

DATA: Jul.7th,99

SIWO - KUL

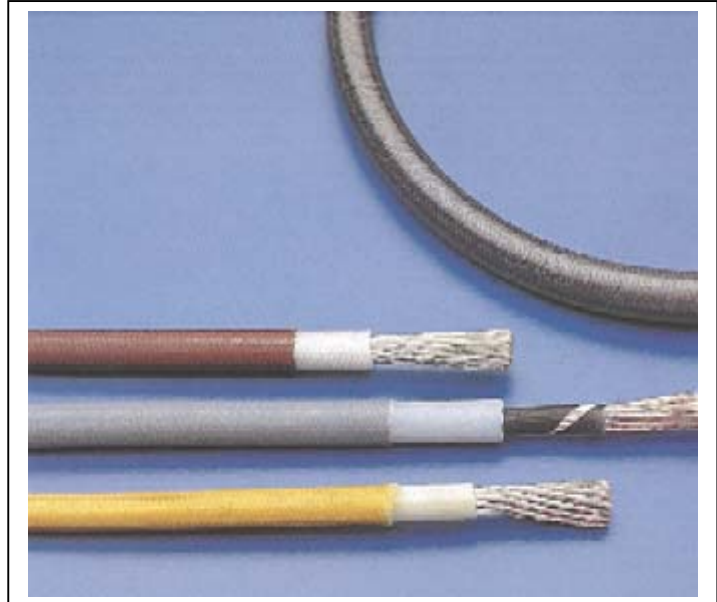
Codice TSK

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DESCRIPTION

The connection cable Type SIWO-KUL is a very flexible single core cable. It is manufactured in the voltage range of 1.1 kV, 3.3/4.2 kV, 6.6 kV and 13.8 kV.

The operating temperature for continuous service extends from -60°C . up to $+180^{\circ}\text{C}$. The use of silicone rubber, a high grade corona resistant insulation material, gives the cable excellent dielectric strength. The braided synthetic yarn covering, which is applied directly over the insulation, gives the cable, because of its short braiding pitch and high compactness, an excellent mechanical protection by maintaining good flexibility.



The varnishing of the braiding results in good antifriction properties, high abrasion and excellent chemical resistance against transformer oil, light fuel oil and most types of cleaning agents.

In the event of fire, no corrosive and toxic gases will be given off. Hence, damage caused by fire can be kept to a minimum. Compared with other plastic insulated cables, SIWO-KUL generates only little smoke and is therefore defined as “low smoke grade” according to the “Guideline for fire regulations”. Of course, the cable meets the requirements concerning fire propagation specified in IEEE 383 and IEC 332-1 respectively. According to the French specification N.F.F.16.101, this cable is BF1 approved which means that it is in compliance with requirements for cable used in the internal wiring of rail cars.

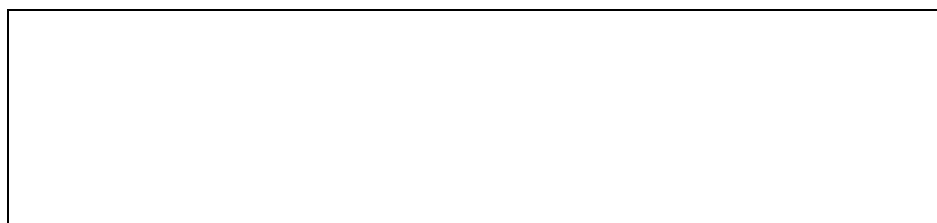
Under the influence of flames the silicone rubber reduces to silicone oxide, which is an excellent electrical insulator. Because of this chemical reaction a relatively long functional endurance under fire conditions can be achieved. Tests according to IEC 331 and VDE 0472 part 814, at rated voltage, show a function time of at least 30 minutes.

The insulation wallthickness has been designed taking into consideration the high dielectric strength of silicone rubber. The breakdown voltage of the finished cable is at least twice the value of the test voltage. The cable meets the requirements of UIC 895 and, concerning dielectric strength, BSS 6195 Type 5, voltage categories C,D, E and F.

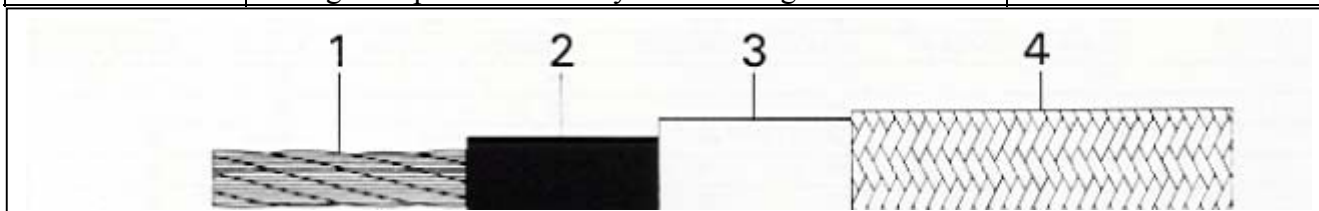
APPLICATIONS

The SIWO-KUL cable is used where high flexibility is required and high temperature conditions are present. It is therefore a suitable connection cable for high voltage machines, for transformers, motors, generators etc. Thanks to its good antifriction properties and abrasion resistance it is also well suited for traction machines and shipbuilding.

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- 1) Copper conductor tinned, flexible, class 5 IEC 228
- 2) Semi-conductive tape only for Kv. 6,6 and 13,8
- 3) Silicone rubber insulation
- 4) Protective synthetic yarn braiding, polyurethane varnished.

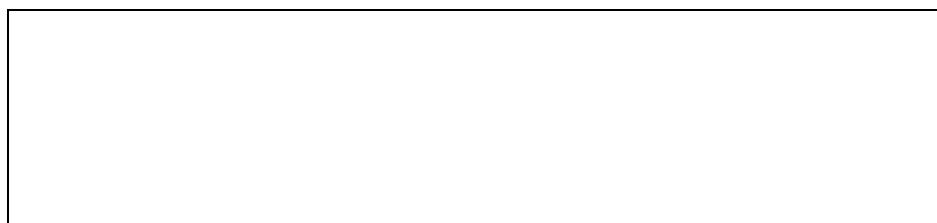
TECHNICAL DATA

Ref.	U.M.	TSK 1,1	TSK 3,3/4,2	TSK 6,6	TSK 13,8
Rated voltage	KV	1,1	3,3/4,2	6,6	13,8
Test voltage	KV	3,5	10	15	30
Breakdown voltage	KV	10	20	30	60
Min. bending radius: 5 x d.		5 x d	5 x d	6 x d	6 x d
Colour		Yellow	Red	Grey	Black
Permissible temp. range:					
- continuous:	°C			-60 +180	
- intermittent: 1h / 12 h	°C			+220	
- short time duty ≥ 3s	°C			+350	
Electrical properties:					
-breakdown field strength	KV/mm			≥50	
-dielectric constant E _R :				3...4	
-loss factor tan:	Tgd			≤ 10 ⁻²	
Mechanical properties:					
-Tensile strenght	MPa			8...9	
-Elongation at break	%			280	
-Hardness	Shore A			60...70	

CROSS SECTIONS AND SIZES

Section	Costruction	Insul. Wall thickness				Out. Diam min. - max.			
mm ²	mm	KV 1,1	KV 3,3	KV 6,6	KV 13,8	KV 1,1	KV 3,3	KV 6,6	KV 13,8
1,50	30 x 0,25	0,90	---	---	---	3,8-4,1	---	---	---
2,50	50 x 0,25	0,90	1,80	---	---	4,3-4,6	6,1-6,4	---	---
4,00	56 x 0,30	0,90	1,80	2,20	---	4,9-5,2	6,7-7,0	8,0-8,3	---
6,00	84 x 0,30	0,90	1,80	2,20	3,50	5,8-6,1	7,6-7,9	8,9-9,3	11,5-11,9
10	80 x 0,40	0,90	1,80	2,20	3,50	7,0-7,4	8,8-9,2	10,1-10,5	12,7-13,1
16	126 x 0,40	0,90	1,80	2,20	3,50	8,2-8,6	10,0-10,4	11,3-11,7	13,9-14,5
25	196 x 0,40	1,10	1,80	2,20	3,50	10,1-10,5	11,5-11,9	12,8-13,2	15,4-16,0
35	276 x 0,40	1,10	1,80	2,20	3,50	11,7-12,3	13,1-13,7	14,4-15,0	17,0-17,6
50	396 x 0,40	1,30	2,00	2,40	3,50	13,8-14,4	15,2-15,8	16,5-17,1	18,7-19,3
70	360 x 0,50	1,30	2,00	2,40	3,50	15,5-16,1	16,9-17,5	18,1-18,7	20,4-21,0
95	475 x 0,50	1,50	2,30	2,40	3,50	17,9-18,5	19,5-20,1	20,1-20,8	22,4-23,0
120	608 x 0,50	1,50	2,30	2,40	3,50	19,9-20,5	21,5-22,1	22,1-22,8	24,4-25,0
150	756 x 0,50	1,70	2,30	2,50	3,70	22,6-23,2	23,8-24,4	24,7-25,3	27,1-27,7
185	925 x 0,50	1,90	2,30	2,50	3,70	24,4-25,0	25,2-25,8	26,1-26,7	28,5-29,3
240	1221 x 0,50	2,10	2,30	2,50	3,70	27,9-28,5	29,0-29,6	29,9-30,7	32,3-33,1
300	1525 x 0,50	---	---	2,50	3,70	---	---	34,4-35,2	36,8-37,6

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CONDUCTOR RESISTANCE AND CABLE WEIGHT

Section		$\Omega/\text{Km } 20^{\circ}\text{C}$				Cable weight Kg./1'000 m.			
mm ²		KV 1,1	KV 3,3	KV 6,6	KV 13,8	KV 1,1	KV 3,3	KV 6,6	KV 13,8
1,50		13.7	-	-	-	29	-	-	-
2,50		8.21	8.21	-	-	37	57	-	-
4,00		5.09	5.09	5.09	-	58	74	96	-
6,00		3.39	3.39	3.39	3.39	76	101	121	173
10		1.95	1.95	1.95	1.95	121	150	172	230
16		1.24	1.24	1.24	1.24	179	212	237	301
25		0.795	0.795	0.795	0.795	273	304	331	405
35		0.566	0.566	0.566	0.566	377	412	441	520
50		0.393	0.393	0.393	0.393	536	576	612	688
70		0.277	0.277	0.277	0.277	737	783	822	905
95		0.210	0.210	0.210	0.210	970	1030	1060	1150
120		0.164	0.164	0.164	0.164	1222	1288	1313	1414
150		0.132	0.132	0.132	0.132	1522	1577	1630	1740
185		0.108	0.108	0.108	0.108	1855	1894	1934	2050
240		0.0817	0.0817	0.0817	0.0817	2442	2463	2490	2640

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