APPLICATION GUIDE

auxema-stemmann
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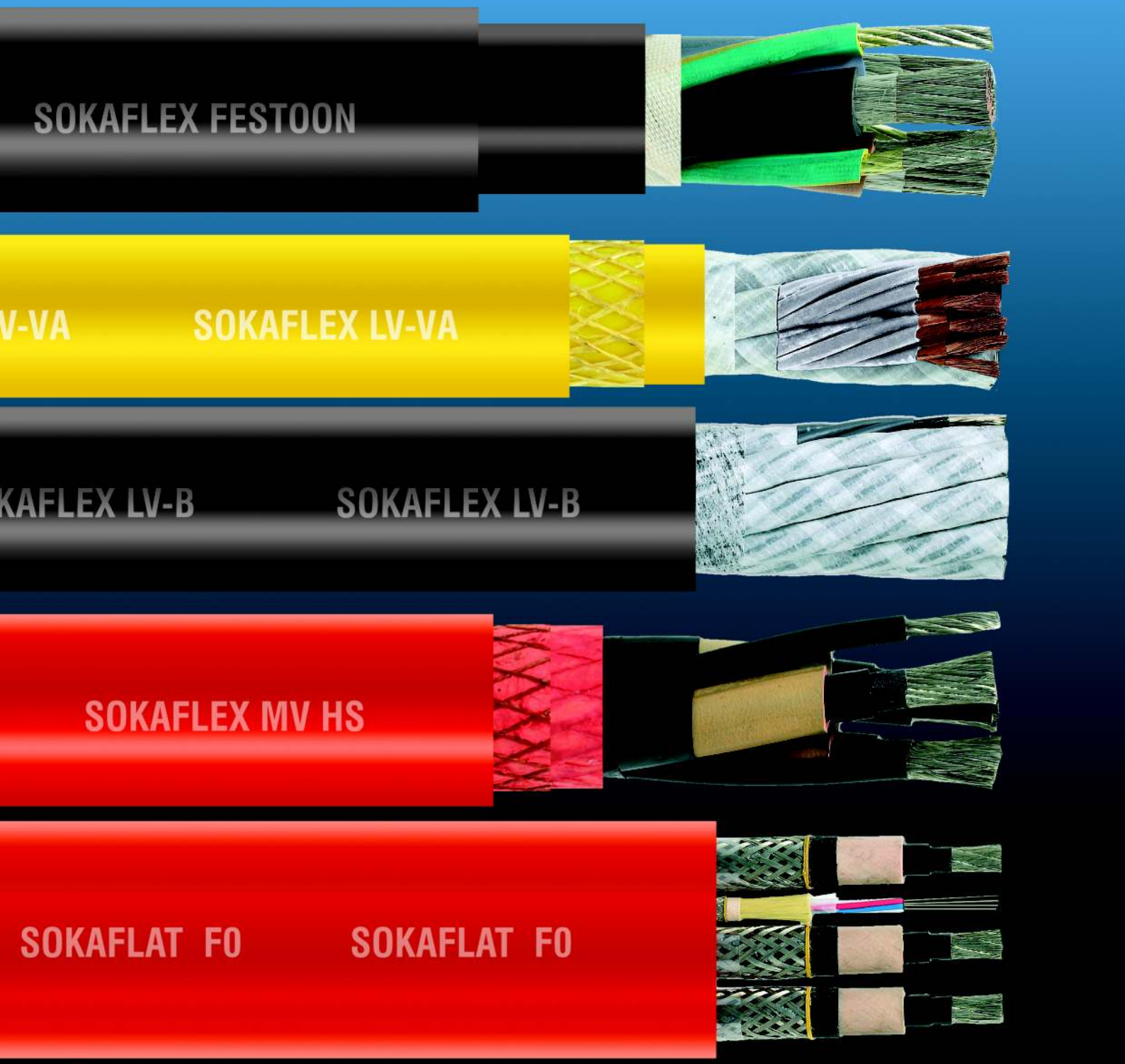


SOKAflex

I. INTRODUCTION

SOKAFLEX cables delivery by **Auxema-Stemmann** are cables particularly adapted to power and data transmission in heavy working conditions. Elevated mechanical stresses, low temperatures, abrasion and bendings constitute the normal working conditions of **SOKAFLEX** cables.

Their robustness and flexibility make them suitable for forced guided applications associated with cranes and handling equipment like ports, mines, civil erecting yards and any other application requiring optimum performances while in function. This catalogue should act as a guide for those who have to choose the right cables as a function of their application.

The following cables will be described:

SOKAFLEX LV-J	SOKAFLEX LV LW-FO
SOKAFLEX LV-JK	SOKAFLEX MV
SOKAFLEX LV GREEN J	SOKAFLEX MV GREEN
SOKAFLEX LVC-JZ	SOKAFLEX MV-FO
SOKAFLEX LVC-JZK	SOKAFLEX MV-FO GREEN
SOKAFLEX LVC-JZ GREEN	SOKAFLEX MV HS
SOKAFLEX LV FESTOON	SOKAFLEX MV-FO HS
SOKAFLEX LV-VA	SOKAFLAT
SOKAFLEX LV-B	SOKAFLAT FO
SOKAFLEX LV-LW	SOKAFIBRE

Various criteria linked to mechanical stresses during service must be considered when selecting a **SOKAFLEX** cable:

- bending radius
- cable tension
- temperature

The cable proper operation and lifetime depend upon the respect of the recommended values announced for these parameters.

Bending Radius

SOKAFLEX cables lifetime is improved if the recommended bending radii during service are respected. The bending radius determined according to the application can be modified if working conditions change: temperature, operation speed, increased tension.

The use of optical fibres does not change minimum bending radius values.

APPLICATION	MINIMUM BENDING RADIUS	
	V≤1kV	V>1kV
MONO SPIRAL REEL	8 D	10 D
SHEAVE GUIDED	10 D	12 D
FESTOON	8 D	-
POWER TRACK	10 D	-
ENTRY AND STRAIN RELIEF	5 D	6 D

D = is the outer cable diameter

Cable Tension

Cable tension is also extremely important for determining **SOKAFLEX** cables lifetime. The principal cable strength members being the copper conductors, the maximum conductor tension value is limited to 20 N/sq.mm. During installation, the maximum value can reach 50 N/sq.mm.

LOW VOLTAGE CABLES

Some special conditions like vertical installation or small dimension cables require the use of a mechanical reinforcement through aramid yarns (see low voltage **SOKAFLEX** - Special).

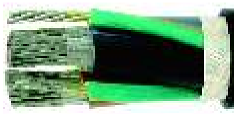
Temperature

The maximum working temperature remains the same for all **SOKAFLEX** cables while the minimum one can differ.

- Maximum working ambient temperature: + 80°C
- Minimum working ambient temperature: -20°C or -40°C

Cables with a -40°C minimum working temperature are realized upon request.

- Short circuit temperature: 200°C



CONCLUSIONS

The influence of the described parameters on **SOKAFLEX** cables applications can be summerized in the following table:

SELECTION OF CABLES:

MAIN APPLICATION (green)
SUITABLE (cyan)
NOTSUITABLE (red)

	CABLE REEL – CABLE LAID ON GROUND – ONE WAY			TWO WAYS	RANDOM			VERTICAL	FESTOONS	BASKET	WORKING TEMPERATURE – AMBIENT CONDITION MIN. VALUE °C	AMBIENT CONDITION MAX. VALUE °C	ON CABLE SURFACE MIN. VALUE °C	ON CABLE SURFACE MAX. VALUE °C
OPERATING MAX. SPEED (MT./MIN)	60	200	300	200	60	180	60	240	240	160				
CONTROL CABLES														
SOKAFLEX LVC-JZ	SUITABLE	MAIN APPLICATION	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	MAIN APPLICATION	SUITABLE	NOTSUITABLE	SUITABLE	NOTSUITABLE	-25	+80	-25	+60
SOKAFLEX LV-JZK	SUITABLE	MAIN APPLICATION	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	MAIN APPLICATION	SUITABLE	NOTSUITABLE	SUITABLE	NOTSUITABLE	-40	+60	-40	+60
SOKAFLEX LV-VA	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	MAIN APPLICATION	NOTSUITABLE	NOTSUITABLE	-25	+80	-25	+60
SOKAFLEX LV FESTOON	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	MAIN APPLICATION	NOTSUITABLE	-25	+80	-25	+60
SOKAFLEX LV-B	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	MAIN APPLICATION	-20	+80	-20	+60
POWER LOW VOLTAGE														
SOKAFLEX LV LW	MAIN APPLICATION	SUITABLE	NOTSUITABLE	NOTSUITABLE	SUITABLE	NOTSUITABLE	MAIN APPLICATION	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	-20	+60	-20	+50
SOKAFLEX LV-J	SUITABLE	MAIN APPLICATION	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	MAIN APPLICATION	SUITABLE	NOTSUITABLE	SUITABLE	NOTSUITABLE	-25	+80	-25	+60
SOKAFLEX LV-JK	SUITABLE	MAIN APPLICATION	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	MAIN APPLICATION	SUITABLE	NOTSUITABLE	SUITABLE	NOTSUITABLE	-40	+60	-40	+60
SOKAFLEX LV FESTOON	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	MAIN APPLICATION	NOTSUITABLE	-25	+80	-25	+60
POWER MEDIUM VOLTAGE														
SOKAFLEX MV	MAIN APPLICATION	MAIN APPLICATION	NOTSUITABLE	SUITABLE	NOTSUITABLE	MAIN APPLICATION	MAIN APPLICATION	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	-30	+80	-30	+60
SOKAFLEX MV HS	SUITABLE	SUITABLE	MAIN APPLICATION	MAIN APPLICATION	MAIN APPLICATION	MAIN APPLICATION	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	-20	+60	-20	+60
SOKAFLEX MV-FO	MAIN APPLICATION	MAIN APPLICATION	NOTSUITABLE	SUITABLE	NOTSUITABLE	MAIN APPLICATION	MAIN APPLICATION	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	-30	+80	-30	+60
SOKAFLEX MV-F0 HS	SUITABLE	SUITABLE	MAIN APPLICATION	MAIN APPLICATION	MAIN APPLICATION	MAIN APPLICATION	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	-20	+60	-20	+60
SOKAFLAT	MAIN APPLICATION	MAIN APPLICATION	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	-30	+80	-30	+60
COMPOSITE OPTICAL FIBRE														
SOKAFIBRE	MAIN APPLICATION	MAIN APPLICATION	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	NOTSUITABLE	MAIN APPLICATION	NOTSUITABLE	-25	+80	-25	+60

Dimensional Characteristics

NOMINAL SECTION (sq.mm)	WIRE DIAMETR (mm)	CONDUCTOR DIAMETR (mm)
1,5	0,26	1,55
2,5	0,26	2,05
4	0,31	2,55
6	0,31	3,10
10	0,41	4,38
16	0,41	5,48
25	0,41	6,91
35	0,41	8,17
50	0,41	9,69
70	0,51	11,60
95	0,51	13,52
120	0,51	15,11
150	0,51	17,00
185	0,51	18,61
240	0,51	21,44

Electrical characteristics

RESISTANCE

- Conductors electrical resistance at 20°C is determined in accordance with the international standards:
  DIN/VDE 0295 class 5 for low voltage cables
- Conductors electrical resistance at 80°C is calculated using a correction factor K = 0,004 per degree Celsius.

REACTANCE

- Conductor reactance is calculated for a 50 Hz frequency.
- Reactance values are valid for the three poles, three poles with grounds and four poles cables.
- Voltage drop maximum admitted value: 4-5 %
  For a low working voltage, the voltage drop ΔV can be determined from the formula:
  $\Delta V = \sqrt{3} \times (R \times \cos\varphi + X \times \sin\varphi) \times I \times L$ (V)
  with R = phase conductor resístance at working temperature (Ω/km)
  X = reactance (Ω/km)
  I = current (A)
  L = line length (km)

SECTION (sq.mm)	REACTANCE - 50 Hz (Ω/km)				
	1	3	3+3	4	5
1,5	0,193	0.107	0,114	0,114	0,119
2,5	0,180	0,101	0,108	0,108	0,112
4	0,170	0,098	0,105	0,105	0,109
6	0,161	0,092	0,099	0,099	0,103
10	0,147	0,088	0,095	0,095	0,099
16	0,138	0,083	0,090	0,090	0,094
25	0,131	0,081	0,089	0,089	0,093
35	0,129	0,079	0,079	0,086	0,090
50	0,125	0,078	0,078	0,085	0,089
70	0,119	0,075	0,075	0,082	0,086
95	0,117	0,074	0,074	0,082	0,086
120	0,114	0,073	0,073	0,080	-
150	0,113	0,073	0,073	0,080	-
185	0,112	0,073	0,073	0,080	-
240	0,110	0,072	0,072	0,79	-
300	0,109	-	-	-	-

SECTION (sq.mm)	MAXIMUM RESISTANCE c.c. 20°C(Ω/km)	WORKING RESISTANCE a.c. 80°C(Ω/km)
1,5	13,7	16,93
2,5	8,21	10,14
4	5,09	6,29
6	3,39	4,19
10	1,95	2,41
16	1,24	1,53
25	0,795	0,983
35	0,565	0,699
50	0,393	0,486
70	0,277	0,343
95	0,210	0,260
120	0,164	0,203
150	0,132	0,163
185	0,108	0,134
240	0,0817	0,101

REACTANCE - 50 Hz (Ω/km) - THREE POLES			
SECTION (sq.mm)	3 kV	6 kV	10 kV
3x35+3x10	0,090	0,109	0,118
3x50+3x10	0,086	0,104	0,111
3x70+3x16	0,082	0,098	0,105
3x95+3x16	0,081	0,095	0,100
3x120+3x25	0,079	0,092	-
3x150+3x25	0,077	-	-
3x185+3x35	0,075	-	-

REACTANCE - 50 Hz (Ω/km) - FOUR POLES			
SECTION (sq.mm)	3 kV	6 kV	10 kV
4 x 16	0,108	0,130	0,141
4 x 25	0,101	0,123	0,131
4 x 35	0,097	0,117	0,125
4 x 50	0,093	0,111	0,119
4 x 70	0,089	0,105	0,112
4 x 95	0,088	0,102	-
4 x 120	0,086	-	-

III. ELECTRICAL CONDUCTORS CHARACTERISTICS

Ampacity

- Ampacity is determined in accordance with the international standars:
  - VDE 0250-C 8/75 for low voltage cables
- Ampacity values are valid for:
  - EPR insulation material
  - conductor temperature: 80°C
  - ambient temperature: 30°C

SECTION (sq.mm)	AMPACITY (A)		SHORT CIRCUIT CURRENT (kA)	
	LOW VOLTAGE	MEDIUM VOLTAGE	THERMAL LIMIT	DYNAMIC LIMIT
1,5	23	23	0,20	-
2,5	30	32	0,32	-
4	41	42	0,51	-
6	53	59	077	-
10	74	80	1,28	-
16	99	104	2,05	24
25	131	137	3,21	27
35	162	167	4,49	29
50	202	200	6,41	30
70	250	246	8,98	34
95	301	300	12,19	36
120	352	350	15,40	38
150	404	405	19,24	40
185	461	460	23,73	42
240	540	540	30,79	45

Correction Factors

Some correction factors (K) must be applied to values indicated in the table when cables are submitted to the following conditions:

1. Cable laid for all its length on a plane K = 0,95
2. Festoon system installation with single cables which are not in contact between themselves K = 1,20
3. Ambient temperatures different from 30°C

T_A	25	35	40	45	50	55	60	65	70	75
K	1,05	0,95	0,89	0,84	0,77	0,71	0,63	0,55	0,45	0,32

4. Reel cable installation
   Ampacity values have to be reduced when the cable is installed on reels:
   a) **mono spiral**: conversion factor is constant K = 0,92
   b) **level wind**: ampacity depends upon the number of spiral layers

LAYERS NUMBER	1	2	3	4	5
K	0,76	0,58	0,47	0,40	0,33

Current carrying capacities for intermittent operation

SECTION (sq.mm)	CORRECTION FACTOR - LOAD FACTOR (FC %)				
	60%	40%	25%	20%	15%
1,5	1,00	1,00	1,00	1,00	1.00
2,5	1,00	1,00	1,02	1,04	1,08
44	1,00	1,03	1,05	1,11	1,19
6	1,00	1,04	1,13	1,18	1,27
10	1,03	1,09	1,21	1,31	1,44
16	1,07	1,16	1,34	1,45	1,62
25	1,10	1,23	1,45	1,59	1,79
35	1,13	1,28	1,53	1,69	1,90
50	1,16	1,34	1,62	1,79	2,03
70	1,18	1,38	1,69	1,87	2,13
95	1,20	1,42	1,74	1,93	2,21
120	1,21	1,44	1,78	1,97	2,26
150	1,22	1,46	1,81	2,01	2,30
185	1,23	1,48	1,82	2,04	2,32
240	1,24	1,49	1,85	2,10	2,36
300	1,25	1,50	1,87	2,15	2,39

SHORT CIRCUIT CURRENT (LCC)

Thermal Limit

Thermal limit is determined in accordance with DIN VDE 0207 Par 20/21 international standard:

- final conductor temperature: 200°C
- initial conductor temperature: 80°C

Short circuit current is calculated for a 1 second period. For times different than 1 second, short circuit current values must be divided by the root mean square of the required time.

SECTION (sq.mm)	ONE SECOND THERMAL LIMIT (kA)	DYNAMIC LIMIT FOR THREE CORE CABLES					
		up to 1kV	3kV	6kV	10kV	15kV	20kV
		INDICATIVE VALUE (1) kA					
1,5	0,20						
2,5	0,32						
4	0,51						
6	0,77						
10	1,29						
16	2,06	30	40	45	50	55	
25	3,22	35	43	50	55	60	
35	4,50	40	48	53	60	65	75
50	6,43	45	50	58	63	70	80
70	9,00	50	55	63	68	75	83
95	12,20	55	60	70	75	75	
120	15,40	60	65	72	78	80	
150	19,30	65	68	75	80		
185	23,80	70	72	80	84		
240	31,00	80					

FINAL SHORT CIRCUIT TEMP. (°C)	INITIAL SHORT CIRCUIT TEMPERATURE OF THE CONDUCTOR						
	30°	40°	50°	60°	70°	80°	90°
160	143	136	129	122	115	107	100
200	159	153	147	141	135	128	122
250	176	170	165	159	154	148	143

Dynamic Limit

- Single cables: dynamic forces tend to separate single cables; it is then necessary to calculate accurately cable support.
- Three and four poles cables: the strength of **SOKAFLEX** cables resists easily to the dynamic forces which tend to separe power conductors. It is necessary to check that dynamic limit is not smaller than the thermal limit for brief short circuits or for big sections.

Current carrying capacities for continuous operation at 30°C ***(3 core cables + earth conductor)***

SECTION (sq.mm)	ONE CABLE	FESTOON	MULTI SPIRE REELS					MONO SPIRE REELS		VOLTAGE DROP
	LAID ON GROUND	SUSPENDED FREELY IN AIR	REELED IN 1 LAYER	REELED IN 2 LAYER	REELED IN 3 LAYER	REELED IN 4 LAYER	REELED IN 5 LAYER	ROUND CABLES	FLAT CABLES	(cos φ=0,8)
	A	A	A	A	A	A	A	A	A	mV/A m
	FACTOR 1*	FACTOR 1,05*	FACTOR 0,80*	FACTOR 0,61*	FACTOR 0,49*	FACTOR 0,42*	FACTOR 0,34*	FACTOR 0,34*	FACTOR 0,50*	FACTOR K**
1	18	19	14	11	9	8	6	14	9	
1,5	23	24	18	14	11	10	8	18	11	23,5
2,5	30	32	24	18	15	13	10	24	15	14,2
4	41	43	33	25	20	17	14	33	21	8,8
6	53	56	42	32	26	22	18	42	27	5,93
10	74	78	59	45	36	31	25	59	37	3,45
16	99	104	79	60	49	42	34	79	52	2,24
25	131	138	105	80	64	55	45	105	65	1,46
35	162	170	130	99	79	68	55	130	81	1,06
50	202	212	162	123	99	85	69	162	101	0,77
70	250	263	200	153	123	105	85	200	125	0,57
95	301	316	241	184	147	126	102	241	155	0,45
120	352	370	282	215	172	148	120	282	176	0,36
150	404	424	323	246	198	170	137	323	202	0,3
185	461	484	369	281	226	194	157	369	230	0,26
240	540	567	432	329	265	227	184	432	270	0,22
300	620	651	496	378	304	260	211	496	310	

* CORRECTION FACTOR
** VOLTAGE DROP (v)=I (A) x L (km) x K (mV/Am)

IV. SOKAFLEX DESCRIPTION AND CHARACTERISTICS

LOW VOLTAGE SOKAFLEX

Low Voltage **SOKAFLEX** cables are manufactured in accordance with VDE 0250 Par. 814/2.85 reference norm. Cable types are:

- Low Voltage **SOKAFLEX** - Power cable
- Low Voltage **SOKAFLEX** - Signalling cable
- Low Voltage **SOKAFLEX** -High resistance cable

All low voltage **SOKAFLEX** cables are available with a minimum working temperature of -20°C. **SOKAFLEX** cables with a -40°C minimum working temperature can be obtained upon request.

Low Voltage Sokaflex LV Power

DEFINITION

Low Voltage power transmission cable - 1 kV
Rated voltage: 1 kV A.C.
Maximum permissible voltage: 1,15 kV A.C.
Test voltage: 3 kV A.C.

CONSTRUCTION CHARACTERISTICS

- Conductors: finely stranded tinned coated copper conductors
- Insulation: crosslinked elastomeric compound (EPR):
  - black - blue - brown - coloured power conductors
  - yellow/green coloured ground conductor
- Mechanical reinforcement: unextensible and antitorsional textile braid resistant to mechanical stresse
- Inner and outer jackets: black coloured polychloroprene material (CR); resistant to flame, abrasion and oils

DIMENSIONAL CHARACTERISTICS

Cable weight and diameters depend upon the structure which can be a single cable, a three poles, three poles with grounds or a four poles cable.

Low Voltage Sokaflex LV Signalling

DEFINITION

Low Voltage cable used for control and signalling.

CONSTRUCTION CHARACTERISTICS

- Conductors: finely stranded tinned coated copper conductors, an extra finaly stranding assures cable flexibility
- Insulation: black coloured crosslinked elastomeric compound (EPR)
- Mechanical reinforcement: unextensible and antitorsional textile braid resistant to mechanical stresses
- Inner and outer jackets: black coloured polychloroprene material (CR); resistant to flame, abrasion and oils

DIMENSIONAL CHARACTERISTICS

Cable weight and diameters depend upon the cable structures.

Low Voltage Sokaflex LV Specials

HIGH RESISTANCE

Low Voltage **SOKAFLEX** cables with an elevated mechanical resistance are suited for severe working conditions and environment. High resistance **SOKAFLEX** cables can be either signalling or composite power/signalling cables and differ from standard cables about:

- Conductors: copper wires are thinner so that the stranded conductor is more flexible.
- Mechanical reinforcement: aramid yarns are used for mechanical reinforcement; the minimum mechanical resistance value guaranteed is 2000 N.
- Outer jacket: the yellow coloured outer polychloprene jacket has elevated mechanical and abrasion performances. High resistance low voltage **SOKAFLEX** cables are realized for several conductors sizes and quantities.

HIGH SAFETY

High safety Low Voltage **SOKAFLEX** cables can be obtained upon request. In addition to conventional materials, **SOKAFLEX** cables can be obtained with fire resistant, low smoke halogen free materials).

INDIVIDUAL SHIELD

Upon request, Low Voltage Signalling **SOKAFLEX** cables can be obtained with twisted shielded pairs or with individual shielded conductors.

MEDIUM VOLTAGE SOKAFLEX

Cable types are: Medium Voltage **SOKAFLEX** 3 kV, 6 kV up to 30 kV upon request. All medium voltage **SOKAFLEX** cables are available with a minimum working temperature of -20°C. **SOKAFLEX** cables with a -40°C minimum working temperature can be obtained upon request.

Medium Voltage Sokaflex MV Power

DEFINITION

Medium Voltage cables used for power transmission.
Cables identification is referred to the nominal tension U_o / U , where:

U_o = insulation nominal tension at industrial frequency in effective kV, between one of the insulated conductors and the earth

U = insulation nominal tension at industry frequency in effective kV, between two of the industrial conductors into the cable

CONSTRUCTION CHARACTERISTICS

SOKAFLEX 3 kV

- Conductors: highly flexible conductor assembly made of finely stranded tinned coated copper conductors laid up with an extra short length of lay
- Semi-conductive shield
- Power conductors insulaton: black coloured crosslinked elastomeric compound (EPR)
- Ground conductor insulation: yellow/green crosslinked elastomeric compound (EPR)
- Inner jacket: black coloured polychloroprene material (CR)
- Mechanical reinforcement: composite braid textile resistant to mechanical stresses
- Outer jacket: red coloured polychloroprene material (CR) resistant to flame, abrasion and oils.

SOKAFLEX 6 kV 10 kV 15kV 20kV

- Conductors: highly flexible conductor assembly made of finely stranded tinned coated copper conductors laid up with an extra short length of lay
- Semi-conductive shield
- Insulation: crosslinked elastomeric compound (EPR) black - blue - brown coloured power conductors
- Semi-conductive shield
- Black semi-conductive material covering ground conductor
- Inner jacket: semi-conductive material
- Mechanical reinforcement: composite braid textile resistant to mechanical stresses
- Outer jacket: red coloured polychloroprene material (CR), resistant to flame, abrasion and oil.

Medium Voltage Sokaflex MV Specials

HIGH SAFETY

High safety Medium Voltage **SOKAFLEX** cables can be obtained upon request.

In addition to conventional materials, **SOKAFLEX** cables can be obtained with fire resistant, low halogen free materials.

CABLES - OPTICAL FIBRES SOKAFIBRE

Optical fibres characteristics can bring interesting advantages to **SOKAFLEX** cables applications fields.

Optical fibre nuclei are used for data and video transmission in both Low and Medium Voltage cables.

Optical Unit

OPTICAL FIBRE

Definition

The optical fibre consists in two concentric materials having different refractive index: the core and the cladding.

A plastic material coating extruded around the glass fibre assures its mechanical properties.

Advantages

- Small dimensions
- Reduced weight
- Elevated transmission characteristics
- Immunity to electromagnetic interferences Galvanic insulation

OPTICAL CABLE

The cable is realized with a loose tube structure; optical fibres laid inside the tube are free to move especially when the cable is submitted to mechanical stresses.

Flexibility of the cable is obtained using a small length of lay of the tubes around the central member.

Optical fibres **SOKAFLEX** cables have the same mechanical characteristics as **SOKAFLEX** standard cables.

OPTICAL FIBRES SOKAFLEX

Optical fibres **SOKAFLEX** cables are similar to standard Low and Medium Voltage **SOKAFLEX** cables.

MEDIUM VOLTAGE OPTICAL FIBRES SOKAFLEX

Medium Voltage optical fibres **SOKAFLEX** cables are realized for several conductors sizes and assembly.

LOW VOLTAGE OPTICAL FIBRES SOKAFLEX

Low Voltage optical fibres **SOKAFLEX** cables are available upon request. Please contact our Technical Department.