Cables for Railway Technology

www.sab-worldwide.com

SAB BRÖCKSKES

Content

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.

The Company

DIN EN ISO 9001

More than 60 years of experience in temperature measurement and control technique as well as in cable production have made a one man business a company with nearly 500 staff members. Our strength is not only the production of standard products but also the development and manufacturing of special products acc. to customers' specifications. Every year we manufacture more than 1500 special products on our customer's request. Every single product is a challenge for our technical team.

We at SAB Bröckskes see ourselves as manufacturer and service provider - in the sense of real partnership and customer oriented work. The quality of our products is known in more than 40 countries of the world. Our customers have tested our products intensively and confirm that they have a longer service life than others. In all product ranges we are certified acc. to ISO 9001:2008. Besides we established an environmental management system for our company acc. to ISO 14001:2004, an occupational health and safety management acc. to NLF/ILO-OSH 2001 and OHSAS 18001:2007 as well as an energy management system acc. to DIN EN ISO 50001:2011. And our future slogan is: **We go forward!**

founded:
- 1947 by Peter Bröckskes sen.
- an independent, middle sized company

CEO:
- Peter Bröckskes and Sabine Bröckskes-Wetten

plant/location:
- in Viersen (lower Rhine) 110.000 m² company site
- manufacturing from copper conductor to outer sheath,
- own VDE proofed burnchamber and laboratory

employees/workers:
- approx. 420 at the plant in Viersen, 500 worldwide

yearly sales:
- approx. 95 Mio. € worldwide

products:
- Special Cables
- Temperature Measurement
- Cable Harnessing

certificates and approvals:
- quality management system acc. to ISO 9001:2008 for every manufacturing field
- environmental management system acc. to ISO 14001:2004
- occupational health and safety management acc. to NLF/ILO-OSH 2001 and OHSAS 18001:2007
- energy management system acc. to DIN EN ISO 50001:2011

MIL, VDE, HAR, IEC, GL, DNV, BV, KR, ABS, NK, RINA, LR, CE

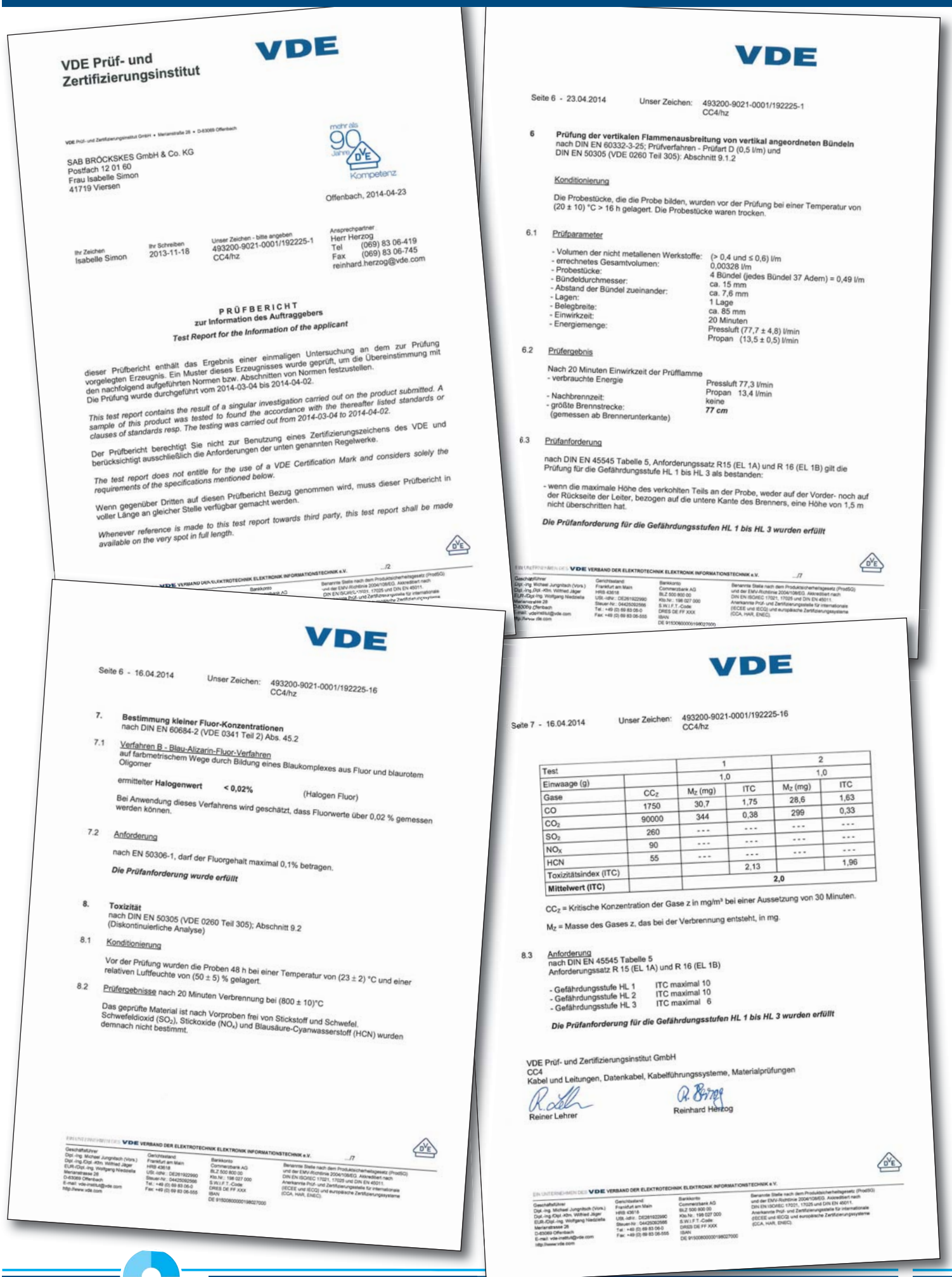
DIN EN 45545-2

Overview of fire protection requirements for cables and wires

Extract from DIN EN 45545-2 table 5 requirement set R15 (EL1A) for the respective hazard classes						
Short name of requireme nt set (used for)	**Test methode reference**	**Parameter Unit**	**Maximum or Minimum**	**HL1**	**HL2**	**HL3**
R15 (EL1A)	T09.01 EN 60332-1-2	Unbured 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 %	Maximum	25	50	70
	T15 EN 50305	*ITC* dimensionless	Maximum	10	10	6

Hazard level classification (HL)

Extract from DIN 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



VDE Prüf- und Zertifizierungsinstitut

VDE Prüf- und Zertifizierungsinstitut GmbH • Merianstraße 28 • D-63069 Offenbach

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

mehr als 90 Jahre VDE Kompetenz

Offenbach, 2014-04-23

Ihr Zeichen	Ihr Schreiben	Unser Zeichen - bitte angeben	Ansprechpartner
Isabelle Simon	2013-11-18	493200-9021-0001/192225-1 CC4/hz	Herr Herzog Tel (069) 83 06-419 Fax (069) 83 06-745 reinhard.herzog@vde.com

PRÜFBERICHT
zur Information des Auftraggebers
Test Report for the Information of the applicant

dieser Prüfbericht enthält das Ergebnis einer einmaligen Untersuchung an dem zur Prüfung vorgelegten Erzeugnis. Ein Muster dieses Erzeugnisses wurde geprüft, um die Übereinstimmung mit den nachfolgend aufgeführten Normen bzw. Abschnitten von Normen festzustellen.
Die Prüfung wurde durchgeführt vom 2014-03-04 bis 2014-04-02.

This test report contains the result of a singular investigation carried out on the product submitted. A sample of this product was tested to found the accordance with the thereafter listed standards or clauses of standards resp. The testing was carried out from 2014-03-04 to 2014-04-02.

Der Prüfbericht berechtigt Sie nicht zur Benutzung eines Zertifizierungszeichens des VDE und berücksichtigt ausschließlich die Anforderungen der unten genannten Regelwerke.

The test report does not entitle for the use of a VDE Certification Mark and considers solely the requirements of the specifications mentioned below.

Wenn gegenüber Dritten auf diesen Prüfbericht Bezug genommen wird, muss dieser Prüfbericht in voller Länge an gleicher Stelle verfügbar gemacht werden.

Whenever reference is made to this test report towards third party, this test report shall be made available on the very spot in full length.

.../2

VDE VERBAND DER ELEKTROTECHNIK ELEKTRONIK INFORMATIONSTECHNIK e.V.

Bankkonto Commerzbank AG BLZ 500 800 00 Kto.Nr.: 198 027 000 S.W.I.F.T.-Code: DRES DE FF XXX IBAN: DE 91500800000198027000

Benannte Stelle nach dem Produktsicherheitsgesetz (ProdSG) und der EMV-Richtlinie 2004/108/EG. Akkreditiert nach DIN EN ISO/IEC 17025, 17025 und DIN EN 45011. Anerkannte Prüf- und Zertifizierungsstelle für internationale (IECEE und IECQ) und europäische Zertifizierungssysteme (CCA, HAR, ENEC).

VDE

Seite 6 - 23.04.2014 Unser Zeichen: 493200-9021-0001/192225-1 CC4/hz

6 Prüfung der vertikalen Flammenausbreitung von vertikal angeordneten Bündeln
nach DIN EN 60332-3-25; Prüfverfahren - Prüfart D (0,5 l/m) und DIN EN 50305 (VDE 0260 Teil 305): Abschnitt 9.1.2

Konditionierung

Die Probestücke, die die Probe bilden, wurden vor der Prüfung bei einer Temperatur von (20 ± 10) °C > 16 h gelagert. Die Probestücke waren trocken.

6.1 Prüfparameter

- Volumen der nicht metallenen Werkstoffe:	(> 0,4 und ≤ 0,6) l/m
- errechnetes Gesamtvolumen:	0,00328 l/m
- Probestücke:	4 Bündel (jedes Bündel 37 Adern) = 0,49 l/m
- Bündeldurchmesser:	ca. 15 mm
- Abstand der Bündel zueinander:	ca. 7,6 mm
- Lagen:	1 Lage
- Belegbreite:	ca. 85 mm
- Einwirkzeit:	20 Minuten
- Energiemenge:	Pressluft (77,7 ± 4,8) l/min Propan (13,5 ± 0,5) l/min

6.2 Prüfergebnis

Nach 20 Minuten Einwirkzeit der Prüfflamme

- verbrauchte Energie	Pressluft 77,3 l/min Propan 13,4 l/min
- Nachbrennzeit:	keine
- größte Brennstrecke: (gemessen ab Brennerunterkante)	***77 cm***

6.3 Prüfanforderung

nach DIN EN 45545 Tabelle 5, Anforderungssatz R15 (EL 1A) und R 16 (EL 1B) gilt die Prüfung für die Gefährdungsstufe HL 1 bis HL 3 als bestanden:

- wenn die maximale Höhe des verkohlten Teils an der Probe, weder auf der Vorder- noch auf der Rückseite der Leiter, bezogen auf die untere Kante des Brenners, eine Höhe von 1,5 m nicht überschritten hat.

Die Prüfanforderung für die Gefährdungsstufen HL 1 bis HL 3 wurden erfüllt

.../7

VDE

Seite 6 - 16.04.2014 Unser Zeichen: 493200-9021-0001/192225-16 CC4/hz

7. Bestimmung kleiner Fluor-Konzentrationen
nach DIN EN 60684-2 (VDE 0341 Teil 2) Abs. 45.2

7.1 Verfahren B - Blau-Alizarin-Fluor-Verfahren
auf farbmetrischem Wege durch Bildung eines Blaukomplexes aus Fluor und blaurotem Oligomer

ermittelter **Halogenwert** **< 0,02%** (Halogen Fluor)

Bei Anwendung dieses Verfahrens wird geschätzt, dass Fluorwerte über 0,02 % gemessen werden können.

7.2 Anforderung

nach EN 50306-1, darf der Fluorgehalt maximal 0,1% betragen.

Die Prüfanforderung wurde erfüllt

8. Toxizität
nach DIN EN 50305 (VDE 0260 Teil 305); Abschnitt 9.2
(Diskontinuierliche Analyse)

8.1 Konditionierung

Vor der Prüfung wurden die Proben 48 h bei einer Temperatur von (23 ± 2) °C und einer relativen Luftfeuchte von (50 ± 5) % gelagert.

8.2 Prüfergebnisse nach 20 Minuten Verbrennung bei (800 ± 10)°C

Das geprüfte Material ist nach Vorproben frei von Stickstoff und Schwefel. Schwefeldioxid (SO_2), Stickoxide (NO_x) und Blausäure-Cyanwasserstoff (HCN) wurden demnach nicht bestimmt.

VDE

Seite 7 - 16.04.2014 Unser Zeichen: 493200-9021-0001/192225-16 CC4/hz

Test		1		2	
Einwaage (g)		1,0		1,0	
Gase	CC_z	M_z (mg)	ITC	M_z (mg)	ITC
CO	1750	30,7	1,75	28,6	1,63
CO_2	90000	344	0,38	299	0,33
SO_2	260	---	---	---	---
NO_x	90	---	---	---	---
HCN	55	---	---	---	---
Toxizitätsindex (ITC)			2,13		1,96
Mittelwert (ITC)			**2,0**		

CC_z = Kritische Konzentration der Gase z in mg/m³ bei einer Aussetzung von 30 Minuten.

M_z = Masse des Gases z, das bei der Verbrennung entsteht, in mg.

8.3 Anforderung
nach DIN EN 45545 Tabelle 5
Anforderungssatz R 15 (EL 1A) und R 16 (EL 1B)

- Gefährdungsstufe HL 1	ITC maximal 10
- Gefährdungsstufe HL 2	ITC maximal 10
- Gefährdungsstufe HL 3	ITC maximal 6

Die Prüfanforderung für die Gefährdungsstufen HL 1 bis HL 3 wurden erfüllt

VDE Prüf- und Zertifizierungsinstitut GmbH
CC4
Kabel und Leitungen, Datenkabel, Kabelführungssysteme, Materialprüfungen

Reiner Lehrer

Reinhard Herzog

Selection index for cables for railway technology

		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 660 FRNC CAT 5e	SABIX® R 691 FRNC CAT 6 C1	SABIX® A 280 FRNC X	SABIX® A 285 FRNC X
Applications		Single conductor	X	X								X	
		Multi-core cable			X	X	X	X	X	X	X	X	X
		screened				X		X	X	X	X		X
		Wiring cable	X	X								X	
		Data cable					X	X	X				
		Control cable			X	X						X	X
		Ethernet cable								X	X		
		cross linked type										X	X
Standards	Halogen-free	tested acc. to DIN EN 45545-2	X	X	X	X	X	X	X			X	X
		tested acc. to DIN 5510-2								X	X		
		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.	X	X	X	X	X	X	X			X	X
		acc. to DIN VDE 0472 part 815 + IEC 60754-1								X	X		
	Fire performance	No flame propagation acc. to DIN EN 60332-3-24		X	X	X	X	X	X			X	X
		No flame propagation acc. to DIN EN 60332-3-25	X	X	X	X	X	X	X			X	X
		No flame propagationg acc. to DIN EN 50305 section 9.1.2	X	X	X	X	X	X	X			X	X
		No flame propagation acc. to IEC 60332-3-25, EN 60332-3-25 and EN 50266-2-5 for cable diameter > 6 mm < 12 mm								X	X		
		Flame retardant and self-extinguishing acc. to DIN EN 60332-1-2	X	X	X	X	X	X	X			X	X
		Flame retardant and self-extinguishing acc. to IEC 60332-1 and DIN EN 60332-1-2								X	X		
		acc. to ASTM E 162-09						X	X				
		acc. to NF C 32-070 C1									X		
		Toxicity acc. to DIN EN 50305	X	X	X	X	X	X	X			X	X
		Toxicity FED_{t30} < 1 acc. to DIN EN 5510-2 appendix C 3.3								X	X		
		Smoke density acc. to DIN EN 61034	X	X	X	X	X	X	X			X	X
		Smoke density acc. to ASTM E 662-09						X	X				
		Smoke density acc. to IEC 61034-1 and EN 61034-1, translucence > 60%								X	X		
		Absence of harmful substances acc. to RoHS directive of the European Union	X	X	X	X	X	X	X	X	X	X	X
Temperature range fixed laying*		+ 125 °C											
		+ 90 °C											
		+ 70 °C											
		– 40 °C											
		– 50 °C											
Voltage		Nominal voltage Uo/U 300/500 V	X		X	X						X	X
		Nominal voltage Uo/U 450/750 V		X									
		Peak operating voltage: < 0,25 mm² = max. 350 V ≥ 0,25 mm² = max. 500 V					X	X	X				
		Peak operating voltage: max. 350 V								X	X		

from

to

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

DIN EN 45545-2 edition 2013

SABIX® A 146 FRNC Wiring cable 300/500 V

SABIX® A 156 FRNC Wiring cable 450/750 V

RoHS

Marking for SABIX® A 146 FRNC 61460150:
SAB BRÖCKSKES · D-VIERSEN · SABIX® A 146 FRNC 300/500V 0,5 mm²CE

Construction:

Conductor:	bare copper strands acc. to IEC 60228, EN 60228, VDE 0295, class 5
Insulation:	special SABIX®
Colour code:	coloured

Outstanding features:

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

Technical data:

Nominal voltage:	**SABIX® A 146 FRNC:** Uo/U 300/500 V	**SABIX® A 156 FRNC:** Uo/U 450/750 V
Testing voltage:	**SABIX® A 146 FRNC:** 2000 V	**SABIX® A 156 FRNC:** 2500 V
Min. bending radius:	7.5 x d	
For one single bend:	5 x d	
Temperature range		
fixed laying:	-50/+90 °C	
flexible application:	-40/+90 °C	
Halogen-free:	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 DIN EN 60332-3-25 and DIN EN 50305 section 9.1.2. Flame retardant and self-extinguishing acc. to DIN EN 60332-1-2.	
Toxicity:	acc. to DIN EN 50305	
Smoke density:	acc. to DIN EN 61034	
Flexibility:	good	
Absence of harmful substances:	acc. to RoHS directive of the European Union	

SABIX® A 146 FRNC

item no.	nominal cross-section mm²	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.

*** Colour code for single conductors:**

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

SABIX® A 156 FRNC

item no.	nominal cross-section mm²	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.

DIN EN 45545-2 edition 2013

SABIX® R 600 FRNC SABIX® Rail Control with numbered cores

RoHS

Marking for SABIX® R 600 FRNC 66001215: SAB BRÖCKSKES · D-VIERSEN · SABIX® R 600 FRNC 12 x 1,5 mm²

Construction:

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

Outstanding features:

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

Technical data:

Nominal voltage:	Uo/U 300/500 V
Testing voltage U:	3000 V
Min. bending radius	
fixed laying:	4 x d
flexible application:	6 x d
Temperature range	
fixed laying:	-40/+90 °C
flexible application:	-30/+90 °C
Halogen-free:	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 DIN EN 60332-3-24, DIN EN 60332-3-25 and DIN EN 50305 section 9.1.2. Flame retardant and self-extinguishing acc. to DIN EN 60332-1-2.
Toxicity:	acc. to DIN EN 50305
Smoke density:	acc. to DIN EN 61034
Flexibility:	good
Absence of harmful substances:	acc. to RoHS directive of the European Union

Tested at reference types.

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
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 mm²	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	270
66000460	4 x 6,00	0,31	12,7	230,4	336
66000560	5 x 6,00	0,31	14,2	288,0	415
66000760	7 x 6,00	0,31	15,7	403,2	545
66000461	4 x 10,0	0,41	16,7	384,0	579
66000561	5 x 10,0	0,41	18,6	480,0	740
66000761	7 x 10,0	0,41	20,7	672,0	960
66000462	4 x 16,0	0,41	20,6	614,4	887
66000562	5 x 16,0	0,41	23,0	768,0	1105
66000762	7 x 16,0	0,41	25,5	1075,2	1445
66000463	4 x 25,0	0,41	24,9	960,0	1388
66000563	5 x 25,0	0,41	28,1	1200,0	1750
66000464	4 x 35,0	0,41	28,8	1344,0	1927
66000564	5 x 35,0	0,41	32,5	1680,0	2413

Other dimensions and colours are possible on request.

DIN EN 45545-2 edition 2013

SABIX® R 638 FRNC

SABIX® Rail Control with numbered cores and overall copper screen

RoHS

Marking for SABIX® R 638 FRNC 66380515:
SAB BRÖCKSKES · D-VIERSEN · SABIX® R 638 FRNC 5 x 1,5 mm² CE

Construction:

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

Outstanding features:

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

* Copper braiding should be connected circularly to optimize the EMC characteristics

Technical data:

Nominal voltage:	Uo/U 300/500 V
Testing voltage U:	3000 V core/screen 2000 V
Min. bending radius *fixed laying:* *flexible application:*	 5 x d 10 x d
Temperature range *fixed laying:* *flexible application:*	 -40/+90 °C -30/+90 °C
Halogen-free:	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 DIN EN 60332-3-24, DIN EN 60332-3-25 and DIN EN 50305 section 9.1.2. Flame retardant and self-extinguishing acc. to DIN EN 60332-1-2.
Toxicity:	acc. to DIN EN 50305
Smoke density:	acc. to DIN EN 61034
Flexibility:	good
Absence of harmful substances:	acc. to RoHS directive of the European Union

Tested at reference types.

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
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 mm²	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.

DIN EN 45545-2 edition 2013

SABIX® R 605 FRNC SABIX® Rail Data

RoHS

Marking for SABIX® R 605 FRNC 66053250:
SAB BRÖCKSKES · D-VIERSEN · SABIX® R 605 FRNC 32 x 0,5 mm² CE

Construction:

Conductor:	bare copper strands with reference to IEC 60228, EN 6028, VDE 0295, class 5
Insulation:	special SABIX®
Colour code:	with reference to DIN 47100
Stranding:	in layers
Sheath material:	special SABIX®
Sheath colour:	grey (RAL 7032)

Outstanding features:

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

Technical data:

Peak operating voltage:	< 0.25 mm² = max. 350 V ≥ 0.25 mm² = max. 500 V
Testing voltage:	< 0.25 mm² = 800 V ≥ 0.25 mm² = 1200 V
Min. bending radius *fixed laying:* *flexible application:*	 5 x d 10 x d
Temperature range *fixed laying:* *flexible application:*	 -40/+90 °C -30/+90 °C
Halogen-free:	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 DIN EN 60332-3-24, DIN EN 60332-3-25 and DIN EN 50305 section 9.1.2. Flame retardant and self-extinguishing acc. to DIN EN 60332-1-2.
Toxicity:	acc. to DIN EN 50305
Smoke density:	acc. to DIN EN 61034
Flexibility:	good
Absence of harmful substances:	acc. to RoHS directive of the European Union

Tested at reference types.

item no.	no. of cores x cross section n x mm²	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 mm²	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

Continued on next page

DIN EN 45545-2 edition 2013

SABIX® R 605 FRNC SABIX® Rail Data

RoHS

BRÖCKSKES · D-VIERSEN · SABIX® R 605 FRNC 32 x 0,5 mm

Marking for SABIX® R 605 FRNC 66053250:
SAB BRÖCKSKES · D-VIERSEN · SABIX® R 605 FRNC 32 x 0,5 mm² CE

item no.	no. of cores x cross section n x mm²	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 mm²	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

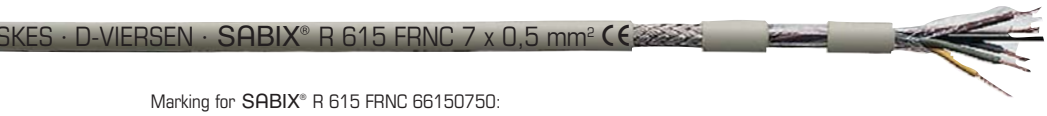
Other dimensions and colours are possible on request.

DIN EN 45545-2 edition 2013

ASTM E 162-09
ASTM E 662-09

RoHS

SABIX® R 615 FRNC SABIX® Rail Data with overall copper screen



Marking for SABIX® R 615 FRNC 66150750:
SAB BRÖCKSKES · D-VIERSEN · SABIX® R 615 FRNC 7 x 0,5 mm²

Construction:

Conductor:	bare copper strands with reference to IEC 60228, EN 6028, VDE 0295, class 5
Insulation:	special SABIX®
Colour code:	with reference to DIN 47100
Stranding:	in layers
Wrapping:	foil
Screen:	tinned copper braiding
Sheath material:	special SABIX®
Sheath colour:	grey (RAL 7032)

Outstanding features:

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

* Copper braiding should be connected circularly to optimize the EMC characteristics

Technical data:

Peak operating voltage:	< 0.25 mm² = max. 350 V ≥ 0.25 mm² = max. 500 V
Testing voltage:	< 0.25 mm² = 800 V ≥ 0.25 mm² = 1200 V
Min. bending radius *fixed laying:* *flexible application:*	 5 x d 10 x d
Temperature range *fixed laying:* *flexible application:*	 -40/+90 °C -30/+90 °C
Halogen-free:	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 DIN EN 60332-3-24, DIN EN 60332-3-25 and DIN EN 50305 section 9.1.2. Flame retardant and self-extinguishing acc. to DIN EN 60332-1-2. Burning tests acc. to ASTM E 162-09.
Toxicity:	acc. to DIN EN 50305
Smoke density:	acc. to DIN EN 61034 + ASTM E 662-09
Flexibility:	good
Absence of harmful substances:	acc. to RoHS directive of the European Union

Tested at reference types.

item no.	no. of cores x cross section n x mm²	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 mm²	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

Continued on next page

DIN EN 45545-2 edition 2013

ASTM E 162-09
ASTM E 662-09

SABIX® R 615 FRNC SABIX® Rail Data with overall copper screen

RoHS

Marking for SABIX® R 615 FRNC 66150750:
SAB BRÖCKSKES · D-VIERSEN · SABIX® R 615 FRNC 7 x 0,5 mm² CE

item no.	no. of cores x cross section n x mm²	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 mm²	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	46,5	73
66150575	5 x 0,75	7,1	55,7	81
66150775	7 x 0,75	7,7	74,0	101
66150875	8 x 0,75	9,2	83,8	132
66151275	12 x 0,75	10,5	133,9	179
66151475	14 x 0,75	11,0	148,5	198
66151675	16 x 0,75	11,5	169,2	224
66151875	18 x 0,75	12,4	184,0	257
66152175	21 x 0,75	13,6	211,0	297
66152475	24 x 0,75	14,4	239,1	324
66152775	27 x 0,75	14,7	260,9	352
66153075	30 x 0,75	15,8	313,4	417
66153275	32 x 0,75	16,3	328,3	440
66153675	36 x 0,75	16,9	357,8	479
66150280	2 x 1,00	5,8	35,2	53
66150380	3 x 1,00	6,3	46,4	65
66150480	4 x 1,00	6,8	57,9	78
66150580	5 x 1,00	7,4	69,6	95
66150680	6 x 1,00	8,0	81,3	111
66150780	7 x 1,00	8,0	90,9	117
66150285	2 x 1,50	6,6	46,5	71
66150385	3 x 1,50	6,8	62,7	90
66150485	4 x 1,50	7,4	79,2	98
66150585	5 x 1,50	8,6	95,8	130
66150685	6 x 1,50	9,3	112,7	152
66150785	7 x 1,50	9,3	127,1	162

Other dimensions and colours are possible on request.

SABIX® R 645 FRNC TP

SABIX® Rail Data, paired with overall copper screen

DIN EN 45545-2 edition 2013

ASTM E 162-09
ASTM E 662-09

RoHS

Marking for SABIX® R 645 FRNC TP 66450325:
SAB BRÖCKSKES · D-VIERSEN · SABIX® R 645 FRNC TP 3 x 2 x 0,25 mm²

Construction:

Conductor:	bare copper strands with reference to IEC 60228, EN 6028, VDE 0295, class 5
Insulation:	special SABIX®
Colour code:	with reference to DIN 47100
Stranding:	pairwise, pairs in layers
Wrapping:	foil
Screen:	tinned copper braiding
Sheath material:	special SABIX®
Sheath colour:	grey (RAL 7032)

Outstanding features:

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

* Copper braiding should be connected circularly to optimize the EMC characteristics

Technical data:

Peak operating voltage:	< 0.25 mm² = max. 350 V ≥ 0.25 mm² = max. 500 V
Testing voltage:	< 0.25 mm² = 800 V ≥ 0.25 mm² = 1200 V
Min. bending radius *fixed laying:* *flexible application:*	 5 x d 10 x d
Temperature range *fixed laying:* *flexible application:*	 -40/+90 °C -30/+90 °C
Halogen-free:	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 DIN EN 60332-3-24, DIN EN 60332-3-25 and DIN EN 50305 section 9.1.2. Flame retardant and self-extinguishing acc. to DIN EN 60332-1-2. Burning tests acc. to ASTM E 162-09.
Toxicity:	acc. to DIN EN 50305
Smoke density:	acc. to DIN EN 61034 + ASTM E 662-09
Flexibility:	good
Absence of harmful substances:	acc. to RoHS directive of the European Union

item no.	no. of pairs x cross section n x 2 x mm²	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	101,9	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 mm²	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

Other dimensions and colours are possible on request.

Ethernet cable CAT 5e + CAT 6

externally tested acc. to DIN 5510-2* edition May 2009

SABIX® R 660 FRNC CAT 5e SABIX® Rail CAT 5e
SABIX® R 691 FRNC CAT 6 C1 SABIX® Rail CAT 6

RoHS

Marking for SABIX® R 660 FRNC CAT 5e 66602202:
SAB BRÖCKSKES · D-VIERSEN · SABIX® R 660 FRNC CAT 5e 2x2x22AWG CE

Construction:	SABIX® R 660 FRNC CAT 5e *flexible*		SABIX® R 691 FRNC CAT 6 C1 *flexible*
Dimension:	2 x 2 x 24 AWG	2 x 2 x 22 AWG	4 x 2 x 26 AWG
Conductor:	tinned copper strands, fine wires		
Core insulation:	PE		
Colour code:	blue, yellow, white, orange		white cores with numbers 1 - 4 (+ blue, orange, green, brown)
Stranding:	in layers		twisted pairs wrapped with foil and alu foil
Wrapping:	foil		non-woven tape
Inner sheath:	special SABIX®		—
Screen:	alu foil and tinned copper braiding		
Outer sheath:	special SABIX®		
Sheath colour:	green (similar RAL 6018)		

Technical data:	SABIX® R 660 FRNC CAT 5e *flexible*		SABIX® R 691 FRNC CAT 6 C1 *flexible*
Item number:	6660-2402	6660-2202	6691-2604
Peak operating voltage VDE:	max. 350 V		
Testing voltage:	core/core 1500 V - core/screen 1200 V		
Temperature range VDE fixed laying: flexible application:	 - 40°C / + 70°C - 30°C / + 70°C		
Min. bending radius fixed laying: flexible application:	 5 x d 12 x d		
Characteristic impedance:	100Ω ± 10Ω, accomplishes the electrical and transmission requirements with high frequency with reference to EN 50288-2-2 (CAT 5 acc. to EN 50173-1)		100Ω ± 10Ω, accomplishes the electrical and transmission requirements with high frequency with reference to EN 50288-5-2 (CAT 6 acc. to EN 50173-1)
Halogen-free:	acc. to DIN VDE 0472 part 815 + IEC 60754-1		
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1 + DIN EN 60332-1-2, no flame propagation acc. to IEC 60332-3-25, EN 60332-3-25 and EN 50266-2-5 for cable diameter > 6 mm < 12 mm		flame retardant and self-extinguishing acc. to IEC 60332-1 + DIN EN 60332-1-2, no flame propagation acc. to IEC 60332-3-25, EN 60332-3-25 and EN 50266-2-5 for cable diameter > 6 mm < 12 mm, NF C 32-070 C1
Smoke density:	acc. to IEC 61034-1 and EN 61034-1, translucence > 60%		
Toxicity:	FED_{t30} < 1 acc. to DIN EN 5510-2 appendix C 3.3		
Flexibility:	good		
Absence of harmful substances:	acc. to RoHS directive of the European Union		

item no.	type	no. of cores	cross section AWG	core-ø mm	outer-ø mm	copper figure kg/km	cable weight ≈kg/km	ohmic resistance at 20°C acc. to VDE 0812 max. Ω/km
66602402	SABIX® R 660 FRNC CAT 5e	4	24	approx. 1,16	approx. 6,1	19,4	62	83,3
66602202	SABIX® R 660 FRNC CAT 5e	4	22	approx. 1,51	approx. 6,7	34,4	70	58,0
66912604	SABIX® R 691 FRNC CAT 6 C1	8	26	approx. 1,40	max. 9,0	40,6	85	145,0

Other dimensions and colours are possible on request.

Outstanding features:

- halogen-free
- no flame propagation
- flame retardant and self-extinguishing
- fulfils fire protection levels 1 - 4 acc. to DIN 5510-1*
- externally tested acc. to DIN 5510-2*
  SABIX® R 691 FRNC CAT 6 C1
- NF C 32-070 C1

* Externally tested at the reference types SABIX® R 660 FRNC CAT 5e 2 x 2 x 22 AWG and SABIX® R 691 FRNC CAT 6 C1.

DIN EN 45545-2 edition 2013

up to +125°C

RoHS

SABIX® A 280 FRNC X Wiring cable / Control cable

Marking for SABIX® A 280 FRNC X 1 x 1,0 mm²:
SAB BRÖCKSKES · D-VIERSEN · SABIX® A 280 FRNC X 1 x 1,0 mm² CE

Marking for SABIX® A 280 FRNC X 5 x 0,5 mm²:
SAB BRÖCKSKES · D-VIERSEN · SABIX® A 280 FRNC X 5 x 0,5 mm² CE

Construction:

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

Outstanding features:

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

Technical data:

Nominal voltage:	Uo/U 300/500 V
Testing voltage U:	2000 V
Min. bending radius:	5 x d
Temperature range *during protected, fixed laying:*	-40/+125 °C (single conductor) -50/+125 °C (multi-core cable)
Halogen-free:	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 DIN EN 60332-3-24, DIN EN 60332-3-25 and DIN EN 50305 section 9.1.2. Flame retardant and self-extinguishing acc. to DIN EN 60332-1-2.
Toxicity:	acc. to DIN EN 50305
Smoke density:	acc. to DIN EN 610341
Absence of harmful substances:	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	ohmic resistance at 20°C max. Ω/km	heating value approx. kWh/km
62800105	1 x 0,50	0,21	1,7	4,8	7	40,1	13,0
62800305	3 x 0,50	0,21	4,7	14,4	35	40,1	115
62800505	5 x 0,50	0,21	5,8	24,0	50	40,1	170
62800805	8 x 0,50	0,21	7,3	38,4	83	40,1	246
62801005	10 x 0,50	0,21	8,1	48,0	97	40,1	275
62801205	12 x 0,50	0,21	8,4	57,6	112	40,1	306
62800607	6 x 0,75	0,21	7,2	43,2	86	26,7	237
62800807	8 x 0,75	0,21	7,3	57,6	101	26,7	245
62801007	10 x 0,75	0,21	9,4	72,0	133	26,7	345
62800110	1 x 1,00	0,21	2,1	9,6	12	20,0	16,0
62800310	3 x 1,00	0,21	5,5	28,8	55	20,0	162
62800410	4 x 1,00	0,21	6,2	38,4	71	20,0	186
62800610	6 x 1,00	0,21	7,5	57,6	101	20,0	252
62800810	8 x 1,00	0,21	9,0	76,8	135	20,0	338
62801010	10 x 1,00	0,21	10,1	96,0	164	20,0	402
62800115	1 x 1,50	0,21	2,5	14,4	17	13,7	22,5
62800315	3 x 1,50	0,21	6,6	43,2	68	13,7	210
62800125	1 x 2,50	0,26	3,1	24,0	27	8,21	34,0

Other dimensions and colours are possible on request.

DIN EN 45545-2 edition 2013

up to +125°C

SABIX® A 285 FRNC X

Control cable with numbered cores and overall copper screen

RoHS

Marking for SABIX® A 285 FRNC X 5 x 0,5 mm²:
SAB BRÖCKSKES · D-VIERSEN · SABIX® A 285 FRNC X 5 x 0,5 mm² CE

Construction:

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

Outstanding features:

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

* Copper braiding should be connected circularly to optimize the EMC characteristics

Technical data:

Nominal voltage:	Uo/U 300/500 V
Testing voltage U:	2000 V
Min. bending radius:	10 x d
Temperature range *during protected, fixed laying:*	-50/+125 °C
Halogen-free:	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 DIN EN 60332-3-24, DIN EN 60332-3-25 and DIN EN 50305 section 9.1.2. Flame retardant and self-extinguishing acc. to DIN EN 60332-1-2.
Toxicity:	acc. to DIN EN 50305
Smoke density:	acc. to DIN EN 61034
Absence of harmful substances:	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	ohmic resistance at 20°C max. Ω/km	heating value approx. kWh/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.

up to 1,8/3,0 kV

B 107 Besilen® insulated strands

RoHS

Marking for B 107 01071000:
SAB BRÖCKSKES · D-VIERSEN · B 107 · Uo/U 1,8/3 kV

Construction:

Conductor:	bare copper strands, extra fine wires
Insulation:	Besilen® EI2 acc. to DIN EN 50363-1
Colour:	translucent

Outstanding features:

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

Technical data:

Nominal voltage	
4,0 - 6,0 mm²:	Uo/U 1,5/1,5 kV
10,0 - 150,0 mm²:	Uo/U 1,8/3,0 kV
Testing voltage	
4,0 - 6,0 mm²:	4000 V
10,0 - 150,0 mm²:	6000 V
Min. bending radius:	5 x d
Temperature range	
fixed laying:	-50/+180 °C
flexible application:	-25/+180 °C
short-time use:	+250 °C
Halogen-free:	acc. to DIN VDE 0472 part 815 and IEC 60754-1
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + EN 60332-1-2
Corrosiveness of conflagration gases:	IEC 60754-2 + EN 50267-2-2 + VDE 0482 part 267-2-2 – no development of corrosive conflagration gases
Weather resistance:	very good
Absence of harmful substances:	acc. to RoHS directive of the European Union

item no.	nominal cross section mm²	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ kg/km
01070400	4,00	0,07	5,3	38,4	54
01070600	6,00	0,07	5,7	57,6	73
01071000	10,00	0,07	9,0	96,0	114
01071600	16,00	0,07	9,3	153,6	194
01072500	25,00	0,10	12,0	240,0	331
01073500	35,00	0,10	13,8	336,0	422
01075000	50,00	0,10	15,7	480,0	576
01077000	70,00	0,10	17,7	672,0	771
01079500	95,00	0,10	18,8	912,0	1006
01071200	120,00	0,10	22,0	1152,0	1257
01071500	150,00	0,10	23,7	1440,0	1542

Other dimensions and colours are possible on request.

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

up to 1,8/3,0 kV

B 108 Besilen® insulated strands with copper braid

RoHS

Marking for B 108 01081000: SAB BRÖCKSKES · D-VIERSEN · B 108 · Uo/U 1,8/3 kV

Construction:

Conductor:	bare copper strands, extra fine wires
Screen:	bare copper braiding
Insulation:	Besilen® EI2 acc. to DIN EN 50363-1
Colour:	translucent

Outstanding features:

- **halogen-free**
- **heat resistant**
- **flexible at low temperatures**
- **flame retardant and self-extinguishing**
- **weather resistant**
- **dimensionally stable construction**

Technical data:

Nominal voltage	
4,0 - 6,0 mm²:	Uo/U 1,5/1,5 kV
10,0 - 150,0 mm²:	Uo/U 1,8/3,0 kV
Testing voltage	
4,0 - 6,0 mm²:	4000 V
10,0 - 150,0 mm²:	6000 V
Min. bending radius:	5 x d
Temperature range	
fixed laying:	-50/+180 °C
flexible application:	-25/+180 °C
short-time use:	+250 °C
Halogen-free:	acc. to DIN VDE 0472 part 815 and IEC 60754-1
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + EN 60332-1-2
Corrosiveness of conflagration gases:	IEC 60754-2 + EN 50267-2-2 + VDE 0482 part 267-2-2 – no development of corrosive conflagration gases
Weather resistance:	very good
Absence of harmful substances:	acc. to RoHS directive of the European Union

item no.	nominal cross section mm²	largest single wire ø mm	outer-ø ± 5% mm	copper figure kg/km	cable weight ≈ kg/km
01080400	4,00	0,07	5,7	53,7	67
01080600	6,00	0,07	6,1	73,3	87
01081000	10,00	0,07	9,4	116,3	164
01081600	16,00	0,07	9,7	174,2	214
01082500	25,00	0,10	12,6	285,9	351
01083500	35,00	0,10	14,4	388,3	468
01085000	50,00	0,10	16,3	542,1	629
01087000	70,00	0,10	18,5	771,8	852
01089500	95,00	0,10	19,6	1023,5	1096
01081200	120,00	0,10	22,8	1285,7	1363
01081500	150,00	0,10	24,5	1593,3	1663

Other dimensions and colours are possible on request.

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

acc. to NF C32-070 C1

SABIX® A 224 FRNC C1 Control cable with numbered cores

RoHS

Marking for SABIX® A 224 FRNC C1 62245005
SAB BRÖCKSKES · D-VIERSEN · SABIX® A 224 FRNC C1 50 x 0,5 mm² CE

Construction:

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

Outstanding features:

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

Technical data:

Nominal voltage:	Uo/U 450/750 V
Testing voltage U:	3000 V
Min. bending radius	
fixed laying:	4 x d
flexible application:	6 x d
Temperature range	
fixed laying:	-30/+90 °C
flexible application:	-20/+90 °C
Halogen-free:	acc. to DIN VDE 0472 part 815 and IEC 60754-1
Fire performance:	no flame propagation acc. to IEC 60332 + EN 50266 cat. C resp. D. Flame retardant and self-extinguishing acc. to IEC 60332-1-2 + EN 60332-1-2 + NF C32-070 C1.
Corrosiveness of conflagration gases:	in compliance with IEC 60754-2 and EN 50267-2-2 + VDE 0482 part 267-2-2 - no development of corrosive conflagration gases
Smoke density:	acc. to IEC 61034 + EN 61034
Absence of harmful substances:	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
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
62240805	8 x 0,50	0,21	9,8	38,4	118
62240905	9 x 0,50	0,21	10,6	43,2	135
62241005	10 x 0,50	0,21	10,8	48,0	140
62241205	12 x 0,50	0,21	11,1	57,6	159
62241405	14 x 0,50	0,21	11,6	67,2	179
62241605	16 x 0,50	0,21	12,5	76,8	207
62241805	18 x 0,50	0,21	13,1	86,4	228
62242105	21 x 0,50	0,21	14,6	100,8	271
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
62240807	8 x 0,75	0,21	11,0	57,6	154
62240907	9 x 0,75	0,21	12,0	64,8	178
62241007	10 x 0,75	0,21	12,2	72,0	184
62241207	12 x 0,75	0,21	12,6	86,4	209
62241407	14 x 0,75	0,21	13,2	100,8	236

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
62241607	16 x 0,75	0,21	14,1	115,2	272
62241807	18 x 0,75	0,21	15,0	129,6	308
62242107	21 x 0,75	0,21	16,6	151,2	363
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
62246107	61 x 0,75	0,21	26,0	439,2	957
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
62240810	8 x 1,00	0,21	11,4	76,8	174
62240910	9 x 1,00	0,21	12,4	86,4	200
62241010	10 x 1,00	0,21	12,6	96,0	209
62241210	12 x 1,00	0,21	13,0	115,2	239
62241410	14 x 1,00	0,21	13,8	134,4	277
62241610	16 x 1,00	0,21	14,6	153,6	311
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
62245010	50 x 1,00	0,21	25,4	480,0	953
62246110	61 x 1,00	0,21	27,1	585,6	1116

Continued on next page

acc. to NF C32-070 C1

SABIX® A 224 FRNC C1 Control cable with numbered cores

RoHS

Marking for SABIX® A 224 FRNC C1 62245005
SAB BRÖCKSKES · D-VIERSEN · SABIX® A 224 FRNC C1 50 x 0,5 mm²

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
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
62240815	8 x 1,50	0,26	12,7	115,2	226
62240915	9 x 1,50	0,26	13,7	129,6	258
62241015	10 x 1,50	0,26	14,0	144,0	270
62241215	12 x 1,50	0,26	14,4	172,8	309
62241415	14 x 1,50	0,26	15,3	201,6	358
62241615	16 x 1,50	0,26	16,4	230,4	412
62241815	18 x 1,50	0,26	17,2	259,2	456
62242115	21 x 1,50	0,26	19,3	302,4	547
62242515	25 x 1,50	0,26	21,0	360,0	643
62243015	30 x 1,50	0,26	21,7	432,0	743
62243415	34 x 1,50	0,26	23,8	489,6	859
62244015	40 x 1,50	0,26	25,7	576,0	1004
62244215	42 x 1,50	0,26	25,7	604,8	1041
62245015	50 x 1,50	0,26	28,3	720,0	1239
62246115	61 x 1,50	0,26	30,2	878,4	1480
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
62240825	8 x 2,50	0,26	15,2	192,0	340
62240925	9 x 2,50	0,26	16,5	216,0	388
62241025	10 x 2,50	0,26	16,8	240,0	407

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
62241225	12 x 2,50	0,26	17,3	288,0	469
62241425	14 x 2,50	0,26	18,4	336,0	543
62241625	16 x 2,50	0,26	19,6	384,0	622
62241825	18 x 2,50	0,26	20,8	432,0	700
62242125	21 x 2,50	0,26	23,0	504,0	824
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
62240763	7 x 25,0	0,41	30,2	1680,0	2175
62240464	4 x 35,0	0,41	27,8	1344,0	1750
62240564	5 x 35,0	0,41	31,2	1680,0	2153
62240764	7 x 35,0	0,41	34,5	2352,0	2982
62240465	4 x 50,0	0,41	34,6	1920,0	2465

Other dimensions and colours are possible on request.

Screened version on request!

SABIX® CC 625 FRNC M Steuerleitung mit nummerierten Adern

Aufdruck-Beispiel für 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

Aufbau:

Leiter:	blanke Cu-Litze nach IEC 60228, EN 60228, VDE 0295, Klasse 5
Isolierhülle:	SABIX®
Aderkenn-zeichnung:	schwarze Adern mit fortlaufendem Ziffernaufdruck nach EN 50334; ab 3 Adern ein grüngelber Schutzleiter
Verseilung:	in Lagen
Mantelmaterial:	SABIX®
Mantelfarbe:	grau (RAL 7000)

Produktvorteile:

- **halogenfrei**
- **UL/CSA approbiert**
- **keine Brandweiterleitung**
- **flammhemmend und selbstverlöschend**
- **flexibel**

Technische Daten:

Nennspannung:	**UL/CSA:** 600 V **DIN VDE:** Uo/U 300/500 V
Prüfspannung:	3000 V nach DIN VDE 0281 Teil 2 + HD 21.2
Mindestbiegeradius *fest verlegt:* *frei beweglich:*	 4 x d 6 x d
Temperaturbereich *nicht bewegt:* *bewegt:*	**UL:** bis zu +75 °C **CSA:** bis zu +80 °C **DIN VDE:** -40/+90 °C -30/+90 °C
Halogenfreiheit:	nach DIN VDE 0472 Teil 815 + IEC 60754-1
Brennverhalten:	Keine Brandweiterleitung nach IEC 60332 + EN 50266 Cat. C bzw. D. Flammhemmend und selbstverlöschend nach IEC 60332-1-2 + EN 60332-1-2, CSA FT1 FT2.
Korrosivität der Brandgase:	IEC 60754-2 + EN 50267-2-2 + VDE 0482 Teil 267-2-2 werden erfüllt - keine Entwicklung von korrosiven Brandgasen
Rauchdichte:	nach IEC 61034 + EN 61034
Flexibilität:	gut
Schadstofffrei:	gemäß RoHS-Richtlinie der Europäischen Union

Art.-Nr.	Aderzahl	Außen-ø ± 5% mm	Cu-Zahl kg/km	Leitungs-gewicht ≈ kg/km
► 20 AWG (15/32) • 0,50 mm²				
62520205	2	5,2	10,3	40
62520305	3	5,5	15,4	47
62520405	4	5,9	20,5	56
62520505	5	6,4	25,6	65
62520705	7	7,0	35,9	83
62520805	8	8,2	41,0	104
62520905	9	8,9	46,1	118
62521005	10	9,1	51,3	120
62521205	12	9,3	61,5	136
62521405	14	9,8	71,8	154
62521605	16	10,5	82,0	177
62521805	18	11,1	92,3	196
62522505	25	13,5	128,2	270
62523005	30	13,9	153,8	310
62523405	34	15,2	174,3	355
62524005	40	16,5	205,1	421
62524105	41	16,5	210,2	428
62526105	61	19,3	312,8	608
► 19 AWG (23/32) • 0,75 mm²				
62520207	2	5,7	14,4	48
62520307	3	6,0	21,6	57
62520407	4	6,5	28,8	69
62520507	5	7,1	36,0	81
62520707	7	7,9	50,4	106
62520807	8	9,3	57,6	132
62520907	9	9,9	64,8	145
62521007	10	10,1	72,0	149
62521207	12	10,6	86,4	175
62521407	14	11,1	100,8	197
62521607	16	11,9	115,2	226
62521807	18	12,5	129,6	250
62522507	25	15,2	180,0	344
62523007	30	15,7	216,0	397
62523407	34	17,1	244,8	453
62524007	40	18,6	288,0	535
62524107	41	18,6	295,2	545
62526107	61	22,0	439,2	786

Art.-Nr.	Aderzahl	Außen-ø ± 5% mm	Cu-Zahl kg/km	Leitungs-gewicht ≈ kg/km
► 18 AWG (30/32) • 1,00 mm²				
62520210	2	5,9	19,2	54
62520310	3	6,3	28,8	66
62520410	4	6,8	38,4	80
62520510	5	7,5	48,0	97
62520710	7	8,2	67,2	124
62520810	8	9,6	76,8	152
62520910	9	10,5	86,4	173
62521010	10	10,7	96,0	179
62521210	12	11,0	115,2	204
62521410	14	11,5	134,4	231
62521810	18	13,0	172,8	294
62522510	25	15,8	240,0	404
62523010	30	16,6	288,0	477
62523410	34	18,0	326,4	543
62524010	40	19,5	384,0	639
62524110	41	19,5	393,6	675
62526110	61	22,9	585,6	931
► 16 AWG (27-29/30) • 1,50 mm²				
62520215	2	6,5	28,8	69
62520315	3	6,9	43,2	85
62520415	4	7,6	57,6	105
62520515	5	8,3	72,0	129
62520715	7	9,3	100,8	166
62520815	8	10,9	115,2	202
62520915	9	11,8	129,6	228
62521015	10	12,1	144,0	240
62521215	12	12,4	172,8	274
62521415	14	13,0	201,6	311
62521815	18	14,9	259,2	404
62522515	25	18,1	360,0	558
62523015	30	18,7	432,0	647
62523415	34	20,5	489,6	747
62524015	40	22,2	576,0	874
62524115	41	22,2	590,4	883
62526115	61	26,0	878,4	1281

Art.-Nr.	Aderzahl	Außen-ø ± 5% mm	Cu-Zahl kg/km	Leitungs-gewicht ≈ kg/km
► 14 AWG (46/30) • 2,50 mm²				
62520225	2	7,8	48,0	104
62520325	3	8,3	72,0	128
62520425	4	9,2	96,0	161
62520525	5	10,1	120,0	195
62520725	7	11,2	168,0	257
62520825	8	13,4	192,0	316
62520925	9	14,3	216,0	348
62521025	10	14,8	240,0	375
62521225	12	15,3	288,0	431
62521825	18	18,2	432,0	632
62522525	25	22,3	600,0	871
► 12 AWG (52/28) • 4,00 mm²				
62520340	3	9,7	115,2	188
62520440	4	10,8	153,6	238
62520540	5	12,1	192,0	295
62520740	7	13,4	268,8	388
► 10 AWG (78/28) • 6,00 mm²				
62520360	3	11,4	172,8	271
62520460	4	12,7	230,4	343
62520560	5	14,2	288,0	425
► 8 AWG (77/26) • 10,00 mm²				
62520461	4	17,2	384,0	608
62520561	5	19,3	480,0	756
► 6 AWG (119/26) • 16,00 mm²				
62520462	4	21,1	614,4	909
► 4 AWG (196/26) • 25,00 mm²				
62520463	4	26,5	960,0	1475
► 2 AWG (280/26) • 35,00 mm²				
62520464	4	30,2	1344,0	2004

Weitere Abmessungen und Farben auf Anfrage

SABIX® CC 625 S FRNC M

Steuerleitung mit nummerierten Adern und Cu-Gesamtabschirmung

RoHS

Aufdruck-Beispiel für SABIX® CC 625 S FRNC M 62341215:
SAB BRÖCKSKES · D-VIERSEN · 62341215 12 x 1,5 mm² SABIX® CC 625 S FRNC M 16 AWG/12c 62341612
AWM Style 21089 75°C 600V CSA AWM I/II A/B 80°C 600V FT1 CE

Aufbau:

Leiter:	blanke Cu-Litze nach IEC 60228, EN 60228, VDE 0295, Klasse 5
Isolierhülle:	SABIX®
Aderkenn-zeichnung:	schwarze Adern mit fortlaufendem Ziffernaufdruck nach EN 50334; ab 3 Adern ein grüngelber Schutzleiter
Verseilung:	in Lagen
Bewicklung:	PETP-Folie
Abschirmung:	Geflecht aus verzinnten Cu-Runddrähten
Mantelmaterial:	SABIX®
Mantelfarbe:	grau (RAL 7000)

Produktvorteile:

- **halogenfrei**
- **UL/CSA approbiert**
- **keine Brandweiterleitung**
- **gute EMV-Eigenschaft***
- **flammhemmend und selbstverlöschend**
- **flexibel**

* Zur Optimierung der EMV-Eigenschaft sollte das Cu-Geflecht kreisrund angeschlossen werden

Technische Daten:

Nennspannung:	**UL/CSA:** 600 V **DIN VDE:** Uo/U 300/500 V
Prüfspannung:	3000 V nach DIN VDE 0281 Teil 2 + HD 21.2 Ader/Schirm 1000 V
Mindestbiegeradius *fest verlegt:* *frei beweglich:*	 5 x d 10 x d
Temperaturbereich *nicht bewegt:* *bewegt:*	**UL:** bis zu +75 °C **CSA:** bis zu +80 °C **DIN VDE:** -40/+90 °C -30/+90 °C
Halogenfreiheit:	nach DIN VDE 0472 Teil 815 + IEC 60754-1
Brennverhalten:	Keine Brandweiterleitung nach IEC 60332 + EN 50266 Cat. C bzw. D. Flammhemmend und selbstverlöschend nach IEC 60332-1-2 + EN 60332-1-2, CSA FT1.
Korrosivität der Brandgase:	IEC 60754-2 + EN 50267-2-2 + VDE 0482 Teil 267-2-2 werden erfüllt - keine Entwicklung von korrosiven Brandgasen
Rauchdichte:	nach IEC 61034 + EN 61034
Flexibilität:	gut
Schadstofffrei:	gemäß RoHS-Richtlinie der Europäischen Union

Art.-Nr.	Aderzahl	Außen-ø ± 5% mm	Cu-Zahl kg/km	Leitungs-gewicht ≈ kg/km
► 20 AWG (17/32) • 0,50 mm²				
62340205	2	5,7	20,8	45
62340305	3	6,0	26,0	54
62340405	4	6,4	32,2	64
62340505	5	7,0	38,7	76
62340705	7	7,6	50,3	96
62340805	8	8,9	58,4	121
62340905	9	9,4	63,6	131
62341005	10	9,6	70,6	136
62341205	12	9,8	80,9	152
62341405	14	10,7	103,4	188
62341605	16	11,2	113,8	206
62341805	18	12,0	128,3	234
62342505	25	13,8	168,2	306
62343005	30	15,0	198,0	361
62343405	34	16,3	239,4	429
62344005	40	17,6	278,3	503
62344105	41	17,6	283,4	514
62346105	61	20,2	395,6	693
► 19 AWG (23/32) • 0,75 mm²				
62340207	2	6,2	25,1	52
62340307	3	6,5	33,3	64
62340407	4	7,0	41,8	77
62340507	5	7,8	50,4	94
62340707	7	8,4	67,8	118
62340807	8	9,8	76,9	145
62340907	9	10,8	100,4	181
62341007	10	11,0	103,7	182
62341207	12	11,3	122,2	207
62341407	14	12,0	136,8	235
62341607	16	12,6	151,5	259
62341807	18	13,2	169,3	286
62342507	25	16,3	245,1	416
62343007	30	16,8	281,4	468
62343407	34	18,2	318,5	534
62344007	40	19,7	370,3	625
62344107	41	19,7	377,5	635
62346107	61	22,9	532,4	879

Art.-Nr.	Aderzahl	Außen-ø ± 5% mm	Cu-Zahl kg/km	Leitungs-gewicht ≈ kg/km
► 18 AWG (30/32) • 1,00 mm²				
62340210	2	6,4	30,9	58
62340310	3	6,8	41,8	73
62340410	4	7,3	51,5	87
62340510	5	8,0	63,7	107
62340710	7	8,9	84,6	139
62340810	8	10,1	96,2	165
62340910	9	11,2	118,2	200
62341010	10	11,4	131,8	210
62341210	12	11,9	151,2	241
62341410	14	12,4	170,6	268
62341810	18	13,9	216,7	340
62342510	25	16,9	312,8	483
62343010	30	17,7	361,3	556
62343410	34	19,1	400,7	629
62344010	40	20,6	467,1	730
62344110	41	20,6	476,7	742
62346110	61	24,0	687,8	1042
► 16 AWG (27-29/30) • 1,50 mm²				
62340215	2	7,0	41,8	71
62340315	3	7,5	57,5	92
62340415	4	8,1	73,4	113
62340515	5	9,0	89,4	139
62340715	7	9,8	120,1	178
62340815	8	11,8	151,1	236
62340915	9	12,5	165,8	259
62341015	10	12,8	183,6	272
62341215	12	13,3	212,5	313
62341415	14	13,9	245,5	354
62341815	18	15,8	324,1	464
62342515	25	19,2	441,8	644
62343015	30	19,8	514,5	734
62343415	34	21,4	581,2	835
62344015	40	23,1	669,4	963
62344115	41	23,1	683,8	972
62346115	61	27,1	992,6	1403

Art.-Nr.	Aderzahl	Außen-ø ± 5% mm	Cu-Zahl kg/km	Leitungs-gewicht ≈ kg/km
► 14 AWG (46/36) • 2,50 mm²				
62340225	2	8,3	63,8	101
62340325	3	9,0	89,4	136
62340425	4	9,7	115,3	168
62340525	5	11,0	151,7	220
62340725	7	12,1	204,1	286
62340825	8	14,1	236,0	346
62340925	9	15,2	260,4	386
62341025	10	15,7	304,8	428
62341225	12	16,4	353,1	493
62341825	18	19,3	513,9	712
62342525	25	23,4	693,5	965
► 12 AWG (52/28) • 4,00 mm²				
62340340	3	10,6	146,8	205
62340440	4	11,5	189,5	256
62340540	5	12,8	231,6	316
62340740	7	14,1	312,8	412
► 10 AWG (78/28) • 6,00 mm²				
62340360	3	12,3	208,9	284
62340460	4	13,6	270,2	362
62340560	5	15,1	332,3	449
► 8 AWG (77/26) • 10,00 mm²				
62340461	4	18,3	457,8	636
62340561	5	20,2	562,9	783
► 6 AWG (119/26) • 16,00 mm²				
62340462	4	22,2	706,7	927
► 4 AWG (196/26) • 25,00 mm²				
62340463	4	27,4	1074,8	1450
► 2 AWG (280/26) • 35,00 mm²				
62340464	4	31,3	1471,8	1959

Weitere Abmessungen und Farben auf Anfrage

SABIX® CC 625 SH FRNC M

Steuerleitung mit nummerierten Adern, Innenmantel und Cu-Gesamtabschirmung

Aufdruck-Beispiel für SABIX® CC 625 SH FRNC M 62571215:
SAB BRÖCKSKES · D-VIERSEN · 62571215 12 x 1,5 mm² SABIX® CC 625 SH FRNC M 16AWG/12c 62571612
AWM Style 21089 75°C 600V CSA AWM I/II A/B 80°C 600V FT1

Aufbau:

Leiter:	blanke Cu-Litze nach IEC 60228, EN 60228, VDE 0295, Klasse 5
Isolierhülle:	SABIX®
Aderkenn-zeichnung:	schwarze Adern mit fortlaufendem Ziffernaufdruck nach EN 50334; ab 3 Adern ein grüngelber Schutzleiter
Verseilung:	in Lagen
Innenmantel:	SABIX®
Abschirmung:	Geflecht aus verzinnten Cu-Runddrähten
Mantelmaterial:	SABIX®
Mantelfarbe:	grau (RAL 7000)

Produktvorteile:

- **halogenfrei**
- **UL/CSA approbiert**
- **keine Brandweiterleitung**
- **gute EMV-Eigenschaft***
- **flammhemmend und selbstverlöschend**
- **flexibel**

* Elektromanyetik uyumluluk özelliğinin optimizasyonu kreisrund angeschlossen werden

Technische Daten:

Nennspannung:	**UL/CSA:** 600 V **DIN VDE:** Uo/U 300/500 V
Prüfspannung:	3000 V nach DIN VDE 0281 Teil 2 + HD 21.2 Ader/Schirm 1000 V
Mindestbiegeradius *fest verlegt:* *frei beweglich:*	 5 x d 10 x d
Temperaturbereich *nicht bewegt:* *bewegt:*	**UL:** bis zu +75 °C **CSA:** bis zu +80 °C **DIN VDE:** -40/+90 °C -30/+90 °C
Halogenfreiheit:	nach DIN VDE 0472 Teil 815 + IEC 60754-1
Brennverhalten:	Keine Brandweiterleitung nach IEC 60332 + EN 50266 Cat. C bzw. D. Flammhemmend und selbstverlöschend nach IEC 60332-1-2 + EN 60332-1-2, CSA FT1.
Korrosivität der Brandgase:	IEC 60754-2 + EN 50267-2-2 + VDE 0482 Teil 267-2-2 werden erfüllt - keine Entwicklung von korrosiven Brandgasen
Rauchdichte:	nach IEC 61034 + EN 61034
Flexibilität:	gut
Schadstofffrei:	gemäß RoHS-Richtlinie der Europäischen Union

Art.-Nr.	Aderzahl	Außen-ø ± 5% mm	Cu-Zahl kg/km	Leitungs-gewicht ≈ kg/km
► 20 AWG (17/32) • 0,50 mm²				
62570205	2	7,0	23,3	74
62570305	3	7,3	28,5	82
62570405	4	7,8	34,9	95
62570505	5	8,4	41,5	110
62570705	7	9,1	53,3	134
62570805	8	10,4	60,5	164
62570905	9	11,1	77,9	189
62571005	10	11,3	87,1	196
62571205	12	11,5	97,4	213
62571405	14	12,4	108,0	244
62571605	16	12,9	121,6	268
62571805	18	13,7	132,1	296
62572505	25	16,3	193,3	409
62573005	30	16,7	219,2	451
62573405	34	18,0	247,9	511
62574005	40	19,5	287,2	602
62574105	41	19,5	292,4	608
62576105	61	22,3	405,2	813
► 19 AWG (23/32) • 0,75 mm²				
62570207	2	7,6	28,8	87
62570307	3	7,9	36,1	97
62570407	4	8,4	46,2	113
62570507	5	9,3	53,5	134
62570707	7	9,9	69,8	160
62570807	8	11,5	93,5	209
62570907	9	12,3	100,9	230
62571007	10	12,7	111,5	244
62571207	12	13,0	126,0	267
62571407	14	13,7	140,6	297
62571607	16	14,3	159,3	328
62571807	18	15,1	173,9	361
62572507	25	18,0	253,5	499
62573007	30	18,7	290,1	563
62573407	34	20,1	327,6	636
62574007	40	21,6	379,8	735
62574107	41	21,6	387,0	745
62576107	61	25,2	542,8	1028

Art.-Nr.	Aderzahl	Außen-ø ± 5% mm	Cu-Zahl kg/km	Leitungs-gewicht ≈ kg/km
► 18 AWG (30/32) • 1,00 mm²				
62570210	2	7,8	33,6	94
62570310	3	8,2	44,6	108
62570410	4	8,9	55,8	129
62570510	5	9,5	67,3	149
62570710	7	10,4	86,6	183
62570810	8	12,2	112,9	241
62570910	9	12,9	126,0	264
62571010	10	13,3	135,7	277
62571210	12	13,6	155,0	304
62571410	14	14,1	178,4	337
62571810	18	15,8	237,7	430
62572510	25	18,8	314,2	572
62573010	30	19,6	370,2	657
62573410	34	21,0	409,9	732
62574010	40	22,5	476,7	845
62574110	41	22,5	486,3	857
62576110	61	26,3	690,5	1191
► 16 AWG (27-29/30) • 1,50 mm²				
62570215	2	8,4	44,6	112
62570315	3	9,0	60,6	135
62570415	4	9,6	76,9	158
62570515	5	10,7	103,6	199
62570715	7	11,5	136,7	243
62570815	8	13,5	154,9	301
62570915	9	14,2	173,6	330
62571015	10	14,7	188,1	349
62571215	12	15,0	217,1	385
62571415	14	15,8	266,5	446
62571815	18	17,7	332,5	557
62572515	25	21,1	443,6	748
62573015	30	21,7	523,9	848
62573415	34	23,5	583,3	959
62574015	40	25,4	679,9	1117
62574115	41	25,4	694,3	1126
62576115	61	29,4	996,7	1574

Art.-Nr.	Aderzahl	Außen-ø ± 5% mm	Cu-Zahl kg/km	Leitungs-gewicht ≈ kg/km
► 14 AWG (46/30) • 2,50 mm²				
62570225	2	9,8	67,3	157
62570325	3	10,7	103,6	202
62570425	4	11,4	131,8	238
62570525	5	12,7	159,5	290
62570725	7	13,8	207,9	357
62570825	8	16,2	257,0	454
62570925	9	17,1	288,9	498
62571025	10	17,6	313,2	528
62571225	12	18,3	361,8	596
62571825	18	21,2	515,7	822
62572525	25	25,5	704,0	1115
► 12 AWG (52/28) • 4,00 mm²				
62570340	3	12,3	151,3	228
62570440	4	13,4	193,3	337
62570540	5	14,7	236,1	405
62570740	7	16,2	333,8	526
► 10 AWG (78/28) • 6,00 mm²				
62570360	3	14,0	216,7	377
62570460	4	15,5	295,1	477
62570560	5	17,0	360,9	575
► 8 AWG (77/26) • 10,00 mm²				
62570461	4	20,2	466,9	791
62570561	5	22,3	572,4	960
► 6 AWG (119/26) • 16,00 mm²				
62570462	4	24,3	717,0	1144
► 4 AWG (196/26) • 25,00 mm²				
62570463	4	29,7	1079,0	1758
► 2 AWG (280/26) • 35,00 mm²				
62570464	4	33,8	1480,9	2358

Weitere Abmessungen und Farben auf Anfrage

-0,6/1 kV

SABIX® A 810 FRNC
Motor connection cable with numbered cores

SABIX® A 812 C FRNC
Motor connection cable with numbered cores, inner sheath and overall copper screen

RoHS

Marking for SABIX A 812 C FRNC 68120715:
SAB BRÖCKSKES · D-VIERSEN · SABIX A 812 C FRNC rf 0,6/1 kV 7 x 1,5 mm² CE

Construction:

Conductor:	bare copper strands acc. to IEC 60228, EN 60228, VDE 0295, class 5
Insulation:	SABIX®
Colour code:	black cores with consecutive numbers acc. to EN 50334; green-yellow earth wire from 3 cores
Stranding:	in layers
Inner sheath:	**SABIX® A 812 C FRNC:** SABIX®
Screen:	**SABIX® A 812 C FRNC:** tinned copper braiding
Sheath material:	SABIX®
Sheath colour:	grey (RAL 7000)

Outstanding features:

- **halogen-free**
- **no flame propagation**
- **flame retardant and self-extinguishing**
- **SABIX® A 812 C FRNC: good EMC characteristics***

* Copper braiding should be connected circularly to optimize the EMC characteristics

Technical data:

Nominal voltage:	Uo/U 0.6/1 kV
Testing voltage U:	4000 V acc. to DIN VDE 0281 part 2 + HD 21.2 **SABIX® A 812 C FRNC:** core/screen 2000 V
Min. bending radius	**SABIX® A 810 FRNC:** **SABIX® A 812 C FRNC:**
fixed laying:	4 x d 5 x d
flexible application:	6 x d 10 x d
Temperature range	
fixed laying:	-40/+85 °C
flexible application:	-30/+85 °C
Halogen-free:	acc. to DIN VDE 0472 part 815 and IEC 60754-1
Fire performance:	no flame propagation acc. to IEC 60332 + EN 50266 cat. C resp. D. flame retardant and self-extinguishing acc. to IEC 60332-1-2 + EN 60332-1-2.
Corrosiveness of conflagration gases:	in compliance with IEC 60754-2 and EN 50267-2-2 + VDE 0482 part 267-2-2 - no development of corrosive conflagration gases
Smoke density:	acc. to IEC 61034 + EN 61034
Flexibility:	good
Weather resistance:	good
Absence of harmful substances:	acc. to RoHS directive of the European Union

SABIX® A 810 FRNC

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
68100315	3 x 1,50	0,26	9,4	43,2	127
68100415	4 x 1,50	0,26	10,1	57,6	149
68100515	5 x 1,50	0,26	11,0	72,0	176
68100715	7 x 1,50	0,26	11,9	100,8	215
68100325	3 x 2,50	0,26	10,6	72,0	173
68100425	4 x 2,50	0,26	11,5	96,0	206
68100525	5 x 2,50	0,26	12,6	120,0	245
68100725	7 x 2,50	0,26	13,8	168,0	309
68100340	3 x 4,00	0,31	11,9	115,2	234
68100440	4 x 4,00	0,31	13,2	153,6	286
68100540	5 x 4,00	0,31	14,3	192,0	337
68100740	7 x 4,00	0,31	15,7	268,8	435
68100360	3 x 6,00	0,31	13,3	172,8	308
68100460	4 x 6,00	0,31	14,3	230,4	373

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
68100560	5 x 6,00	0,31	15,8	288,0	448
68100760	7 x 6,00	0,31	17,2	403,2	579
68100370	3 x 10,0	0,41	18,3	288,0	583
68100470	4 x 10,0	0,41	20,0	384,0	709
68100570	5 x 10,0	0,41	21,9	480,0	846
68100770	7 x 10,0	0,41	23,9	672,0	1082
68100380	3 x 16,0	0,41	21,5	460,8	823
68100480	4 x 16,0	0,41	23,5	614,4	1007
68100580	5 x 16,0	0,41	25,9	768,0	1232
68100780	7 x 16,0	0,41	28,3	1075,2	1585
68100390	3 x 25,0	0,41	25,9	720,0	1265
68100490	4 x 25,0	0,41	28,4	960,0	1557
68100590	5 x 25,0	0,41	31,4	1200,0	1878
68100790	7 x 25,0	0,41	34,4	1680,0	2445

Other dimensions and colours are possible on request.

SABIX® A 812 C FRNC

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
68120315	3 x 1,50	0,26	11,3	90,9	202
68120415	4 x 1,50	0,26	12,0	111,7	226
68120715	7 x 1,50	0,26	13,8	160,8	312
68120325	3 x 2,50	0,26	12,6	126,5	258
68120425	4 x 2,50	0,26	13,5	155,8	298
68120525	5 x 2,50	0,26	15,0	216,9	373
68120725	7 x 2,50	0,26	16,2	266,9	437
68120440	4 x 4,00	0,31	16,3	251,6	454
68120740	7 x 4,00	0,31	18,0	379,9	589
68120360	3 x 6,00	0,31	15,1	270,0	426
68120460	4 x 6,00	0,31	16,7	328,8	516
68120760	7 x 6,00	0,31	19,9	528,3	777

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
68120370	3 x 10,0	0,41	19,4	412,3	614
68120470	4 x 10,0	0,41	21,0	522,4	746
68120570	5 x 10,0	0,41	22,8	645,5	916
68120770	7 x 10,0	0,41	25,1	842,0	1154
68120380	3 x 16,0	0,41	22,4	601,9	827
68120480	4 x 16,0	0,41	24,7	783,4	1055
68120580	5 x 16,0	0,41	27,0	942,8	1291
68120780	7 x 16,0	0,41	29,7	1274,0	1661
68120390	3 x 25,0	0,41	26,7	894,0	1188
68120490	4 x 25,0	0,41	29,4	1157,7	1510
68120590	5 x 25,0	0,41	32,3	1413,6	1862

Other dimensions and colours are possible on request.

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:

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

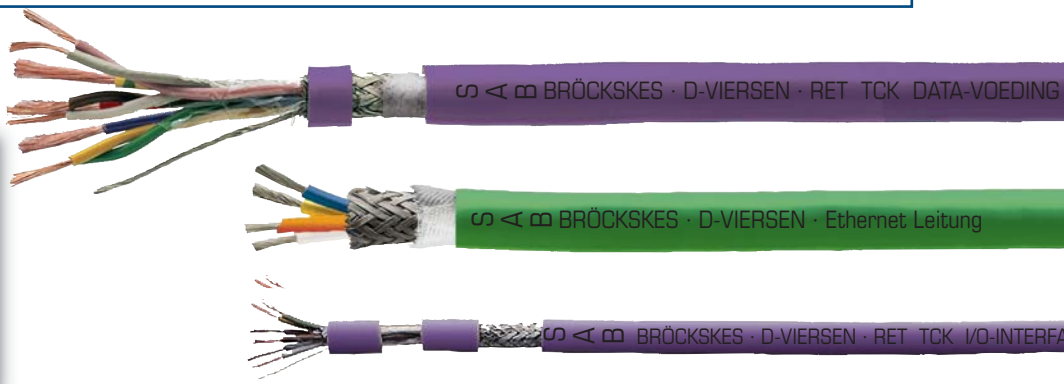
Of course, we also fulfil other parameters than the above-mentioned. Your requests are always most important and our highly motivated team will meet them applying our comprehensive know-how. By this means you will be able to improve the efficiency of your machines.

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

Cables for E-Ticketing Systems

SABIX® IBS 610 FRNC (B)
SABIX® IBS 610 FRNC
Ethernet Cable

RoHS



Construction:	SABIX® IBS 610 FRNC (B) item no. 6610-9002	SABIX® IBS 610 FRNC item no. 6610-9003	Ethernet Cable item no. 0660-9002
Dimension:	3 x 2 x 0,25 + 2 x 0,5 mm²	2 x 0,25 + 1 x 0,25 mm²	2 x 2 x 0,34 mm²
Conductor:	bare copper strands		
Isolation:	0,25 mm²: PE, 2YI1 acc. to DIN VDE 0207 part 2 0,50 mm²: SABIX®	0,25 mm²: PE, 2YI1 acc. to DIN VDE 0207 part 2 0,25 mm²: SABIX®	thermoplastic material based on Polyethylene
Colour code:	with reference to DIN VDE 47100	with reference to DIN VDE 47100 and pink	blue, yellow, white, orange
Stranding:	pairwise, pairs in layers		specially adjusted layering
Wrapping:	PETP foil		
Inner sheath:	---		SABIX®
Screen:	tinned copper braiding		
Wrapping:	non-woven tape		
Outer sheath:	SABIX®		
Sheath colour:	purple (RAL 4001)		green (RAL 6018)

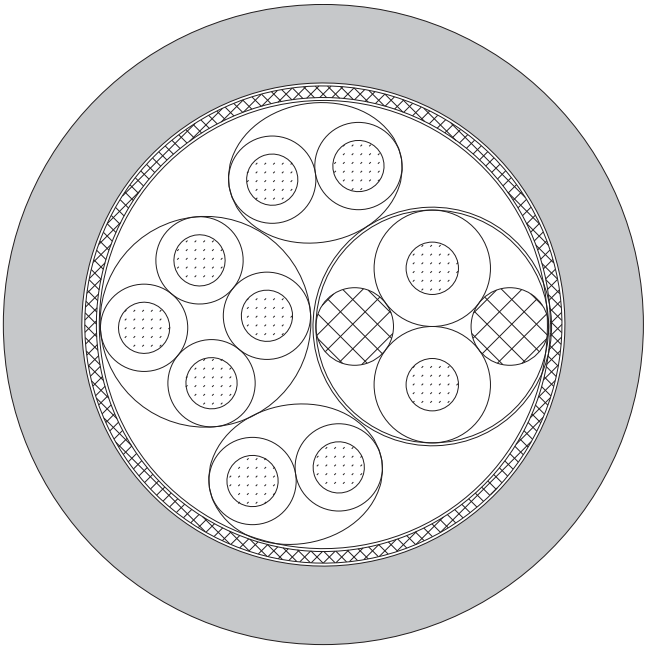
Technical data:	SABIX® IBS 610 FRNC (B) item no. 6610-9002	SABIX® IBS 610 FRNC item no. 6610-9003	Ethernet Cable item no. 0660-9002
Peak operating voltage:	max. 350 V		
Testing voltage:	core/core 1500 V · core/screen 1200 V		
Temperature range fixed laying: flexible application:	- 40°C / + 70°C - 30°C / + 70°C		- 30°C / + 70°C - 20°C / + 70°C
Min. bending radius fixed laying: flexible application:	7,5 x d		5 x d 10 x d
Characteristic impedance:	0,064 MHz: 120 Ω ± 20% acc. to VDE 0472 part 516 1 MHz: 100 Ω ± 15% acc to. VDE 0472 part 516		---
Halogen-free:	acc. to DIN VDE 0472 part 815 and IEC 60754-1		
Fire performance:	fulfills DIN EN 60332-1-2, IEC 60332-1-2 in accordance with DIN EN 50265-2-1 (VDE 0482 part 265-2-1)65-2-1)		
Absence of harmful substances:	acc. to RoHS directive of the European Union		

Outstanding features:	SABIX® IBS 610 FRNC (B) item no. 6610-9002	SABIX® IBS 610 FRNC item no. 6610-9003	Ethernet Cable item no. 0660-9002
	combined bus and control cable - space-saving version		accomplishes the electrical and transmission requirements with high frequency acc. to EN 50288-2-2 (CAT 5 acc. to EN 50173-1)

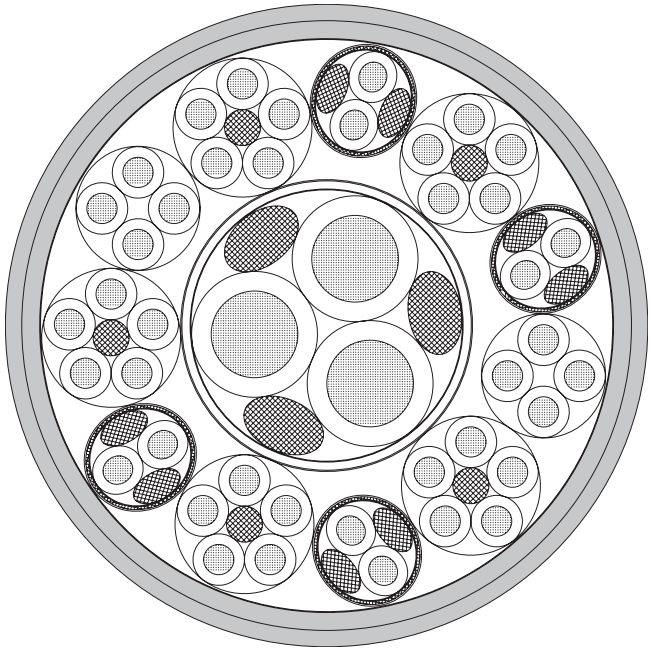
CAN-Bus cable
Halogen-free combined cable with overall copper screen

Coupling cable
Torsion able connecting cable

CAN-Bus cable



Coupling cable



CAN-Bus cable
Halogen-free combined cable with overall copper screen

item no. 63359002

cross section: 2 x 2 x 0,50 mm² +4 x 0,50 mm² + 2 x 0,50 mm²

Construction:

Conductor:	tinned copper strands, fine wires with reference to DIN VDE 0812
Insulation:	SABIX® thermoplastic material and 02YI1 acc. to DIN VDE 0819 part 103 (for 2 x 0.50 mm²)
Screen:	tinned copper braid, optical coverage ≥ 85%
Sheath material:	SABIX® thermoplastic material
Sheath colour:	black (RAL 9005)
Marking:	SAB BRÖCKSKES · D-VIERSEN · SO. SABIX CAN-BUS-LEITUNG

Technical data:

Peak operating voltage:	max. 450 V
Testing voltage:	core/core 1000 V (DC) core/screen 1500 V (DC)
Min. bending radius *flexible application:*	10 x d
Temperature range *fixed laying:* *flexible application:*	-40/+70 °C -30/+70 °C
Halogen-free:	acc. to DIN VDE 0472 part 815 and IEC 60754-1
Fire performance:	no flame propagation acc. to IEC 60332 + EN 50266 category C resp. D. flame retardant and self-extinguishing acc. to IEC 60332-1-2 and EN 60332-1-2.
Characteristic impedance:	acc. to VDE 0472 part 516 at 1 Mhz: 120 Ω ± 10% (CAN-Bus)
Image attenuation constant:	acc. to VDE 0472 part 515 at 1 Mhz: approx. 1.5 dB/100 m (CAN-Bus)
Mutual capacitance:	acc. to VDE 0472 part 504 test method: approx. 15 nF/km (CAN-Bus)
Oil resistance:	acc. to EN 60811-2-1 section 10 and VDE 0473 part 811-2-1 section 10
Absence of harmful substances:	acc. to RoHS-guideline 2002/95/EG as well as acc. to RoHS directive of the European Union

Coupling cable
Torsion able connecting cable

item no. 07909008

cross section: 33 x 1,5 mm² + 3 x 10,0 mm² + 4 x (2 x 1,5) mm²

Construction:

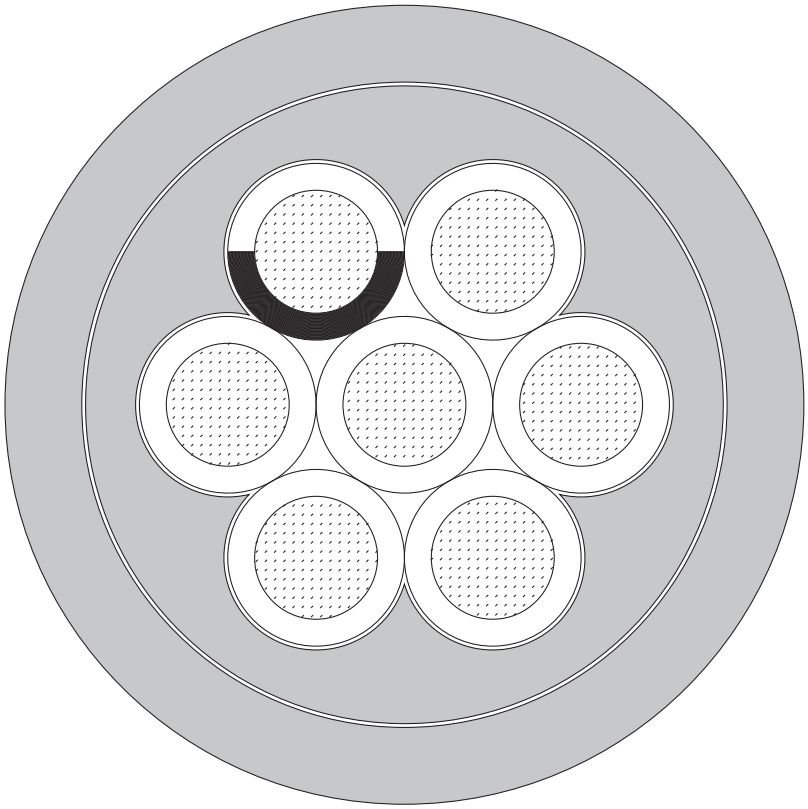
Conductor:	special copper, fine wires
Insulation:	TPE
Screen:	spezial copper braid, optical coverage ≥ 85%
Sheath material:	special PUR
Sheath colour:	black (RAL 9005)

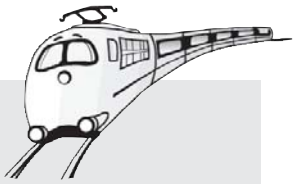
Technical data:

Nominal voltage:	1,50 mm²: Uo/U 0,6/1,0 kV 10,0 mm²: Uo/U 1,8/3,0 kV
Testing voltage:	core/core 1,50 mm²: 4000 V, 10,0 mm²: 12000 V core/screen 1,50 mm²: 2000 V, 10,0 mm²: 6000 V
Min. bending radius *flexible application:*	10 x d
Temperature range *fixed laying:* *flexible application:*	-50/+90 °C -40/+90 °C
Absence of harmful substances:	as acc. to RoHS directive of the European Union

SABIX® A 883 Ö twisting and torsion connection cable

RoHS





for the use in rail vehicles, e. g. bogies and boxes

also possible without earth wire

Construction:

Conductor:	tinned copper strands, acc. to IEC 60228. EN 60228, DIN VDE 0295 class 6
Insulation:	TPE
Colour code:	black cores with consecutive numbers acc. to DIN VDE 50334 green-yellow earth wire from 3 cores
Stranding:	in layers
Inner sheath:	SABIX®
Sheath material:	PUR
Sheath colour:	black (RAL 9005)
Marking:	SAB BRÖCKSKES · D-VIERSEN · SABIX® A 833 Ö dimension CE

Technical data:

Nominal voltage:	Uo/U 300/500 V
Testing voltage:	core/core 2000 V
Min. bending radius	
fixed laying:	4 x d
flexible application:	6 x d
Temperature range	
fixed laying:	-50/+85 °C
flexible application:	-40/+85 °C
Torsion angle:	± 15°
Halogen-free:	acc. to DIN VDE 0472 part 815 and IEC 60754-1
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + EN 60332-1-2
UV resistance:	good
Ozone resistance:	good
Oil resistance:	good
Weather resistance:	good
Absence of harmful substances:	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
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

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
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.

Halogen-free bus cables

RoHS

Marking for 06569001:
SAB BRÖCKSKES · D-VIERSEN ·Halogen-free Bus Cable/120 Ohms 4 x 0,5 mm² 06569001 CE

Construction:	paired screened LSZH cable	120Ω bus cable (quad)	120Ω bus cable (twin)
Dimension:	2 x 2 x 0,50 mm²	4 x 0,50 mm²	2 x 0,50 mm² + 1 x 0,50 mm²
Conductor:	tinned copper strands, fine wires		
Core insulation:	PE	Foam Skin PE	
Colour code:	white, blue, yellow, orange	white, red, yellow, black	blue, red, black
Stranding:	twisted to pairs	---	
Stranding:	pairs twisted in specially adjusted layering		
Wrapping:	alu foil		
Screen:	tinned copper braiding		
Wrapping:	PETP foil		
Outer sheath:	SABIX®		
Sheath colour:	black (similar RAL 9005)		

Technical data:	paired screened LSZH cable	120Ω bus cable (quad)	120Ω bus cable (twin)
Item number:	66109008	06569001	06569002
Peak operating voltage:	max. 300 V	max. 350 V	max. 300 V
Testing voltage:	core/core 1500 V core/screen 1200 V	core/core 1500 V core/screen 1500 V	core/core 1500 V core/screen 1200 V
Temperature range VDE fixed laying: flexible application: short time use:	- 30°C / + 70°C - 30°C / + 70°C	- 40°C / + 80°C - 40°C / + 80°C up to + 85°C	- 30°C / + 80°C - 30°C / + 80°C up to + 85°C
Min. bending radius fixed laying: flexible application:	5 x d 10 x d		
Fire performance:	flame retardant and self-extinguishing acc. to IEC 60332-1-2 (EN 60332-1-2, NF C 32-070 C2, EN 50265-2-1	flame retardant and self-extinguishing acc. to IEC 60332-1-2 + EN 60332-1-2 + NFC 32-070 C2	
Halogen-free:	acc. to DIN VDE 0472 part 815 + IEC 60754-1		
Smoke density:	> 60% acc. to IEC 61034 + EN 61034 (EN 50268-2, DIN 5510-2 table 6)	> 60% acc. to IEC 61034 + EN 61034	
Toxicity (outer sheat):	acc. to EN 50305	---	
Low smoke emission:	I,F. < 7 (NF F 16-101)	---	
Toxicity Index:	class F1 (NFF 16-101), BS 6853 table 13 Cat. 1a	---	
Impedance:	100 ± 15 Ω between 1 and 16 MHz	120 Ω ± 10% between 1 and 10 MHz	120 Ω ± 10% between 0,75 and 3 MHz
Absence of harmful substances:	acc. to RoHS directive of the European Union		

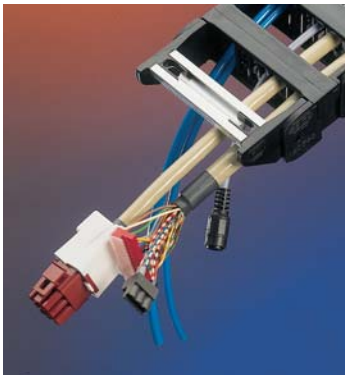
item no.	type	outer-ø mm	copper figure kg/km	cable wight ≈kg/km	ohmic resistance at 20°C acc. to VDE 0812 max.Ω/km
66109008	paired screened LSZH cable	9,7 ± 0,5	60,5	136	40,1
06569001	120Ω bus cable (quad)	8,3 ± 0,3	40,7	70	42,0
06569002	120Ω bus cable (twin)	6,3 ± 0,3	34,7	60	42,0

Other dimensions and colours are possible on request.

Cable harnessing · SAB helix cables

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
- Rubber
- Special materials (fibre glass, Pi foil, SABtex etc.)

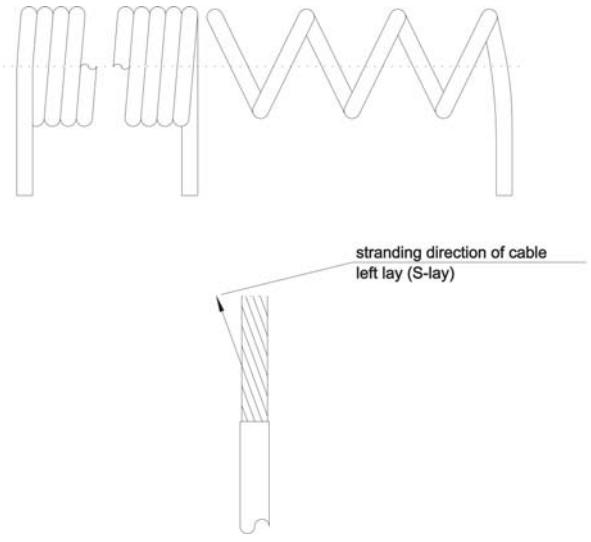
… also offer a wide range of applications in industry.

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

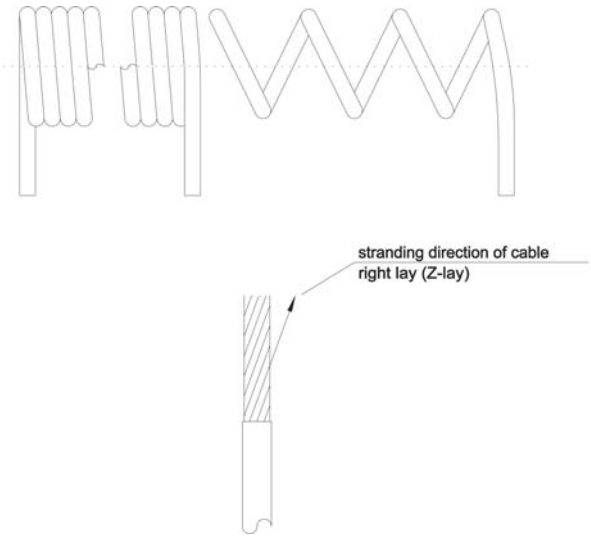
SAB helix cables

By a special method cables can be transferred from their straight form to a curling form. According to the application the cable can be adjusted to your demands and specifications. It is possible to make helix cables of both, PVC as well as PUR PUR sheathed cables. You can also buy screened helix cables from us. PVC helix cables can be used as extension or connection cables. These cost saving cables are used if there is no continuous restoring force demanded, e.g. for lamps or electrical appliances. PUR helix cables are used for very high requests on the quality of the cable. The pull-off length of these cables is approximately 4:1 and they have a good restoring force as well. For this reason these cables are used e.g. material handling appliances, in machines and on gates. The helical direction is dependent on the stranding direction of a cable.

Helical direction ⇨ left (counter-clockwirse)



Helical direction ⇨ right (clockwise)



FLEXIBLE CABLES

- Halogen-free cables
- Cable track cables
- Servo motor cables
- ETFE, FEP, PFA cables
- Bus cables
- Torsion cables
- Hybrid and special cables
- Control and connection cables
- Data cables
- Besilen® (Silicone) cables
- Compensating and extension cables
- Tray cables

TEMPERATURE MEASUREMENT

- Protecting armatures and gauge slides
- Mineral insulated thermocouples and Mineral insulated resistance thermometers
- Temperature measurement in plastic processing industry/Hot runner technique
- Diesel thermocouples
- Probe with stainless steel sleeve
- Temperature measurement in test vehicles
- Transmitter
- HV sensors
- Measurement techniques

CABLE HARNESSING

- Harnessed cables acc. to customer's specification
- Harnessed cable track cables
- Helix cables
- Cable harnesses
- Harnessed motor and transmission cables for Siemens and Indramat drives

SAB Bröckskes GmbH & Co. KG · Grefrather Str. 204 - 212 b · 41749 Viersen · GERMANY
Tel.: +49/2162/898-0 · Fax: +49/2162/898-101 · www.sab-worldwide.com · info@sab-broeckskes.de