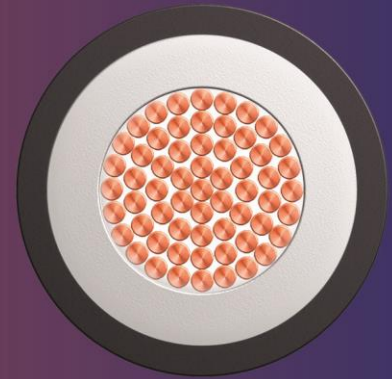
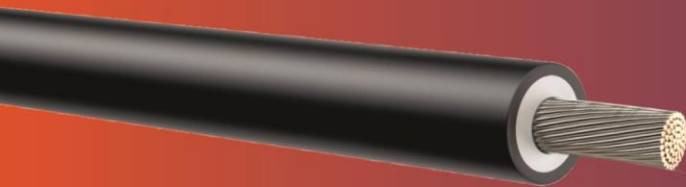


ROLLING STOCK – AUXILIARY - AND MAINPOWER CABLE

BETrans® 9 GWK-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 ₀ /U | 3.6 / 6 kV AC |
| Maximum voltage | U _{0m} | 4.32 kV AC |
| Maximum voltage | U _m | 7.2 kV AC |
| Maximum voltage | V ₀ | 5.4 kV DC |
| Maximum voltage | V _m | 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 ²] | Color code | Conductor-Ø [mm] | Min. insulation wall thickness [mm] | Outer-Ø [mm] | R ₂₀ [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 |

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