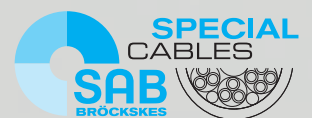


# CABLES FOR RAILWAY TECHNOLOGY



[www.sab-cable.com](http://www.sab-cable.com)





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**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.**

fulfils fire protection requirements acc. to NFPA 130 section 8.6.7.1.1.1 and section 12.2.1 (1)

## 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 100 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 NLF/ILO-OSH and DIN ISO 45001, and an energy management system according to DIN EN ISO 50001.

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

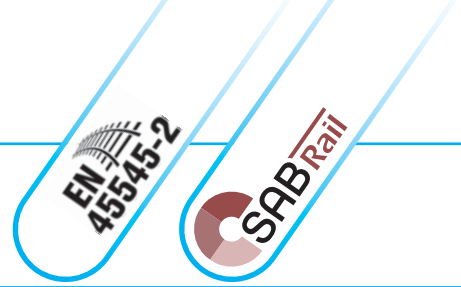
FOUNDED:	1947 by Peter Bröckskes sen. an independent, medium-sized company.
CEO:	Peter Bröckskes and Sabine Bröckskes-Wetten
PLANT/LOCATION:	In Viersen (Lower Rhine) 110.000 m <sup>2</sup> company site.  Own manufacturing from copper conductor to outer sheath.  VDE approved burnchamber and laboratory within the company.
EMPLOYEES/WORKERS:	approx. 430 at the plant in Viersen, 550 worldwide
YEARLY SALES:	over 134 Mio. € worldwide
PRODUCTS:	Special Cables  Measurement Technology  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 EN 60332-1-2	Unburned length mm	Minimum	burned part ≤ 540 and unburned part > 50	burned part ≤ 540 and unburned part > 50	burned part ≤ 540 and unburned part > 50
	T09.02 EN 60332-3-24 (for d ≥ 12 mm)	m	Maximum	2,5	2,5	2,5
	T09.03 EN 50305 (for 6 mm < d < 12 mm)	m	Maximum	2,5	2,5	2,5
	T09.04 EN 50305 (for d ≤ 6 mm)	m	Maximum	1,5	1,5	1,5
	T13 EN 61034-2	Transmission %	Minimum	25	50	70
	T15 EN 50305	<i>ITC</i> 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: Standard vehicles	A: Vehicles forming part of an automatic train having no emergency trained staff on board	D: Double decked vehicles	S: 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

		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																						●
cross linked type											●							●	●	●			
Standards	Halogen-free	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	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
	Fire performance	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	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		Flame retardant acc. to UL 1685 section 12, FT4/IEEE 1202 (NFPA 130)					●	●	●														
		Burning test acc. to ASTM E 162-09							●	●													
		Flame retardant acc. to ISO 6722 (UN/ECE R118)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
		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									●	●				●							●
	good ozone, UV and weather resistance									●	●											●	
Temperature range fixed laying*	+250 °C																						
	+180 °C																						
	+125 °C																						
	+ 90 °C		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
	+ 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						●	●	●														
	≥ 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



BRÜCKSKES · D-VIERSEN · SABIX® A 146 FRNC 300/500 V 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 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
- flame retardant acc. to UN/ECE R118

## Technical Data:

<b>Nominal voltage:</b>	<b>SABIX® A 146 FRNC:</b> U <sub>o</sub> /U 300/500 V	<b>SABIX® A 156 FRNC:</b> U <sub>o</sub> /U 450/750 V
<b>Testing voltage:</b>	<b>SABIX® A 146 FRNC:</b> 2000 V	<b>SABIX® A 156 FRNC:</b> 2500 V
<b>Min. bending radius: For one single bend:</b>	7,5 x d 5 x d	
<b>Temperature range</b> <i>fixed laying:</i> <i>flexible application:</i>	-40/+90 °C -30/+90 °C	
<b>Halogen-free: complementary for railway technology:</b>	acc. to IEC 60754-1 + VDE 0482-754-1 acc. to EN 50306-1 + EN 50264-1 are fulfilled. Development of HCl is < 0,5% acc. to IEC 60754-1. pH-value is > 4,3 acc. to IEC 60754-2. Conductivity is < 10,0 µS/mm acc. to IEC 60754-2. Fluoric content < 0,1% acc. to IEC 60684-2	
<b>Fire performance:</b>	No flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 and EN 50305 + VDE 0260-305 section 9.1.2. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2. Flame retardant acc. to ISO 6722 (UN/ECE R118)	
<b>Corrosiveness of conflagration gases:</b>	in compliance with IEC 60754-2 + VDE 0482-754-2 - no development of corrosive conflagration gases	
<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	

## SABIX® A 146 FRNC

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
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 cross-section mm <sup>2</sup>	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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



Marking for SABIX® R 600 FRNC 66001215:

SAB BRÜCKSKES · D-VIERSEN · SABIX® R 600 FRNC 12 x 1,5 mm² CE

### Construction:

<b>Conductor:</b>	bare copper strands acc. to IEC 60228, VDE 0295, class 5
<b>Insulation:</b>	special SABIX®
<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
<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
- flame retardant acc. to UN/ECE R118

### 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>	
<i>fixed laying:</i>	4 x d
<i>flexible application:</i>	6 x d
<b>Temperature range</b>	
<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. Development of HCl is < 0,5% acc. to IEC 60754-1. pH-value is > 4,3 acc. to IEC 60754-2. Conductivity is < 10,0 µS/mm acc. to IEC 60754-2. Fluoric content < 0,1% acc. to IEC 60684-2
<b>Fire performance:</b>	No flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 and EN 50305 + VDE 0260-305 section 9.1.2. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2. 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 x cross section n x mm <sup>2</sup>	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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

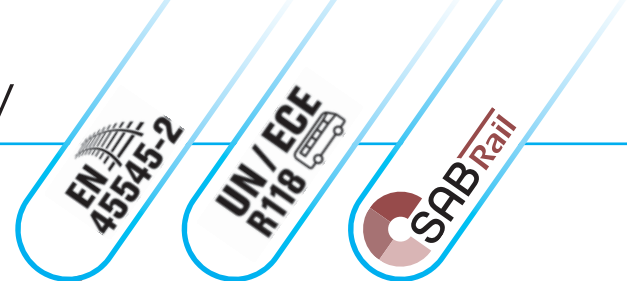
item no.	no. of cores x cross section n x mm <sup>2</sup>	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ kg/km
66000415	4 x 1,50	0,26	7,6	57,6	99
66000515	5 x 1,50	0,26	8,3	72,0	124
66000715	7 x 1,50	0,26	9,2	100,8	170
66001015	10 x 1,50	0,26	12,0	144,0	229
66001215	12 x 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	276
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 10,00	0,41	16,7	384,0	579
66000561	5 x 10,00	0,41	18,6	480,0	740
66000761	7 x 10,00	0,41	20,7	672,0	960
66000462	4 x 16,00	0,41	20,6	614,4	887
66000562	5 x 16,00	0,41	23,0	768,0	1105
66000762	7 x 16,00	0,41	25,5	1075,2	1445
66000463	4 x 25,00	0,41	24,9	960,0	1388
66000563	5 x 25,00	0,41	28,1	1200,0	1750
66000464	4 x 35,00	0,41	28,8	1344,0	1927
66000564	5 x 35,00	0,41	32,5	1680,0	2413

Other dimensions and colours are possible on request.

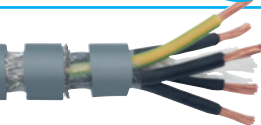
# Cables for Railway Technology

## SABIX® R 638 FRNC

SABIX® Rail Control with numbered cores and overall copper screen



SKES · D-VIERSEN · SABIX® R 638 FRNC 5 x 1,5 mm<sup>2</sup> CE



Marking for SABIX® R 638 FRNC 66380515:

SAB BRÜCKSKES · D-VIERSEN · SABIX® R 638 FRNC 5 x 1,5 mm<sup>2</sup> CE

### Construction:

<b>Conductor:</b>	bare copper strands acc. to IEC 60228, VDE 0295, class 5
<b>Insulation:</b>	special SABIX®
<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
<b>Wrapping:</b>	foil
<b>Screen:</b>	tinned copper braiding
<b>Sheath material:</b>	special SABIX®
<b>Sheath colour:</b>	grey (RAL 7000)

### Technical Data:

<b>Nominal voltage:</b>	U <sub>0</sub> /U 300/500 V
<b>Testing voltage:</b>	core/core 3000 V core/screen 2000 V
<b>Min. bending radius</b>	
fixed laying:	5 x d
flexible application:	10 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. Development of HCl is < 0,5% acc. to IEC 60754-1. pH-value is > 4,3 acc. to IEC 60754-2. Conductivity is < 10,0 µS/mm acc. to IEC 60754-2. Fluoric content < 0,1% acc. to IEC 60684-2
<b>Fire performance:</b>	No flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 and EN 50305 + VDE 0260-305 section 9.1.2. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2. 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

### 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
- flame retardant acc. to UN/ECE R118

item no.	no. of cores x cross section n x mm <sup>2</sup>	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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 x cross section n x mm <sup>2</sup>	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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.

Tested at reference types.



# Cables for Railway Technology

## SABIX® R 605 FRNC

SABIX® Rail Data



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
- fulfils fire protection requirements acc. to NFPA 130 section 8.6.7.1.1 and section 12.2.1 (1)
- flame retardant acc. to UN/ECE R118

### Technical Data:

<b>Peak operating voltage:</b>	< 0,25 mm <sup>2</sup> = max. 350 V ≥ 0,25 mm <sup>2</sup> = max. 500 V
<b>Testing voltage:</b>	core/core 1500 V
<b>Min. bending radius</b> <i>fixed laying:</i>	5 x d
<i>flexible application:</i>	10 x d
<b>Temperature range</b> <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. Development of HCl is < 0,5% acc. to IEC 60754-1. pH-value is > 4,3 acc. to IEC 60754-2. Conductivity is < 10,0 μS/mm acc. to IEC 60754-2. Fluoric content < 0,1% acc. to IEC 60684-2
<b>Fire performance:</b>	No flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 and EN 50305 + VDE 0260-305 section 9.1.2. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2. Flame retardant acc. to UL 1685 section 12, FT4/IEEE 1202. 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 x cross section n x mm <sup>2</sup>	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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 x cross section n x mm <sup>2</sup>	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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

NFPA 130 / FT4 only up to outer-ø < 13 mm.  
Continued on next page

# Cables for Railway Technology

## SABIX® R 605 FRNC

SABIX® Rail Data



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

item no.	no. of cores x cross section n x mm <sup>2</sup>	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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 x cross section n x mm <sup>2</sup>	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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

NFPA 130 / FT4 only up to outer-ø < 13 mm.  
Other dimensions and colours are possible on request.

# Cables for Railway Technology

## SABIX® R 615 FRNC

SABIX® Rail Data with overall copper screen



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
- fulfils fire protection requirements acc. to NFPA 130 section 8.6.7.1.1.1 and section 12.2.1 (1)
- 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 ≥ 0,25 mm <sup>2</sup> = max. 500 V
<b>Testing voltage:</b>	core/core 1500 V core/screen 1200 V
<b>Min. bending radius</b>	
fixed laying:	5 x d
flexible application:	10 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. Development of HCl is < 0,5% acc. to IEC 60754-1. pH-value is > 4,3 acc. to IEC 60754-2. Conductivity is < 10,0 µS/mm acc. to IEC 60754-2. Fluoric content < 0,1% acc. to IEC 60684-2
<b>Fire performance:</b>	No flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 and EN 50305 + VDE 0260-305 section 9.1.2. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2. Flame retardant acc. to UL 1685 section 12, FT4/IEEE 1202. Burning tests acc. to ASTM E 162-09. 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 x cross section n x mm <sup>2</sup>	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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 x cross section n x mm <sup>2</sup>	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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

NFPA 130 / FT4 only up to outer-ø < 13 mm.  
Continued on next page

# Cables for Railway Technology

## SABIX® R 615 FRNC

SABIX® Rail Data with overall copper screen



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

item no.	no. of cores x cross section n x mm <sup>2</sup>	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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 x cross section n x mm <sup>2</sup>	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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

NFPA 130 / FT4 only up to outer-ø < 13 mm.  
Other dimensions and colours are possible on request.

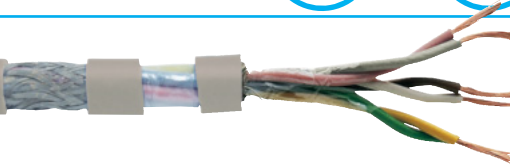
# Cables for Railway Technology

## SABIX® R 645 FRNC TP

SABIX® Rail Data paired with overall copper screen



645 FRNC TP 3 x 2 x 0,25 mm<sup>2</sup> CE



Marking for SABIX® R 645 FRNC TP 66450325:

SAB BRÜCKSKES · D-VIERSEN · SABIX® R 645 FRNC TP 3 x 2 x 0,25 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>	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
- fulfils fire protection requirements acc. to NFPA 130 section 8.6.7.1.1 and section 12.2.1 (1)
- 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 mm <sup>2</sup> = max. 350 V ≥ 0,25 mm <sup>2</sup> = max. 500 V
<b>Testing voltage:</b>	core/core 1500 V core/screen 1200 V
<b>Min. bending radius</b>	
fixed laying:	5 x d
flexible application:	10 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. Development of HCl is < 0,5% acc. to IEC 60754-1. pH-value is > 4,3 acc. to IEC 60754-2. Conductivity is < 10,0 µS/mm acc. to IEC 60754-2. Fluoric content < 0,1% acc. to IEC 60684-2
<b>Fire performance:</b>	No flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 and EN 50305 + VDE 0260-305 section 9.1.2. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2. Flame retardant acc. to UL 1685 section 12, FT4/IEEE 1202. Burning tests acc. to ASTM E 162-09. 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 x cross section n x 2 x mm <sup>2</sup>	outer-ø ± 10% mm	copper figure kg/km	cable weight ≈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 x cross section n x 2 x mm <sup>2</sup>	outer-ø ± 10% mm	copper figure kg/km	cable weight ≈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

NFPA 130 / FT4 only up to outer-ø < 13 mm.  
Other dimensions and colours are possible on request.

# Cables for Railway Technology

## SABIX® R flex

continuously flexible SABIX® Rail cable with numbered cores



BRÖCKSKES · D-VIERSEN · SABIX® R flex 5G0,75 mm² CE



Marking for SABIX® R flex 66701105:

SAB BRÖCKSKES · D-VIERSEN · SABIX® R flex 5G0,75 mm² 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 acc. to IEC 60228, VDE 0295, class 6
<b>Insulation:</b>	special Polymer
<b>Colour code:</b>	black cores with consecutive numbers acc. to EN 50334 + VDE 0293-334, green-yellow earth wire from 3 cores. Twisted pairs type without green-yellow earth wire
<b>Stranding:</b>	in layers resp. pairwise
<b>Wrapping:</b>	foil
<b>Screen:</b>	tinned copper braiding (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, UV and weather 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
- flame retardant acc. to UN/ECE R118

### Technical Data:

<b>Nominal voltage:</b>	Uo/U 300/500 V	
<b>Testing voltage:</b>	core/core 2000 V	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. Development of HCl is < 0,5% acc. to IEC 60754-1. pH-value is > 4,3 acc. to IEC 60754-2. Conductivity is < 10,0 µS/mm acc. to IEC 60754-2. Fluoric content < 0,1% acc. to IEC 60684-2.	
<b>Fire performance:</b>	No flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 and EN 50305 + VDE 0260-305 section 9.1.2. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2. 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>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 x cross section n x mm²	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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.

item no.	no. of cores x cross section n x mm²	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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 x cross section n x 2 x mm²	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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	89,9	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



-VIERSEN · SAB RailLine 560 5x0,75mm<sup>2</sup> C 6560-1105 CE 

Marking for SAB RailLine 560 65601105:

SAB BRÜCKSKES · D-VIERSEN · SAB RailLine 560 5x0,75mm<sup>2</sup> 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, UV and weather 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
- flame retardant acc. to UN/ECE R118

### 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
	2000 V		4000 V
	core/screen	2000 V	4000 V
<b>Min. bending radius</b>			
<i>fixed laying:</i>	4 x d		
<i>flexible application:</i>	6 x d		
<i>continuously flexible:</i>	10 x d		
<b>Torsion angle:</b>	± 15°/1 m		
<b>Temperature range</b>			
<i>fixed laying:</i>	-50/+90 °C		
<i>flexible application:</i>	-50/+90 °C		
<b>Halogen-free:</b>	acc. to EN 50306-1 + EN 50264-1 are fulfilled. Development of HCl is < 0,5% acc. to IEC 60754-1. pH-value is > 4,3 acc. to IEC 60754-2. Conductivity is < 10,0 µS/mm acc. to IEC 60754-2. Fluoric content < 0,1% acc. to IEC 60684-2.		
<b>Fire performance:</b>	No flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 and EN 50305 + VDE 0260-305 section 9.1.2. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2. 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>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 x cross section n x mm <sup>2</sup>	nominal voltage	outer-ø mm	copper figure kg/km	cable weight ≈ 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 x cross section n x mm <sup>2</sup>	nominal voltage	outer-ø mm	copper figure kg/km	cable weight ≈ 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 x cross section n x 2 x mm <sup>2</sup>	nominal voltage	outer-ø mm	copper figure kg/km	cable weight ≈ 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



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



Marking for CATLine CAT 7A R 17674621:

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

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

<b>Technical data:</b>	CATLine CAT 5e R <i>flexible</i>		CATLine CAT 6A R <i>flexible</i>	CATLine CAT 7A R <i>flexible</i>
<b>Item number:</b>	1567-2625 1567-9002 1567-9004	1567-4421	1667-4621	1767-4621
<b>Peak operating voltage:</b>	max. 90 V			
<b>Testing voltage</b> core/core: core/screen:	750 V 750 V			
<b>Min. bending radius</b> fixed laying: flexible application:	5 x d 12 x d			
<b>Temperature range VDE</b> fixed laying: flexible application:	-40/+70 °C -30/+70 °C			
<b>Halogen-free:</b>	acc. to EN 50306-1 + EN 50264-1. Development of HCl is ≤ 0,5% acc. to IEC 60754-1. pH-value is ≥ 4,3 acc. to IEC 60754-2. Conductivity is ≤ 10,0 µS/mm acc. to IEC 60754-2. Fluoric content ≤ 0,1% acc. to IEC 60684-2			
<b>Fire performance:</b>	no flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 and EN 50305 + VDE 0260-305 section 9.1.2. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2. Flame retardant acc. to ISO 6722 (UN/ECE R118)			
<b>Smoke density:</b>	acc. to IEC 61034 + VDE 0482-1034			
<b>Toxicity:</b>	acc. to EN 50305 + VDE 0260-305			
<b>Characteristic impedance:</b>	100Ω ± 10Ω, fulfils the electrical and transmission requirements with high frequency with reference to EN 50288-2-2 / CAT 5	100Ω ± 10Ω, fulfils the electrical and transmission requirements with high frequency with reference to EN 50288-10-2 / CAT 6A	100Ω ± 10Ω, fulfils the electrical and transmission requirements with high frequency with reference to EN 50288-9-2 / CAT 7A	
<b>Flexibility:</b>	good			
<b>Application:</b>	suitable for EtherCAT and EtherNET/IP applications			
<b>Absence of harmful substances:</b>	acc. to RoHS directive of the European Union			

item no.	type	dimension	max. core-ø mm	outer-ø mm	copper figure kg/km	cable weight ≈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.



fulfils fire protection requirements  
R15 (EL1A) acc. to EN 45545-2  
for hazard levels HL1-3

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





# 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



D-VIERSEN · 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.

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

<b>Technical data:</b>	CATLine CAT 5e R flex <i>continuously flexible</i>		CATLine CAT 6A R flex <i>continuously flexible</i>	CATLine CAT 7A R flex <i>continuously flexible</i>
<b>Item number:</b>	1569-2435 1569-2235	1569-4431 1569-4631	1669-4431 1669-4631	1769-4431 1769-4631
<b>Peak operating voltage:</b>	max. 90 V			
<b>Testing voltage</b> core/core: core/screen:	750 V 750 V			
<b>Min. bending radius</b> fixed laying: flexible application: continuously flexible:	5 x d 12 x d 15 x d			
<b>Temperature range VDE</b> fixed laying: flexible application:	-50/+90 °C -40/+90 °C			
<b>Halogen-free:</b>	acc. to EN 50306-1 + EN 50264-1. Development of HCl is ≤ 0,5% acc. to IEC 60754-1. pH-value is ≥ 4,3 acc. to IEC 60754-2. Conductivity is ≤ 10,0 µS/mm acc. to IEC 60754-2. Fluoric content ≤ 0,1% acc. to IEC 60684-2			
<b>Fire performance:</b>	no flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 and EN 50305 + VDE 0260-305 section 9.1.2. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2. Flame retardant acc. to ISO 6722 (UN/ECE R118)			
<b>Smoke density:</b>	acc. to IEC 61034 + VDE 0482-1034			
<b>Toxicity:</b>	acc. to EN 50305 + VDE 0260-305			
<b>Oil and fuel resistance:</b>	acc. to EN 50264-1 + VDE 0260-264-1			
<b>Characteristic impedance:</b>	100Ω ± 5Ω with reference to EN 50288-2-2 / CAT 5	100Ω ± 10Ω with reference to EN 50288-2-2 / CAT 5	100Ω ± 10Ω with reference to EN 50288-10-2 / CAT 6A	100Ω ± 10Ω with reference to EN 50288-9-2 / CAT 7A
<b>Flexibility:</b>	good			
<b>Application:</b>	suitable for EtherCAT and EtherNET/IP applications			
<b>Absence of harmful substances:</b>	acc. to RoHS directive of the European Union			

item no.	type	dimension	max. core-ø mm	outer-ø mm	copper figure kg/km	cable weight ≈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.

**fulfils fire protection requirements R15 (EL1A) and R16 (EL1B) acc. to EN 45545-2 for hazard levels HL1-3**

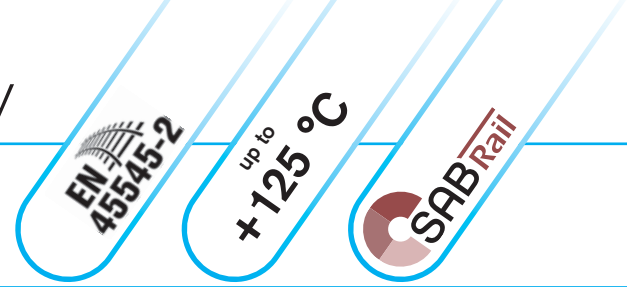
**Also possible as harnessed cable with M12 or RJ 45 plug!**



# Cables for Railway Technology

## SABIX® A 280 FRNC X

wiring cable / control cable, cross linked type



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 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 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>	U <sub>0</sub> /U 300/500 V
<b>Testing voltage:</b>	core/core 2000 V
<b>Min. bending radius:</b>	5 x d
<b>Temperature range during protected, fixed laying:</b>	-40/+125 °C (single conductor) -50/+125 °C (multi-core cable)
<b>Halogen-free:</b>	acc. to EN 50306-1 + EN 50264-1 are fulfilled. Development of HCl is < 0,5% acc. to IEC 60754-1. pH-value is > 4,3 acc. to IEC 60754-2. Conductivity is < 10,0 µS/mm acc. to IEC 60754-2. Fluoric content < 0,1% acc. to IEC 60684-2
<b>Fire performance:</b>	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
<b>Toxicity:</b>	acc. to EN 50305 + VDE 0260-305
<b>Smoke density:</b>	acc. to IEC 61034 + VDE 0482-1034
<b>Absence of harmful substances:</b>	acc. to RoHS directive of the European Union

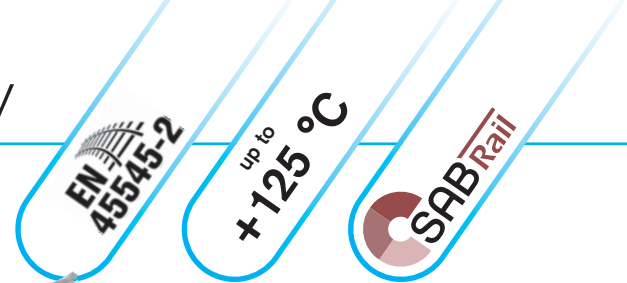
item no.	no. of cores x cross section	largest single wire	outer-ø ± 5%	copper figure	cable weight	ohmic resistance at 20 °C max. Ω/km	heating value approx. kWh/km
	n x mm <sup>2</sup>	ø mm	mm	kg/km	≈ kg/km		
62800105	1 x 0,50	0,21	1,7	4,8	7	40,1	13,0
62800305	3 x 0,50	0,21	4,7	14,4	35	40,1	115
62800505	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



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 acc. to IEC 60228, VDE 0295, class 5
<b>Insulation:</b>	special SABIX®
<b>Colour code:</b>	white cores with consecutive numbers 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)

### Technical Data:

<b>Nominal voltage:</b>	U <sub>0</sub> /U 300/500 V
<b>Testing voltage:</b>	core/core 2000 V core/screen 2000 V
<b>Min. bending radius:</b>	10 x d
<b>Temperature range during protected, fixed laying:</b>	-50/+125 °C
<b>Halogen-free:</b>	acc. to EN 50306-1 + EN 50264-1 are fulfilled. Development of HCl is < 0,5% acc. to IEC 60754-1. pH-value is > 4,3 acc. to IEC 60754-2. Conductivity is < 10,0 µS/mm acc. to IEC 60754-2. Fluoric content < 0,1% acc. to IEC 60684-2
<b>Fire performance:</b>	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
<b>Toxicity:</b>	acc. to EN 50305 + VDE 0260-305
<b>Smoke density:</b>	acc. to IEC 61034 + VDE 0482-1034
<b>Absence of harmful substances:</b>	acc. to RoHS directive of the European Union

### 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

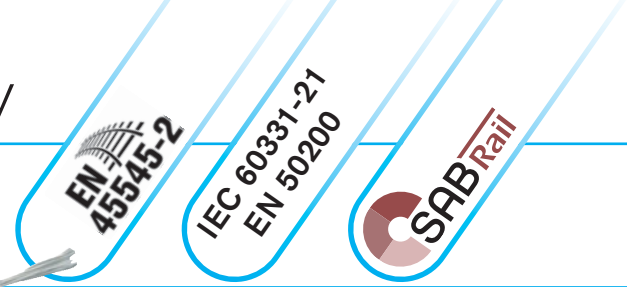
item no.	no. of cores x cross section	largest single wire	outer-ø ± 5%	copper figure	cable weight	ohmic resistance at 20 °C max. Ω/km	heating value approx. kWh/km
	n x mm <sup>2</sup>	ø mm	mm	kg/km	≈ kg/km		
62850305	3 x 0,50	0,21	5,2	30,3	45	40,1	99
62850505	5 x 0,50	0,21	6,3	43,5	68	40,1	154
62850805	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



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 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 during protected, fixed laying:</b>	-50/+125 °C
<b>Halogen-free:</b>	acc. to EN 50306-1 + EN 50264-1 are fulfilled. Development of HCl is < 0,5% acc. to IEC 60754-1. pH-value is > 4,3 acc. to IEC 60754-2. Conductivity is < 10,0 µS/mm acc. to IEC 60754-2. Fluoric content < 0,1% acc. to IEC 60684-2.
<b>Fire performance:</b>	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
<b>Insulation integrity in case of fire:</b>	EN 50200 PH 30, VDE 0482-200, 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 harmful substances:</b>	acc. to RoHS directive of the European Union

item no.	no. of cores x cross section n x mm <sup>2</sup>	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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 x cross section n x mm <sup>2</sup>	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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

highly flexible Besilen<sup>®</sup> insulated HV single core

EN 45545-2

Nominal voltage up to  
Uo/U 1.8/3 kV



ES · D-VIERSEN · R 107 1,8/3 kV 95,0mm<sup>2</sup> 6107-0894



Marking for R 107 61070894:

SAB BRÖCKSKES · D-VIERSEN · R 107 1,8/3 kV 95,0mm<sup>2</sup> 6107-0894

**Application:** Highly flexible single conductor for current or ground connection in railway technology.

### Construction:

<b>Conductor:</b>	bare copper strands, extremely fine wires
<b>Insulation:</b>	Besilen <sup>®</sup> EI2 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>	
fixed laying:	-50/+180 °C
flexible application:	-25/+180 °C
short-time use:	+250 °C
<b>Halogen-free:</b>	acc. to EN 50306-1 + EN 50264-1 are fulfilled. Development of HCl is < 0,5% acc. to IEC 60754-1. pH-value is > 4,3 IEC 60754-2. Conductivity is < 10,0 µS/mm acc. to IEC 60754-2. Fluoric content < 0,1% acc. to IEC 60684-2.
<b>Fire performance:</b>	No flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 and EN 50305 + VDE 0260-305 section 9.1.2. Flame retardant and self-extinguishing 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 mm<sup>2</sup>:  
R15 (EL1A) HL 1 / R16 (EL1B) HL 1-2  
from 16,00 mm<sup>2</sup>:  
R15 (EL1A) HL 1-2 / R16 (EL1B) HL 1-3
- halogen-free
- heat resistant
- flexible at low temperatures
- flame retardant and self-extinguishing
- good ozone, UV and weather resistance

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
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<sup>®</sup>** 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

highly flexible Besilen® insulated HV single core



Marking for B 107 01079500:  
SAB BRÜCKSKES · D-VIERSEN · B 107 Uo/U 1,8/3 kV 95,0mm<sup>2</sup>

**Application:** Highly flexible single core for switchboard wiring and the use in energy storage systems, test benches or power wiring.

### Construction:

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

### Technical data:

<b>Nominal voltage:</b>	Uo/U 1,8/3,0 kV AC Uo/U 2,7/5,4 kV DC
<b>Voltage cULus:</b>	3000 V
<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>	<b>DIN VDE</b> cULus: up to +150 °C
<i>fixed laying:</i>	-40/+180 °C
<i>flexible application:</i>	-25/+180 °C
<i>short time use:</i>	+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, cULus FT2
<b>Corrosiveness of conflagration gases:</b>	IEC 60754-2 + VDE 0482-754-2 - 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:



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

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
01070100	1,00	0,07	4,3	9,6	25
01070150	1,50	0,07	4,7	14,4	31
01070250	2,50	0,07	5,2	24,0	43
01070400	4,00	0,07	5,9	38,4	60
01070600	6,00	0,07	6,3	57,6	80
01071000	10,00	0,07	9,0	96,0	146
01071600	16,00	0,07	9,3	153,6	194
01072500	25,00	0,10	12,0	240,0	314
01073500	35,00	0,10	13,8	336,0	431
01075000	50,00	0,10	15,7	480,0	581
01077000	70,00	0,10	17,7	672,0	792
01079500	95,00	0,10	18,8	912,0	1012
01071200	120,00	0,10	20,5	1152,0	1280
01071500	150,00	0,10	23,7	1440,0	1551
01071850	185,00	0,15	25,3	1776,0	1935
01072400	240,00	0,15	27,9	2304,0	2508
01073000	300,00	0,15	30,8	2880,0	3003

Other dimensions and colours are possible on request.

\* 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    |



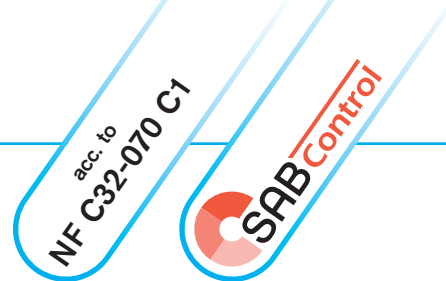
On request with  
tinned copper strands!  
Also available with  
copper braiding as B 108!

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

# Cables for Railway Technology

## SABIX® A 224 FRNC C1

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



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 acc. to IEC 60228, VDE 0295, class 5
<b>Insulation:</b>	SABIX®
<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
<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>	
<i>fixed laying:</i>	4 x d
<i>flexible application:</i>	6 x d
<b>Radiation resistance:</b>	1 x 10 <sup>7</sup> cJ/kg (100 kGy)
<b>Temperature range</b>	
<i>fixed laying:</i>	-30/+90 °C
<i>flexible application:</i>	-20/+90 °C
<b>Halogen-free:</b>	acc. to IEC 60754-1 + VDE 0482-754-1
<b>Fire performance:</b>	no flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 cat. C resp. D, acc. to RoHS directive of the European Union.  Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2 + NF C32-070 C1
<b>Corrosiveness of conflagration gases:</b>	in compliance with IEC 60754-2 + VDE 0482-754-2 - no development of corrosive conflagration gases
<b>Smoke density:</b>	acc. to IEC 61034 + VDE 0482-1034
<b>Absence of harmful substances:</b>	acc. to RoHS directive of the European Union

item no.	no. of cores x cross section n x mm <sup>2</sup>	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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 x cross section n x mm <sup>2</sup>	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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 mm² 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 acc. to IEC 60228, VDE 0295, class 5
<b>Insulation:</b>	SABIX®
<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
<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>	
<i>fixed laying:</i>	4 x d
<i>flexible application:</i>	6 x d
<b>Temperature range</b>	<b>UL:</b> up to +75 °C <b>CSA:</b> up to + 80 °C
<i>fixed laying:</i>	<b>DIN VDE:</b> -40/+90 °C
<i>flexible application:</i>	-30/+90 °C
<b>Halogen-free:</b>	acc. to IEC 60754-1 + VDE 0482-754-1
<b>Fire performance:</b>	no flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 cat. C resp. D, acc. to RoHS directive of the European Union.
	Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2, CSA FT1
<b>Corrosiveness of conflagration gases:</b>	in compliance with IEC 60754-2 + VDE 0482-754-2 - no development of corrosive conflagration gases
<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

item no.	no. of cores x cross section n x mm <sup>2</sup>	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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 x cross section n x mm <sup>2</sup>	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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 10,00	0,41	17,2	384,0	608
62520561	5 x 10,00	0,41	19,3	480,0	756
62520462	4 x 16,00	0,41	21,1	614,4	909
62520463	4 x 25,00	0,41	26,5	960,0	1475
62520464	4 x 35,00	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 /II/ A/B 80°C 600V FT1 CE

### Construction:

<b>Conductor:</b>	bare copper strands acc. to IEC 60228, VDE 0295, class 5
<b>Insulation:</b>	SABIX®
<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
<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 core/screen 2000 V
<b>Min. bending radius</b> <i>fixed laying:</i> <i>flexible application:</i>	5 x d 10 x d
<b>Temperature range</b> <i>fixed laying:</i> <i>flexible application:</i>	UL: up to +75 °C      CSA: up to + 80 °C DIN VDE: -40/+90 °C -30/+90 °C
<b>Halogen-free:</b>	acc. to IEC 60754-1 + VDE 0482-754-1
<b>Fire performance:</b>	no flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 cat. C resp. D, acc. to RoHS directive of the European Union.  Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2, CSA FT1
<b>Corrosiveness of conflagration gases:</b>	in compliance with IEC 60754-2 + VDE 0482-754-2 - no development of corrosive conflagration gases
<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

item no.	no. of cores x cross section n x mm <sup>2</sup>	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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 x cross section n x mm <sup>2</sup>	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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 10,00	0,31	18,3	457,8	636
62340561	5 x 10,00	0,31	20,2	562,9	793
62340462	4 x 16,00	0,41	22,2	706,7	927
62340463	4 x 25,00	0,41	27,4	1074,8	1450
62340464	4 x 35,00	0,41	31,3	1471,8	1959

Other dimensions and colours are possible on request.



Also available with  
inner sheath!

# Cables for Railway Technology

## Hybrid and Special Cables



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:

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.

- ✓ 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)

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



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:

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

### Technical data:

<b>Peak operating voltage:</b>	max. 30 V
<b>Testing voltage:</b>	core/core 600 V core/screen 600 V
<b>Min. bending radius</b>	
fixed laying:	5 x d
flexible application:	10 x d
<b>Temperature range</b>	
fixed laying:	-50/+90 °C
flexible application:	-50/+90 °C
<b>Halogen-free:</b>	acc. to EN 50306-1 + EN 50264-1 are fulfilled. Development of HCl is < 0,5% acc. to IEC 60754-1. pH-value is > 4,3 acc. to IEC 60754-2. Conductivity is < 10,0 µS/mm acc. to IEC 60754-2. Fluoric content < 0,1% acc. to IEC 60684-2.
<b>Fire performance:</b>	No flame propagation acc. to IEC 60332-3-24 + VDE 0482-332-3-24 resp. IEC 60332-3-25 + VDE 0482-332-3-25 and EN 50305 + VDE 0260-305 section 9.1.2. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + VDE 0482-332-1-2. 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>Oil and fuel resistance:</b>	acc. to EN 50264-1 + VDE 0260-264-1
<b>Absence of harmful substances:</b>	acc. to RoHS directive of the European Union

### Outstanding features:



- halogen-free
- continuously flexible
- no flame propagation
- flame retardant and self-extinguishing
- good oil and fuel resistance
- fulfils fire protection requirements R15 (EL1A) and R16 (EL1B) acc. to EN 45545-2 for hazard levels HL1-3
- flame retardant acc. to UN/ECE R118

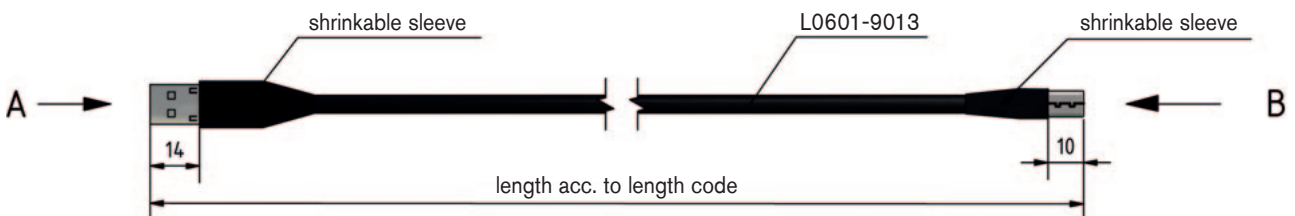
Art.-Nr.	type	dimension	outer-ø approx. mm	copper figure kg/km	cable weight ≈kg/km	ohmic resistance at 20°C max. Ω/km
06019013	SABIX® USB 2.0 R flex	4 x 28/7 AWG	5,2	14,3	41	223,8

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



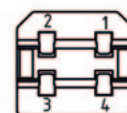
view A (2:1)



Pin configuration

USB A	colour code	USB B
1	red	1
2	white	2
3	green	3
4	black	4
housing	screen	housing

view B (3:1)



view soldering side

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

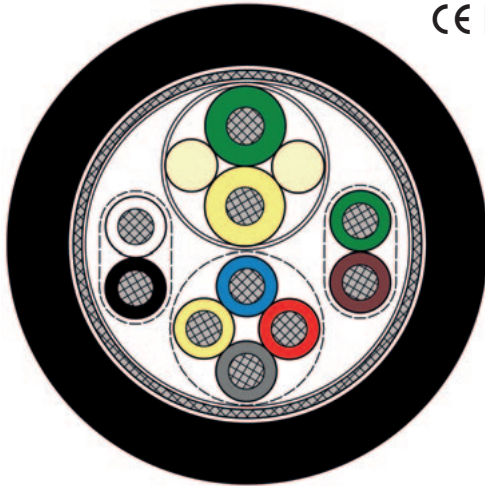
## Coupling cable T 790 torsion able connecting cable

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

item no. 63359002

cross section:

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

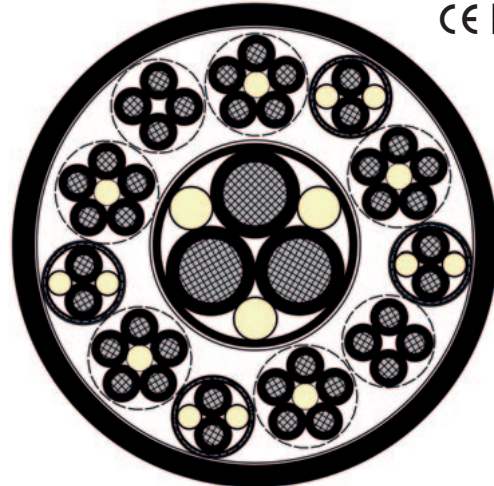


### Torsion able connecting cable

item no. 07909008

cross section:

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



### Construction:

<b>Conductor:</b>	tinned copper strands, fine wires with reference to VDE 0812
<b>Insulation:</b>	SABIX® thermoplastic material and O2Y11 acc. to EN 50290-2-23 + VDE 0819-103 (for 2 x 0.50 mm <sup>2</sup> )
<b>Stranding:</b>	pairs and quads twisted together in layers
<b>Screen:</b>	tinned copper braiding, optical coverage ≥ 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) 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 ≥ 85%
<b>Sheath material:</b>	special PUR
<b>Sheath colour:</b>	black (RAL 9005)

### Technical data:

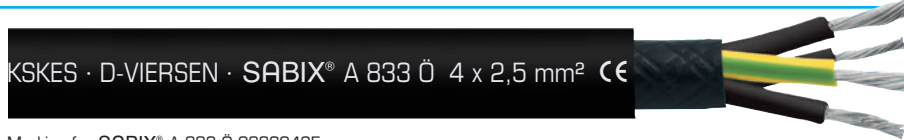
<b>Nominal voltage:</b>	1,50 mm <sup>2</sup> : U <sub>o</sub> /U 0,6/1,0 kV 10,0 mm <sup>2</sup> : U <sub>o</sub> /U 1,8/3,0 kV
<b>Testing voltage:</b>	core/core 1,50 mm <sup>2</sup> : 4000 V, 10,0 mm <sup>2</sup> : 12000 V core/screen 1,50 mm <sup>2</sup> : 2000 V, 10,0 mm <sup>2</sup> : 6000 V
<b>Min. 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



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, acc. to IEC 60228, VDE 0295, class 6
<b>Insulation:</b>	TPE
<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
<b>Inner sheath:</b>	SABIX®
<b>Sheath material:</b>	PUR, TPU acc. to 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>	
<i>fixed laying:</i>	4 x d
<i>flexible application:</i>	6 x d
<b>Temperature range</b>	
<i>fixed laying:</i>	-50/+85 °C
<i>flexible application:</i>	-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 acc. to IEC 60332-1-2 + VDE 0482-332-1-2
<b>Oil resistance:</b>	very good - PUR, TPU acc. to 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 x cross section n x mm <sup>2</sup>	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ 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**

SAB BRÖCKSKES GmbH & Co. KG  
Postfach 12 01 60  
Frau Isabelle Simon  
41719 Viersen

Prüfbericht Nr. 17/1061  
Test report No. 17/1061

Prüfdatum: 2017-07-26

Antraggeber: SAB Bröckskes GmbH & Co. KG  
Isabelle Simon / Alexander Skambraks  
Einkauf / Entwicklung  
Grefrather Str. 204-212b  
41749 Viersen, Deutschland  
simon@sab-broeckskes.de

Produkt: SABIX USB 2.0 R flex 4xAWG 2B7

Prüfung: 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

Prüfung: EN 45545-2:2013+A1:2015  
Bahnanwendungen – Brandschutz in Schienenfahrzeugen  
Teil 2: Anforderungen an das Brandverhalten von Materialien und Komponenten  
EN 45545-2:2013+A1:2015  
Railway applications – Fire protection on railway vehicles  
Part 2: Requirements for fire behavior of materials and components

Prüfergebnis: T09.01 erfüllt

**CURRENTA**

Currenta GmbH & Co. OHG  
AMT-BA-Broschwege  
CHEMPARK, Gebäude 8 411  
D-41360 Levertussen

Prüfbericht Nr. 17/1061  
Auftrags-Nr. L70674C  
Ordnr. No. L70674C

Prüfung: EN 45545-2:2013+A1:2015  
Bahnanwendungen – Brandschutz in Schienenfahrzeugen  
Teil 2: Anforderungen an das Brandverhalten von Materialien und Komponenten  
EN 45545-2:2013+A1:2015  
Railway applications – Fire protection on railway vehicles  
Part 2: Requirements for fire behavior of materials and components

Prüfergebnis: T09.01 erfüllt

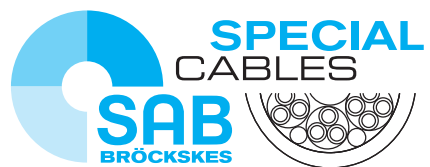
**LABCO**

15-0405\_02 Index 0

SAB Bröckskes GmbH & Co. KG  
Grefrather Straße 204-212 b  
D-41749 Viersen  
SABIX R 845 FRNC TP0x0x14 mm²  
Artikelnummer : 16645-0214  
Chargennummer : K229978

Prüfung: IEC 60332-1-2:2004  
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

Prüfergebnis: T09.01 erfüllt



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