard level M
Ozone resistant	EN 60811-403

## Material properties / Standards

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
Resistance to alkaline	EN 60811-404
Low fire load	DIN 51900
Limiting oxygen index (LOI)	ISO 4589-2
UV resistant	EN 50618
Fire performance for rolling stock	EN 45545-2 HL1 - HL3
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 Smoke	EN 50305
Absence of halogens	EN 50267-2-1 EN 60684-2
Corrosivity of gases	EN 50267-2-2
Fire performance for rolling stock	NFPA130
Vertical flame propagation for bunched wires or cables	FT 4/IEEE 1202
Smoke release	UL 1685

## Approvals

Swiss Federal Railways

Construction Cross Section [n x mm <sup>2</sup> ]	Color code	Conductor-Ø [mm]	Min. insulation wall thickness [mm]	Outer-Ø [mm]	R <sub>20</sub> [mΩ/m]	Weight [kg/km]	Fire load [kWh/m]	Part no.
1.5	black	1.45	1.475	4.40 ± 0.10	13.7	33	0.08	313682
2.5	black	1.95	1.475	4.90 ± 0.15	8.21	45	0.094	313683
4	black	2.55	1.625	5.80 ± 0.15	5.09	66	0.126	313684
6	black	3.1	1.675	6.45 ± 0.20	3.39	88	0.149	313685
10	black	4.1	1.8	7.70 ± 0.20	1.95	134	0.198	313688
16	black	5.0	1.95	8.90 ± 0.30	1.24	196	0.253	313689
25	black	6.2	2.15	10.50 ± 0.30	0.795	290	0.335	313698
35	black	7.7	2.25	12.20 ± 0.30	0.565	404	0.439	313699
50	black	9.7	2.3	14.30 ± 0.30	0.393	564	0.569	313700
70	black	11.2	2.3	15.80 ± 0.40	0.277	754	0.65	313701
95	black	12.8	2.55	17.90 ± 0.40	0.21	988	0.795	313702
120	black	14.6	2.65	19.90 ± 0.40	0.164	1231	0.918	313703
150	black	16.4	2.75	21.90 ± 0.50	0.132	1529	1.126	313705
185	black	17.9	2.85	23.60 ± 0.50	0.108	1816	1.193	313706
240	black	20.7	3.1	26.90 ± 0.50	0.0817	2414	1.404	313707