

# CABLES FOR RAILWAY TECHNOLOGY



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|                                                            |                                                                                                                            |
|------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------|
| <b>Who we are</b>                                          | 3                                                                                                                          |
| <b>Overview of fire protection requirements for cables</b> | 4                                                                                                                          |
| <b>Selection index for cables for railway technology</b>   | 5                                                                                                                          |
| <b>Cables for Railway technology</b>                       |                                                                                                                            |
| ■ SABIX® A 146 FRNC                                        | wiring cable 300/500 V, tested acc. to EN 45545-2 ..... 6                                                                  |
| ■ SABIX® A 156 FRNC                                        | wiring cable 450/750 V, tested acc. to EN 45545-2 ..... 6                                                                  |
| ■ SABIX® R 600 FRNC                                        | SABIX® Rail Control with numbered cores, tested acc. to EN 45545-2 ..... 7                                                 |
| ■ SABIX® R 638 FRNC                                        | SABIX® Rail Control with numbered cores and overall copper screen, tested acc. to EN 45545-2 ..... 8                       |
| ■ SABIX® R 605 FRNC                                        | SABIX® Rail Data, tested acc. to EN 45545-2 ..... 9-10                                                                     |
| ■ SABIX® R 615 FRNC                                        | SABIX® Rail Data with overall copper screen, tested acc. to EN 45545-2 ..... 11-12                                         |
| ■ SABIX® R 645 FRNC TP                                     | SABIX® Rail Data, paired with overall copper screen, tested acc. to EN 45545-2 ..... 13                                    |
| ■ SABIX® R flex                                            | continuously flexible SABIX® Rail cable with numbered cores, tested acc. to EN 45545-2 ..... 14                            |
| ■ SAB RailLine 560                                         | continuously flexible SABIX® Rail cable for outdoor use, cross linked type, tested acc. to EN 45545-2 ..... 15             |
| ■ CATLine CAT 5e R                                         | halogen-free CAT 5e Industrial Ethernet cable, tested acc. to EN 45545-2 ..... 16                                          |
| ■ CATLine CAT 6A R                                         | halogen-free CAT 6A Gigabit Ethernet cable, tested acc. to EN 45545-2 ..... 16                                             |
| ■ CATLine CAT 7A R                                         | halogen-free CAT 7A Gigabit Ethernet cable, tested acc. to EN 45545-2 ..... 16                                             |
| ■ CATLine CAT 5e R flex                                    | continuously flexible halogen-free CAT 5e Industrial Ethernet cable, tested acc. to EN 45545-2 ..... 17                    |
| ■ CATLine CAT 6A R flex                                    | continuously flexible halogen-free CAT 6A Gigabit Ethernet cable, tested acc. to EN 45545-2 ..... 17                       |
| ■ CATLine CAT 7A R flex                                    | continuously flexible halogen-free CAT 7A Gigabit Ethernet cable, tested acc. to EN 45545-2 ..... 17                       |
| ■ SABIX® A 280 FRNC X                                      | wiring cable 300/500 V, cross linked type, tested acc. to EN 45545-2 ..... 18                                              |
| ■ SABIX® A 280 FRNC X                                      | control cable with numbered cores, cross linked type, tested acc. to EN 45545-2 ..... 18                                   |
| ■ SABIX® A 285 FRNC X                                      | control cable with numbered cores and overall copper screen, cross linked type, tested acc. to EN 45545-2 ..... 19         |
| ■ SABIX® A 280 FRNC X (FR)                                 | fire resistant control cable, cross linked type, tested acc. to EN 45545-2, EN 50200 and IEC 60331-21 ..... 20             |
| ■ R 107                                                    | Besilen® insulated copper rope, tested acc. to EN 45545-2 ..... 21                                                         |
| ■ B 107                                                    | Besilen® insulated copper rope ..... 22                                                                                    |
| ■ SABIX® A 224 FRNC C1                                     | control cable with numbered cores, improved fire performance and extended temperature range acc. to NF C32-070 C1 ..... 23 |
| ■ SABIX® CC 625 FRNC M                                     | control cable with numbered cores acc. to UL/CSA ..... 24                                                                  |
| ■ SABIX® CC 625 S FRNC M                                   | control cable with numbered cores and overall copper screen acc. to UL/CSA ..... 25                                        |
| ■ Hybrid and Special cables                                | ..... 26                                                                                                                   |
| ■ SABIX® USB 2.0 R flex                                    | halogen-free continuously flexible SABIX® USB 2.0 Rail Cable, tested acc. to EN 45545-2 ..... 27                           |
| ■ CAN-Bus cables                                           | halogen-free combined cable with overall copper screen ..... 28                                                            |
| ■ Coupling cable T 790                                     | torsion able connecting cable ..... 28                                                                                     |
| ■ SABIX® A 883 Ö                                           | twisting and torsion connection cable ..... 29                                                                             |
| ■ Our cables                                               | at a glance ..... 30                                                                                                       |
| ■ Our temperature measurement                              | at a glance ..... 30                                                                                                       |
| ■ Harnessed cables                                         | ..... 31                                                                                                                   |
| ■ Test results                                             | ..... 31                                                                                                                   |



**In case that you don't find a suitable cable for your special application, we are always prepared to design a cable according to your individual construction requirements.**

## Family business in the third generation

**75** years of experience in cable and wire manufacturing as well as in temperature measurement technology turned a one-man business into a company with more than 550 employees. We prove our strength every year with more than 1500 special products according to customers' requirements. Each product is a new challenge for our creative technical team. We at **SAB** see ourselves as a manufacturer and a service provider – in the sense of true partnership and the greatest possible customer orientation.

Today, the quality of our products is known and appreciated in more than 80 countries around the world. In all product ranges, we are certified according to DIN EN ISO 9001. Furthermore, we have implemented an environmental management system for our company according to DIN EN ISO 14001, an occupational health and safety management system according to DIN EN ISO 14001 and DIN ISO 45001, and an energy management system according to DIN EN ISO 50001.

And also for the future, our slogan is: **"WE CONTINUE!"**

|                    |                                                                                                                                                                                    |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| FOUNDED:           | 1947 by Peter Bröckskes sen.<br>an independent, medium-sized company.                                                                                                              |
| CEO:               | Peter Bröckskes and Sabine Bröckskes-Wetten                                                                                                                                        |
| PLANT/LOCATION:    | In Viersen (Lower Rhine) 110.000 m² company site.<br><br>Own manufacturing from copper conductor to outer sheath.<br><br>VDE proved burnchamber and laboratory within the company. |
| EMPLOYEES/WORKERS: | Approx. 430 at the plant in Viersen, 550 worldwide                                                                                                                                 |
| YEARLY SALES:      | Approx. 95 Mio. € worldwide                                                                                                                                                        |
| PRODUCTS:          | Special Cables<br><br>Measurement Technology<br><br>Cable Harnessing                                                                                                               |

### CERTIFICATES AND APPROVALS:



Quality management system acc. to DIN EN ISO 9001  
for every manufacturing field

Environmental management system acc. to DIN EN ISO 14001

Occupational health and safety management  
acc. to NLF/ILO-OSH and DIN ISO 45001

Energy management system acc. to DIN EN ISO 50001

Extract from EN 45545-2 table 5 requirement set R15 (EL1A)  
for the respective hazard classes

| Short name of requirement set (used for) | Test method reference                                        | Parameter Unit     | Maximum or Minimum | HL1                                             | HL2                                             | HL3                                             |
|------------------------------------------|--------------------------------------------------------------|--------------------|--------------------|-------------------------------------------------|-------------------------------------------------|-------------------------------------------------|
| R15 (EL1A)                               | T09.01<br>EN 60332-1-2                                       | Unburned length mm | Minimum            | burned part $\leq 540$ and unburned part $> 50$ | burned part $\leq 540$ and unburned part $> 50$ | burned part $\leq 540$ and unburned part $> 50$ |
|                                          | T09.02<br>EN 60332-3-24 (for $d \geq 12$ mm)                 | m                  | Maximum            | 2,5                                             | 2,5                                             | 2,5                                             |
|                                          | T09.03<br>EN 50305 (for $6 \text{ mm} < d < 12 \text{ mm}$ ) | m                  | Maximum            | 2,5                                             | 2,5                                             | 2,5                                             |
|                                          | T09.04<br>EN 50305 (for $d \leq 6$ mm)                       | m                  | Maximum            | 1,5                                             | 1,5                                             | 1,5                                             |
|                                          | T13<br>EN 61034-2                                            | Transmission %     | Minimum            | 25                                              | 50                                              | 70                                              |
|                                          | T15<br>EN 50305                                              | ITC dimensionless  | Maximum            | 10                                              | 10                                              | 6                                               |

### Hazard level classification (HL)

Extract from EN 45545-2 table 5 requirement set R15 (EL1A)  
for the respective hazard classes

| Operation category | Design category         |                                                                                              |                              |                                       |
|--------------------|-------------------------|----------------------------------------------------------------------------------------------|------------------------------|---------------------------------------|
|                    | N:<br>Standard vehicles | A:<br>Vehicles forming part of an automatic train having no emergency trained staff on board | D:<br>Double decked vehicles | S:<br>Sleeping and couchette vehicles |
| 1                  | HL1                     | HL1                                                                                          | HL1                          | HL2                                   |
| 2                  | HL2                     | HL2                                                                                          | HL2                          | HL2                                   |
| 3                  | HL2                     | HL2                                                                                          | HL2                          | HL3                                   |
| 4                  | HL3                     | HL3                                                                                          | HL3                          | HL3                                   |

## Selection table

Cables for Railway Technology acc. to EN 45545-2

EN 45545-2



|                                 |                                                                                                                  | Cable type | SABIX® A 146 FRNC | SABIX® A 156 FRNC | SABIX® R 600 FRNC | SABIX® R 638 FRNC | SABIX® R 605 FRNC | SABIX® R 615 FRNC | SABIX® R 645 FRNC TP | SABIX® R flex | SAB RailLine 560 | CATLine CAT 5e R | CATLine CAT 6A R | CATLine CAT 7A R | CATLine CAT 5e R flex | CATLine CAT 6A R flex | CATLine CAT 7A R flex | SABIX® A 280 FRNC X | SABIX® A 285 FRNC X | SABIX® A 280 FRNC X (FR) | R 107 | SABIX® USB 2.0 R flex |
|---------------------------------|------------------------------------------------------------------------------------------------------------------|------------|-------------------|-------------------|-------------------|-------------------|-------------------|-------------------|----------------------|---------------|------------------|------------------|------------------|------------------|-----------------------|-----------------------|-----------------------|---------------------|---------------------|--------------------------|-------|-----------------------|
| Applications                    | Single conductor                                                                                                 |            | ●                 | ●                 |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       | ●                   |                     |                          | ●     |                       |
|                                 | Multi-core cable                                                                                                 |            |                   |                   | ●                 | ●                 | ●                 | ●                 | ●                    | ●             | ●                | ●                | ●                | ●                | ●                     | ●                     | ●                     | ●                   | ●                   | ●                        |       | ●                     |
|                                 | screened                                                                                                         |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Wiring cable                                                                                                     |            | ●                 | ●                 |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       | ●                   |                     |                          |       |                       |
|                                 | Data cable                                                                                                       |            |                   |                   |                   |                   |                   | ●                 | ●                    | ●             |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Control cable                                                                                                    |            |                   |                   | ●                 | ●                 |                   |                   |                      | ●             | ●                |                  |                  |                  |                       |                       |                       | ●                   | ●                   | ●                        |       |                       |
|                                 | Ethernet cable                                                                                                   |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  | ●                |                  |                       | ●                     |                       |                     |                     |                          |       |                       |
|                                 | USB 2.0 cable                                                                                                    |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       | ●                     |
| Standards                       | cross linked type                                                                                                |            |                   |                   |                   |                   |                   |                   |                      |               | ●                |                  |                  |                  |                       |                       |                       | ●                   | ●                   | ●                        |       |                       |
|                                 | tested acc. to EN 45545-2                                                                                        |            | ●                 | ●                 | ●                 | ●                 | ●                 | ●                 | ●                    | ●             | ●                | ●                | ●                | ●                | ●                     | ●                     | ●                     | ●                   | ●                   | ●                        | ●     | ●                     |
|                                 | acc. to EN 50306-1 + EN 50264-1 are fulfilled.                                                                   |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Development of HCl is < 0,5% acc. to DIN EN 50267-2-1.                                                           |            | ●                 | ●                 | ●                 | ●                 | ●                 | ●                 | ●                    | ●             | ●                | ●                | ●                | ●                | ●                     | ●                     | ●                     | ●                   | ●                   | ●                        | ●     | ●                     |
|                                 | pH-value is > 4,3 acc. to DIN EN 50267-2-2.                                                                      |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Conductivity is < 10,0 µS/mm acc. to DIN EN 50267-2-2.                                                           |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Fluoric content < 0,1% acc. to DIN EN 60684-2                                                                    |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | No flame propagation acc. to IEC 60332-3-24, IEC 60332-3-25 + EN 50305 section 9.1.2                             |            | ●                 | ●                 | ●                 | ●                 | ●                 | ●                 | ●                    | ●             | ●                | ●                | ●                | ●                | ●                     | ●                     | ●                     | ●                   | ●                   | ●                        | ●     | ●                     |
|                                 | Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2                                  |            | ●                 | ●                 | ●                 | ●                 | ●                 | ●                 | ●                    | ●             | ●                | ●                | ●                | ●                | ●                     | ●                     | ●                     | ●                   | ●                   | ●                        | ●     | ●                     |
|                                 | Burning test acc. to ASTM E 162-09                                                                               |            |                   |                   |                   |                   |                   |                   | ●                    | ●             |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Flame retardant acc. to ISO 6722 (UN/ECE R118)                                                                   |            |                   |                   |                   |                   |                   |                   | ●                    | ●             |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
| Fire performance                | Insulation integrity in case of fire acc. to EN 50200 PH 30, VDE 0482-200, IEC 60331-21 FE 180 + VDE 0482-331-21 |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     | ●                        |       |                       |
|                                 | Toxicity acc. to EN 50305 + VDE 0260-305                                                                         |            | ●                 | ●                 | ●                 | ●                 | ●                 | ●                 | ●                    | ●             | ●                | ●                | ●                | ●                | ●                     | ●                     | ●                     | ●                   | ●                   | ●                        | ●     | ●                     |
|                                 | Smoke density acc. to IEC 61034 + VDE 0482-1034                                                                  |            | ●                 | ●                 | ●                 | ●                 | ●                 | ●                 | ●                    | ●             | ●                | ●                | ●                | ●                | ●                     | ●                     | ●                     | ●                   | ●                   | ●                        | ●     | ●                     |
|                                 | Smoke density acc. to ASTM E 662-09                                                                              |            |                   |                   |                   | ●                 | ●                 |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Oil and fuel resistance acc. to EN 50264-1 + VDE 0260-264-1                                                      |            |                   |                   |                   |                   |                   | ●                 | ●                    |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Ozone resistance acc. to EN 50382-2 + VDE 0260-382-2                                                             |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          | ●     |                       |
|                                 | +250 °C                                                                                                          |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | +180 °C                                                                                                          |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | +125 °C                                                                                                          |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | + 90 °C                                                                                                          |            | ●                 | ●                 | ●                 | ●                 | ●                 | ●                 | ●                    | ●             | ●                | ●                | ●                | ●                | ●                     | ●                     | ●                     | ●                   | ●                   | ●                        | ●     | ●                     |
| Temperature range fixed laying* | + 70 °C                                                                                                          |            | ●                 | ●                 | ●                 | ●                 | ●                 | ●                 | ●                    | ●             | ●                | ●                | ●                | ●                | ●                     | ●                     | ●                     | ●                   | ●                   | ●                        | ●     | ●                     |
|                                 | - 40 °C                                                                                                          |            | ●                 | ●                 | ●                 | ●                 | ●                 | ●                 | ●                    | ●             | ●                | ●                | ●                | ●                | ●                     | ●                     | ●                     | ●                   | ●                   | ●                        | ●     | ●                     |
|                                 | - 50 °C                                                                                                          |            | ●                 | ●                 | ●                 | ●                 | ●                 | ●                 | ●                    | ●             | ●                | ●                | ●                | ●                | ●                     | ●                     | ●                     | ●                   | ●                   | ●                        | ●     | ●                     |
| Voltage                         | Peak operating voltage max. 30 V                                                                                 |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Peak operating voltage max. 90 V                                                                                 |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  | ●                |                  |                       | ●                     |                       |                     |                     |                          |       |                       |
|                                 | Peak operating voltage: < 0,25 mm² = max. 350 V                                                                  |            |                   |                   |                   |                   |                   | ●                 | ●                    | ●             |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Peak operating voltage: ≥ 0,25 mm² = max. 500 V                                                                  |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Nominal voltage U <sub>0</sub> /U 300/500 V                                                                      |            | ●                 |                   | ●                 | ●                 |                   |                   |                      |               | ●                | ●                |                  |                  |                       |                       |                       | ●                   | ●                   | ●                        |       |                       |
|                                 | Nominal voltage U <sub>0</sub> /U 450/750 V                                                                      |            |                   | ●                 |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Nominal voltage U <sub>0</sub> /U 0,6/1 kV                                                                       |            |                   |                   |                   |                   |                   |                   |                      |               |                  | ●                |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Nominal voltage U <sub>0</sub> /U 1,8/3 kV                                                                       |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          | ●     |                       |
|                                 | Testing voltage 600 V                                                                                            |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       | ●                     |
|                                 | Testing voltage 1500 V                                                                                           |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  | ●                |                  |                       | ●                     |                       |                     |                     |                          |       |                       |
|                                 | Testing voltage 2000 V                                                                                           |            | ●                 |                   |                   |                   |                   | ●                 | ●                    | ●             |                  |                  |                  |                  |                       |                       |                       | ●                   | ●                   | ●                        |       |                       |
|                                 | Testing voltage 2500 V                                                                                           |            |                   | ●                 |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Testing voltage 3000 V                                                                                           |            |                   |                   | ●                 | ●                 |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Testing voltage 4000 V                                                                                           |            |                   |                   |                   |                   |                   |                   |                      |               | ●                |                  |                  |                  |                       |                       |                       |                     |                     |                          |       |                       |
|                                 | Testing voltage 6500 V                                                                                           |            |                   |                   |                   |                   |                   |                   |                      |               |                  |                  |                  |                  |                       |                       |                       |                     |                     |                          | ●     |                       |



\*The temperature range for flexible application is mentioned on the particular catalogue page

# Cables for Railway Technology

**SABIX® A 146 FRNC** wiring cable  
300/500 V  
**SABIX® A 156 FRNC** wiring cable  
450/750 V

EN 45545-2

Flame retardant acc. to  
UN/ECE R118



BRÜCKSKES · D-VIERSEN · SABIX® A 146 FRNC 300/500V 0,5 mm² CE

Marking for SABIX® A 146 FRNC 61460150:

SAB BRÜCKSKES · D-VIERSEN · SABIX® A 146 FRNC 300/500 V 0,5 mm² CE

## Construction:

|                     |                                                             |
|---------------------|-------------------------------------------------------------|
| <b>Conductor:</b>   | bare copper strands<br>acc. to IEC 60228, VDE 0295, class 5 |
| <b>Insulation:</b>  | SABIX®                                                      |
| <b>Colour code:</b> | see table*                                                  |

## Outstanding features:

- halogen-free
- no flame propagation
- flame retardant and self-extinguishing
- very good stripping
- flexible
- fulfils fire protection requirements R15 (EL1A) acc. to EN 45545-2 for hazard levels HL1-3

## Technical Data:

|                                                                                  |                                                                                                                                                                                                                                                     |                                                          |
|----------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| <b>Nominal voltage:</b>                                                          | <b>SABIX® A 146 FRNC:</b><br>U <sub>0</sub> /U 300/500 V                                                                                                                                                                                            | <b>SABIX® A 156 FRNC:</b><br>U <sub>0</sub> /U 450/750 V |
| <b>Testing voltage:</b>                                                          | <b>SABIX® A 146 FRNC:</b><br>2000 V                                                                                                                                                                                                                 | <b>SABIX® A 156 FRNC:</b><br>2500 V                      |
| <b>Min. bending radius:</b><br><b>For one single bend:</b>                       | 7.5 x d<br>5 x d                                                                                                                                                                                                                                    |                                                          |
| <b>Temperature range</b><br><i>fixed laying:</i><br><i>flexible application:</i> | -40/+90 °C<br>-30/+90 °C                                                                                                                                                                                                                            |                                                          |
| <b>Halogen-free:</b>                                                             | acc. to EN 50306-1 + EN 50264-1 are fulfilled.<br>Development of HCl is < 0,5%<br>acc. to IEC 60754-1.<br>pH-value is > 4,3 acc. to IEC 60754-2.<br>Conductivity is < 10,0 µS/mm acc. to IEC 60754-2.<br>Fluoric content < 0,1% acc. to IEC 60684-2 |                                                          |
| <b>Fire performance:</b>                                                         | No flame propagation<br>acc. to IEC 60332-3-24 + VDE 0482-332-3-24<br>resp. IEC 60332-3-25 + VDE 0482-332-3-25<br>and EN 50305 + VDE 0260-305 section 9.1.2.<br>Flame retardant and self-extinguishing<br>acc. to IEC 60332-1-2 + VDE 0482-332-1-2  |                                                          |
| <b>Corrosiveness of<br/>conflagration gases:</b>                                 | in compliance with<br>IEC 60754-2 + VDE 0482-754-2 -<br>no development of corrosive conflagration gases                                                                                                                                             |                                                          |
| <b>Smoke density:</b>                                                            | acc. to IEC 61034 + VDE 0482-1034                                                                                                                                                                                                                   |                                                          |
| <b>Flexibility:</b>                                                              | good                                                                                                                                                                                                                                                |                                                          |
| <b>Absence of<br/>harmful substances:</b>                                        | acc. to RoHS directive of the European Union                                                                                                                                                                                                        |                                                          |

## SABIX® A 146 FRNC

| item no.    | nominal<br>cross-section<br>mm² | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|-------------|---------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| 6146 .. 50* | 0,50                            | 0,21                           | 2,1                   | 4,8                       | 9                          |
| 6146 .. 75* | 0,75                            | 0,21                           | 2,4                   | 7,2                       | 12                         |
| 6146 .. 80* | 1,00                            | 0,21                           | 2,5                   | 9,6                       | 14                         |

Other dimensions and colours are possible on request.

## SABIX® A 156 FRNC

| item no.    | nominal<br>cross-section<br>mm² | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|-------------|---------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| 6156 .. 82* | 1,50                            | 0,26                           | 3,0                   | 14,4                      | 20                         |
| 6156 .. 84* | 2,50                            | 0,26                           | 3,6                   | 24,0                      | 32                         |
| 6156 .. 86* | 4,00                            | 0,31                           | 4,2                   | 38,4                      | 48                         |
| 6156 .. 87* | 6,00                            | 0,31                           | 4,7                   | 57,6                      | 67                         |
| 6156 .. 88* | 10,00                           | 0,41                           | 6,3                   | 96,0                      | 117                        |
| 6156 .. 89* | 16,00                           | 0,41                           | 8,0                   | 153,6                     | 181                        |
| 6156 .. 90* | 25,00                           | 0,41                           | 9,9                   | 240,0                     | 292                        |
| 6156 .. 91* | 35,00                           | 0,41                           | 11,1                  | 336,0                     | 394                        |
| 6156 .. 92* | 50,00                           | 0,41                           | 12,6                  | 480,0                     | 563                        |
| 6156 .. 93* | 70,00                           | 0,41                           | 14,8                  | 672,0                     | 751                        |
| 6156 .. 94* | 95,00                           | 0,51                           | 18,2                  | 912,0                     | 1034                       |
| 6156 .. 95* | 120,00                          | 0,51                           | 19,7                  | 1152,0                    | 1241                       |
| 6156 .. 96* | 150,00                          | 0,51                           | 21,8                  | 1440,0                    | 1544                       |
| 6156 .. 97* | 185,00                          | 0,51                           | 23,2                  | 1776,0                    | 1866                       |
| 6156 .. 98* | 240,00                          | 0,51                           | 26,9                  | 2304,0                    | 2507                       |
| 6156 .. 99* | 300,00                          | 0,51                           | 30,0                  | 2880,0                    | 3125                       |

Other dimensions and colours are possible on request.

\* Colour code for single conductors,  
position 5 and 6 of the item no.:

|             |                   |
|-------------|-------------------|
| 01 = black  | 07 = violet       |
| 02 = blue   | 08 = white        |
| 03 = brown  | 09 = orange       |
| 04 = grey   | 11 = red          |
| 05 = yellow | 16 = gentian blue |
| 06 = green  | 27 = green-yellow |



On request with  
tinned copper strands

# Cables for Railway Technology

## SABIX® R 600 FRNC

SABIX® Rail Control with numbered cores

EN 45545-2



S · D-VIERSEN · SABIX® R 600 FRNC 12 x 1,5 mm<sup>2</sup> CE



Marking for SABIX® R 600 FRNC 66001215:

SAB BRÜCKSKES · D-VIERSEN · SABIX® R 600 FRNC 12 x 1,5 mm<sup>2</sup> CE

### Construction:

|                         |                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Conductor:</b>       | bare copper strands<br>acc. to IEC 60228, VDE 0295, class 5                                                      |
| <b>Insulation:</b>      | special SABIX®                                                                                                   |
| <b>Colour code:</b>     | black cores with consecutive numbers<br>acc. to EN 50334 + VDE 0293-334,<br>green-yellow earth wire from 3 cores |
| <b>Stranding:</b>       | in layers                                                                                                        |
| <b>Sheath material:</b> | special SABIX®                                                                                                   |
| <b>Sheath colour:</b>   | grey (RAL 7000)                                                                                                  |

### Outstanding features:



- halogen-free
- no flame propagation
- flame retardant and self-extinguishing
- fulfils fire protection requirements R15 (EL1A)  
acc. to EN 45545-2  
for hazard levels HL1-3

### Technical Data:

|                                       |                                                                                                                                                                                                                                                     |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nominal voltage:</b>               | U <sub>0</sub> /U 300/500 V                                                                                                                                                                                                                         |
| <b>Testing voltage:</b>               | core/core 3000 V                                                                                                                                                                                                                                    |
| <b>Min. bending radius</b>            |                                                                                                                                                                                                                                                     |
| fixed laying:                         | 4 x d                                                                                                                                                                                                                                               |
| flexible application:                 | 6 x d                                                                                                                                                                                                                                               |
| <b>Temperature range</b>              |                                                                                                                                                                                                                                                     |
| fixed laying:                         | -40/+90 °C                                                                                                                                                                                                                                          |
| flexible application:                 | -30/+90 °C                                                                                                                                                                                                                                          |
| <b>Halogen-free:</b>                  | acc. to EN 50306-1 + EN 50264-1 are fulfilled.<br>Development of HCl is < 0,5%<br>acc. to IEC 60754-1.<br>pH-value is > 4,3 acc. to IEC 60754-2.<br>Conductivity is < 10,0 µS/mm acc. to IEC 60754-2.<br>Fluoric content < 0,1% acc. to IEC 60684-2 |
| <b>Fire performance:</b>              | no flame propagation<br>acc. to IEC 60332-3-24, IEC 60332-3-25 +<br>EN 50305 section 9.1.2.<br>Flame retardant and self-extinguishing<br>acc. to IEC 60332-1-2 + VDE 0482-332-1-2                                                                   |
| <b>Toxicity:</b>                      | acc. to EN 50305 + VDE 0260-305                                                                                                                                                                                                                     |
| <b>Smoke density:</b>                 | acc. to IEC 61034 + VDE 0482-1034                                                                                                                                                                                                                   |
| <b>Flexibility:</b>                   | good                                                                                                                                                                                                                                                |
| <b>Absence of harmful substances:</b> | acc. to RoHS directive of the European Union                                                                                                                                                                                                        |

Tested at reference types.

| item no. | no. of cores<br>x cross section<br>n x mm <sup>2</sup> | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| 66000205 | 2 x 0,50                                               | 0,21                           | 4,8                   | 9,6                       | 33                         |
| 66000305 | 3 x 0,50                                               | 0,21                           | 5,1                   | 14,4                      | 38                         |
| 66000405 | 4 x 0,50                                               | 0,21                           | 5,5                   | 19,2                      | 46                         |
| 66000505 | 5 x 0,50                                               | 0,21                           | 6,2                   | 24,0                      | 57                         |
| 66000705 | 7 x 0,50                                               | 0,21                           | 6,7                   | 33,6                      | 69                         |
| 66001005 | 10 x 0,50                                              | 0,21                           | 8,6                   | 48,0                      | 96                         |
| 66001205 | 12 x 0,50                                              | 0,21                           | 9,1                   | 57,6                      | 110                        |
| 66001805 | 18 x 0,50                                              | 0,21                           | 10,7                  | 86,4                      | 169                        |
| 66002505 | 25 x 0,50                                              | 0,21                           | 12,9                  | 120,0                     | 221                        |
| 66003205 | 32 x 0,50                                              | 0,21                           | 14,0                  | 153,6                     | 287                        |
| 66004205 | 42 x 0,50                                              | 0,21                           | 15,7                  | 201,6                     | 365                        |
| 66006105 | 61 x 0,50                                              | 0,21                           | 18,5                  | 292,8                     | 510                        |
| 66000207 | 2 x 0,75                                               | 0,21                           | 5,4                   | 14,4                      | 44                         |
| 66000307 | 3 x 0,75                                               | 0,21                           | 5,7                   | 21,6                      | 51                         |
| 66000407 | 4 x 0,75                                               | 0,21                           | 6,4                   | 28,8                      | 63                         |
| 66000507 | 5 x 0,75                                               | 0,21                           | 7,0                   | 36,0                      | 77                         |
| 66000707 | 7 x 0,75                                               | 0,21                           | 7,8                   | 50,4                      | 96                         |
| 66001007 | 10 x 0,75                                              | 0,21                           | 10,0                  | 72,0                      | 144                        |
| 66001207 | 12 x 0,75                                              | 0,21                           | 10,5                  | 86,4                      | 163                        |
| 66001807 | 18 x 0,75                                              | 0,21                           | 12,4                  | 129,6                     | 230                        |
| 66002507 | 25 x 0,75                                              | 0,21                           | 15,1                  | 180,0                     | 316                        |
| 66003207 | 32 x 0,75                                              | 0,21                           | 16,4                  | 230,4                     | 388                        |
| 66004207 | 42 x 0,75                                              | 0,21                           | 18,4                  | 302,4                     | 515                        |
| 66006107 | 61 x 0,75                                              | 0,21                           | 21,6                  | 439,2                     | 721                        |
| 66000210 | 2 x 1,00                                               | 0,21                           | 5,6                   | 19,2                      | 50                         |
| 66000310 | 3 x 1,00                                               | 0,21                           | 6,1                   | 28,8                      | 62                         |
| 66000410 | 4 x 1,00                                               | 0,21                           | 6,6                   | 38,4                      | 76                         |
| 66000510 | 5 x 1,00                                               | 0,21                           | 7,5                   | 48,0                      | 94                         |
| 66000710 | 7 x 1,00                                               | 0,21                           | 8,1                   | 67,2                      | 117                        |
| 66001010 | 10 x 1,00                                              | 0,21                           | 10,6                  | 96,0                      | 172                        |
| 66001210 | 12 x 1,00                                              | 0,21                           | 10,9                  | 115,2                     | 196                        |
| 66001810 | 18 x 1,00                                              | 0,21                           | 12,9                  | 172,8                     | 280                        |
| 66002510 | 25 x 1,00                                              | 0,21                           | 15,7                  | 240,0                     | 381                        |
| 66003210 | 32 x 1,00                                              | 0,21                           | 17,1                  | 307,2                     | 486                        |
| 66004210 | 42 x 1,00                                              | 0,21                           | 19,4                  | 403,2                     | 616                        |
| 66006110 | 61 x 1,00                                              | 0,21                           | 22,7                  | 585,6                     | 873                        |
| 66000215 | 2 x 1,50                                               | 0,26                           | 6,4                   | 28,8                      | 69                         |
| 66000315 | 3 x 1,50                                               | 0,26                           | 6,8                   | 43,2                      | 81                         |

| item no. | no. of cores<br>x cross section<br>n x mm <sup>2</sup> | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| 66000415 | 4 x 1,50                                               | 0,26                           | 7,6                   | 57,6                      | 99                         |
| 66000515 | 5 x 1,50                                               | 0,26                           | 8,3                   | 72,0                      | 124                        |
| 66000715 | 7 x 1,50                                               | 0,26                           | 9,2                   | 100,8                     | 170                        |
| 66001015 | 10 x 1,50                                              | 0,26                           | 12,0                  | 144,0                     | 229                        |
| 66001215 | 12 x 1,50                                              | 0,26                           | 12,4                  | 172,8                     | 263                        |
| 66001815 | 18 x 1,50                                              | 0,26                           | 14,8                  | 259,2                     | 289                        |
| 66002515 | 25 x 1,50                                              | 0,26                           | 18,0                  | 360,0                     | 537                        |
| 66003215 | 32 x 1,50                                              | 0,26                           | 19,5                  | 460,8                     | 661                        |
| 66004215 | 42 x 1,50                                              | 0,26                           | 22,0                  | 604,8                     | 867                        |
| 66006115 | 61 x 1,50                                              | 0,26                           | 25,8                  | 878,4                     | 1217                       |
| 66000225 | 2 x 2,50                                               | 0,26                           | 7,8                   | 48,0                      | 105                        |
| 66000325 | 3 x 2,50                                               | 0,26                           | 8,9                   | 72,0                      | 127                        |
| 66000425 | 4 x 2,50                                               | 0,26                           | 9,2                   | 96,0                      | 155                        |
| 66000525 | 5 x 2,50                                               | 0,26                           | 10,1                  | 120,0                     | 199                        |
| 66000725 | 7 x 2,50                                               | 0,26                           | 11,2                  | 168,0                     | 252                        |
| 66001025 | 10 x 2,50                                              | 0,26                           | 14,8                  | 240,0                     | 362                        |
| 66001225 | 12 x 2,50                                              | 0,26                           | 15,3                  | 288,0                     | 416                        |
| 66001825 | 18 x 2,50                                              | 0,26                           | 18,2                  | 432,0                     | 615                        |
| 66002525 | 25 x 2,50                                              | 0,26                           | 22,3                  | 600,0                     | 837                        |
| 66000340 | 3 x 4,00                                               | 0,31                           | 9,7                   | 115,2                     | 185                        |
| 66000440 | 4 x 4,00                                               | 0,31                           | 10,8                  | 153,6                     | 234                        |
| 66000540 | 5 x 4,00                                               | 0,31                           | 12,1                  | 192,0                     | 290                        |
| 66000740 | 7 x 4,00                                               | 0,31                           | 13,4                  | 268,8                     | 375                        |
| 66000360 | 3 x 6,00                                               | 0,31                           | 11,4                  | 172,8                     | 270                        |
| 66000460 | 4 x 6,00                                               | 0,31                           | 12,7                  | 230,4                     | 336                        |
| 66000560 | 5 x 6,00                                               | 0,31                           | 14,2                  | 288,0                     | 415                        |
| 66000760 | 7 x 6,00                                               | 0,31                           | 15,7                  | 403,2                     | 545                        |
| 66000461 | 4 x 10,0                                               | 0,41                           | 16,7                  | 384,0                     | 579                        |
| 66000561 | 5 x 10,0                                               | 0,41                           | 18,6                  | 480,0                     | 740                        |
| 66000761 | 7 x 10,0                                               | 0,41                           | 20,7                  | 672,0                     | 960                        |
| 66000462 | 4 x 16,0                                               | 0,41                           | 20,6                  | 614,4                     | 887                        |
| 66000562 | 5 x 16,0                                               | 0,41                           | 23,0                  | 768,0                     | 1105                       |
| 66000762 | 7 x 16,0                                               | 0,41                           | 25,5                  | 1075,2                    | 1445                       |
| 66000463 | 4 x 25,0                                               | 0,41                           | 24,9                  | 960,0                     | 1388                       |
| 66000563 | 5 x 25,0                                               | 0,41                           | 28,1                  | 1200,0                    | 1750                       |
| 66000464 | 4 x 35,0                                               | 0,41                           | 28,8                  | 1344,0                    | 1927                       |
| 66000564 | 5 x 35,0                                               | 0,41                           | 32,5                  | 1680,0                    | 2413                       |

Other dimensions and colours are possible on request.

# Cables for Railway Technology

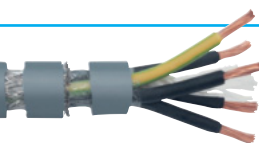
## SABIX® R 638 FRNC

SABIX® Rail Control with numbered cores and overall copper screen

EN 45545-2



SKES · D-VIERSEN · SABIX® R 638 FRNC 5 x 1,5 mm² CE



Marking for SABIX® R 638 FRNC 66380515:

SAB BRÜCKSKES · D-VIERSEN · SABIX® R 638 FRNC 5 x 1,5 mm² CE

### Construction:

|                         |                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Conductor:</b>       | bare copper strands<br>acc. to IEC 60228, VDE 0295, class 5                                                      |
| <b>Insulation:</b>      | special SABIX®                                                                                                   |
| <b>Colour code:</b>     | black cores with consecutive numbers<br>acc. to EN 50334 + VDE 0293-334,<br>green-yellow earth wire from 3 cores |
| <b>Stranding:</b>       | in layers                                                                                                        |
| <b>Wrapping:</b>        | foil                                                                                                             |
| <b>Screen:</b>          | tinned copper braiding                                                                                           |
| <b>Sheath material:</b> | special SABIX®                                                                                                   |
| <b>Sheath colour:</b>   | grey (RAL 7000)                                                                                                  |

### Outstanding features:

- halogen-free
- good EMC characteristics
- no flame propagation
- flame retardant and self-extinguishing
- fulfils  
fire protection requirements R15 (EL1A)  
acc. to EN 45545-2  
for hazard levels HL1-3

### Technical Data:

|                                                                                    |                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nominal voltage:</b>                                                            | U <sub>0</sub> /U 300/500 V                                                                                                                                                                                                                         |
| <b>Testing voltage:</b>                                                            | core/core 3000 V<br>core/screen 2000 V                                                                                                                                                                                                              |
| <b>Min. bending radius</b><br><i>fixed laying:</i><br><i>flexible application:</i> | 5 x d<br>10 x d                                                                                                                                                                                                                                     |
| <b>Temperature range</b><br><i>fixed laying:</i><br><i>flexible application:</i>   | -40/+90 °C<br>-30/+90 °C                                                                                                                                                                                                                            |
| <b>Halogen-free:</b>                                                               | acc. to EN 50306-1 + EN 50264-1 are fulfilled.<br>Development of HCl is < 0,5%<br>acc. to IEC 60754-1.<br>pH-value is > 4,3 acc. to IEC 60754-2.<br>Conductivity is < 10,0 µS/mm acc. to IEC 60754-2.<br>Fluoric content < 0,1% acc. to IEC 60684-2 |
| <b>Fire performance:</b>                                                           | no flame propagation<br>acc. to IEC 60332-3-24, IEC 60332-3-25 +<br>EN 50305 section 9.1.2.<br>Flame retardant and self-extinguishing<br>acc. to IEC 60332-1-2 + VDE 0482-332-1-2                                                                   |
| <b>Toxicity:</b>                                                                   | acc. to EN 50305 + VDE 0260-305                                                                                                                                                                                                                     |
| <b>Smoke density:</b>                                                              | acc. to IEC 61034 + VDE 0482-1034                                                                                                                                                                                                                   |
| <b>Flexibility:</b>                                                                | good                                                                                                                                                                                                                                                |
| <b>Absence of<br/>harmful substances:</b>                                          | acc. to RoHS directive of the European Union                                                                                                                                                                                                        |

Tested at reference types.

| item no. | no. of cores<br>x cross section<br>n x mm² | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| 66380205 | 2 x 0,50                                   | 0,21                           | 5,3                   | 25,5                      | 38                         |
| 66380305 | 3 x 0,50                                   | 0,21                           | 5,6                   | 30,7                      | 45                         |
| 66380405 | 4 x 0,50                                   | 0,21                           | 6,2                   | 48,0                      | 61                         |
| 66380505 | 5 x 0,50                                   | 0,21                           | 6,7                   | 55,9                      | 70                         |
| 66380705 | 7 x 0,50                                   | 0,21                           | 7,2                   | 71,1                      | 81                         |
| 66381205 | 12 x 0,50                                  | 0,21                           | 9,6                   | 108,1                     | 150                        |
| 66381805 | 18 x 0,50                                  | 0,21                           | 11,4                  | 143,5                     | 206                        |
| 66382505 | 25 x 0,50                                  | 0,21                           | 13,8                  | 189,7                     | 272                        |
| 66380207 | 2 x 0,75                                   | 0,21                           | 6,1                   | 31,1                      | 50                         |
| 66380307 | 3 x 0,75                                   | 0,21                           | 6,4                   | 50,6                      | 61                         |
| 66380407 | 4 x 0,75                                   | 0,21                           | 6,9                   | 61,1                      | 73                         |
| 66380507 | 5 x 0,75                                   | 0,21                           | 7,7                   | 73,7                      | 96                         |
| 66380707 | 7 x 0,75                                   | 0,21                           | 8,3                   | 90,9                      | 121                        |
| 66381207 | 12 x 0,75                                  | 0,21                           | 11,2                  | 142,4                     | 193                        |
| 66381807 | 18 x 0,75                                  | 0,21                           | 13,3                  | 197,9                     | 280                        |
| 66382507 | 25 x 0,75                                  | 0,21                           | 16,2                  | 284,6                     | 395                        |
| 66380210 | 2 x 1,00                                   | 0,21                           | 6,3                   | 48,0                      | 56                         |
| 66380310 | 3 x 1,00                                   | 0,21                           | 6,6                   | 58,2                      | 68                         |
| 66380410 | 4 x 1,00                                   | 0,21                           | 7,1                   | 75,7                      | 94                         |
| 66380510 | 5 x 1,00                                   | 0,21                           | 8,0                   | 86,1                      | 110                        |
| 66380710 | 7 x 1,00                                   | 0,21                           | 8,6                   | 108,2                     | 138                        |
| 66381210 | 12 x 1,00                                  | 0,21                           | 11,8                  | 172,1                     | 226                        |
| 66381810 | 18 x 1,00                                  | 0,21                           | 13,8                  | 242,1                     | 315                        |
| 66382510 | 25 x 1,00                                  | 0,21                           | 16,8                  | 346,5                     | 454                        |

| item no. | no. of cores<br>x cross section<br>n x mm² | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| 66380215 | 2 x 1,50                                   | 0,26                           | 6,9                   | 60,7                      | 63                         |
| 66380315 | 3 x 1,50                                   | 0,26                           | 7,2                   | 80,5                      | 90                         |
| 66380415 | 4 x 1,50                                   | 0,26                           | 8,1                   | 95,6                      | 110                        |
| 66380515 | 5 x 1,50                                   | 0,26                           | 9,0                   | 113,2                     | 135                        |
| 66380715 | 7 x 1,50                                   | 0,26                           | 9,7                   | 151,2                     | 178                        |
| 66381215 | 12 x 1,50                                  | 0,26                           | 13,9                  | 240,8                     | 300                        |
| 66381815 | 18 x 1,50                                  | 0,26                           | 15,7                  | 362,3                     | 454                        |
| 66382515 | 25 x 1,50                                  | 0,26                           | 19,1                  | 492,1                     | 613                        |
| 66380225 | 2 x 2,50                                   | 0,26                           | 8,3                   | 86,3                      | 100                        |
| 66380325 | 3 x 2,50                                   | 0,26                           | 9,0                   | 113,0                     | 128                        |
| 66380425 | 4 x 2,50                                   | 0,26                           | 9,7                   | 146,2                     | 163                        |
| 66380525 | 5 x 2,50                                   | 0,26                           | 11,0                  | 175,0                     | 215                        |
| 66380725 | 7 x 2,50                                   | 0,26                           | 12,1                  | 225,1                     | 276                        |
| 66381225 | 12 x 2,50                                  | 0,26                           | 16,4                  | 392,0                     | 466                        |
| 66381825 | 18 x 2,50                                  | 0,26                           | 19,3                  | 564,1                     | 666                        |
| 66382525 | 25 x 2,50                                  | 0,26                           | 23,4                  | 770,1                     | 931                        |
| 66380440 | 4 x 4,00                                   | 0,31                           | 11,5                  | 210,7                     | 250                        |
| 66380540 | 5 x 4,00                                   | 0,31                           | 12,8                  | 260,0                     | 309                        |
| 66380460 | 4 x 6,00                                   | 0,31                           | 13,6                  | 298,4                     | 353                        |
| 66380560 | 5 x 6,00                                   | 0,31                           | 15,1                  | 358,7                     | 420                        |
| 66380461 | 4 x 10,00                                  | 0,41                           | 17,8                  | 517,1                     | 616                        |
| 66380462 | 4 x 16,00                                  | 0,41                           | 21,9                  | 756,0                     | 917                        |

Other dimensions and colours are possible on request.

# Cables for Railway Technology

## SABIX® R 605 FRNC

SABIX® Rail Data

EN 45545-2

Flame retardant acc. to  
UN/ECE R118



D-VIERSEN · SABIX® R 605 FRNC 32 x 0,5 mm<sup>2</sup> CE



Marking for SABIX® R 605 FRNC 66053250:

SAB BRÜCKSKES · D-VIERSEN · SABIX® R 605 FRNC 32 x 0,5 mm<sup>2</sup> CE

### Construction:

|                         |                                                                    |
|-------------------------|--------------------------------------------------------------------|
| <b>Conductor:</b>       | bare copper strands with reference to IEC 60228, VDE 0295, class 5 |
| <b>Insulation:</b>      | special SABIX®                                                     |
| <b>Colour code:</b>     | with reference to DIN 47100                                        |
| <b>Stranding:</b>       | in layers                                                          |
| <b>Sheath material:</b> | special SABIX®                                                     |
| <b>Sheath colour:</b>   | grey (RAL 7032)                                                    |

### Outstanding features:



- halogen-free
- no flame propagation
- flame retardant and self-extinguishing
- fulfils fire protection requirements R15 (EL1A) acc. to EN 45545-2 for hazard levels HL1-3
- flame retardant acc. to UN/ECE R118

### Technical Data:

|                                                                                    |                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Peak operating voltage:</b>                                                     | < 0.25 mm <sup>2</sup> = max. 350 V<br>≥ 0.25 mm <sup>2</sup> = max. 500 V                                                                                                                                                                          |
| <b>Testing voltage:</b>                                                            | core/core 1500 V                                                                                                                                                                                                                                    |
| <b>Min. bending radius</b><br><i>fixed laying:</i><br><i>flexible application:</i> | 5 x d<br>10 x d                                                                                                                                                                                                                                     |
| <b>Temperature range</b><br><i>fixed laying:</i><br><i>flexible application:</i>   | -40/+90 °C<br>-30/+90 °C                                                                                                                                                                                                                            |
| <b>Halogen-free:</b>                                                               | acc. to EN 50306-1 + EN 50264-1 are fulfilled.<br>Development of HCl is < 0,5%<br>acc. to IEC 60754-1.<br>pH-value is > 4,3 acc. to IEC 60754-2.<br>Conductivity is < 10,0 µS/mm acc. to IEC 60754-2.<br>Fluoric content < 0,1% acc. to IEC 60684-2 |
| <b>Fire performance:</b>                                                           | no flame propagation<br>acc. to IEC 60332-3-24, IEC 60332-3-25 + EN 50305 section 9.1.2.<br>Flame retardant and self-extinguishing<br>acc. to IEC 60332-1-2 + VDE 0482-332-1-2.<br>Flame retardant acc. to ISO 6722 (UN/ECE R118)                   |
| <b>Toxicity:</b>                                                                   | acc. to EN 50305 + VDE 0260-305                                                                                                                                                                                                                     |
| <b>Smoke density:</b>                                                              | acc. to IEC 61034 + VDE 0482-1034                                                                                                                                                                                                                   |
| <b>Flexibility:</b>                                                                | good                                                                                                                                                                                                                                                |
| <b>Absence of harmful substances:</b>                                              | acc. to RoHS directive of the European Union                                                                                                                                                                                                        |

Tested at reference types.

| item no. | no. of cores<br>x cross section<br>n x mm <sup>2</sup> | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------------------|-----------------------|---------------------------|----------------------------|
| 66050214 | 2 x 0,14                                               | 3,1                   | 2,7                       | 13                         |
| 66050314 | 3 x 0,14                                               | 3,3                   | 4,0                       | 15                         |
| 66050414 | 4 x 0,14                                               | 3,5                   | 5,4                       | 18                         |
| 66050514 | 5 x 0,14                                               | 3,8                   | 6,7                       | 21                         |
| 66050714 | 7 x 0,14                                               | 4,1                   | 9,4                       | 25                         |
| 66050814 | 8 x 0,14                                               | 5,0                   | 10,8                      | 32                         |
| 66051214 | 12 x 0,14                                              | 5,3                   | 16,1                      | 38                         |
| 66051414 | 14 x 0,14                                              | 5,5                   | 18,8                      | 42                         |
| 66051614 | 16 x 0,14                                              | 6,0                   | 21,5                      | 51                         |
| 66051814 | 18 x 0,14                                              | 6,3                   | 24,2                      | 56                         |
| 66052114 | 21 x 0,14                                              | 6,9                   | 28,2                      | 65                         |
| 66052414 | 24 x 0,14                                              | 7,3                   | 32,3                      | 70                         |
| 66052714 | 27 x 0,14                                              | 7,7                   | 36,3                      | 80                         |
| 66053014 | 30 x 0,14                                              | 7,9                   | 40,3                      | 86                         |
| 66053214 | 32 x 0,14                                              | 8,2                   | 43,0                      | 92                         |
| 66053614 | 36 x 0,14                                              | 8,5                   | 48,4                      | 101                        |
| 66054014 | 40 x 0,14                                              | 9,1                   | 53,8                      | 112                        |
| 66054414 | 44 x 0,14                                              | 9,5                   | 59,1                      | 119                        |
| 66055014 | 50 x 0,14                                              | 10,3                  | 67,2                      | 142                        |
| 66056114 | 61 x 0,14                                              | 10,9                  | 82,0                      | 165                        |
| 66050225 | 2 x 0,25                                               | 3,4                   | 4,8                       | 17                         |
| 66050325 | 3 x 0,25                                               | 3,6                   | 7,2                       | 20                         |
| 66050425 | 4 x 0,25                                               | 3,9                   | 9,6                       | 24                         |
| 66050525 | 5 x 0,25                                               | 4,2                   | 12,0                      | 29                         |
| 66050725 | 7 x 0,25                                               | 4,6                   | 16,8                      | 35                         |
| 66050825 | 8 x 0,25                                               | 5,2                   | 19,2                      | 43                         |
| 66051225 | 12 x 0,25                                              | 6,1                   | 28,8                      | 57                         |
| 66051425 | 14 x 0,25                                              | 6,4                   | 33,6                      | 64                         |
| 66051625 | 16 x 0,25                                              | 6,7                   | 38,4                      | 72                         |

| item no. | no. of cores<br>x cross section<br>n x mm <sup>2</sup> | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------------------|-----------------------|---------------------------|----------------------------|
| 66051825 | 18 x 0,25                                              | 7,1                   | 43,2                      | 80                         |
| 66052125 | 21 x 0,25                                              | 7,9                   | 50,4                      | 96                         |
| 66052425 | 24 x 0,25                                              | 8,4                   | 57,6                      | 104                        |
| 66052725 | 27 x 0,25                                              | 8,6                   | 64,8                      | 114                        |
| 66053025 | 30 x 0,25                                              | 8,9                   | 72,0                      | 125                        |
| 66053225 | 32 x 0,25                                              | 9,2                   | 76,8                      | 132                        |
| 66053625 | 36 x 0,25                                              | 10,0                  | 86,4                      | 156                        |
| 66054025 | 40 x 0,25                                              | 10,6                  | 96,0                      | 173                        |
| 66054425 | 44 x 0,25                                              | 11,1                  | 105,6                     | 184                        |
| 66055025 | 50 x 0,25                                              | 11,6                  | 120,0                     | 204                        |
| 66056125 | 61 x 0,25                                              | 12,3                  | 146,4                     | 241                        |
| 66050234 | 2 x 0,34                                               | 4,0                   | 6,5                       | 24                         |
| 66050334 | 3 x 0,34                                               | 4,2                   | 9,8                       | 27                         |
| 66050434 | 4 x 0,34                                               | 4,6                   | 13,1                      | 33                         |
| 66050534 | 5 x 0,34                                               | 5,0                   | 16,3                      | 40                         |
| 66050734 | 7 x 0,34                                               | 5,5                   | 22,8                      | 49                         |
| 66050834 | 8 x 0,34                                               | 6,5                   | 26,1                      | 63                         |
| 66051234 | 12 x 0,34                                              | 7,3                   | 39,2                      | 80                         |
| 66051434 | 14 x 0,34                                              | 7,9                   | 45,7                      | 94                         |
| 66051634 | 16 x 0,34                                              | 8,3                   | 52,2                      | 106                        |
| 66051834 | 18 x 0,34                                              | 8,8                   | 58,8                      | 117                        |
| 66052134 | 21 x 0,34                                              | 10,0                  | 68,5                      | 146                        |
| 66052434 | 24 x 0,34                                              | 10,6                  | 78,3                      | 157                        |
| 66052734 | 27 x 0,34                                              | 10,8                  | 88,1                      | 172                        |
| 66053034 | 30 x 0,34                                              | 11,2                  | 97,9                      | 187                        |
| 66053234 | 32 x 0,34                                              | 11,6                  | 104,4                     | 199                        |
| 66053634 | 36 x 0,34                                              | 12,1                  | 117,5                     | 220                        |
| 66054034 | 40 x 0,34                                              | 12,9                  | 130,6                     | 244                        |
| 66054434 | 44 x 0,34                                              | 13,5                  | 143,6                     | 261                        |

Continued on next page

# Cables for Railway Technology

## SABIX® R 605 FRNC

SABIX® Rail Data

EN 45545-2

Flame retardant acc. to  
UN/ECE R118



D-VIERSEN · SABIX® R 605 FRNC 32 x 0,5 mm² CEE



Marking for SABIX® R 605 FRNC 66053250:

SAB BRÜCKSKES · D-VIERSEN · SABIX® R 605 FRNC 32 x 0,5 mm² CEE

| item no. | no. of cores<br>x cross section<br>n x mm² | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------|-----------------------|---------------------------|----------------------------|
| 66055034 | 50 x 0,34                                  | 14,5                  | 163,2                     | 304                        |
| 66056134 | 61 x 0,34                                  | 15,4                  | 199,1                     | 358                        |
| 66050250 | 2 x 0,50                                   | 4,3                   | 9,6                       | 28                         |
| 66050350 | 3 x 0,50                                   | 4,5                   | 14,4                      | 33                         |
| 66050450 | 4 x 0,50                                   | 4,9                   | 19,2                      | 40                         |
| 66050550 | 5 x 0,50                                   | 5,4                   | 24,0                      | 49                         |
| 66050750 | 7 x 0,50                                   | 6,1                   | 33,6                      | 63                         |
| 66050850 | 8 x 0,50                                   | 7,1                   | 38,4                      | 79                         |
| 66051250 | 12 x 0,50                                  | 8,1                   | 57,6                      | 102                        |
| 66051450 | 14 x 0,50                                  | 8,5                   | 67,2                      | 115                        |
| 66051650 | 16 x 0,50                                  | 9,0                   | 76,8                      | 131                        |
| 66051850 | 18 x 0,50                                  | 9,5                   | 86,4                      | 145                        |
| 66052150 | 21 x 0,50                                  | 10,9                  | 100,8                     | 180                        |
| 66052450 | 24 x 0,50                                  | 11,5                  | 115,2                     | 195                        |
| 66052750 | 27 x 0,50                                  | 11,7                  | 129,6                     | 213                        |
| 66053050 | 30 x 0,50                                  | 12,1                  | 144,0                     | 232                        |
| 66053250 | 32 x 0,50                                  | 12,6                  | 153,6                     | 248                        |
| 66053650 | 36 x 0,50                                  | 13,1                  | 172,8                     | 274                        |
| 66054450 | 44 x 0,50                                  | 15,1                  | 211,2                     | 341                        |
| 66055050 | 50 x 0,50                                  | 15,7                  | 240,0                     | 411                        |
| 66056150 | 61 x 0,50                                  | 16,7                  | 292,8                     | 448                        |
| 66050275 | 2 x 0,75                                   | 4,9                   | 14,4                      | 38                         |
| 66050375 | 3 x 0,75                                   | 5,2                   | 21,6                      | 45                         |
| 66050475 | 4 x 0,75                                   | 5,9                   | 28,8                      | 58                         |
| 66050575 | 5 x 0,75                                   | 6,4                   | 36,0                      | 70                         |
| 66050775 | 7 x 0,75                                   | 7,0                   | 50,4                      | 87                         |
| 66050875 | 8 x 0,75                                   | 8,3                   | 57,6                      | 111                        |

| item no. | no. of cores<br>x cross section<br>n x mm² | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------|-----------------------|---------------------------|----------------------------|
| 66051275 | 12 x 0,75                                  | 9,4                   | 86,4                      | 142                        |
| 66051475 | 14 x 0,75                                  | 10,3                  | 100,8                     | 170                        |
| 66051675 | 16 x 0,75                                  | 10,8                  | 115,2                     | 192                        |
| 66051875 | 18 x 0,75                                  | 11,4                  | 129,6                     | 213                        |
| 66052175 | 21 x 0,75                                  | 12,5                  | 151,2                     | 248                        |
| 66052475 | 24 x 0,75                                  | 13,3                  | 172,8                     | 270                        |
| 66052775 | 27 x 0,75                                  | 13,6                  | 194,4                     | 297                        |
| 66053075 | 30 x 0,75                                  | 14,5                  | 216,0                     | 339                        |
| 66053275 | 32 x 0,75                                  | 15,0                  | 230,4                     | 360                        |
| 66053675 | 36 x 0,75                                  | 15,6                  | 259,2                     | 399                        |
| 66054075 | 40 x 0,75                                  | 16,7                  | 288,0                     | 443                        |
| 66054475 | 44 x 0,75                                  | 17,5                  | 316,8                     | 475                        |
| 66055075 | 50 x 0,75                                  | 18,3                  | 360,0                     | 530                        |
| 66056175 | 61 x 0,75                                  | 19,8                  | 439,2                     | 648                        |
| 66050280 | 2 x 1,00                                   | 5,1                   | 19,2                      | 43                         |
| 66050380 | 3 x 1,00                                   | 5,4                   | 28,8                      | 53                         |
| 66050480 | 4 x 1,00                                   | 6,1                   | 38,4                      | 68                         |
| 66050580 | 5 x 1,00                                   | 6,7                   | 48,0                      | 82                         |
| 66050680 | 6 x 1,00                                   | 7,3                   | 57,6                      | 97                         |
| 66050780 | 7 x 1,00                                   | 7,3                   | 67,2                      | 104                        |
| 66050285 | 2 x 1,50                                   | 5,6                   | 28,8                      | 55                         |
| 66050385 | 3 x 1,50                                   | 6,1                   | 43,2                      | 71                         |
| 66050485 | 4 x 1,50                                   | 6,7                   | 57,6                      | 87                         |
| 66050585 | 5 x 1,50                                   | 7,7                   | 72,0                      | 113                        |
| 66050685 | 6 x 1,50                                   | 8,4                   | 86,4                      | 134                        |
| 66050785 | 7 x 1,50                                   | 8,4                   | 100,8                     | 144                        |

Other dimensions and colours are possible on request.

# Cables for Railway Technology

## SABIX® R 615 FRNC

SABIX® Rail Data with overall copper screen

EN 45545-2

Flame retardant acc. to  
UN/ECE R118



SEN · SABIX® R 615 FRNC 5 x 0,5 mm<sup>2</sup> CE



Marking for SABIX® R 615 FRNC 66150550:

SAB BRÜCKSKES · D-VIERSEN · SABIX® R 615 FRNC 5 x 0,5 mm<sup>2</sup> CE

### Construction:

|                         |                                                                    |
|-------------------------|--------------------------------------------------------------------|
| <b>Conductor:</b>       | bare copper strands with reference to IEC 60228, VDE 0295, class 5 |
| <b>Insulation:</b>      | special SABIX®                                                     |
| <b>Colour code:</b>     | with reference to DIN 47100                                        |
| <b>Stranding:</b>       | in layers                                                          |
| <b>Wrapping:</b>        | foil                                                               |
| <b>Screen:</b>          | tinned copper braiding                                             |
| <b>Sheath material:</b> | special SABIX®                                                     |
| <b>Sheath colour:</b>   | grey (RAL 7032)                                                    |

### Outstanding features:

- halogen-free
- good EMC characteristics
- no flame propagation
- flame retardant and self-extinguishing
- fulfils fire protection requirements R15 (EL1A) acc. to EN 45545-2 for hazard levels HL1-3
- tested acc. to American ASTM standard
- flame retardant acc. to UN/ECE R118

### Technical Data:

|                                                                                    |                                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Peak operating voltage:</b>                                                     | < 0.25 mm <sup>2</sup> = max. 350 V<br>≥ 0.25 mm <sup>2</sup> = max. 500 V                                                                                                                                                                                                |
| <b>Testing voltage:</b>                                                            | core/core 1500 V<br>core/screen 1200 V                                                                                                                                                                                                                                    |
| <b>Min. bending radius</b><br><i>fixed laying:</i><br><i>flexible application:</i> | 5 x d<br>10 x d                                                                                                                                                                                                                                                           |
| <b>Temperature range</b><br><i>fixed laying:</i><br><i>flexible application:</i>   | -40/+90 °C<br>-30/+90 °C                                                                                                                                                                                                                                                  |
| <b>Halogen-free:</b>                                                               | acc. to EN 50306-1 + EN 50264-1 are fulfilled.<br>Development of HCl is < 0,5%<br>acc. to IEC 60754-1.<br>pH-value is > 4,3 acc. to IEC 60754-2.<br>Conductivity is < 10,0 µS/mm acc. to IEC 60754-2.<br>Fluoric content < 0,1% acc. to IEC 60684-2                       |
| <b>Fire performance:</b>                                                           | no flame propagation<br>acc. to IEC 60332-3-24, IEC 60332-3-25 + EN 50305 section 9.1.2.<br>Flame retardant and self-extinguishing<br>acc. to IEC 60332-1-2 + VDE 0482-332-1-2.<br>Burning tests acc. to ASTM E 162-09.<br>Flame retardant acc. to ISO 6722 (UN/ECE R118) |
| <b>Toxicity:</b>                                                                   | acc. to EN 50305 + VDE 0260-305                                                                                                                                                                                                                                           |
| <b>Smoke density:</b>                                                              | acc. to IEC 61034 + VDE 0482-1034 + ASTM E 662-09                                                                                                                                                                                                                         |
| <b>Flexibility:</b>                                                                | good                                                                                                                                                                                                                                                                      |
| <b>Absence of harmful substances:</b>                                              | acc. to RoHS directive of the European Union                                                                                                                                                                                                                              |

Tested at reference types.

| item no. | no. of cores<br>x cross section<br>n x mm <sup>2</sup> | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------------------|-----------------------|---------------------------|----------------------------|
| 66150214 | 2 x 0,14                                               | 3,6                   | 12,6                      | 21                         |
| 66150314 | 3 x 0,14                                               | 3,8                   | 14,1                      | 22                         |
| 66150414 | 4 x 0,14                                               | 4,0                   | 15,9                      | 24                         |
| 66150514 | 5 x 0,14                                               | 4,3                   | 19,5                      | 29                         |
| 66150714 | 7 x 0,14                                               | 4,6                   | 24,0                      | 33                         |
| 66150814 | 8 x 0,14                                               | 5,4                   | 26,0                      | 43                         |
| 66151014 | 10 x 0,14                                              | 5,8                   | 29,0                      | 47                         |
| 66151214 | 12 x 0,14                                              | 6,2                   | 32,0                      | 54                         |
| 66151414 | 14 x 0,14                                              | 6,4                   | 35,0                      | 60                         |
| 66151614 | 16 x 0,14                                              | 6,7                   | 49,0                      | 67                         |
| 66151814 | 18 x 0,14                                              | 7,0                   | 54,0                      | 72                         |
| 66152114 | 21 x 0,14                                              | 7,6                   | 60,0                      | 84                         |
| 66152414 | 24 x 0,14                                              | 8,0                   | 74,0                      | 89                         |
| 66152714 | 27 x 0,14                                              | 8,6                   | 85,0                      | 104                        |
| 66153014 | 30 x 0,14                                              | 8,8                   | 98,0                      | 112                        |
| 66153214 | 32 x 0,14                                              | 9,1                   | 108,0                     | 118                        |
| 66153614 | 36 x 0,14                                              | 9,4                   | 117,0                     | 128                        |
| 66154014 | 40 x 0,14                                              | 10,0                  | 126,0                     | 141                        |
| 66154414 | 44 x 0,14                                              | 10,6                  | 138,0                     | 162                        |
| 66155014 | 50 x 0,14                                              | 11,0                  | 150,0                     | 175                        |
| 66155214 | 52 x 0,14                                              | 11,0                  | 155,0                     | 179                        |
| 66156114 | 61 x 0,14                                              | 11,6                  | 176,0                     | 203                        |
| 66150225 | 2 x 0,25                                               | 3,9                   | 15,0                      | 24                         |
| 66150325 | 3 x 0,25                                               | 4,1                   | 18,0                      | 26                         |
| 66150425 | 4 x 0,25                                               | 4,4                   | 22,0                      | 31                         |
| 66150525 | 5 x 0,25                                               | 4,9                   | 25,0                      | 38                         |
| 66150725 | 7 x 0,25                                               | 5,3                   | 32,0                      | 46                         |
| 66150825 | 8 x 0,25                                               | 6,1                   | 35,0                      | 58                         |
| 66151025 | 10 x 0,25                                              | 6,6                   | 42,0                      | 64                         |

| item no. | no. of cores<br>x cross section<br>n x mm <sup>2</sup> | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------------------|-----------------------|---------------------------|----------------------------|
| 66151225 | 12 x 0,25                                              | 6,8                   | 50,0                      | 72                         |
| 66151425 | 14 x 0,25                                              | 7,1                   | 64,0                      | 80                         |
| 66151625 | 16 x 0,25                                              | 7,4                   | 71,0                      | 89                         |
| 66151825 | 18 x 0,25                                              | 7,8                   | 80,0                      | 98                         |
| 66152125 | 21 x 0,25                                              | 8,8                   | 105,0                     | 122                        |
| 66152425 | 24 x 0,25                                              | 9,3                   | 115,0                     | 130                        |
| 66152725 | 27 x 0,25                                              | 9,5                   | 120,0                     | 142                        |
| 66153025 | 30 x 0,25                                              | 9,8                   | 132,0                     | 152                        |
| 66153225 | 32 x 0,25                                              | 10,1                  | 138,0                     | 161                        |
| 66153625 | 36 x 0,25                                              | 10,7                  | 152,0                     | 189                        |
| 66154025 | 40 x 0,25                                              | 11,3                  | 164,0                     | 209                        |
| 66154425 | 44 x 0,25                                              | 11,8                  | 180,0                     | 221                        |
| 66155025 | 50 x 0,25                                              | 12,7                  | 222,0                     | 254                        |
| 66155225 | 52 x 0,25                                              | 12,7                  | 234,0                     | 260                        |
| 66156125 | 61 x 0,25                                              | 13,4                  | 287,0                     | 295                        |
| 66150234 | 2 x 0,34                                               | 4,5                   | 17,0                      | 31                         |
| 66150334 | 3 x 0,34                                               | 4,9                   | 21,0                      | 36                         |
| 66150434 | 4 x 0,34                                               | 5,3                   | 25,0                      | 43                         |
| 66150534 | 5 x 0,34                                               | 5,7                   | 30,0                      | 51                         |
| 66150734 | 7 x 0,34                                               | 6,4                   | 42,0                      | 63                         |
| 66150834 | 8 x 0,34                                               | 7,2                   | 45,0                      | 78                         |
| 66151034 | 10 x 0,34                                              | 7,8                   | 63,0                      | 87                         |
| 66151234 | 12 x 0,34                                              | 8,0                   | 70,0                      | 97                         |
| 66151434 | 14 x 0,34                                              | 8,8                   | 78,0                      | 118                        |
| 66151634 | 16 x 0,34                                              | 9,2                   | 87,0                      | 129                        |
| 66151834 | 18 x 0,34                                              | 9,7                   | 108,0                     | 144                        |
| 66152134 | 21 x 0,34                                              | 10,7                  | 127,0                     | 177                        |
| 66152434 | 24 x 0,34                                              | 11,3                  | 140,0                     | 193                        |
| 66152734 | 27 x 0,34                                              | 11,5                  | 151,0                     | 207                        |

Continued on next page

# Cables for Railway Technology

## SABIX® R 615 FRNC

SABIX® Rail Data with overall copper screen

EN 45545-2

Flame retardant acc. to  
UN/ECE R118



SEN · SABIX® R 615 FRNC 5 x 0,5 mm² CE



Marking for SABIX® R 615 FRNC 66150550:

SAB BRÜCKSKES · D-VIERSEN · SABIX® R 615 FRNC 5 x 0,5 mm² CE

| item no. | no. of cores<br>x cross section<br>n x mm² | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------|-----------------------|---------------------------|----------------------------|
| 66153034 | 30 x 0,34                                  | 11,9                  | 162,0                     | 222                        |
| 66153234 | 32 x 0,34                                  | 12,7                  | 171,0                     | 247                        |
| 66153634 | 36 x 0,34                                  | 13,2                  | 188,0                     | 272                        |
| 66154034 | 40 x 0,34                                  | 14,0                  | 208,0                     | 301                        |
| 66154434 | 44 x 0,34                                  | 14,6                  | 223,0                     | 319                        |
| 66155034 | 50 x 0,34                                  | 15,8                  | 248,0                     | 386                        |
| 66155234 | 52 x 0,34                                  | 15,8                  | 273,0                     | 395                        |
| 66156134 | 61 x 0,34                                  | 16,7                  | 316,0                     | 366                        |
| 66150250 | 2 x 0,50                                   | 5,0                   | 23,5                      | 39                         |
| 66150350 | 3 x 0,50                                   | 5,2                   | 28,4                      | 42                         |
| 66150450 | 4 x 0,50                                   | 5,6                   | 35,1                      | 50                         |
| 66150550 | 5 x 0,50                                   | 6,3                   | 41,6                      | 63                         |
| 66150750 | 7 x 0,50                                   | 6,8                   | 53,1                      | 76                         |
| 66150850 | 8 x 0,50                                   | 7,8                   | 62,0                      | 94                         |
| 66151050 | 10 x 0,50                                  | 8,8                   | 74,5                      | 113                        |
| 66151250 | 12 x 0,50                                  | 9,0                   | 84,2                      | 126                        |
| 66151450 | 14 x 0,50                                  | 9,4                   | 93,5                      | 139                        |
| 66151650 | 16 x 0,50                                  | 9,9                   | 105,9                     | 156                        |
| 66151850 | 18 x 0,50                                  | 10,6                  | 133,9                     | 185                        |
| 66152150 | 21 x 0,50                                  | 11,6                  | 154,9                     | 220                        |
| 66152450 | 24 x 0,50                                  | 12,6                  | 169,7                     | 240                        |
| 66152750 | 27 x 0,50                                  | 12,8                  | 184,2                     | 260                        |
| 66153050 | 30 x 0,50                                  | 13,2                  | 203,6                     | 283                        |
| 66153250 | 32 x 0,50                                  | 13,7                  | 213,5                     | 299                        |
| 66153650 | 36 x 0,50                                  | 14,2                  | 239,0                     | 330                        |
| 66154450 | 44 x 0,50                                  | 16,4                  | 309,2                     | 422                        |
| 66155050 | 50 x 0,50                                  | 17,0                  | 349,7                     | 469                        |
| 66156150 | 61 x 0,50                                  | 18,0                  | 403,7                     | 540                        |

| item no. | no. of cores<br>x cross section<br>n x mm² | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------|-----------------------|---------------------------|----------------------------|
| 66150275 | 2 x 0,75                                   | 5,6                   | 30,3                      | 48                         |
| 66150375 | 3 x 0,75                                   | 6,1                   | 37,6                      | 56                         |
| 66150475 | 4 x 0,75                                   | 6,6                   | 48,3                      | 74                         |
| 66150575 | 5 x 0,75                                   | 7,1                   | 55,7                      | 81                         |
| 66150775 | 7 x 0,75                                   | 7,7                   | 74,0                      | 101                        |
| 66150875 | 8 x 0,75                                   | 9,2                   | 83,8                      | 132                        |
| 66151275 | 12 x 0,75                                  | 10,5                  | 133,9                     | 179                        |
| 66151475 | 14 x 0,75                                  | 11,0                  | 148,5                     | 198                        |
| 66151675 | 16 x 0,75                                  | 11,5                  | 169,2                     | 224                        |
| 66151875 | 18 x 0,75                                  | 12,4                  | 184,0                     | 257                        |
| 66152175 | 21 x 0,75                                  | 13,6                  | 211,0                     | 297                        |
| 66152475 | 24 x 0,75                                  | 14,4                  | 239,1                     | 324                        |
| 66152775 | 27 x 0,75                                  | 14,7                  | 260,9                     | 352                        |
| 66153075 | 30 x 0,75                                  | 15,8                  | 313,4                     | 417                        |
| 66153275 | 32 x 0,75                                  | 16,3                  | 328,3                     | 440                        |
| 66153675 | 36 x 0,75                                  | 16,9                  | 357,8                     | 479                        |
| 66150280 | 2 x 1,00                                   | 5,8                   | 35,2                      | 53                         |
| 66150380 | 3 x 1,00                                   | 6,3                   | 46,4                      | 65                         |
| 66150480 | 4 x 1,00                                   | 6,8                   | 57,9                      | 78                         |
| 66150580 | 5 x 1,00                                   | 7,4                   | 69,6                      | 95                         |
| 66150680 | 6 x 1,00                                   | 8,0                   | 81,3                      | 111                        |
| 66150780 | 7 x 1,00                                   | 8,0                   | 90,9                      | 117                        |
| 66150285 | 2 x 1,50                                   | 6,6                   | 46,5                      | 71                         |
| 66150385 | 3 x 1,50                                   | 6,8                   | 62,7                      | 90                         |
| 66150485 | 4 x 1,50                                   | 7,4                   | 79,2                      | 98                         |
| 66150585 | 5 x 1,50                                   | 8,6                   | 95,8                      | 130                        |
| 66150685 | 6 x 1,50                                   | 9,3                   | 112,7                     | 152                        |
| 66150785 | 7 x 1,50                                   | 9,3                   | 127,1                     | 162                        |

Other dimensions and colours are possible on request.

# Cables for Railway Technology

## SABIX® R 645 FRNC TP

SABIX® Rail Data paired with overall copper screen

EN 45545-2

Flame retardant acc. to  
UN/ECE R118



645 FRNC TP 3 x 2 x 0,25 mm² CE



Marking for SABIX® R 645 FRNC TP 66450325:

SAB BRÜCKSKES · D-VIERSEN · SABIX® R 645 FRNC TP 3 x 2 x 0,25 mm² CE

### Construction:

|                         |                                                                    |
|-------------------------|--------------------------------------------------------------------|
| <b>Conductor:</b>       | bare copper strands with reference to IEC 60228, VDE 0295, class 5 |
| <b>Insulation:</b>      | special SABIX®                                                     |
| <b>Colour code:</b>     | with reference to DIN 47100                                        |
| <b>Stranding:</b>       | pairwise, pairs in layers                                          |
| <b>Wrapping:</b>        | foil                                                               |
| <b>Screen:</b>          | tinned copper braiding                                             |
| <b>Sheath material:</b> | special SABIX®                                                     |
| <b>Sheath colour:</b>   | grey (RAL 7032)                                                    |

### Outstanding features:

- halogen-free
- no flame propagation
- good EMC characteristics
- flame retardant and self-extinguishing
- fulfils fire protection requirements R15 (EL1A) acc. to EN 45545-2 for hazard levels HL1-3
- tested acc. to American ASTM standard
- flame retardant acc. to UN/ECE R118
- good transmission rates and crosstalk attenuation

### Technical Data:

|                                                    |                                                                                                                                                                                                                                                                           |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Peak operating voltage:</b>                     | < 0.25 mm² = max. 350 V<br>≥ 0.25 mm² = max. 500 V                                                                                                                                                                                                                        |
| <b>Testing voltage:</b>                            | core/core 1500 V<br>core/screen 1200 V                                                                                                                                                                                                                                    |
| <b>Min. bending radius</b><br><i>fixed laying:</i> | 5 x d                                                                                                                                                                                                                                                                     |
| <i>flexible application:</i>                       | 10 x d                                                                                                                                                                                                                                                                    |
| <b>Temperature range</b><br><i>fixed laying:</i>   | -40/+90 °C                                                                                                                                                                                                                                                                |
| <i>flexible application:</i>                       | -30/+90 °C                                                                                                                                                                                                                                                                |
| <b>Halogen-free:</b>                               | acc. to EN 50306-1 + EN 50264-1 are fulfilled.<br>Development of HCl is < 0,5%<br>acc. to IEC 60754-1.<br>pH-value is > 4,3 acc. to IEC 60754-2.<br>Conductivity is < 10,0 µS/mm acc. to IEC 60754-2.<br>Fluoric content < 0,1% acc. to IEC 60684-2                       |
| <b>Fire performance:</b>                           | no flame propagation<br>acc. to IEC 60332-3-24, IEC 60332-3-25 + EN 50305 section 9.1.2.<br>Flame retardant and self-extinguishing<br>acc. to IEC 60332-1-2 + VDE 0482-332-1-2.<br>Burning tests acc. to ASTM E 162-09.<br>Flame retardant acc. to ISO 6722 (UN/ECE R118) |
| <b>Toxicity:</b>                                   | acc. to EN 50305 + VDE 0260-305                                                                                                                                                                                                                                           |
| <b>Smoke density:</b>                              | acc. to IEC 61034 + VDE 0482-1034 + ASTM E 662-09                                                                                                                                                                                                                         |
| <b>Flexibility:</b>                                | good                                                                                                                                                                                                                                                                      |
| <b>Absence of harmful substances:</b>              | acc. to RoHS directive of the European Union                                                                                                                                                                                                                              |

Tested at reference types.

| item no  | no. of pairs<br>x cross section<br>n x 2 x mm² | outer-ø<br>± 10%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈kg/km |
|----------|------------------------------------------------|------------------------|---------------------------|---------------------------|
| 66450214 | 2 x 2 x 0,14                                   | 5,2                    | 19,1                      | 38                        |
| 66450314 | 3 x 2 x 0,14                                   | 5,7                    | 23,4                      | 44                        |
| 66450414 | 4 x 2 x 0,14                                   | 6,5                    | 27,8                      | 54                        |
| 66450514 | 5 x 2 x 0,14                                   | 7,0                    | 31,9                      | 64                        |
| 66450614 | 6 x 2 x 0,14                                   | 7,2                    | 36,2                      | 71                        |
| 66450814 | 8 x 2 x 0,14                                   | 7,8                    | 43,4                      | 83                        |
| 66451014 | 10 x 2 x 0,14                                  | 8,9                    | 50,6                      | 105                       |
| 66451214 | 12 x 2 x 0,14                                  | 9,7                    | 58,2                      | 121                       |
| 66451614 | 16 x 2 x 0,14                                  | 10,5                   | 71,4                      | 147                       |
| 66451814 | 18 x 2 x 0,14                                  | 11,1                   | 92,8                      | 174                       |
| 66452414 | 24 x 2 x 0,14                                  | 12,8                   | 114,8                     | 223                       |
| 66450225 | 2 x 2 x 0,25                                   | 5,7                    | 24,9                      | 46                        |
| 66450325 | 3 x 2 x 0,25                                   | 6,4                    | 31,4                      | 61                        |
| 66450425 | 4 x 2 x 0,25                                   | 7,2                    | 39,3                      | 72                        |
| 66450525 | 5 x 2 x 0,25                                   | 7,7                    | 45,8                      | 83                        |
| 66450625 | 6 x 2 x 0,25                                   | 7,9                    | 50,7                      | 92                        |
| 66450825 | 8 x 2 x 0,25                                   | 9,0                    | 62,1                      | 119                       |
| 66451025 | 10 x 2 x 0,25                                  | 9,8                    | 73,9                      | 138                       |
| 66451225 | 12 x 2 x 0,25                                  | 10,9                   | 102,3                     | 173                       |
| 66451625 | 16 x 2 x 0,25                                  | 11,9                   | 126,8                     | 213                       |
| 66451825 | 18 x 2 x 0,25                                  | 12,7                   | 136,6                     | 245                       |
| 66452425 | 24 x 2 x 0,25                                  | 14,2                   | 170,3                     | 296                       |
| 66450234 | 2 x 2 x 0,34                                   | 6,8                    | 31,5                      | 63                        |
| 66450334 | 3 x 2 x 0,34                                   | 7,4                    | 39,7                      | 79                        |
| 66450434 | 4 x 2 x 0,34                                   | 8,8                    | 49,8                      | 102                       |
| 66450534 | 5 x 2 x 0,34                                   | 9,5                    | 58,5                      | 121                       |
| 66450634 | 6 x 2 x 0,34                                   | 9,7                    | 65,1                      | 125                       |

| item no  | no. of pairs<br>x cross section<br>n x 2 x mm² | outer-ø<br>± 10%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈kg/km |
|----------|------------------------------------------------|------------------------|---------------------------|---------------------------|
| 66450834 | 8 x 2 x 0,34                                   | 10,6                   | 80,7                      | 159                       |
| 66451234 | 12 x 2 x 0,34                                  | 13,4                   | 133,1                     | 248                       |
| 66451634 | 16 x 2 x 0,34                                  | 14,6                   | 165,0                     | 305                       |
| 66451834 | 18 x 2 x 0,34                                  | 15,1                   | 178,3                     | 334                       |
| 66452434 | 24 x 2 x 0,34                                  | 17,6                   | 255,1                     | 449                       |
| 66450250 | 2 x 2 x 0,50                                   | 7,2                    | 39,3                      | 72                        |
| 66450350 | 3 x 2 x 0,50                                   | 7,9                    | 50,1                      | 92                        |
| 66450450 | 4 x 2 x 0,50                                   | 9,4                    | 64,6                      | 119                       |
| 66450550 | 5 x 2 x 0,50                                   | 10,2                   | 76,3                      | 141                       |
| 66450650 | 6 x 2 x 0,50                                   | 10,4                   | 86,0                      | 155                       |
| 66450850 | 8 x 2 x 0,50                                   | 11,4                   | 126,6                     | 179                       |
| 66451050 | 10 x 2 x 0,50                                  | 13,2                   | 146,5                     | 252                       |
| 66451250 | 12 x 2 x 0,50                                  | 14,4                   | 175,6                     | 294                       |
| 66451650 | 16 x 2 x 0,50                                  | 16,3                   | 241,3                     | 380                       |
| 66451850 | 18 x 2 x 0,50                                  | 16,9                   | 261,0                     | 436                       |
| 66452450 | 24 x 2 x 0,50                                  | 19,0                   | 330,4                     | 508                       |
| 66450275 | 2 x 2 x 0,75                                   | 8,5                    | 52,4                      | 102                       |
| 66450375 | 3 x 2 x 0,75                                   | 9,4                    | 69,4                      | 128                       |
| 66450475 | 4 x 2 x 0,75                                   | 10,9                   | 101,9                     | 166                       |
| 66450575 | 5 x 2 x 0,75                                   | 11,7                   | 121,9                     | 201                       |
| 66450675 | 6 x 2 x 0,75                                   | 12,5                   | 136,5                     | 239                       |
| 66450875 | 8 x 2 x 0,75                                   | 13,7                   | 170,1                     | 279                       |
| 66451275 | 12 x 2 x 0,75                                  | 17,1                   | 261,2                     | 419                       |
| 66451675 | 16 x 2 x 0,75                                  | 18,6                   | 329,9                     | 522                       |
| 66451875 | 18 x 2 x 0,75                                  | 19,3                   | 369,3                     | 580                       |
| 66452475 | 24 x 2 x 0,75                                  | 21,8                   | 469,2                     | 714                       |

Other dimensions and colours are possible on request.

# Cables for Railway Technology

## SABIX® R flex

continuously flexible SABIX® Rail cable with numbered cores

EN 45545-2



BRÖCKSKES · D-VIERSEN · SABIX® R flex 5G0,75 mm<sup>2</sup> CE

Marking for SABIX® R flex 66701105:

SAB BRÖCKSKES · D-VIERSEN · SABIX® R flex 5G0,75 mm<sup>2</sup> CE

**Application:** Suitable for flexible and protected installation in the interior for door control or in protecting tubes for outdoor laying at the bogie, railway machines or as connection cable between the waggons. Appropriate for light and medium mechanical stress.

### Construction:

|                         |                                                                                                                                                                            |
|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Conductor:</b>       | bare copper strands<br>acc. to IEC 60228, VDE 0295, class 6                                                                                                                |
| <b>Insulation:</b>      | special Polymer                                                                                                                                                            |
| <b>Colour code:</b>     | black cores with consecutive numbers<br>acc. to EN 50334 + VDE 0293-334,<br>green-yellow earth wire from 3 cores.<br>Twisted pairs type<br>without green-yellow earth wire |
| <b>Stranding:</b>       | in layers resp. pairwise                                                                                                                                                   |
| <b>Wrapping:</b>        | foil                                                                                                                                                                       |
| <b>Screen:</b>          | tinned copper braiding<br>(if existing)                                                                                                                                    |
| <b>Sheath material:</b> | SABIX® Ultra                                                                                                                                                               |
| <b>Sheath colour:</b>   | black (RAL 9005)                                                                                                                                                           |

### Outstanding features:

- halogen-free
- continuously flexible
- good EMC characteristics
- no flame propagation
- flame retardant and self-extinguishing
- good ozone and UV resistance
- good oil and fuel resistance
- good acid and alkalines resistance
- fulfils fire protection requirements  
R15 (EL1A) and R16 (EL1B)  
acc. to EN 45545-2  
for hazard levels HL1-2

| item no.                         | no. of cores<br>x cross section<br>n x mm <sup>2</sup> | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------------------------------|--------------------------------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| <b>multi-core cable screened</b> |                                                        |                                |                       |                           |                            |
| 66701002                         | 2 x 0,50                                               | 0,16                           | 5,3                   | 24,8                      | 46                         |
| 66701003                         | 3 x 0,50                                               | 0,16                           | 5,5                   | 29,8                      | 51                         |
| 66701005                         | 5 x 0,50                                               | 0,16                           | 6,5                   | 40,3                      | 71                         |
| 66701007                         | 7 x 0,50                                               | 0,16                           | 7,4                   | 53,8                      | 91                         |
| 66701018                         | 18 x 0,50                                              | 0,16                           | 10,8                  | 132,5                     | 200                        |
| 66701032                         | 32 x 0,50                                              | 0,16                           | 13,7                  | 214,5                     | 317                        |
| 66701103                         | 3 x 0,75                                               | 0,16                           | 6,1                   | 37,7                      | 62                         |
| 66701104                         | 4 x 0,75                                               | 0,16                           | 6,7                   | 46,2                      | 76                         |
| 66701105                         | 5 x 0,75                                               | 0,16                           | 7,2                   | 55,9                      | 90                         |
| 66701125                         | 25 x 0,75                                              | 0,16                           | 14,5                  | 242,3                     | 351                        |
| 66701204                         | 4 x 1,00                                               | 0,16                           | 6,9                   | 56,0                      | 87                         |
| 66701207                         | 7 x 1,00                                               | 0,16                           | 8,7                   | 90,1                      | 137                        |
| 66701212                         | 12 x 1,00                                              | 0,16                           | 11,0                  | 161,6                     | 224                        |
| 66701303                         | 3 x 1,50                                               | 0,16                           | 7,1                   | 61,0                      | 92                         |
| 66701304                         | 4 x 1,50                                               | 0,16                           | 7,6                   | 78,0                      | 111                        |
| 66701305                         | 5 x 1,50                                               | 0,16                           | 8,5                   | 94,8                      | 137                        |
| 66701318                         | 18 x 1,50                                              | 0,16                           | 14,4                  | 321,3                     | 417                        |
| 66701404                         | 4 x 2,50                                               | 0,16                           | 9,7                   | 122,5                     | 174                        |
| 66701405                         | 5 x 2,50                                               | 0,16                           | 11,0                  | 166,4                     | 235                        |
| 66701407                         | 7 x 2,50                                               | 0,16                           | 13,2                  | 288,3                     | 324                        |
| 66701412                         | 12 x 2,50                                              | 0,16                           | 15,7                  | 356,2                     | 465                        |
| 66701504                         | 4 x 4,00                                               | 0,16                           | 11,4                  | 200,6                     | 260                        |
| 66701604                         | 4 x 6,00                                               | 0,21                           | 13,9                  | 291,6                     | 380                        |
| 66701704                         | 4 x 10,00                                              | 0,21                           | 16,8                  | 483,2                     | 605                        |
| 66701804                         | 4 x 16,00                                              | 0,21                           | 20,2                  | 730,4                     | 885                        |
| 66701904                         | 4 x 25,00                                              | 0,21                           | 24,1                  | 1113,6                    | 1293                       |

Other dimensions and colours are possible on request.

### Technical Data:

|                                       |                                                                                                                                                                                                                                                      |
|---------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nominal voltage:</b>               | U <sub>0</sub> /U 300/500 V                                                                                                                                                                                                                          |
| <b>Testing voltage:</b>               | core/core 2000 V<br>core/screen 2000 V                                                                                                                                                                                                               |
| <b>Min. bending radius</b>            | unshielded shielded                                                                                                                                                                                                                                  |
| <i>fixed laying:</i>                  | 4 x d 5 x d                                                                                                                                                                                                                                          |
| <i>flexible application:</i>          | 6 x d 10 x d                                                                                                                                                                                                                                         |
| <i>continuously flexible:</i>         | 12 x d 15 x d                                                                                                                                                                                                                                        |
| <b>Temperature range</b>              | -50/+90 °C                                                                                                                                                                                                                                           |
| <i>fixed laying:</i>                  | -40/+90 °C                                                                                                                                                                                                                                           |
| <i>flexible application:</i>          |                                                                                                                                                                                                                                                      |
| <b>Halogen-free:</b>                  | acc. to EN 50306-1 + EN 50264-1 are fulfilled.<br>Development of HCl is < 0,5%<br>acc. to IEC 60754-1.<br>pH-value is > 4,3 acc. to IEC 60754-2.<br>Conductivity is < 10,0 µS/mm acc. to IEC 60754-2.<br>Fluoric content < 0,1% acc. to IEC 60684-2. |
| <b>Fire performance:</b>              | no flame propagation<br>acc. to IEC 60332-3-24, IEC 60332-3-25 +<br>EN 50305 section 9.1.2.<br>Flame retardant and self-extinguishing<br>acc. to IEC 60332-1-2 + VDE 0482-332-1-2                                                                    |
| <b>Toxicity:</b>                      | acc. to EN 50305 + VDE 0260-305                                                                                                                                                                                                                      |
| <b>Smoke density:</b>                 | acc. to IEC 61034 + VDE 0482-1034                                                                                                                                                                                                                    |
| <b>Oil and fuel resistance:</b>       | acc. to EN 50264-1 + VDE 0260-264-1                                                                                                                                                                                                                  |
| <b>Flexibility:</b>                   | very good                                                                                                                                                                                                                                            |
| <b>Absence of harmful substances:</b> | acc. to RoHS directive of the European Union                                                                                                                                                                                                         |

| item no.                           | no. of cores<br>x cross section<br>n x mm <sup>2</sup> | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|------------------------------------|--------------------------------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| <b>multi-core cable unscreened</b> |                                                        |                                |                       |                           |                            |
| 66700002                           | 2 x 0,50                                               | 0,16                           | 4,6                   | 9,6                       | 31                         |
| 66700004                           | 4 x 0,50                                               | 0,16                           | 5,4                   | 19,2                      | 47                         |
| 66700007                           | 7 x 0,50                                               | 0,16                           | 6,9                   | 33,6                      | 76                         |
| 66700012                           | 12 x 0,50                                              | 0,16                           | 8,4                   | 57,6                      | 113                        |
| 66700018                           | 18 x 0,50                                              | 0,16                           | 9,9                   | 86,4                      | 160                        |
| 66700032                           | 32 x 0,50                                              | 0,16                           | 12,8                  | 153,6                     | 267                        |
| 66700103                           | 3 x 0,75                                               | 0,16                           | 5,6                   | 21,6                      | 51                         |
| 66700105                           | 5 x 0,75                                               | 0,16                           | 6,7                   | 36,0                      | 75                         |
| 66700125                           | 25 x 0,75                                              | 0,16                           | 13,8                  | 180,0                     | 303                        |
| 66700202                           | 2 x 1,00                                               | 0,16                           | 5,7                   | 19,2                      | 49                         |
| 66700273                           | 73 x 1,00                                              | 0,16                           | 23,0                  | 700,8                     | 989                        |
| 66700303                           | 3 x 1,50                                               | 0,16                           | 6,6                   | 43,2                      | 81                         |
| 66700307                           | 7 x 1,50                                               | 0,16                           | 9,4                   | 100,8                     | 167                        |
| 66700318                           | 18 x 1,50                                              | 0,16                           | 13,7                  | 259,2                     | 376                        |

Other dimensions and colours are possible on request.

| item no.                         | no. of pairs<br>x cross section<br>n x 2 x mm <sup>2</sup> | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------------------------------|------------------------------------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| <b>multi-pair cable screened</b> |                                                            |                                |                       |                           |                            |
| 66703002                         | 2 x 2 x 0,50                                               | 0,16                           | 7,0                   | 36,9                      | 69                         |
| 66703003                         | 3 x 2 x 0,50                                               | 0,16                           | 8,0                   | 49,4                      | 90                         |
| 66703004                         | 4 x 2 x 0,50                                               | 0,16                           | 10,0                  | 65,3                      | 121                        |
| 66703006                         | 6 x 2 x 0,50                                               | 0,16                           | 10,4                  | 103,4                     | 161                        |
| 66703008                         | 8 x 2 x 0,50                                               | 0,16                           | 12,5                  | 129,4                     | 229                        |
| 66703012                         | 12 x 2 x 0,50                                              | 0,16                           | 14,3                  | 177,1                     | 278                        |
| 66703103                         | 3 x 2 x 0,75                                               | 0,16                           | 8,9                   | 69,2                      | 113                        |
| 66703108                         | 8 x 2 x 0,75                                               | 0,16                           | 14,6                  | 177,6                     | 306                        |
| 66703202                         | 2 x 2 x 1,00                                               | 0,16                           | 8,9                   | 64,4                      | 111                        |
| 66703203                         | 3 x 2 x 1,00                                               | 0,16                           | 9,5                   | 83,9                      | 135                        |
| 66703206                         | 6 x 2 x 1,00                                               | 0,16                           | 12,6                  | 168,0                     | 249                        |
| 66703208                         | 8 x 2 x 1,00                                               | 0,16                           | 15,1                  | 220,8                     | 357                        |
| 66703302                         | 2 x 2 x 1,50                                               | 0,16                           | 10,3                  | 103,2                     | 157                        |
| 66703304                         | 4 x 2 x 1,50                                               | 0,16                           | 12,7                  | 168,1                     | 243                        |
| 66703306                         | 6 x 2 x 1,50                                               | 0,16                           | 14,3                  | 234,7                     | 345                        |

Other dimensions and colours are possible on request.

# Cables for Railway Technology

## SAB RailLine 560

continuously flexible SABIX® Rail Cable for outdoor use, cross linked type

EN 45545-2



-VIERSEN · SAB RailLine 560 5x0,75mm² C 6560-1105 CE



Marking for SAB RailLine 560 65601105:

SAB BRÜCKSKES · D-VIERSEN · SAB RailLine 560 5x0,75mm² C 6560-1105 CE

**Application:** For flexible outdoor installation, e.g. bogies, railway machines. Also for flexible application inside rolling stock, e.g. door systems.

### Construction:

|                         |                                                                                                            |
|-------------------------|------------------------------------------------------------------------------------------------------------|
| <b>Conductor:</b>       | tinned copper strands, extra fine wires                                                                    |
| <b>Insulation:</b>      | SABIX® X                                                                                                   |
| <b>Colour code:</b>     | black cores with consecutive numbers acc. to EN 50334 + VDE 0293-334, green-yellow earth wire from 3 cores |
| <b>Stranding:</b>       | in layers resp. pairwise                                                                                   |
| <b>Wrapping:</b>        | foil                                                                                                       |
| <b>Screen:</b>          | tinned copper braiding (if existing)                                                                       |
| <b>Sheath material:</b> | SABIX® X                                                                                                   |
| <b>Sheath colour:</b>   | black (RAL 9005)                                                                                           |

### Outstanding features:



- weather resistant
- continuously flexible
- good ozone and UV resistance
- good oil and fuel resistance
- good acid and alkalines resistance
- fulfils fire protection requirements R15 (EL1A) and R16 (EL1B) acc. to EN 45545-2 for hazard levels HL1-3

### Technical Data:

|                                                                                                                     |                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nominal voltage:</b>                                                                                             | Uo/U 300/500 V resp. 0.6/1 kV                                                                                                                                                                                                                        |
| <b>Testing voltage:</b>                                                                                             | core/core 300/500 V 0.6/1 kV<br>core/core 2000 V 4000 V<br>core/screen 2000 V 4000 V                                                                                                                                                                 |
| <b>Min. bending radius</b><br><i>fixed laying:</i><br><i>flexible application:</i><br><i>continuously flexible:</i> | 4 x d<br>6 x d<br>10 x d                                                                                                                                                                                                                             |
| <b>Torsion angle:</b>                                                                                               | ± 15°/1 m                                                                                                                                                                                                                                            |
| <b>Temperature range</b><br><i>fixed laying:</i><br><i>flexible application:</i>                                    | -50/+90 °C<br>-50/+90 °C                                                                                                                                                                                                                             |
| <b>Halogen-free:</b>                                                                                                | acc. to EN 50306-1 + EN 50264-1 are fulfilled.<br>Development of HCl is < 0,5%<br>acc. to IEC 60754-1.<br>pH-value is > 4,3 acc. to IEC 60754-2.<br>Conductivity is < 10,0 µS/mm acc. to IEC 60754-2.<br>Fluoric content < 0,1% acc. to IEC 60684-2. |
| <b>Fire performance:</b>                                                                                            | no flame propagation<br>acc. to IEC 60332-3-24, IEC 60332-3-25 + EN 50305 section 9.1.2.<br>Flame retardant and self-extinguishing<br>acc. to IEC 60332-1-2 + VDE 0482-332-1-2                                                                       |
| <b>Toxicity:</b>                                                                                                    | acc. to EN 50305 + VDE 0260-305                                                                                                                                                                                                                      |
| <b>Smoke density:</b>                                                                                               | acc. to IEC 61034 + VDE 0482-1034                                                                                                                                                                                                                    |
| <b>Weather resistance:</b>                                                                                          | very good                                                                                                                                                                                                                                            |
| <b>Oil and fuel resistance:</b>                                                                                     | acc. to EN 50264-1 + VDE 0260-264-1                                                                                                                                                                                                                  |
| <b>Flexibility:</b>                                                                                                 | very good                                                                                                                                                                                                                                            |
| <b>Absence of harmful substances:</b>                                                                               | acc. to RoHS directive of the European Union                                                                                                                                                                                                         |

| item no.                           | no. of cores<br>x cross section<br>n x mm² | nominal<br>voltage | outer-ø<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|------------------------------------|--------------------------------------------|--------------------|---------------|---------------------------|----------------------------|
| <b>multi-core cable unscreened</b> |                                            |                    |               |                           |                            |
| 65600002                           | 2 x 0,50                                   | 300/500 V          | 4,9           | 9,6                       | 37                         |
| 65600105                           | 5 x 0,75                                   | 300/500 V          | 6,4           | 36,0                      | 73                         |
| 65600203                           | 3 x 1,00                                   | 300/500 V          | 5,3           | 28,8                      | 55                         |
| 65600205                           | 5 x 1,00                                   | 300/500 V          | 6,7           | 48,0                      | 86                         |
| 65600207                           | 7 x 1,00                                   | 300/500 V          | 7,9           | 67,2                      | 127                        |
| 65600225                           | 25 x 1,00                                  | 300/500 V          | 13,4          | 240,0                     | 346                        |
| 65600304                           | 4 x 1,50                                   | 300/500 V          | 6,9           | 57,6                      | 101                        |
| 65600307                           | 7 x 1,50                                   | 300/500 V          | 9,3           | 100,8                     | 175                        |
| 65609001                           | 5 x 35,0                                   | 0,6/1 kV           | 33,2          | 1680,0                    | 2299                       |

Other dimensions and colours are possible on request.

| item no.                         | no. of cores<br>x cross section<br>n x mm² | nominal<br>voltage | outer-ø<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------------------------------|--------------------------------------------|--------------------|---------------|---------------------------|----------------------------|
| <b>multi-core cable screened</b> |                                            |                    |               |                           |                            |
| 65601002                         | 2 x 0,50                                   | 300/500 V          | 4,9           | 24,7                      | 42                         |
| 65601003                         | 3 x 0,50                                   | 300/500 V          | 5,3           | 29,7                      | 51                         |
| 65601005                         | 5 x 0,50                                   | 300/500 V          | 6,1           | 40,2                      | 67                         |
| 65601012                         | 12 x 0,50                                  | 300/500 V          | 8,5           | 85,9                      | 132                        |
| 65601105                         | 5 x 0,75                                   | 300/500 V          | 6,8           | 53,6                      | 87                         |
| 65601204                         | 4 x 1,00                                   | 300/500 V          | 6,6           | 57,0                      | 86                         |
| 65601213                         | 13 x 1,00                                  | 300/500 V          | 10,8          | 169,2                     | 235                        |
| 65601303                         | 3 x 1,50                                   | 300/500 V          | 7,3           | 63,4                      | 99                         |
| 65601305                         | 5 x 1,50                                   | 300/500 V          | 8,3           | 94,6                      | 152                        |
| 65601307                         | 7 x 1,50                                   | 300/500 V          | 9,7           | 127,4                     | 195                        |
| 65609002                         | 5 x 35,0                                   | 0,6/1 kV           | 34,1          | 1885,3                    | 2455                       |

Other dimensions and colours are possible on request.

| item no.                         | no. of pairs<br>x cross section<br>n x 2 x mm² | nominal<br>voltage | outer-ø<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------------------------------|------------------------------------------------|--------------------|---------------|---------------------------|----------------------------|
| <b>multi-pair cable screened</b> |                                                |                    |               |                           |                            |
| 65609004                         | 6 x 2 x 0,25                                   | 300/500 V          | 8,0           | 46,3                      | 98                         |
| 65609005                         | 12 x 2 x 0,34                                  | 300/500 V          | 11,9          | 131,4                     | 204                        |
| 65603002                         | 2 x 2 x 0,50                                   | 300/500 V          | 6,7           | 35,5                      | 69                         |
| 65603004                         | 4 x 2 x 0,50                                   | 300/500 V          | 8,5           | 60,1                      | 108                        |
| 65603006                         | 6 x 2 x 0,50                                   | 300/500 V          | 9,8           | 84,3                      | 153                        |
| 65603008                         | 8 x 2 x 0,50                                   | 300/500 V          | 12,3          | 129,3                     | 230                        |
| 65603103                         | 3 x 2 x 0,75                                   | 300/500 V          | 8,4           | 65,9                      | 124                        |

Other dimensions and colours are possible on request.

# Cables for Railway Technology

**CATLine CAT 5e R**

**CATLine CAT 6A R** halogen-free Industrial Ethernet Cables  
for Railway Technology

**CATLine CAT 7A R**

EN 45545-2

Flame retardant acc. to  
UN/ECE R118



SEN · CATLine Cat. 7A R 4x2x24AWG 1767-4621 CE



Marking for CATLine CAT 7A R 17674621:

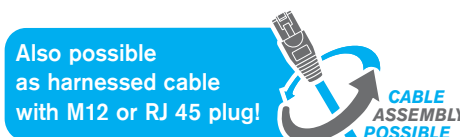
SAB BRÜCKSKES · D-VIERSEN · CATLine Cat. 7A R 4x2x24AWG 1767-4621 CE

| Construction:    | CATLine CAT 5e R<br><i>flexible</i>                |                                                                               | CATLine CAT 6A R<br><i>flexible</i> | CATLine CAT 7A R<br><i>flexible</i>               |
|------------------|----------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------|---------------------------------------------------|
| Dimension:       | 2 x 2 x 26 AWG<br>2 x 2 x 24 AWG<br>2 x 2 x 22 AWG | 4 x 2 x 24 AWG                                                                | 4 x 2 x 26 AWG                      |                                                   |
| Conductor:       | bare copper strands, fine wires                    |                                                                               |                                     |                                                   |
| Insulation:      | PE                                                 |                                                                               |                                     |                                                   |
| Colour code:     | blue, yellow,<br>white, orange                     | white-blue/blue, white-orange/orange,<br>white-green/green, white-brown/brown |                                     |                                                   |
| Stranding:       | star quad                                          | cores twisted to pairs, pairs together                                        |                                     | twisted to pairs with alu foil,<br>pairs together |
| Wrapping:        | foil                                               |                                                                               |                                     | ---                                               |
| Screen:          | alu foil und tinned copper braiding                |                                                                               |                                     | tinned copper braiding                            |
| Sheath material: | special SABIX®                                     |                                                                               |                                     |                                                   |
| Sheath colour:   | green (similar RAL 6018)                           |                                                                               |                                     |                                                   |

| Technical data:                                                 | CATLine CAT 5e R<br><i>flexible</i>                                                                                                                                                                                                |                                                                                                                                           | CATLine CAT 6A R<br><i>flexible</i>                                                                                                      | CATLine CAT 7A R<br><i>flexible</i> |
|-----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------|
| Item number:                                                    | 1567-2625<br>1567-9002<br>1567-9004                                                                                                                                                                                                | 1567-4421                                                                                                                                 | 1667-4621                                                                                                                                | 1767-4621                           |
| Peak operating voltage:                                         | max. 90 V                                                                                                                                                                                                                          |                                                                                                                                           |                                                                                                                                          |                                     |
| Testing voltage<br>core/core:<br>core/screen:                   | 750 V<br>750 V                                                                                                                                                                                                                     |                                                                                                                                           |                                                                                                                                          |                                     |
| Min. bending radius<br>fixed laying:<br>flexible application:   | 5 x d<br>12 x d                                                                                                                                                                                                                    |                                                                                                                                           |                                                                                                                                          |                                     |
| Temperature range VDE<br>fixed laying:<br>flexible application: | -40/+70 °C<br>-30/+70 °C                                                                                                                                                                                                           |                                                                                                                                           |                                                                                                                                          |                                     |
| Halogen-free:                                                   | acc. to EN 50306-1 + EN 50264-1.<br>Development of HCl is ≤ 0,5% acc. to IEC 60754-1.<br>pH-value is ≥ 4,3 acc. to IEC 60754-2.<br>Conductivity is ≤ 10,0 µS/mm acc. to IEC 60754-2.<br>Fluoric content ≤ 0,1% acc. to IEC 60684-2 |                                                                                                                                           |                                                                                                                                          |                                     |
| Fire performance:                                               | no flame propagation acc. to IEC 60332-3-25 / VDE 0482-332-3-25 +<br>EN 50305 / VDE 0260-305 section 9.1.1 + 9.1.2.<br>Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2                             |                                                                                                                                           |                                                                                                                                          |                                     |
| Smoke density:                                                  | acc. to IEC 61034 + VDE 0482-1034                                                                                                                                                                                                  |                                                                                                                                           |                                                                                                                                          |                                     |
| Toxicity:                                                       | acc. to EN 50305 + VDE 0260-305                                                                                                                                                                                                    |                                                                                                                                           |                                                                                                                                          |                                     |
| Characteristic impedance:                                       | 100Ω ± 10Ω,<br>fulfils the electrical and transmission<br>requirements with high frequency<br>with reference to<br>EN 50288-2-2 / CAT 5                                                                                            | 100Ω ± 10Ω,<br>fulfils the electrical and transmission<br>requirements with high frequency<br>with reference to<br>EN 50288-10-2 / CAT 6A | 100Ω ± 10Ω,<br>fulfils the electrical and transmission<br>requirements with high frequency<br>with reference to<br>EN 50288-9-2 / CAT 7A |                                     |
| Flexibility:                                                    | good                                                                                                                                                                                                                               |                                                                                                                                           |                                                                                                                                          |                                     |
| Absence of harmful substances:                                  | acc. to RoHS directive of the European Union                                                                                                                                                                                       |                                                                                                                                           |                                                                                                                                          |                                     |

| item no. | type             | dimension      | max.<br>core-ø<br>mm | outer-ø<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈kg/km |
|----------|------------------|----------------|----------------------|---------------|---------------------------|---------------------------|
| 15672625 | CATLine CAT 5e R | 2 x 2 x 26 AWG | 1,05                 | 4,0 ± 5%      | 16,4                      | 25                        |
| 15679002 | CATLine CAT 5e R | 2 x 2 x 24 AWG | 1,30                 | 5,2 ± 5%      | 22,7                      | 41                        |
| 15679004 | CATLine CAT 5e R | 2 x 2 x 22 AWG | 1,60                 | 5,9 ± 5%      | 29,1                      | 52                        |
| 15674421 | CATLine CAT 5e R | 4 x 2 x 24 AWG | 1,30                 | 8,0 ± 10%     | 41,2                      | 70                        |
| 16674621 | CATLine CAT 6A R | 4 x 2 x 26 AWG | 1,05                 | 6,8 ± 10%     | 31,9                      | 55                        |
| 17674621 | CATLine CAT 7A R | 4 x 2 x 26 AWG | 1,60                 | 7,8 ± 10%     | 38,5                      | 75                        |

Other dimensions and colours are possible on request.



Also possible  
as harnessed cable  
with M12 or RJ 45 plug!

CABLE  
ASSEMBLY  
POSSIBLE

# Cables for Railway Technology

## CATLine CAT 5e R flex CATLine CAT 6A R flex CATLine CAT 7A R flex

continuously flexible halogen-free  
Industrial Ethernet Cables  
for Railway Technology

EN 45545-2



• CATLine Cat. 7A R flex 4x2x24AWG 1769-4431 CE



Marking for CATLine CAT 7A R flex 17694431:

SAB BRÜCKSKES · D-VIERSEN · CATLine Cat. 7A R flex 4x2x24AWG 1769-4431 CE

**Application:** Suitable for flexible and protected installation in the interior for door control or in protecting tubes for outdoor laying at the bogie. Appropriate for light and medium mechanical stress.

| Construction:    | CATLine CAT 5e R flex<br><i>continuously flexible</i> |                                                                               | CATLine CAT 6A R flex<br><i>continuously flexible</i> | CATLine CAT 7A R flex<br><i>continuously flexible</i> |
|------------------|-------------------------------------------------------|-------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------|
| Dimension:       | 2 x 2 x 24 AWG<br>2 x 2 x 22 AWG                      | 4 x 2 x 26 AWG<br>4 x 2 x 24 AWG                                              | 4 x 2 x 26 AWG / 4 x 2 x 24 AWG                       |                                                       |
| Conductor:       | bare copper strands, fine wires                       |                                                                               |                                                       |                                                       |
| Insulation:      | special SABIX®                                        |                                                                               |                                                       |                                                       |
| Colour code:     | blue, yellow,<br>white, orange                        | white-blue/blue, white-orange/orange,<br>white-green/green, white-brown/brown |                                                       |                                                       |
| Stranding:       | star quad                                             | cores twisted to pairs, pairs together                                        |                                                       | twisted to pairs with alu foil,<br>pairs together     |
| Wrapping:        | foil                                                  |                                                                               |                                                       | ---                                                   |
| Screen:          | alu foil und tinned copper braiding                   |                                                                               |                                                       | tinned copper braiding                                |
| Sheath material: | special SABIX®                                        |                                                                               |                                                       |                                                       |
| Sheath colour:   | green (similar RAL 6018)                              |                                                                               |                                                       |                                                       |

| Technical data:                                                                         | CATLine CAT 5e R flex<br>continuously flexible                                                                                                                                                                                     |                                                            | CATLine CAT 6A R flex<br>continuously flexible         | CATLine CAT 7A R flex<br>continuously flexible        |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|--------------------------------------------------------|-------------------------------------------------------|
| Item number:                                                                            | 1569-2435<br>1569-2235                                                                                                                                                                                                             | 1569-4431<br>1569-4631                                     | 1669-4431<br>1669-4631                                 | 1769-4431<br>1769-4631                                |
| Peak operating voltage:                                                                 | max. 90 V                                                                                                                                                                                                                          |                                                            |                                                        |                                                       |
| Testing voltage<br>core/core:<br>core/screen:                                           | 750 V<br>750 V                                                                                                                                                                                                                     |                                                            |                                                        |                                                       |
| Min. bending radius<br>fixed laying:<br>flexible application:<br>continuously flexible: | 5 x d<br>12 x d<br>15 x d                                                                                                                                                                                                          |                                                            |                                                        |                                                       |
| Temperature range VDE<br>fixed laying:<br>flexible application:                         | -50/+90 °C<br>-40/+90 °C                                                                                                                                                                                                           |                                                            |                                                        |                                                       |
| Halogen-free:                                                                           | acc. to EN 50306-1 + EN 50264-1.<br>Development of HCl is ≤ 0,5% acc. to IEC 60754-1.<br>pH-value is ≥ 4,3 acc. to IEC 60754-2.<br>Conductivity is ≤ 10,0 µS/mm acc. to IEC 60754-2.<br>Fluoric content ≤ 0,1% acc. to IEC 60684-2 |                                                            |                                                        |                                                       |
| Fire performance:                                                                       | no flame propagation acc. to IEC 60332-3-25 / VDE 0482-332-3-25 +<br>EN 50305 / VDE 0260-305 section 9.1.1 + 9.1.2.<br>Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2                             |                                                            |                                                        |                                                       |
| Smoke density:                                                                          | acc. to IEC 61034 + VDE 0482-1034                                                                                                                                                                                                  |                                                            |                                                        |                                                       |
| Toxicity:                                                                               | acc. to EN 50305 + VDE 0260-305                                                                                                                                                                                                    |                                                            |                                                        |                                                       |
| Characteristic impedance:                                                               | 100Ω ± 5Ω<br>with reference to<br>EN 50288-2-2 /<br>CAT 5                                                                                                                                                                          | 100Ω ± 10Ω<br>with reference to<br>EN 50288-2-2 /<br>CAT 5 | 100Ω ± 10Ω with reference to<br>EN 50288-10-2 / CAT 6A | 100Ω ± 10Ω with reference to<br>EN 50288-9-2 / CAT 7A |
| Flexibility:                                                                            | good                                                                                                                                                                                                                               |                                                            |                                                        |                                                       |
| Absence of harmful substances:                                                          | acc. to RoHS directive of the European Union                                                                                                                                                                                       |                                                            |                                                        |                                                       |

| item no. | type                  | dimension      | max.<br>core-ø<br>mm | outer-ø<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈kg/km |
|----------|-----------------------|----------------|----------------------|---------------|---------------------------|---------------------------|
| 15692435 | CATLine CAT 5e R flex | 2 x 2 x 24 AWG | 1,25                 | 5,1           | 22,8                      | 40                        |
| 15692235 | CATLine CAT 5e R flex | 2 x 2 x 22 AWG | 1,55                 | 5,8           | 29,2                      | 53                        |
| 15694431 | CATLine CAT 5e R flex | 4 x 2 x 24 AWG | 1,29                 | 7,8           | 42,3                      | 81                        |
| 15694631 | CATLine CAT 5e R flex | 4 x 2 x 26 AWG | 0,99                 | 6,5           | 29,7                      | 55                        |
| 16694431 | CATLine CAT 6A R flex | 4 x 2 x 24 AWG | 1,29                 | 7,9           | 42,2                      | 80                        |
| 16694631 | CATLine CAT 6A R flex | 4 x 2 x 26 AWG | 0,99                 | 6,5           | 29,7                      | 56                        |
| 17694431 | CATLine CAT 7A R flex | 4 x 2 x 24 AWG | 1,71                 | 9,7           | 46,6                      | 109                       |
| 17694631 | CATLine CAT 7A R flex | 4 x 2 x 26 AWG | 1,45                 | 8,6           | 35,8                      | 92                        |

Other dimensions and colours are possible on request.

Also possible  
as harnessed cable  
with M12 or RJ 45 plug!



# Cables for Railway Technology

## SABIX® A 280 FRNC X

wiring cable / control cable, cross linked type

EN 45545-2

up to  
+125 °C



BRÜCKSKES · D-VIERSEN · SABIX® A 280 FRNC X 1 x 1,0 mm<sup>2</sup> CE



Marking for SABIX® A 280 FRNC X 62800110:

SAB BRÜCKSKES · D-VIERSEN · SABIX® A 280 FRNC X 1 x 1,0 mm<sup>2</sup> CE

BRÜCKSKES · D-VIERSEN · SABIX® A 280 FRNC X 5 x 0,5 mm<sup>2</sup> CE



Marking for SABIX® A 280 FRNC X 62800505:

SAB BRÜCKSKES · D-VIERSEN · SABIX® A 280 FRNC X 5 x 0,5 mm<sup>2</sup> CE

### Construction:

|                          |                                                                          |
|--------------------------|--------------------------------------------------------------------------|
| <b>Conductor:</b>        | tinned copper strands fine wires<br>acc. to IEC 60228, VDE 0295, class 5 |
| <b>Insulation:</b>       | special SABIX®                                                           |
| <b>Single conductor:</b> |                                                                          |
| <b>Colour code:</b>      | white (similar RAL 9010)                                                 |
| <b>Multi-core cable:</b> |                                                                          |
| <b>Colour code:</b>      | white cores with consecutive numbers<br>acc. to EN 50334 + VDE 0293-334  |
| <b>Multi-core cable:</b> |                                                                          |
| <b>Stranding:</b>        | in layers                                                                |
| <b>Multi-core cable:</b> |                                                                          |
| <b>Sheath material:</b>  | special SABIX®                                                           |
| <b>Multi-core cable:</b> |                                                                          |
| <b>Sheath colour:</b>    | black (RAL 9005)                                                         |

### Outstanding features:



- halogen-free
- no flame propagation
- flame retardant and self-extinguishing
- good ozone resistance
- good oil and chemical resistance
- fulfils  
fire protection requirements R15 (EL1A)  
acc. to EN 45545-2  
for hazard levels HL1-3

### Technical Data:

|                                                                        |                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nominal voltage:</b>                                                | Uo/U 300/500 V                                                                                                                                                                                                                                      |
| <b>Testing voltage:</b>                                                | core/core 2000 V                                                                                                                                                                                                                                    |
| <b>Min. bending radius:</b>                                            | 5 x d                                                                                                                                                                                                                                               |
| <b>Temperature range</b><br><i>during protected,<br/>fixed laying:</i> | -40/+125 °C (single conductor)<br>-50/+125 °C (multi-core cable)                                                                                                                                                                                    |
| <b>Halogen-free:</b>                                                   | acc. to EN 50306-1 + EN 50264-1 are fulfilled.<br>Development of HCl is < 0,5%<br>acc. to IEC 60754-1.<br>pH-value is > 4,3 acc. to IEC 60754-2.<br>Conductivity is < 10,0 µS/mm acc. to IEC 60754-2.<br>Fluoric content < 0,1% acc. to IEC 60684-2 |
| <b>Fire performance:</b>                                               | no flame propagation<br>acc. to IEC 60332-3-24, IEC 60332-3-25 +<br>EN 50305 section 9.1.2.<br>Flame retardant and self-extinguishing<br>acc. to IEC 60332-1-2 + VDE 0482-332-1-2                                                                   |
| <b>Toxicity:</b>                                                       | acc. to EN 50305 + VDE 0260-305                                                                                                                                                                                                                     |
| <b>Smoke density:</b>                                                  | acc. to IEC 61034 + VDE 0482-1034                                                                                                                                                                                                                   |
| <b>Absence of<br/>harmful substances:</b>                              | acc. to RoHS directive of the European Union                                                                                                                                                                                                        |

| item no. | no. of cores<br>x cross section<br><br>n x mm <sup>2</sup> | largest<br>single wire<br><br>ø mm | outer-ø<br>± 5%<br><br>mm | copper<br>figure<br><br>kg/km | cable<br>weight<br><br>≈ kg/km | ohmic<br>resistance<br>at 20 °C<br>max. Ω/km | heating<br>value<br>approx.<br>kWh/km |
|----------|------------------------------------------------------------|------------------------------------|---------------------------|-------------------------------|--------------------------------|----------------------------------------------|---------------------------------------|
| 62800105 | 1 x 0,50                                                   | 0,21                               | 1,7                       | 4,8                           | 7                              | 40,1                                         | 13,0                                  |
| 62800305 | 3 x 0,50                                                   | 0,21                               | 4,7                       | 14,4                          | 35                             | 40,1                                         | 115                                   |
| 62800505 | 5 x 0,50                                                   | 0,21                               | 5,8                       | 24,0                          | 50                             | 40,1                                         | 170                                   |
| 62800805 | 8 x 0,50                                                   | 0,21                               | 7,3                       | 38,4                          | 83                             | 40,1                                         | 246                                   |
| 62801005 | 10 x 0,50                                                  | 0,21                               | 8,1                       | 48,0                          | 97                             | 40,1                                         | 275                                   |
| 62801205 | 12 x 0,50                                                  | 0,21                               | 8,4                       | 57,6                          | 112                            | 40,1                                         | 306                                   |
| 62800607 | 6 x 0,75                                                   | 0,21                               | 7,2                       | 43,2                          | 86                             | 26,7                                         | 237                                   |
| 62800807 | 8 x 0,75                                                   | 0,21                               | 7,3                       | 57,6                          | 101                            | 26,7                                         | 245                                   |
| 62801007 | 10 x 0,75                                                  | 0,21                               | 9,4                       | 72,0                          | 133                            | 26,7                                         | 345                                   |
| 62800110 | 1 x 1,00                                                   | 0,21                               | 2,1                       | 9,6                           | 12                             | 20,0                                         | 16,0                                  |
| 62800310 | 3 x 1,00                                                   | 0,21                               | 5,5                       | 28,8                          | 55                             | 20,0                                         | 162                                   |
| 62800410 | 4 x 1,00                                                   | 0,21                               | 6,2                       | 38,4                          | 71                             | 20,0                                         | 186                                   |
| 62800610 | 6 x 1,00                                                   | 0,21                               | 7,5                       | 57,6                          | 101                            | 20,0                                         | 252                                   |
| 62800810 | 8 x 1,00                                                   | 0,21                               | 9,0                       | 76,8                          | 135                            | 20,0                                         | 338                                   |
| 62801010 | 10 x 1,00                                                  | 0,21                               | 10,1                      | 96,0                          | 164                            | 20,0                                         | 402                                   |
| 62800115 | 1 x 1,50                                                   | 0,21                               | 2,5                       | 14,4                          | 17                             | 13,7                                         | 22,5                                  |
| 62800315 | 3 x 1,50                                                   | 0,21                               | 6,6                       | 43,2                          | 68                             | 13,7                                         | 210                                   |
| 62800125 | 1 x 2,50                                                   | 0,26                               | 3,1                       | 24,0                          | 27                             | 8,21                                         | 34,0                                  |

Other dimensions and colours are possible on request.

# Cables for Railway Technology

## SABIX® A 285 FRNC X

control cable with numbered cores and overall copper screen, cross linked type

EN 45545-2

up to  
+125 °C



· D-VIERSEN · SABIX® A 285 FRNC X 5 x 0,5 mm² CE



Marking for SABIX® A 285 FRNC X 62850505:

SAB BRÜCKSKES · D-VIERSEN · SABIX® A 285 FRNC X 5 x 0,5 mm² CE

### Construction:

|                         |                                                                          |
|-------------------------|--------------------------------------------------------------------------|
| <b>Conductor:</b>       | tinned copper strands fine wires<br>acc. to IEC 60228, VDE 0295, class 5 |
| <b>Insulation:</b>      | special SABIX®                                                           |
| <b>Colour code:</b>     | white cores with consecutive numbers<br>acc. to. EN 50334 + VDE 0293-334 |
| <b>Stranding:</b>       | in layers                                                                |
| <b>Wrapping:</b>        | foil                                                                     |
| <b>Screen:</b>          | tinned copper braiding                                                   |
| <b>Sheath material:</b> | special SABIX®                                                           |
| <b>Sheath colour:</b>   | black (RAL 9005)                                                         |

### Outstanding features:

- halogen-free
- good EMC characteristics
- no flame propagation
- flame retardant and self-extinguishing
- good ozone resistance
- good oil and chemical resistance
- fulfils  
fire protection requirements R15 (EL1A)  
acc. to EN 45545-2  
for hazard levels HL1-3

### Technical Data:

|                                                                  |                                                                                                                                                                                                                                                     |
|------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nominal voltage:</b>                                          | Uo/U 300/500 V                                                                                                                                                                                                                                      |
| <b>Testing voltage:</b>                                          | core/core 2000 V<br>core/screen 2000 V                                                                                                                                                                                                              |
| <b>Min. bending radius:</b>                                      | 10 x d                                                                                                                                                                                                                                              |
| <b>Temperature range<br/>during protected,<br/>fixed laying:</b> | -50/+125 °C                                                                                                                                                                                                                                         |
| <b>Halogen-free:</b>                                             | acc. to EN 50306-1 + EN 50264-1 are fulfilled.<br>Development of HCl is < 0,5%<br>acc. to IEC 60754-1.<br>pH-value is > 4,3 acc. to IEC 60754-2.<br>Conductivity is < 10,0 µS/mm acc. to IEC 60754-2.<br>Fluoric content < 0,1% acc. to IEC 60684-2 |
| <b>Fire performance:</b>                                         | no flame propagation<br>acc. to IEC 60332-3-24, IEC 60332-3-25 +<br>EN 50305 section 9.1.2.<br>Flame retardant and self-extinguishing<br>acc. to IEC 60332-1-2 + VDE 0482-332-1-2                                                                   |
| <b>Toxicity:</b>                                                 | acc. to EN 50305 + VDE 0260-305                                                                                                                                                                                                                     |
| <b>Smoke density:</b>                                            | acc. to IEC 61034 + VDE 0482-1034                                                                                                                                                                                                                   |
| <b>Absence of<br/>harmful substances:</b>                        | acc. to RoHS directive of the European Union                                                                                                                                                                                                        |

| item no. | no. of cores<br>x cross section | largest<br>single wire | outer-ø<br>± 5% | copper<br>figure | cable<br>weight | ohmic<br>resistance<br>at 20 °C<br>max. Ω/km | heating<br>value<br>approx.<br>kWh/km |
|----------|---------------------------------|------------------------|-----------------|------------------|-----------------|----------------------------------------------|---------------------------------------|
|          | n x mm²                         | ø mm                   | mm              | kg/km            | ≈ kg/km         |                                              |                                       |
| 62850305 | 3 x 0,50                        | 0,21                   | 5,2             | 30,3             | 45              | 40,1                                         | 99                                    |
| 62850505 | 5 x 0,50                        | 0,21                   | 6,3             | 43,5             | 68              | 40,1                                         | 154                                   |
| 62850805 | 8 x 0,50                        | 0,21                   | 7,9             | 62,2             | 97              | 40,1                                         | 237                                   |
| 62851005 | 10 x 0,50                       | 0,21                   | 8,6             | 74,3             | 114             | 40,1                                         | 258                                   |
| 62851205 | 12 x 0,50                       | 0,21                   | 8,9             | 86,6             | 127             | 40,1                                         | 288                                   |
| 62850607 | 6 x 0,75                        | 0,21                   | 7,7             | 67,0             | 101             | 26,7                                         | 231                                   |
| 62850807 | 8 x 0,75                        | 0,21                   | 9,1             | 86,6             | 132             | 26,7                                         | 305                                   |
| 62851007 | 10 x 0,75                       | 0,21                   | 10,4            | 119,7            | 172             | 26,7                                         | 381                                   |
| 62850310 | 3 x 1,00                        | 0,21                   | 6,2             | 46,5             | 66              | 20,0                                         | 155                                   |
| 62850610 | 6 x 1,00                        | 0,21                   | 8,2             | 83,7             | 125             | 20,0                                         | 285                                   |
| 62850810 | 8 x 1,00                        | 0,21                   | 9,8             | 106,0            | 160             | 20,0                                         | 366                                   |
| 62851010 | 10 x 1,00                       | 0,21                   | 10,8            | 149,9            | 200             | 20,0                                         | 401                                   |

Other dimensions and colours are possible on request.

# Cables for Railway Technology

## SABIX® A 280 FRNC X (FR)

fire resistant control cable, cross linked type

EN 45545-2  
IEC 60331-21  
EN 50200



BRÜCKSKES · D-VIERSEN · SABIX® A 280 FRNC X (FR) 5 x 0,5 mm<sup>2</sup> CE



Marking for SABIX® A 280 FRNC X (FR) 62809505:

SAB BRÜCKSKES · D-VIERSEN · SABIX® A 280 FRNC X (FR) 5 x 0,5 mm<sup>2</sup> CE

### Construction:

|                         |                                                                          |
|-------------------------|--------------------------------------------------------------------------|
| <b>Conductor:</b>       | tinned copper strands fine wires                                         |
| <b>Wrapping:</b>        | mica tape                                                                |
| <b>Insulation:</b>      | special SABIX®                                                           |
| <b>Colour code:</b>     | white cores with consecutive numbers<br>acc. to. EN 50334 + VDE 0293-334 |
| <b>Stranding:</b>       | in layers                                                                |
| <b>Sheath material:</b> | special SABIX®                                                           |
| <b>Sheath colour:</b>   | black (RAL 9005)                                                         |

### Outstanding features:

- halogen-free
- no flame propagation
- fire resistant
- flame retardant and self-extinguishing
- good ozone resistance
- good oil and chemical resistance
- fulfils  
fire protection requirements R15 (EL1A)  
acc. to EN 45545-2  
for hazard levels HL1-3
- EN 50200 PH 30 + VDE 0482-200,  
IEC 60331-21+ VDE 0482-331-21

### Technical Data:

|                                                                  |                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nominal voltage:</b>                                          | U <sub>0</sub> /U 300/500 V                                                                                                                                                                                                                          |
| <b>Testing voltage:</b>                                          | core/core 2000 V                                                                                                                                                                                                                                     |
| <b>Min. bending radius:</b>                                      | 10 x d                                                                                                                                                                                                                                               |
| <b>Temperature range<br/>during protected,<br/>fixed laying:</b> | -50/+125 °C                                                                                                                                                                                                                                          |
| <b>Halogen-free:</b>                                             | acc. to EN 50306-1 + EN 50264-1 are fulfilled.<br>Development of HCl is < 0,5%<br>acc. to IEC 60754-1.<br>pH-value is > 4,3 acc. to IEC 60754-2.<br>Conductivity is < 10,0 µS/mm acc. to IEC 60754-2.<br>Fluoric content < 0,1% acc. to IEC 60684-2. |
| <b>Fire performance:</b>                                         | no flame propagation<br>acc. to IEC 60332-3-24, IEC 60332-3-25 +<br>+ EN 50305 section 9.1.2.<br>Flame retardant and self-extinguishing<br>acc. to IEC 60332-1-2 + VDE 0482-332-1-2                                                                  |
| <b>Insulation integrity<br/>in case of fire:</b>                 | EN 50200 PH 30, VDE 0482-200,<br>IEC 60331-21 FE 180 + VDE 0482-331-21                                                                                                                                                                               |
| <b>Toxicity:</b>                                                 | acc. to EN 50305 + VDE 0260-305                                                                                                                                                                                                                      |
| <b>Smoke density:</b>                                            | acc. to IEC 61034 + VDE 0482-1034                                                                                                                                                                                                                    |
| <b>Absence of<br/>harmful substances:</b>                        | acc. to RoHS directive of the European Union                                                                                                                                                                                                         |

| item no. | no. of cores<br>x cross section<br>n x mm <sup>2</sup> | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------------------|-----------------------|---------------------------|----------------------------|
| 62809502 | 2 x 0,50                                               | 5,8                   | 9,6                       | 47                         |
| 62809503 | 3 x 0,50                                               | 6,1                   | 14,4                      | 58                         |
| 62809504 | 4 x 0,50                                               | 6,7                   | 19,2                      | 65                         |
| 62809505 | 5 x 0,50                                               | 7,4                   | 24,0                      | 79                         |
| 62809507 | 7 x 0,50                                               | 8,3                   | 33,6                      | 102                        |
| 62809510 | 10 x 0,50                                              | 10,9                  | 48,0                      | 151                        |
| 62809512 | 12 x 0,50                                              | 11,2                  | 57,6                      | 172                        |
| 62809518 | 18 x 0,50                                              | 13,2                  | 86,4                      | 235                        |
| 62809525 | 25 x 0,50                                              | 16,2                  | 120,0                     | 333                        |
| 62809602 | 2 x 0,75                                               | 6,5                   | 14,4                      | 56                         |
| 62809603 | 3 x 0,75                                               | 6,6                   | 21,6                      | 70                         |
| 62809604 | 4 x 0,75                                               | 7,2                   | 28,8                      | 80                         |
| 62809605 | 5 x 0,75                                               | 8,2                   | 36,0                      | 101                        |
| 62809607 | 7 x 0,75                                               | 8,9                   | 50,4                      | 126                        |
| 62809608 | 8 x 0,75                                               | 10,7                  | 57,6                      | 171                        |
| 62809610 | 10 x 0,75                                              | 11,7                  | 72,0                      | 186                        |
| 62809612 | 12 x 0,75                                              | 12,1                  | 86,4                      | 213                        |
| 62809618 | 18 x 0,75                                              | 14,6                  | 129,6                     | 311                        |
| 62809625 | 25 x 0,75                                              | 16,2                  | 180,0                     | 415                        |
| 62809702 | 2 x 1,00                                               | 6,4                   | 19,2                      | 62                         |
| 62809703 | 3 x 1,00                                               | 6,8                   | 28,8                      | 78                         |
| 62809704 | 4 x 1,00                                               | 7,4                   | 38,4                      | 89                         |
| 62809705 | 5 x 1,00                                               | 8,4                   | 48,0                      | 113                        |
| 62809707 | 7 x 1,00                                               | 9,2                   | 67,2                      | 143                        |

| item no. | no. of cores<br>x cross section<br>n x mm <sup>2</sup> | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------------------|-----------------------|---------------------------|----------------------------|
| 62809710 | 10 x 1,00                                              | 12,1                  | 96,0                      | 210                        |
| 62809712 | 12 x 1,00                                              | 12,5                  | 115,2                     | 240                        |
| 62809718 | 18 x 1,00                                              | 15,1                  | 172,8                     | 353                        |
| 62809725 | 25 x 1,00                                              | 18,1                  | 240,0                     | 472                        |
| 62809802 | 2 x 1,50                                               | 7,2                   | 28,8                      | 83                         |
| 62809803 | 3 x 1,50                                               | 7,7                   | 43,2                      | 107                        |
| 62809804 | 4 x 1,50                                               | 8,6                   | 57,6                      | 128                        |
| 62809805 | 5 x 1,50                                               | 9,8                   | 72,0                      | 163                        |
| 62809807 | 7 x 1,50                                               | 10,7                  | 100,8                     | 207                        |
| 62809808 | 8 x 1,50                                               | 12,5                  | 115,2                     | 264                        |
| 62809810 | 10 x 1,50                                              | 13,7                  | 144,0                     | 291                        |
| 62809812 | 12 x 1,50                                              | 14,6                  | 172,8                     | 351                        |
| 62809818 | 18 x 1,50                                              | 17,1                  | 259,2                     | 495                        |
| 62809825 | 25 x 1,50                                              | 21,0                  | 360,0                     | 686                        |
| 62809902 | 2 x 2,50                                               | 8,6                   | 48,0                      | 121                        |
| 62809903 | 3 x 2,50                                               | 9,1                   | 72,0                      | 156                        |
| 62809904 | 4 x 2,50                                               | 10,3                  | 96,0                      | 189                        |
| 62809905 | 5 x 2,50                                               | 11,4                  | 120,0                     | 230                        |
| 62809907 | 7 x 2,50                                               | 12,5                  | 168,0                     | 297                        |
| 62809910 | 10 x 2,50                                              | 16,5                  | 240,0                     | 434                        |
| 62809912 | 12 x 2,50                                              | 17,0                  | 288,0                     | 498                        |
| 62809918 | 18 x 2,50                                              | 20,5                  | 432,0                     | 731                        |
| 62809925 | 25 x 2,50                                              | 25,0                  | 600,0                     | 1015                       |

Other dimensions and colours are possible on request.

# Cables for Railway Technology

## R 107

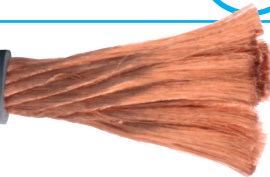
Besilen® insulated copper rope

EN 45545-2

Nominal voltage up to  
Uo/U 1.8/3 kV



ES · D-VIERSEN · R 107 1,8/3 kV 95,0mm² 6107-0894



Marking for R 107 61070894:

SAB BRÖCKSKES · D-VIERSEN · R 107 1,8/3 kV 95,0mm² 6107-0894

### Construction:

|                    |                                                     |
|--------------------|-----------------------------------------------------|
| <b>Conductor:</b>  | bare copper strands, extremely fine wires           |
| <b>Insulation:</b> | Besilen® EI2<br>acc. to EN 50363-1 + VDE 0207-363-1 |
| <b>Colour:</b>     | slate-gray (RAL 7015)                               |

### Technical data:

|                                                                                                            |                                                                                                                                                                                                                                                    |
|------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nominal voltage:</b>                                                                                    | Uo/U 1,8/3,0 kV                                                                                                                                                                                                                                    |
| <b>Testing voltage:</b>                                                                                    | 6500 V                                                                                                                                                                                                                                             |
| <b>Current-carrying capacity:</b>                                                                          | acc. to VDE 0298-4                                                                                                                                                                                                                                 |
| <b>Min. bending radius:</b>                                                                                | 5 x d                                                                                                                                                                                                                                              |
| <b>Temperature range</b><br><i>fixed laying:</i><br><i>flexible application:</i><br><i>short-time use:</i> | <br>-50/+180 °C<br>-25/+180 °C<br>+250 °C                                                                                                                                                                                                          |
| <b>Halogen-free:</b>                                                                                       | acc. to EN 50306-1 + EN 50264-1 are fulfilled.<br>Development of HCl is < 0,5%<br>acc. to IEC 60754-1.<br>pH-value is > 4,3 IEC 60754-2.<br>Conductivity is < 10,0 µS/mm acc. to IEC 60754-2.<br>Fluoric content < 0,1% acc. to IEC 60684-2.       |
| <b>Fire performance:</b>                                                                                   | No flame propagation<br>acc. to IEC 60332-3-24 + VDE 0482-332-3-24<br>resp. IEC 60332-3-25 + VDE 0482-332-3-25<br>and EN 50305 + VDE 0260-305 section 9.1.2.<br>Flame retardant and self-extinguishing<br>acc. to IEC 60332-1-2 + VDE 0482-332-1-2 |
| <b>Toxicity:</b>                                                                                           | acc. to EN 50305 + VDE 0260-305                                                                                                                                                                                                                    |
| <b>Smoke density:</b>                                                                                      | acc. to IEC 61034 + VDE 0482-1034                                                                                                                                                                                                                  |
| <b>Weather resistance:</b>                                                                                 | very good                                                                                                                                                                                                                                          |
| <b>Ozone resistance:</b>                                                                                   | acc. to EN 50382-2 + VDE 0260-382-2                                                                                                                                                                                                                |
| <b>Oil resistance:</b>                                                                                     | good                                                                                                                                                                                                                                               |
| <b>Absence of harmful substances:</b>                                                                      | acc. to RoHS directive of the European Union                                                                                                                                                                                                       |

### Outstanding features:



- extremely flexible
- fulfils fire protection requirements  
acc. to EN 45545-2 /  
from 1,50 - 10,00 mm²:  
R15 (EL1A) HL 1 / R16 (EL1B) HL 1-2  
from 16,00 mm²:  
R15 (EL1A) HL 1-2 / R16 (EL1B) HL 1-3
- halogen-free
- heat resistant
- flexible at low temperatures
- flame retardant and self-extinguishing
- weather resistant

| item no. | nominal<br>cross section<br>mm² | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|---------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| 61070882 | 1,50                            | 0,07                           | 6,9                   | 14,4                      | 62                         |
| 61070884 | 2,50                            | 0,07                           | 7,4                   | 24,0                      | 76                         |
| 61070886 | 4,00                            | 0,07                           | 8,1                   | 38,4                      | 97                         |
| 61070887 | 6,00                            | 0,07                           | 8,5                   | 57,6                      | 119                        |
| 61070888 | 10,00                           | 0,07                           | 10,0                  | 96,0                      | 172                        |
| 61070889 | 16,00                           | 0,07                           | 10,3                  | 153,6                     | 222                        |
| 61070890 | 25,00                           | 0,10                           | 12,1                  | 240,0                     | 328                        |
| 61070891 | 35,00                           | 0,10                           | 13,8                  | 336,0                     | 435                        |
| 61070892 | 50,00                           | 0,10                           | 15,7                  | 480,0                     | 591                        |
| 61070893 | 70,00                           | 0,10                           | 17,7                  | 672,0                     | 788                        |
| 61070894 | 95,00                           | 0,10                           | 19,2                  | 912,0                     | 1041                       |
| 61070895 | 120,00                          | 0,10                           | 20,9                  | 1152,0                    | 1281                       |
| 61070896 | 150,00                          | 0,10                           | 24,1                  | 1440,0                    | 1588                       |
| 61070897 | 185,00                          | 0,15                           | 25,3                  | 1776,0                    | 1912                       |
| 61070898 | 240,00                          | 0,15                           | 29,8                  | 2304,0                    | 2476                       |
| 61070899 | 300,00                          | 0,15                           | 31,7                  | 2880,0                    | 3094                       |

Other dimensions and colours are possible on request.



On request with  
tinned copper strands!  
Also available with  
copper braiding as R 108!

**Besilen®** is a specially developed Silicone rubber-based material  
with good electrical characteristics and it is a registered  
trademark of SAB BRÖCKSKES GmbH & Co. KG.

# Cables for Railway Technology

## B 107

Besilen® insulated copper rope

Nominal voltage up to  
U<sub>0</sub>/U 1.8/3 kV



BRÖCKSKES · D-VIERSEN · B 107 U<sub>0</sub>/U 1,8/3 kV 95,0mm<sup>2</sup>



Marking for B 107 01079500:

SAB BRÖCKSKES · D-VIERSEN · B 107 U<sub>0</sub>/U 1,8/3 kV 95,0mm<sup>2</sup>

### Construction:

|                    |                                                     |
|--------------------|-----------------------------------------------------|
| <b>Conductor:</b>  | bare copper strands, extra fine wires               |
| <b>Insulation:</b> | Besilen® EI2<br>acc. to EN 50363-1 + VDE 0207-363-1 |
| <b>Colour:</b>     | translucent                                         |

### Technical data:

|                                              |                                                                                                                         |
|----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------|
| <b>Nominal voltage</b>                       | 4,0 - 6,0 mm <sup>2</sup> : U <sub>0</sub> /U 1,5/1,5 kV<br>10,0 - 185,0 mm <sup>2</sup> : U <sub>0</sub> /U 1,8/3,0 kV |
| <b>Testing voltage</b>                       | 4,0 - 6,0 mm <sup>2</sup> : 4000 V<br>10,0 - 185,0 mm <sup>2</sup> : 6500 V                                             |
| <b>Current-carrying capacity:</b>            | acc. to VDE 0298-4                                                                                                      |
| <b>Min. bending radius:</b>                  | 5 x d                                                                                                                   |
| <b>Temperature range</b>                     |                                                                                                                         |
| fixed laying:                                | -40/+180 °C                                                                                                             |
| flexible application:                        | -25/+180 °C                                                                                                             |
| short-time use:                              | +250 °C                                                                                                                 |
| <b>Halogen-free:</b>                         | acc. to IEC 60754-1 + VDE 0482-754-1                                                                                    |
| <b>Fire performance:</b>                     | flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2                                         |
| <b>Corrosiveness of conflagration gases:</b> | IEC 60754-2 + VDE 0482-754-2<br>- no development of corrosive conflagration gases                                       |
| <b>Weather resistance:</b>                   | very good                                                                                                               |
| <b>Absence of harmful substances:</b>        | acc. to RoHS directive of the European Union                                                                            |

### Outstanding features:



- halogen-free
- heat resistant
- flexible at low temperatures
- flame retardant and self-extinguishing
- weather resistant

| item no. | nominal cross section mm <sup>2</sup> | largest single wire ø mm | outer-ø ± 5% mm | copper figure kg/km | cable weight ≈ kg/km |
|----------|---------------------------------------|--------------------------|-----------------|---------------------|----------------------|
| 01070400 | 4,00                                  | 0,07                     | 5,3             | 38,4                | 54                   |
| 01070600 | 6,00                                  | 0,07                     | 5,7             | 57,6                | 74                   |
| 01071000 | 10,00                                 | 0,07                     | 9,0             | 96,0                | 146                  |
| 01071600 | 16,00                                 | 0,07                     | 9,3             | 153,6               | 196                  |
| 01072500 | 25,00                                 | 0,10                     | 12,0            | 240,0               | 314                  |
| 01073500 | 35,00                                 | 0,10                     | 13,8            | 336,0               | 426                  |
| 01075000 | 50,00                                 | 0,10                     | 15,7            | 480,0               | 581                  |
| 01077000 | 70,00                                 | 0,10                     | 17,7            | 672,0               | 777                  |
| 01079500 | 95,00                                 | 0,10                     | 18,8            | 912,0               | 1012                 |
| 01071200 | 120,00                                | 0,10                     | 20,5            | 1152,0              | 1244                 |
| 01071500 | 150,00                                | 0,10                     | 23,7            | 1440,0              | 1551                 |
| 01071850 | 185,00                                | 0,15                     | 25,3            | 1776,0              | 1893                 |

Other dimensions and colours are possible on request.



On request with  
tinned copper strands!  
Also available with  
copper braiding as B 108!

\* Colour code for copper rope,  
position 8 of the item no.:

- |                  |            |
|------------------|------------|
| 1 = green-yellow | 5 = green  |
| 2 = blue         | 6 = white  |
| 3 = black        | 7 = orange |
| 4 = brown        | 8 = red    |

**Besilen®** is a specially developed Silicone rubber-based material with good electrical characteristics and it is a registered trademark of SAB BRÖCKSKES GmbH & Co. KG.

# Cables for Railway Technology

## SABIX® A 224 FRNC C1

control cable with numbered cores, improved fire performance  
and extended temperature range



SKES · D-VIERSEN · SABIX® A 224 FRNC C1 14 x 0,5 mm² CE



Marking for SABIX® A 224 FRNC C1 62241405:

SAB BRÜCKSKES · D-VIERSEN · SABIX® A 224 FRNC C1 14 x 0,5 mm² CE

### Construction:

|                         |                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Conductor:</b>       | bare copper strands<br>acc. to IEC 60228, VDE 0295, class 5                                                      |
| <b>Insulation:</b>      | SABIX®                                                                                                           |
| <b>Colour code:</b>     | black cores with consecutive numbers<br>acc. to EN 50334 + VDE 0293-334,<br>green-yellow earth wire from 3 cores |
| <b>Stranding:</b>       | in layers                                                                                                        |
| <b>Sheath material:</b> | SABIX®                                                                                                           |
| <b>Sheath colour:</b>   | black (RAL 9005)                                                                                                 |

### Outstanding features:



- halogen-free
- no flame propagation
- flame retardant and self-extinguishing
- NF C32-070 C1

### Technical Data:

|                                                                                    |                                                                                                                                                                                                                                                                                                 |
|------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nominal voltage:</b>                                                            | U <sub>0</sub> /U 450/750 V                                                                                                                                                                                                                                                                     |
| <b>Testing voltage:</b>                                                            | core/core 3000 V                                                                                                                                                                                                                                                                                |
| <b>Min. bending radius</b><br><i>fixed laying:</i><br><i>flexible application:</i> | 4 x d<br>6 x d                                                                                                                                                                                                                                                                                  |
| <b>Radiation resistance:</b>                                                       | 1 x 10 <sup>7</sup> cJ/kg (100 kGy)                                                                                                                                                                                                                                                             |
| <b>Temperature range</b><br><i>fixed laying:</i><br><i>flexible application:</i>   | -30/+90 °C<br>-20/+90 °C                                                                                                                                                                                                                                                                        |
| <b>Halogen-free:</b>                                                               | acc. to IEC 60754-1 + VDE 0482-754-1                                                                                                                                                                                                                                                            |
| <b>Fire performance:</b>                                                           | no flame propagation<br>acc. to IEC 60332-3-24 + VDE 0482-332-3-24<br>resp. IEC 60332-3-25 + VDE 0482-332-3-25<br>cat. C resp. D, acc. to RoHS directive of the<br>European Union.<br><br>Flame retardant and self-extinguishing<br>acc. to IEC 60332-1-2 + VDE 0482-332-1-2<br>+ NF C32-070 C1 |
| <b>Corrosiveness of<br/>conflagration gases:</b>                                   | in compliance with<br>IEC 60754-2 + VDE 0482-754-2 -<br>no development of corrosive conflagration gases                                                                                                                                                                                         |
| <b>Smoke density:</b>                                                              | acc. to IEC 61034 + VDE 0482-1034                                                                                                                                                                                                                                                               |
| <b>Absence of<br/>harmful substances:</b>                                          | acc. to RoHS directive of the European Union                                                                                                                                                                                                                                                    |

| item no. | no. of cores<br>x cross section<br>n x mm² | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| 62240205 | 2 x 0,50                                   | 0,21                           | 5,8                   | 9,6                       | 36                         |
| 62240305 | 3 x 0,50                                   | 0,21                           | 6,3                   | 14,4                      | 49                         |
| 62240405 | 4 x 0,50                                   | 0,21                           | 6,8                   | 19,2                      | 59                         |
| 62240505 | 5 x 0,50                                   | 0,21                           | 7,7                   | 24,0                      | 76                         |
| 62240705 | 7 x 0,50                                   | 0,21                           | 8,3                   | 33,6                      | 94                         |
| 62241205 | 12 x 0,50                                  | 0,21                           | 11,1                  | 57,6                      | 159                        |
| 62241805 | 18 x 0,50                                  | 0,21                           | 13,1                  | 86,4                      | 228                        |
| 62242505 | 25 x 0,50                                  | 0,21                           | 15,9                  | 120,0                     | 315                        |
| 62243005 | 30 x 0,50                                  | 0,21                           | 16,6                  | 144,0                     | 369                        |
| 62243405 | 34 x 0,50                                  | 0,21                           | 18,1                  | 163,2                     | 424                        |
| 62244005 | 40 x 0,50                                  | 0,21                           | 19,6                  | 192,0                     | 497                        |
| 62244205 | 42 x 0,50                                  | 0,21                           | 19,6                  | 201,6                     | 514                        |
| 62245005 | 50 x 0,50                                  | 0,21                           | 21,4                  | 240,0                     | 602                        |
| 62246105 | 61 x 0,50                                  | 0,21                           | 22,9                  | 292,8                     | 718                        |
| 62240207 | 2 x 0,75                                   | 0,21                           | 6,4                   | 14,4                      | 45                         |
| 62240307 | 3 x 0,75                                   | 0,21                           | 7,0                   | 21,6                      | 61                         |
| 62240407 | 4 x 0,75                                   | 0,21                           | 7,8                   | 28,8                      | 79                         |
| 62240507 | 5 x 0,75                                   | 0,21                           | 8,5                   | 36,0                      | 95                         |
| 62240707 | 7 x 0,75                                   | 0,21                           | 9,4                   | 50,4                      | 125                        |
| 62241207 | 12 x 0,75                                  | 0,21                           | 12,6                  | 86,4                      | 209                        |
| 62241807 | 18 x 0,75                                  | 0,21                           | 15,0                  | 129,6                     | 308                        |
| 62242507 | 25 x 0,75                                  | 0,21                           | 18,2                  | 180,0                     | 424                        |
| 62243007 | 30 x 0,75                                  | 0,21                           | 18,8                  | 216,0                     | 487                        |
| 62243407 | 34 x 0,75                                  | 0,21                           | 20,4                  | 244,8                     | 557                        |
| 62244007 | 40 x 0,75                                  | 0,21                           | 22,2                  | 288,0                     | 661                        |
| 62244207 | 42 x 0,75                                  | 0,21                           | 22,2                  | 302,4                     | 685                        |
| 62245007 | 50 x 0,75                                  | 0,21                           | 24,4                  | 360,0                     | 803                        |
| 62240210 | 2 x 1,00                                   | 0,21                           | 6,8                   | 19,2                      | 53                         |
| 62240310 | 3 x 1,00                                   | 0,21                           | 7,2                   | 28,8                      | 69                         |
| 62240410 | 4 x 1,00                                   | 0,21                           | 8,0                   | 38,4                      | 89                         |
| 62240510 | 5 x 1,00                                   | 0,21                           | 8,8                   | 48,0                      | 108                        |
| 62240710 | 7 x 1,00                                   | 0,21                           | 9,7                   | 67,2                      | 142                        |

| item no. | no. of cores<br>x cross section<br>n x mm² | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| 62241210 | 12 x 1,00                                  | 0,21                           | 13,0                  | 115,2                     | 239                        |
| 62241810 | 18 x 1,00                                  | 0,21                           | 15,5                  | 172,8                     | 352                        |
| 62242110 | 21 x 1,00                                  | 0,21                           | 17,2                  | 201,6                     | 415                        |
| 62242510 | 25 x 1,00                                  | 0,21                           | 18,8                  | 240,0                     | 485                        |
| 62243010 | 30 x 1,00                                  | 0,21                           | 19,6                  | 288,0                     | 568                        |
| 62243410 | 34 x 1,00                                  | 0,21                           | 21,3                  | 326,4                     | 649                        |
| 62244010 | 40 x 1,00                                  | 0,21                           | 23,0                  | 384,0                     | 759                        |
| 62244210 | 42 x 1,00                                  | 0,21                           | 23,0                  | 403,2                     | 787                        |
| 62240215 | 2 x 1,50                                   | 0,26                           | 7,4                   | 28,8                      | 65                         |
| 62240315 | 3 x 1,50                                   | 0,26                           | 8,0                   | 43,2                      | 89                         |
| 62240415 | 4 x 1,50                                   | 0,26                           | 8,7                   | 57,6                      | 111                        |
| 62240515 | 5 x 1,50                                   | 0,26                           | 9,8                   | 72,0                      | 140                        |
| 62240715 | 7 x 1,50                                   | 0,26                           | 10,8                  | 100,8                     | 185                        |
| 62241215 | 12 x 1,50                                  | 0,26                           | 14,4                  | 172,8                     | 309                        |
| 62241815 | 18 x 1,50                                  | 0,26                           | 17,2                  | 259,2                     | 456                        |
| 62242515 | 25 x 1,50                                  | 0,26                           | 21,0                  | 360,0                     | 643                        |
| 62240225 | 2 x 2,50                                   | 0,26                           | 8,8                   | 48,0                      | 96                         |
| 62240325 | 3 x 2,50                                   | 0,26                           | 9,5                   | 72,0                      | 132                        |
| 62240425 | 4 x 2,50                                   | 0,26                           | 10,6                  | 96,0                      | 170                        |
| 62240525 | 5 x 2,50                                   | 0,26                           | 11,6                  | 120,0                     | 208                        |
| 62240725 | 7 x 2,50                                   | 0,26                           | 12,8                  | 168,0                     | 275                        |
| 62241225 | 12 x 2,50                                  | 0,26                           | 17,3                  | 288,0                     | 469                        |
| 62241825 | 18 x 2,50                                  | 0,26                           | 20,8                  | 432,0                     | 700                        |
| 62242525 | 25 x 2,50                                  | 0,26                           | 25,3                  | 600,0                     | 971                        |
| 62240340 | 3 x 4,00                                   | 0,31                           | 11,0                  | 115,2                     | 187                        |
| 62240440 | 4 x 4,00                                   | 0,31                           | 12,2                  | 153,6                     | 243                        |
| 62240540 | 5 x 4,00                                   | 0,31                           | 13,6                  | 192,0                     | 304                        |
| 62240740 | 7 x 4,00                                   | 0,31                           | 15,0                  | 268,8                     | 403                        |
| 62240360 | 3 x 6,00                                   | 0,31                           | 12,7                  | 172,8                     | 263                        |
| 62240460 | 4 x 6,00                                   | 0,31                           | 14,1                  | 230,4                     | 341                        |
| 62240560 | 5 x 6,00                                   | 0,31                           | 15,7                  | 288,0                     | 426                        |
| 62240760 | 7 x 6,00                                   | 0,31                           | 17,3                  | 403,2                     | 568                        |
| 62240461 | 4 x 10,0                                   | 0,41                           | 18,0                  | 384,0                     | 566                        |
| 62240561 | 5 x 10,0                                   | 0,41                           | 25,1                  | 480,0                     | 984                        |
| 62240761 | 7 x 10,0                                   | 0,41                           | 25,1                  | 672,0                     | 1121                       |
| 62240462 | 4 x 16,0                                   | 0,41                           | 25,2                  | 614,4                     | 1026                       |
| 62240562 | 5 x 16,0                                   | 0,41                           | 25,3                  | 768,0                     | 1087                       |
| 62240762 | 7 x 16,0                                   | 0,41                           | 27,1                  | 1075,2                    | 1403                       |
| 62240463 | 4 x 25,0                                   | 0,41                           | 24,4                  | 960,0                     | 1273                       |
| 62240563 | 5 x 25,0                                   | 0,41                           | 27,2                  | 1200,0                    | 1598                       |
| 62240464 | 4 x 35,0                                   | 0,41                           | 27,8                  | 1344,0                    | 1750                       |
| 62240465 | 4 x 50,0                                   | 0,41                           | 34,6                  | 1920,0                    | 2465                       |

Other dimensions and colours are possible on request.



**Screened version  
on request!**

# Cables for Railway Technology

## SABIX® CC 625 FRNC M

control cable with numbered cores



Marking for SABIX® CC 625 FRNC M 62521215:

SAB BRÖCKSKES · D-VIERSEN · 62521215 12 x 1,5 mm<sup>2</sup> SABIX® CC 625 FRNC M

16 AWG/12c 62521612 AWM Style 21089 75°C 600V CSA AWM I/II A/B 80°C 600V FT1 CE

### Construction:

|                         |                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Conductor:</b>       | bare copper strands<br>acc. to IEC 60228, VDE 0295, class 5                                                      |
| <b>Insulation:</b>      | SABIX®                                                                                                           |
| <b>Colour code:</b>     | black cores with consecutive numbers<br>acc. to EN 50334 + VDE 0293-334,<br>green-yellow earth wire from 3 cores |
| <b>Stranding:</b>       | in layers                                                                                                        |
| <b>Sheath material:</b> | SABIX®                                                                                                           |
| <b>Sheath colour:</b>   | grey (RAL 7000)                                                                                                  |

### Outstanding features:

- halogen-free
- UL recognized, CSA approved
- no flame propagation
- flame retardant and self-extinguishing
- flexible

### Technical Data:

|                                                                                    |                                                                                                                                                                                    |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nominal voltage:</b>                                                            | U <sub>0</sub> /U 300/500 V                                                                                                                                                        |
| <b>Voltage UL/CSA:</b>                                                             | 600 V                                                                                                                                                                              |
| <b>Testing voltage:</b>                                                            | core/core 3000 V                                                                                                                                                                   |
| <b>Min. bending radius</b><br><i>fixed laying:</i><br><i>flexible application:</i> | 4 x d<br>6 x d                                                                                                                                                                     |
| <b>Temperature range</b><br><i>fixed laying:</i><br><i>flexible application:</i>   | UL: up to +75 °C      CSA: up to + 80 °C<br>DIN VDE: -40/+90 °C<br>-30/+90 °C                                                                                                      |
| <b>Halogen-free:</b>                                                               | acc. to IEC 60754-1 + VDE 0482-754-1                                                                                                                                               |
| <b>Fire performance:</b>                                                           | no flame propagation<br>acc. to IEC 60332-3-24 + VDE 0482-332-3-24<br>resp. IEC 60332-3-25 + VDE 0482-332-3-25<br>cat. C resp. D, acc. to RoHS directive of the<br>European Union. |
| <b>Corrosiveness of<br/>conflagration gases:</b>                                   | Flame retardant and self-extinguishing acc. to<br>IEC 60332-1-2 + VDE 0482-332-1-2, CSA FT1                                                                                        |
| <b>Smoke density:</b>                                                              | in compliance with<br>IEC 60754-2 + VDE 0482-754-2 -<br>no development of corrosive conflagration gases                                                                            |
| <b>Flexibility:</b>                                                                | good                                                                                                                                                                               |
| <b>Absence of<br/>harmful substances:</b>                                          | acc. to RoHS directive of the European Union                                                                                                                                       |

| item no. | no. of cores<br>x cross section<br>n x mm <sup>2</sup> | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| 62520205 | 2 x 0,50                                               | 0,21                           | 5,2                   | 10,3                      | 40                         |
| 62520305 | 3 x 0,50                                               | 0,21                           | 5,5                   | 15,4                      | 47                         |
| 62520405 | 4 x 0,50                                               | 0,21                           | 5,9                   | 20,5                      | 56                         |
| 62520505 | 5 x 0,50                                               | 0,21                           | 6,4                   | 25,6                      | 65                         |
| 62520705 | 7 x 0,50                                               | 0,21                           | 7,0                   | 35,9                      | 83                         |
| 62520805 | 8 x 0,50                                               | 0,21                           | 8,2                   | 41,0                      | 104                        |
| 62520905 | 9 x 0,50                                               | 0,21                           | 8,9                   | 46,1                      | 118                        |
| 62521005 | 10 x 0,50                                              | 0,21                           | 9,1                   | 51,3                      | 120                        |
| 62521205 | 12 x 0,50                                              | 0,21                           | 9,3                   | 61,5                      | 136                        |
| 62521405 | 14 x 0,50                                              | 0,21                           | 9,8                   | 71,8                      | 154                        |
| 62521605 | 16 x 0,50                                              | 0,21                           | 10,5                  | 82,0                      | 177                        |
| 62521805 | 18 x 0,50                                              | 0,21                           | 11,1                  | 92,3                      | 196                        |
| 62522505 | 25 x 0,50                                              | 0,21                           | 13,5                  | 128,2                     | 270                        |
| 62523005 | 30 x 0,50                                              | 0,21                           | 13,9                  | 153,8                     | 310                        |
| 62523405 | 34 x 0,50                                              | 0,21                           | 15,2                  | 174,3                     | 355                        |
| 62524005 | 40 x 0,50                                              | 0,21                           | 16,5                  | 205,1                     | 421                        |
| 62524105 | 41 x 0,50                                              | 0,21                           | 16,5                  | 210,2                     | 428                        |
| 62526105 | 61 x 0,50                                              | 0,21                           | 19,3                  | 312,8                     | 608                        |
| 62520207 | 2 x 0,75                                               | 0,21                           | 5,7                   | 14,4                      | 48                         |
| 62520307 | 3 x 0,75                                               | 0,21                           | 6,0                   | 21,6                      | 57                         |
| 62520407 | 4 x 0,75                                               | 0,21                           | 6,5                   | 28,8                      | 69                         |
| 62520507 | 5 x 0,75                                               | 0,21                           | 7,1                   | 36,0                      | 81                         |
| 62520707 | 7 x 0,75                                               | 0,21                           | 7,9                   | 50,4                      | 106                        |
| 62520807 | 8 x 0,75                                               | 0,21                           | 9,3                   | 57,6                      | 132                        |
| 62520907 | 9 x 0,75                                               | 0,21                           | 9,9                   | 64,8                      | 145                        |
| 62521007 | 10 x 0,75                                              | 0,21                           | 10,1                  | 72,0                      | 149                        |
| 62521207 | 12 x 0,75                                              | 0,21                           | 10,6                  | 86,4                      | 175                        |
| 62521407 | 14 x 0,75                                              | 0,21                           | 11,1                  | 100,8                     | 197                        |
| 62521607 | 16 x 0,75                                              | 0,21                           | 11,9                  | 115,2                     | 226                        |
| 62521807 | 18 x 0,75                                              | 0,21                           | 12,5                  | 129,6                     | 250                        |
| 62522507 | 25 x 0,75                                              | 0,21                           | 15,2                  | 180,0                     | 344                        |
| 62523007 | 30 x 0,75                                              | 0,21                           | 15,7                  | 216,0                     | 397                        |
| 62523407 | 34 x 0,75                                              | 0,21                           | 17,1                  | 244,8                     | 453                        |
| 62524007 | 40 x 0,75                                              | 0,21                           | 18,6                  | 288,0                     | 535                        |
| 62524107 | 41 x 0,75                                              | 0,21                           | 18,6                  | 295,2                     | 545                        |
| 62526107 | 61 x 0,75                                              | 0,21                           | 22,0                  | 439,2                     | 786                        |
| 62520210 | 2 x 1,00                                               | 0,21                           | 5,9                   | 19,2                      | 54                         |
| 62520310 | 3 x 1,00                                               | 0,21                           | 6,3                   | 28,8                      | 66                         |
| 62520410 | 4 x 1,00                                               | 0,21                           | 6,8                   | 38,4                      | 80                         |
| 62520510 | 5 x 1,00                                               | 0,21                           | 7,5                   | 48,0                      | 97                         |
| 62520710 | 7 x 1,00                                               | 0,21                           | 8,2                   | 67,2                      | 124                        |
| 62520810 | 8 x 1,00                                               | 0,21                           | 9,6                   | 76,8                      | 152                        |
| 62520910 | 9 x 1,00                                               | 0,21                           | 10,5                  | 86,4                      | 173                        |
| 62521010 | 10 x 1,00                                              | 0,21                           | 10,7                  | 96,0                      | 179                        |
| 62521210 | 12 x 1,00                                              | 0,21                           | 11,0                  | 115,2                     | 204                        |
| 62521410 | 14 x 1,00                                              | 0,21                           | 11,5                  | 134,4                     | 231                        |
| 62521810 | 18 x 1,00                                              | 0,21                           | 13,0                  | 172,8                     | 294                        |

| item no. | no. of cores<br>x cross section<br>n x mm <sup>2</sup> | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| 62522510 | 25 x 1,00                                              | 0,21                           | 15,8                  | 240,0                     | 404                        |
| 62523010 | 30 x 1,00                                              | 0,21                           | 16,6                  | 288,0                     | 477                        |
| 62523410 | 34 x 1,00                                              | 0,21                           | 18,0                  | 326,4                     | 543                        |
| 62524010 | 40 x 1,00                                              | 0,21                           | 19,5                  | 384,0                     | 639                        |
| 62524110 | 41 x 1,00                                              | 0,21                           | 19,5                  | 393,6                     | 675                        |
| 62526110 | 61 x 1,00                                              | 0,21                           | 22,9                  | 585,6                     | 931                        |
| 62520215 | 2 x 1,50                                               | 0,26                           | 6,5                   | 28,8                      | 69                         |
| 62520315 | 3 x 1,50                                               | 0,26                           | 6,9                   | 43,2                      | 85                         |
| 62520415 | 4 x 1,50                                               | 0,26                           | 7,6                   | 57,6                      | 105                        |
| 62520515 | 5 x 1,50                                               | 0,26                           | 8,3                   | 72,0                      | 129                        |
| 62520715 | 7 x 1,50                                               | 0,26                           | 9,3                   | 100,8                     | 166                        |
| 62520815 | 8 x 1,50                                               | 0,26                           | 10,9                  | 115,2                     | 202                        |
| 62520915 | 9 x 1,50                                               | 0,26                           | 11,8                  | 129,6                     | 228                        |
| 62521015 | 10 x 1,50                                              | 0,26                           | 12,1                  | 144,0                     | 240                        |
| 62521215 | 12 x 1,50                                              | 0,26                           | 12,4                  | 172,8                     | 274                        |
| 62521415 | 14 x 1,50                                              | 0,26                           | 13,0                  | 201,6                     | 311                        |
| 62521815 | 18 x 1,50                                              | 0,26                           | 14,9                  | 259,2                     | 404                        |
| 62522515 | 25 x 1,50                                              | 0,26                           | 18,1                  | 360,0                     | 558                        |
| 62523015 | 30 x 1,50                                              | 0,26                           | 18,7                  | 432,0                     | 647                        |
| 62523415 | 34 x 1,50                                              | 0,26                           | 20,5                  | 489,6                     | 747                        |
| 62524015 | 40 x 1,50                                              | 0,26                           | 22,2                  | 576,0                     | 874                        |
| 62524115 | 41 x 1,50                                              | 0,26                           | 22,2                  | 590,4                     | 883                        |
| 62526115 | 61 x 1,50                                              | 0,26                           | 26,0                  | 878,4                     | 1281                       |
| 62520225 | 2 x 2,50                                               | 0,26                           | 7,8                   | 48,0                      | 104                        |
| 62520325 | 3 x 2,50                                               | 0,26                           | 8,3                   | 72,0                      | 128                        |
| 62520425 | 4 x 2,50                                               | 0,26                           | 9,2                   | 96,0                      | 161                        |
| 62520525 | 5 x 2,50                                               | 0,26                           | 10,1                  | 120,0                     | 195                        |
| 62520725 | 7 x 2,50                                               | 0,26                           | 11,2                  | 168,0                     | 257                        |
| 62520825 | 8 x 2,50                                               | 0,26                           | 13,4                  | 192,0                     | 316                        |
| 62520925 | 9 x 2,50                                               | 0,26                           | 14,3                  | 216,0                     | 348                        |
| 62521025 | 10 x 2,50                                              | 0,26                           | 14,8                  | 240,0                     | 375                        |
| 62521225 | 12 x 2,50                                              | 0,26                           | 15,3                  | 288,0                     | 431                        |
| 62521825 | 18 x 2,50                                              | 0,26                           | 18,2                  | 432,0                     | 632                        |
| 62522525 | 25 x 2,50                                              | 0,26                           | 22,3                  | 600,0                     | 871                        |
| 62520340 | 3 x 4,00                                               | 0,31                           | 9,7                   | 115,2                     | 188                        |
| 62520440 | 4 x 4,00                                               | 0,31                           | 10,8                  | 153,6                     | 238                        |
| 62520540 | 5 x 4,00                                               | 0,31                           | 12,1                  | 192,0                     | 295                        |
| 62520740 | 7 x 4,00                                               | 0,31                           | 13,4                  | 268,8                     | 388                        |
| 62520360 | 3 x 6,00                                               | 0,31                           | 11,4                  | 172,8                     | 271                        |
| 62520460 | 4 x 6,00                                               | 0,31                           | 12,7                  | 230,4                     | 343                        |
| 62520560 | 5 x 6,00                                               | 0,31                           | 14,2                  | 288,0                     | 425                        |
| 62520461 | 4 x 10,0                                               | 0,41                           | 17,2                  | 384,0                     | 608                        |
| 62520561 | 5 x 10,0                                               | 0,41                           | 19,3                  | 480,0                     | 756                        |
| 62520462 | 4 x 16,0                                               | 0,41                           | 21,1                  | 614,4                     | 909                        |
| 62520463 | 4 x 25,0                                               | 0,41                           | 26,5                  | 960,0                     | 1475                       |
| 62520464 | 4 x 35,0                                               | 0,41                           | 30,2                  | 1344,0                    | 2004                       |

Other dimensions and colours are possible on request.

# Cables for Railway Technology

## SABIX® CC 625 S FRNC M

control cable with numbered cores and overall copper screen



Marking for SABIX® CC 625 S FRNC M 62341215:

SAB BRÖCKSKES · D-VIERSEN · 62341215 12 x 1,5 mm² SABIX® CC 625 S FRNC M

16 AWG/12c 62341612 AWM Style 21089 75°C 600V CSA AWM I/II A/B 80°C 600V FT1 CE

### Construction:

|                         |                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Conductor:</b>       | bare copper strands<br>acc. to IEC 60228, VDE 0295, class 5                                                      |
| <b>Insulation:</b>      | SABIX®                                                                                                           |
| <b>Colour code:</b>     | black cores with consecutive numbers<br>acc. to EN 50334 + VDE 0293-334,<br>green-yellow earth wire from 3 cores |
| <b>Stranding:</b>       | in layers                                                                                                        |
| <b>Wrapping:</b>        | foil                                                                                                             |
| <b>Screen:</b>          | tinned copper braiding                                                                                           |
| <b>Sheath material:</b> | SABIX®                                                                                                           |
| <b>Sheath colour:</b>   | grey (RAL 7000)                                                                                                  |

### Outstanding features:

- halogen-free
- UL recognized, CSA approved
- no flame propagation
- good EMC characteristics
- flame retardant and self-extinguishing
- flexible

### Technical Data:

|                                                                                    |                                                                                                                                                                                                                                                                                       |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nominal voltage:</b>                                                            | U <sub>0</sub> /U 300/500 V                                                                                                                                                                                                                                                           |
| <b>Voltage UL/CSA:</b>                                                             | 600 V                                                                                                                                                                                                                                                                                 |
| <b>Testing voltage:</b>                                                            | core/core 3000 V<br>core/screen 2000 V                                                                                                                                                                                                                                                |
| <b>Min. bending radius</b><br><i>fixed laying:</i><br><i>flexible application:</i> | 5 x d<br>10 x d                                                                                                                                                                                                                                                                       |
| <b>Temperature range</b><br><i>fixed laying:</i><br><i>flexible application:</i>   | UL: up to +75 °C CSA: up to +80 °C<br>DIN VDE: -40/+90 °C<br>-30/+90 °C                                                                                                                                                                                                               |
| <b>Halogen-free:</b>                                                               | acc. to IEC 60754-1 + VDE 0482-754-1                                                                                                                                                                                                                                                  |
| <b>Fire performance:</b>                                                           | no flame propagation<br>acc. to IEC 60332-3-24 + VDE 0482-332-3-24<br>resp. IEC 60332-3-25 + VDE 0482-332-3-25<br>cat. C resp. D, acc. to RoHS directive of the<br>European Union.<br><br>Flame retardant and self-extinguishing acc. to<br>IEC 60332-1-2 + VDE 0482-332-1-2, CSA FT1 |
| <b>Corrosiveness of<br/>conflagration gases:</b>                                   | in compliance with<br>IEC 60754-2 + VDE 0482-754-2 -<br>no development of corrosive conflagration gases                                                                                                                                                                               |
| <b>Smoke density:</b>                                                              | acc. to IEC 61034 + VDE 0482-1034                                                                                                                                                                                                                                                     |
| <b>Flexibility:</b>                                                                | good                                                                                                                                                                                                                                                                                  |
| <b>Absence of<br/>harmful substances:</b>                                          | acc. to RoHS directive of the European Union                                                                                                                                                                                                                                          |

| item no. | no. of cores<br>x cross section<br>n x mm² | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| 62340205 | 2 x 0,50                                   | 0,21                           | 5,7                   | 20,8                      | 45                         |
| 62340305 | 3 x 0,50                                   | 0,21                           | 6,0                   | 26,0                      | 54                         |
| 62340405 | 4 x 0,50                                   | 0,21                           | 6,4                   | 32,2                      | 64                         |
| 62340505 | 5 x 0,50                                   | 0,21                           | 7,0                   | 38,7                      | 76                         |
| 62340705 | 7 x 0,50                                   | 0,21                           | 7,6                   | 50,3                      | 96                         |
| 62340905 | 9 x 0,50                                   | 0,21                           | 9,4                   | 63,6                      | 131                        |
| 62341205 | 12 x 0,50                                  | 0,21                           | 9,8                   | 80,9                      | 152                        |
| 62341605 | 16 x 0,50                                  | 0,21                           | 11,2                  | 113,8                     | 206                        |
| 62341805 | 18 x 0,50                                  | 0,21                           | 12,0                  | 128,3                     | 234                        |
| 62342505 | 25 x 0,50                                  | 0,21                           | 13,8                  | 168,2                     | 306                        |
| 62343005 | 30 x 0,50                                  | 0,21                           | 15,0                  | 198,0                     | 361                        |
| 62343405 | 34 x 0,50                                  | 0,21                           | 16,3                  | 239,4                     | 429                        |
| 62344005 | 40 x 0,50                                  | 0,21                           | 17,6                  | 278,3                     | 503                        |
| 62344105 | 41 x 0,50                                  | 0,21                           | 17,6                  | 283,4                     | 514                        |
| 62346105 | 61 x 0,50                                  | 0,21                           | 20,2                  | 395,6                     | 693                        |
| 62340207 | 2 x 0,75                                   | 0,21                           | 6,2                   | 25,1                      | 52                         |
| 62340307 | 3 x 0,75                                   | 0,21                           | 6,5                   | 33,3                      | 64                         |
| 62340407 | 4 x 0,75                                   | 0,21                           | 7,0                   | 41,8                      | 77                         |
| 62340507 | 5 x 0,75                                   | 0,21                           | 7,8                   | 50,4                      | 94                         |
| 62340707 | 7 x 0,75                                   | 0,21                           | 8,4                   | 67,8                      | 118                        |
| 62340907 | 9 x 0,75                                   | 0,21                           | 10,8                  | 100,4                     | 181                        |
| 62341207 | 12 x 0,75                                  | 0,21                           | 11,3                  | 122,2                     | 207                        |
| 62341607 | 16 x 0,75                                  | 0,21                           | 12,6                  | 151,5                     | 259                        |
| 62341807 | 18 x 0,75                                  | 0,21                           | 13,2                  | 169,3                     | 286                        |
| 62342507 | 25 x 0,75                                  | 0,21                           | 16,3                  | 245,1                     | 416                        |
| 62343007 | 30 x 0,75                                  | 0,21                           | 16,8                  | 281,4                     | 468                        |
| 62343407 | 34 x 0,75                                  | 0,21                           | 18,2                  | 318,5                     | 534                        |
| 62344007 | 40 x 0,75                                  | 0,21                           | 19,7                  | 370,3                     | 625                        |
| 62344107 | 41 x 0,75                                  | 0,21                           | 19,7                  | 377,5                     | 635                        |
| 62346107 | 61 x 0,75                                  | 0,21                           | 22,9                  | 532,4                     | 879                        |
| 62340210 | 2 x 1,00                                   | 0,21                           | 6,4                   | 30,9                      | 58                         |
| 62340310 | 3 x 1,00                                   | 0,21                           | 6,8                   | 41,8                      | 73                         |
| 62340410 | 4 x 1,00                                   | 0,21                           | 7,3                   | 51,5                      | 87                         |

| item no. | no. of cores<br>x cross section<br>n x mm² | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| 62340510 | 5 x 1,00                                   | 0,21                           | 8,0                   | 63,7                      | 107                        |
| 62340710 | 7 x 1,00                                   | 0,21                           | 8,9                   | 84,6                      | 139                        |
| 62340910 | 9 x 1,00                                   | 0,21                           | 11,2                  | 118,2                     | 200                        |
| 62341210 | 12 x 1,00                                  | 0,21                           | 11,9                  | 151,2                     | 241                        |
| 62341810 | 18 x 1,00                                  | 0,21                           | 13,9                  | 216,7                     | 340                        |
| 62342510 | 25 x 1,00                                  | 0,21                           | 16,9                  | 312,8                     | 483                        |
| 62343010 | 30 x 1,00                                  | 0,21                           | 17,7                  | 361,3                     | 556                        |
| 62343410 | 34 x 1,00                                  | 0,21                           | 19,1                  | 400,7                     | 629                        |
| 62344010 | 40 x 1,00                                  | 0,21                           | 20,6                  | 467,1                     | 730                        |
| 62344110 | 41 x 1,00                                  | 0,21                           | 20,6                  | 476,7                     | 742                        |
| 62346110 | 61 x 1,00                                  | 0,21                           | 24,0                  | 687,8                     | 1042                       |
| 62340215 | 2 x 1,50                                   | 0,26                           | 7,0                   | 41,8                      | 71                         |
| 62340315 | 3 x 1,50                                   | 0,26                           | 7,5                   | 57,5                      | 92                         |
| 62340415 | 4 x 1,50                                   | 0,26                           | 8,1                   | 73,4                      | 113                        |
| 62340515 | 5 x 1,50                                   | 0,26                           | 9,0                   | 89,4                      | 139                        |
| 62340715 | 7 x 1,50                                   | 0,26                           | 9,8                   | 120,1                     | 178                        |
| 62340915 | 9 x 1,50                                   | 0,26                           | 12,5                  | 165,8                     | 259                        |
| 62341215 | 12 x 1,50                                  | 0,26                           | 13,3                  | 212,5                     | 313                        |
| 62341815 | 18 x 1,50                                  | 0,26                           | 15,8                  | 324,1                     | 464                        |
| 62342515 | 25 x 1,50                                  | 0,26                           | 19,2                  | 441,8                     | 644                        |
| 62343015 | 30 x 1,50                                  | 0,26                           | 19,8                  | 514,5                     | 734                        |
| 62343415 | 34 x 1,50                                  | 0,26                           | 21,4                  | 581,2                     | 835                        |
| 62344015 | 40 x 1,50                                  | 0,26                           | 23,1                  | 669,4                     | 963                        |
| 62344115 | 41 x 1,50                                  | 0,26                           | 23,1                  | 683,8                     | 972                        |
| 62346115 | 61 x 1,50                                  | 0,26                           | 27,1                  | 992,6                     | 1403                       |
| 62340225 | 2 x 2,50                                   | 0,26                           | 8,3                   | 63,8                      | 101                        |
| 62340325 | 3 x 2,50                                   | 0,26                           | 9,0                   | 89,4                      | 136                        |
| 62340425 | 4 x 2,50                                   | 0,26                           | 9,7                   | 115,3                     | 168                        |
| 62340525 | 5 x 2,50                                   | 0,26                           | 11,0                  | 151,7                     | 220                        |
| 62340725 | 7 x 2,50                                   | 0,26                           | 12,1                  | 204,1                     | 286                        |
| 62340925 | 9 x 2,50                                   | 0,26                           | 15,2                  | 260,4                     | 386                        |
| 62341225 | 12 x 2,50                                  | 0,26                           | 16,4                  | 353,1                     | 493                        |
| 62341825 | 18 x 2,50                                  | 0,26                           | 19,3                  | 513,9                     | 712                        |
| 62342525 | 25 x 2,50                                  | 0,26                           | 23,4                  | 693,5                     | 965                        |
| 62340340 | 3 x 4,00                                   | 0,31                           | 10,6                  | 146,8                     | 205                        |
| 62340440 | 4 x 4,00                                   | 0,31                           | 11,5                  | 189,5                     | 256                        |
| 62340540 | 5 x 4,00                                   | 0,31                           | 12,8                  | 231,6                     | 316                        |
| 62340740 | 7 x 4,00                                   | 0,31                           | 14,1                  | 312,8                     | 412                        |
| 62340360 | 3 x 6,00                                   | 0,31                           | 12,3                  | 208,9                     | 284                        |
| 62340460 | 4 x 6,00                                   | 0,31                           | 13,6                  | 270,2                     | 362                        |
| 62340560 | 5 x 6,00                                   | 0,31                           | 15,1                  | 332,3                     | 449                        |
| 62340461 | 4 x 10,0                                   | 0,31                           | 18,3                  | 457,8                     | 636                        |
| 62340561 | 5 x 10,0                                   | 0,31                           | 20,2                  | 562,9                     | 783                        |
| 62340462 | 4 x 16,0                                   | 0,41                           | 22,2                  | 706,7                     | 927                        |
| 62340463 | 4 x 25,0                                   | 0,41                           | 27,4                  | 1074,8                    | 1450                       |
| 62340464 | 4 x 35,0                                   | 0,41                           | 31,3                  | 1471,8                    | 1959                       |

Other dimensions and colours are possible on request.



Also available with  
inner sheath!

## Hybrid and Special Cables



### Special Cables

Your problem is our challenge

Technical problems often arise that can not be solved properly by standard cables. Being a customer of SAB Bröckskes, you have the right to get the best solution. We are your specialist for hybrid and special cables in railway technologies. No matter whether a cable of our standard range is to be modified or a completely new cable is to be constructed: we will work together with you intensively in order to realise your requests and needs. Anyway, you will profit from our variedness and flexibility, that besides our wide standard product range of cables count among the special strengths of our company.

We produce nearly every type of special cable for you already with minimum quantities of 500 m, in certain dimensions already 100 m – exactly according to your individual construction demands. Please give us your requested details, such as:

- ✓ conductor material
- ✓ number of cores
- ✓ cross sections
- ✓ colours
- ✓ outer diameter
- ✓ flexibility
- ✓ low and high temperature resistance
- ✓ materials
- ✓ types of screening
- ✓ combined cables
- ✓ technical specifications
- ✓ optical waveguide
- ✓ number of fibres
- ✓ POF (polymeric optical fibres)

Of course, we also fulfil other parameters than the above-mentioned. Your requests are always most important and our highly motivated team will meet them applying our comprehensive know-how. By this means you will be able to improve the efficiency of your machines.

Are you interested in a special solution? Contact directly our sales team that is supported by sales representatives in many parts of Europe.

# USB 2.0 Cables

## SABIX® USB 2.0 R flex

halogen-free continuously flexible SABIX® USB 2.0 Rail cable

EN 45545-2

Flame retardant acc. to  
UN/ECE R118



CKSKES · D-VIERSEN · SABIX USB 2.0 R flex 4x28AWG 0601-9013



Marking for SABIX® USB 2.0 R flex 06019013:

SAB BRÜCKSKES · D-VIERSEN · SABIX USB 2.0 R flex 4x28AWG 0601-9013

### Construction:

|                  |                                                                                          |
|------------------|------------------------------------------------------------------------------------------|
| Conductor:       | bare copper strands, fine wires                                                          |
| Insulation:      | SABIX®                                                                                   |
| Colour code:     | white, green, red, black                                                                 |
| Screen:          | alu foil and tinned copper braiding,<br>Drain AWG 30<br>of tinned copper under the braid |
| Sheath material: | SABIX®                                                                                   |
| Sheath colour:   | black (RAL 9005)                                                                         |

### Technical data:

|                                                               |                                                                                                                                                                                                                                                      |
|---------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Peak operating voltage:                                       | max. 30 V                                                                                                                                                                                                                                            |
| Testing voltage:                                              | core/core 600 V<br>core/screen 600 V                                                                                                                                                                                                                 |
| Min. bending radius<br>fixed laying:<br>flexible application: | 5 x d<br>10 x d                                                                                                                                                                                                                                      |
| Temperature range<br>fixed laying:<br>flexible application:   | -50/+90 °C<br>-50/+90 °C                                                                                                                                                                                                                             |
| Halogen-free:                                                 | acc. to EN 50306-1 + EN 50264-1 are fulfilled.<br>Development of HCl is < 0,5%<br>acc. to IEC 60754-1.<br>pH-value is > 4,3 acc. to IEC 60754-2.<br>Conductivity is < 10,0 µS/mm acc. to IEC 60754-2.<br>Fluoric content < 0,1% acc. to IEC 60684-2. |
| Fire performance:                                             | No flame propagation<br>acc. to IEC 60332-3-24 + VDE 0482-332-3-24<br>resp. IEC 60332-3-25 + VDE 0482-332-3-25<br>and EN 50305 + VDE 0260-305 section 9.1.2.<br>Flame retardant and self-extinguishing<br>acc. to IEC 60332-1-2 + VDE 0482-332-1-2   |
| Toxicity:                                                     | acc. to EN 50305 + VDE 0260-305                                                                                                                                                                                                                      |
| Smoke density:                                                | acc. to IEC 61034 + VDE 0482-1034                                                                                                                                                                                                                    |
| Absence<br>of harmful substances:                             | acc. to RoHS directive of the European Union                                                                                                                                                                                                         |

### Outstanding features:



- halogen-free
- continuously flexible
- no flame propagation
- flame retardant and self-extinguishing
- fulfils fire protection requirements  
R15 (EL1A) and R16 (EL1B)  
acc. to EN 45545-2  
for hazard levels HL1-3

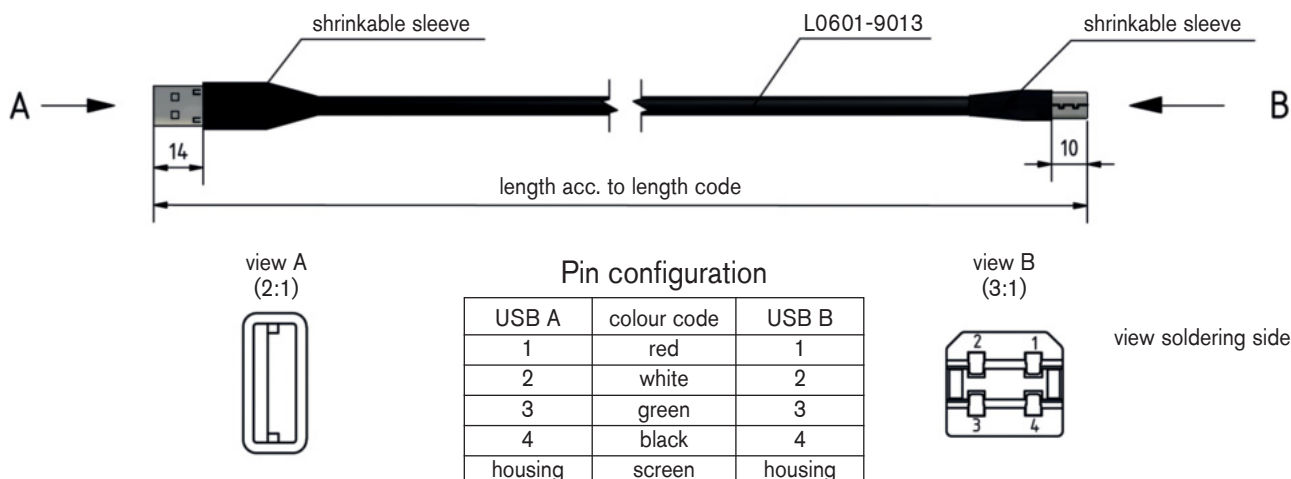
| Art.-Nr. | type                  | dimension    | outer-ø<br>approx.<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈kg/km | ohmic resistance<br>at 20°C<br>max. Ω/km |
|----------|-----------------------|--------------|--------------------------|---------------------------|---------------------------|------------------------------------------|
| 06019013 | SABIX® USB 2.0 R flex | 4 x 28/7 AWG | 5,2                      | 14,3                      | 41                        | 223,8                                    |

Other dimensions and colours are possible on request.

Also possible  
as harnessed cable  
with USB type A and  
USB type B plug!



## USB 2.0 cable with USB type A and USB type B plug



## CAN-Bus cable halogen-free combined cable with overall copper screen

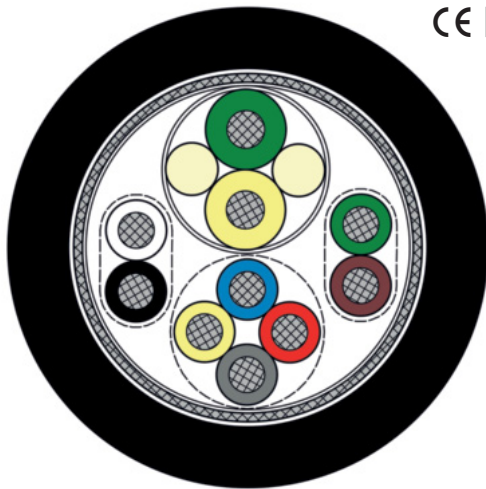
## Coupling cable T 790 torsion able connecting cable

### Halogen-free combined cable with overall copper screen

item no. 63359002

cross section:

$2 \times 2 \times 0,50 \text{ mm}^2 + 4 \times 0,50 \text{ mm}^2 + 2 \times 0,50 \text{ mm}^2$



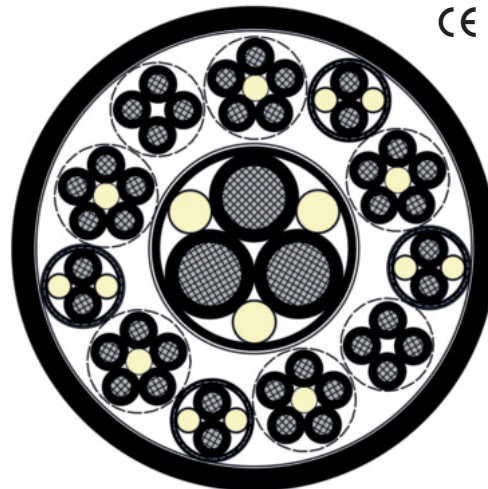
CE EAC RoHS

### Torsion able connecting cable

item no. 07909008

cross section:

$33 \times 1,5 \text{ mm}^2 + 3 \times 10,0 \text{ mm}^2 + 4 \times (2 \times 1,5) \text{ mm}^2$



CE EAC RoHS

### Construction:

|                         |                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Conductor:</b>       | tinned copper strands, fine wires with reference to VDE 0812                                                     |
| <b>Insulation:</b>      | SABIX® thermoplastic material and 02Y11 acc. to EN 50290-2-23 + VDE 0819-103 (for $2 \times 0,50 \text{ mm}^2$ ) |
| <b>Stranding:</b>       | pairs and quads twisted together in layers                                                                       |
| <b>Screen:</b>          | tinned copper braiding, optical coverage $\geq 85\%$                                                             |
| <b>Sheath material:</b> | SABIX® thermoplastic material                                                                                    |
| <b>Sheath colour:</b>   | black (RAL 9005)                                                                                                 |

### Technical Data:

|                                                  |                                                                                                                                                                                                       |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Peak operating voltage:</b>                   | max. 450 V                                                                                                                                                                                            |
| <b>Testing voltage:</b>                          | core/core 1000 V (DC)<br>core/screen 1500 V (DC)                                                                                                                                                      |
| <b>Min. bending radius flexible application:</b> | 10 x d                                                                                                                                                                                                |
| <b>Temperature range fixed laying:</b>           | -40/+70 °C                                                                                                                                                                                            |
| <b>flexible application:</b>                     | -30/+70 °C                                                                                                                                                                                            |
| <b>Halogen-free:</b>                             | acc. to IEC 60754-1 + VDE 0482-754-1                                                                                                                                                                  |
| <b>Fire performance:</b>                         | no flame propagation nach IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 cat. C resp. D. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2 |
| <b>Characteristic impedance:</b>                 | acc. to EN 50289-1-11 nom. 120Ω (CAN-Bus)                                                                                                                                                             |
| <b>Oil resistance:</b>                           | acc. to EN 60811-507 section 10 + VDE 0473-811-507 section 10                                                                                                                                         |
| <b>Absence of harmful substances:</b>            | acc. to RoHS directive of the European Union                                                                                                                                                          |

| item no. | dimension                                                                                       | outer-ø ± 5% mm | copper figure kg/km | cable weight ≈ kg/km |
|----------|-------------------------------------------------------------------------------------------------|-----------------|---------------------|----------------------|
| 63359002 | $2 \times 2 \times 0,50 \text{ mm}^2 + 4 \times 0,50 \text{ mm}^2 + 2 \times 0,50 \text{ mm}^2$ | 11,0            | 79,6                | 160                  |

### Construction:

|                         |                                                       |
|-------------------------|-------------------------------------------------------|
| <b>Conductor:</b>       | special copper, fine wires                            |
| <b>Insulation:</b>      | TPE                                                   |
| <b>Screen:</b>          | special copper braiding, optical coverage $\geq 85\%$ |
| <b>Sheath material:</b> | special PUR                                           |
| <b>Sheath colour:</b>   | black (RAL 9005)                                      |

### Technical data:

|                                                  |                                                                                                                                                     |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Nominal voltage:</b>                          | 1,50 mm <sup>2</sup> : U <sub>o</sub> /U 0,6/1,0 kV<br>10,0 mm <sup>2</sup> : U <sub>o</sub> /U 1,8/3,0 kV                                          |
| <b>Testing voltage:</b>                          | core/core 1,50 mm <sup>2</sup> : 4000 V, 10,0 mm <sup>2</sup> : 12000 V<br>core/screen 1,50 mm <sup>2</sup> : 2000 V, 10,0 mm <sup>2</sup> : 6000 V |
| <b>Min. bending radius flexible application:</b> | 10 x d                                                                                                                                              |
| <b>Temperature range fixed laying:</b>           | -50/+90 °C                                                                                                                                          |
| <b>flexible application:</b>                     | -40/+90 °C                                                                                                                                          |
| <b>Absence of harmful substances:</b>            | acc. to RoHS directive of the European Union                                                                                                        |

| item no. | dimension                                                                                        | outer-ø ± 5% mm | copper figure kg/km | cable weight ≈ kg/km |
|----------|--------------------------------------------------------------------------------------------------|-----------------|---------------------|----------------------|
| 62050715 | $33 \times 1,5 \text{ mm}^2 + 3 \times 10,0 \text{ mm}^2 + 4 \times (2 \times 1,5) \text{ mm}^2$ | 42,0            | 1136,2              | 2070                 |

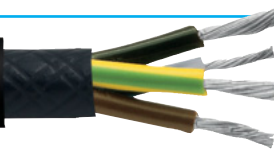
# Cables for Railway Technology

## SABIX® A 883 Ö

twisting and torsion connection cable



KSKES · D-VIERSEN · SABIX® A 883 Ö 4 x 2,5 mm² CE



Marking for SABIX® A 883 Ö 08830425:

SAB BRÜCKSKES · D-VIERSEN · SABIX® A 883 Ö 4 x 2,5 mm² CE

**Application:** For the use in rail vehicles, e. g. bogies and boxes.

### Construction:

|                         |                                                                                                                  |
|-------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Conductor:</b>       | tinned copper strands,<br>acc. to IEC 60228, VDE 0295, class 6                                                   |
| <b>Insulation:</b>      | TPE                                                                                                              |
| <b>Colour code:</b>     | black cores with consecutive numbers<br>acc. to EN 50334 + VDE 0293-334,<br>green-yellow earth wire from 3 cores |
| <b>Stranding:</b>       | in layers                                                                                                        |
| <b>Inner sheath:</b>    | SABIX®                                                                                                           |
| <b>Sheath material:</b> | PUR, TPU acc. to<br>EN 50363-10-2 + VDE 0207-363-10-2                                                            |
| <b>Sheath colour:</b>   | black (RAL 9005)                                                                                                 |

### Technical data:

|                                       |                                                                                    |
|---------------------------------------|------------------------------------------------------------------------------------|
| <b>Nominal voltage:</b>               | U <sub>0</sub> /U 300/500 V                                                        |
| <b>Testing voltage:</b>               | core/core 2000 V                                                                   |
| <b>Min. bending radius</b>            |                                                                                    |
| fixed laying:                         | 4 x d                                                                              |
| flexible application:                 | 6 x d                                                                              |
| <b>Temperature range</b>              |                                                                                    |
| fixed laying:                         | -50/+85 °C                                                                         |
| flexible application:                 | -40/+85 °C                                                                         |
| <b>Torsion angle:</b>                 | ± 15°                                                                              |
| <b>Halogen-free:</b>                  | acc. to IEC 60754-1 + VDE 0482-754-1                                               |
| <b>Fire performance:</b>              | flame retardant and self-extinguishing<br>acc. to IEC 60332-1-2 + VDE 0482-332-1-2 |
| <b>Oil resistance:</b>                | very good - PUR, TPU acc. to<br>EN 50363-10-2 + DIN VDE 0207-363-10-2              |
| <b>UV resistance:</b>                 | good                                                                               |
| <b>Ozone resistance:</b>              | good                                                                               |
| <b>Weather resistance:</b>            | good                                                                               |
| <b>Absence of harmful substances:</b> | acc. to RoHS directive of the European Union                                       |

| item no. | no. of cores<br>x cross section<br>n x mm² | largest<br>single wire<br>ø mm | outer-ø<br>± 5%<br>mm | copper<br>figure<br>kg/km | cable<br>weight<br>≈ kg/km |
|----------|--------------------------------------------|--------------------------------|-----------------------|---------------------------|----------------------------|
| 08830215 | 2 x 1,50                                   | 0,16                           | 8,1                   | 28,8                      | 92                         |
| 08830315 | 3 x 1,50                                   | 0,16                           | 8,4                   | 43,2                      | 107                        |
| 08830415 | 4 x 1,50                                   | 0,16                           | 9,0                   | 57,6                      | 128                        |
| 08830715 | 7 x 1,50                                   | 0,16                           | 10,4                  | 100,8                     | 189                        |
| 08831815 | 18 x 1,50                                  | 0,16                           | 15,2                  | 259,2                     | 417                        |
| 08830325 | 3 x 2,50                                   | 0,16                           | 9,7                   | 75,5                      | 158                        |
| 08830425 | 4 x 2,50                                   | 0,16                           | 10,5                  | 100,6                     | 192                        |
| 08830525 | 5 x 2,50                                   | 0,16                           | 11,5                  | 125,8                     | 233                        |
| 08830725 | 7 x 2,50                                   | 0,16                           | 12,2                  | 176,1                     | 291                        |
| 08830540 | 5 x 4,00                                   | 0,16                           | 13,6                  | 192,0                     | 335                        |

Other dimensions and colours are possible on request.



**Also possible  
without earth wire!**

# Cables for Railway Technology

## Our cables at a glance

### Conductor Materials

- Bare copper
- Tinned copper
- Silver plated copper
- Nickel plated copper
- Nickel
- Nickel pure
- Compensating cable alloys

### Conductor Sizes

- 0,14 mm<sup>2</sup> - 300 mm<sup>2</sup>
- variety of stranding styles

### Insulation and Jacketing Materials

- PVC (varietals)
- Polyethylene
- Polypropylene
- TPE
- Fibreglass
- Besilen®/Silicone
- Pi foil
- FEP, ETFE, PFA, PTFE
- A zero halogen
- Polyurethane

### Conductor Count Ranges

- unshielded - up to 125 conductors
- shielded - up to 100 conductors

### Temperature Ranges (based on material)

- Thermoplastic Elastomers -50°C up to +145°C
- Besilen®/Silicone -40°C up to +220°C
- FEP, ETFE, PFA, PTFE -90°C up to +260°C
- Halogen-free -50°C up to +220°C
- Fibreglass up to +600°C

### Shielding and Braiding Materials

- Bare copper
- Tinned copper
- Galvanized steel
- Stainless steel
- Aluminium foil
- Fibreglass
- Aramid



### Approbationen

- UL, CSA, CE, EAC, VDE, HAR, IEC, EN, ISO, DNV-GL, LR, ABS, RINA, RMRS, BSI

## Our temperature measurement at a glance

### Protecting armatures and gauge slides

- Immersion protecting armatures
- Screwed protecting armatures
- Welding protecting armatures, etc.

### Temperature measurement in test vehicles

- Thermo 8-plug connector
- Dipstick thermocouples
- Thermocouples for cooling water tube applications, etc.

### Mineral insulated thermocouples/ Mineral insulated resistance thermometers

- with fixed connecting cable
- with bare connection ends
- with thermo-plug/miniature plug, etc.

### Temperature measurement in plastics processing industry/Hot runner technique

- Hot runner mineral insulated thermocouples
- Plug-in thermocouples
- Molten mass thermocouples, etc.

### Probe with stainless steel sleeve

- available as thermocouple
- available as resistance thermometer

### Compensating and extension cables

- Compensating and extension cables for thermocouples
- Connection cables for resistance thermometers, etc.

### Accessories

- Clamping screw connections
- Flanges
- Screw sockets
- Connection heads
- Welding protecting tubes
- Transmitters
- Thermo-plugs/sockets
- Screw-in nipples
- Miniature plugs/sockets



# Cables for Railway Technology

## Cable harnessing

### Cable harnessing

Due to the good co-operation with our customers we get continuously new ideas. Therefore, SAB Bröckskes has enlarged the product range by the field of cable and wire harnessing. No matter whether you need cable looms, assembled single conductors or cables – SAB Bröckskes offers a wide range of products, especially adjusted to your demands and specifications. There are many possibilities in use of assembled cables. Some of these applications are in the car manufacturing industry, machine and industrial plant construction, control engineering, manufacturing of house hold appliances. Connection possibilities of the large variety of connectors and sling parts offer efficient and cost saving solutions. The variety of possible uses of materials that are processed by SAB Bröckskes at present:



- ✓ PUR (polyurethane)
  - ✓ TPE
  - ✓ Besilen® (silicone)
  - ✓ PVC (polyvinyl chloride)
  - ✓ SABIX® (halogen-free)
  - ✓ ETFE, FEP, PFA
  - ✓ Special materials (fibre glass, Pi foil, SABtex etc.)
- ... also offer a wide range of applications in industry.

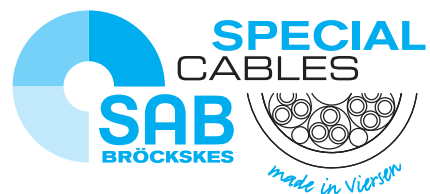
Please do not hesitate to contact our specialists,  
who will help you with an individual advice fitting to your application.

## Test results

**VDE Prüf- und Zertifizierungsinstitut**  
VDE Prüf- und Zertifizierungsinstitut GmbH • Marzstraße 28 • D-53359 Offenbach  
SAB BRÖCKSKES GmbH & Co. KG  
Postfach 12 01 60  
Frau Isabelle Simon  
41719 Viersen  
Ihr Zeichen: Isabelle Simon  
Ihr Schreiben: 2013-11-18  
Unser Zeichen - bitte eingeben: 493200-9021-0001/192225-1  
CC4/hz  
Anspruchspartner: Herr Herzog  
Tel: (069) 83 06-419  
Fax: (069) 83 06-745  
reinhard.herzog@vde.com  
Offenbach, 2014-04-23  
PRÜFBERICHT zur Information des Auftraggebers  
Test Report for the Information of the applicant  
dieser Prüfbericht enthält das Ergebnis einer einmaligen Untersuchung an dem zur Prüfung vorgelegten Erzeugnis. Ein Muster dieses Erzeugnisses wurde geprüft, um die Übereinstimmung mit den nachfolgend aufgeführten Normen bzw. Abschnitten von Normen festzustellen.  
Die Prüfung wurde durchgeführt vom 2014-03-04 bis 2014-04-02.  
This test report contains the result of a singular investigation carried out on the product submitted. A sample of this product was tested to find out the accordance with the thereafter listed standards or clauses of standards resp. The testing was carried out from 2014-03-04 to 2014-04-02.  
Der Prüfbericht berechtigt Sie nicht zur Benutzung eines Zertifizierungszeichens des VDE und berücksichtigt ausschließlich die Anforderungen der unten genannten Regelwerke.  
The test report does not entitle for the use of a VDE Certification Mark and considers solely the requirements of the specifications mentioned below.  
Wenn gegenüber Dritten auf diesen Prüfbericht Bezug genommen wird, muss dieser Prüfbericht in voller Länge an gleicher Stelle verfügbar gemacht werden.  
Whenever reference is made to this test report towards third party, this test report shall be made available on the very spot in full length.

**CURRENTA**  
Prüfbericht Nr. 17/1061  
Test report No. 17/1061  
Auftrags-Nr. L70674C  
Order No. L70674C  
SAB Bröckskes GmbH & Co. KG  
Isabelle Simon / Alexander Skambraks  
Einkauf / Entwicklung  
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41749 Viersen, Deutschland  
simon@sab-broeckskes.de  
SABIX USB 2.0 R flex 4xAWG 28/7  
EN 60332-1-2:2004  
Prüfungen an Kabeln, isolierten Leitungen und Glasfaserkabeln im Brandfall  
Teil 1-2: Prüfung der vertikalen Flammenausbreitung an einer Ader, einer isolierten Leitung oder einem Kabel – Prüfverfahren mit 1-kW-Flamme mit Gas/Luft-Gemisch  
EN 60332-1-2:2004  
Tests on electric and optical fibre cables under fire conditions  
Part 1-2: Test for vertical flame propagation for a single insulated wire or cable – Procedure for 1 kW pre-mixed flame  
EN 45545-2:2013+A1:2015  
Bahnanwendungen – Brandschutz in Schienenfahrzeugen  
Teil 2: Anforderungen an das Brandverhalten von Materialien und Komponenten  
Railway applications – Fire protection on railway vehicles  
Part 2: Requirements for fire behavior of materials and components  
Prüfverfahren nach EN 45545-2  
Test method according to EN 45545-2  
T09.01  
Anforderungen  
Requirements  
erfüllt  
fulfilled  
Jochen Fuhrmann  
Chief Technology Officer (CTO)  
SAB Bröckskes GmbH & Co. KG  
Page 1 of 9

**LABCO**  
15-0405\_02 Index 0  
SAB-Bröckskes GmbH & Co. KG  
Greifrather Straße 204-212 b  
D-41749 Viersen  
SABIX R 645 FRNC TP2x2x0,14 mm²  
Artikelnummer : L6645-0214  
Chargennummer : K229978  
GY  
30.09.2015  
Okt. 2015  
ISO 14572:2011-10, §5.21  
bzw. ISO 6722-1:2011 §5.22  
UNECE-R118:2012, § 6.2.6  
In, dass sich die Prüfergebnisse ausschließlich auf die hier untersuchten  
als nicht anders gefordert, werden pro Prüfpunkt drei Prüfungen durchgeführt. Dieser  
en sind gekennzeichnet (§).  
that the test results refer to tested samples solely. Unless otherwise agreed, three  
at point. This test report may only be copied or published in its original form.  
lied to be accurate. In case of discrepancies the German version shall govern.  
s are marked (§).  
Draw up of the test report Freigabe des Prüfberichts / Release of the test report  
J. D. Grüssing  
12.10.2015  
Datum / Date  
(Dipl.-Phys. Dr. H. Seike  
Abteilungsleiter)  
DAkkS  
Deutsche  
Akkreditierungsstelle  
D-PL-11079-01-00  
P025 durch die DAkkS  
gesetzlich anerkanntes Prüfzentrum  
als die in der Urkunde beigefügten Prüfverfahren  
auf der Basis der EN ISO/IEC 17025 ist DAkkS  
Befugnis  
Body  
and for test methods listed in the certificate.  
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Page 1 of 9



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