



# Traction Cable

## Radox 9 GKW-AX

### General Properties :

Electron beam cross-linked insulation and sheath; excellent resistance to high and low temperature, oil, ozone, weathering and abrasion; enhanced corona resistance; limited fire hazard properties, low smoke, halogenfree, flame retardant, low toxicity; flexible, easy to strip.

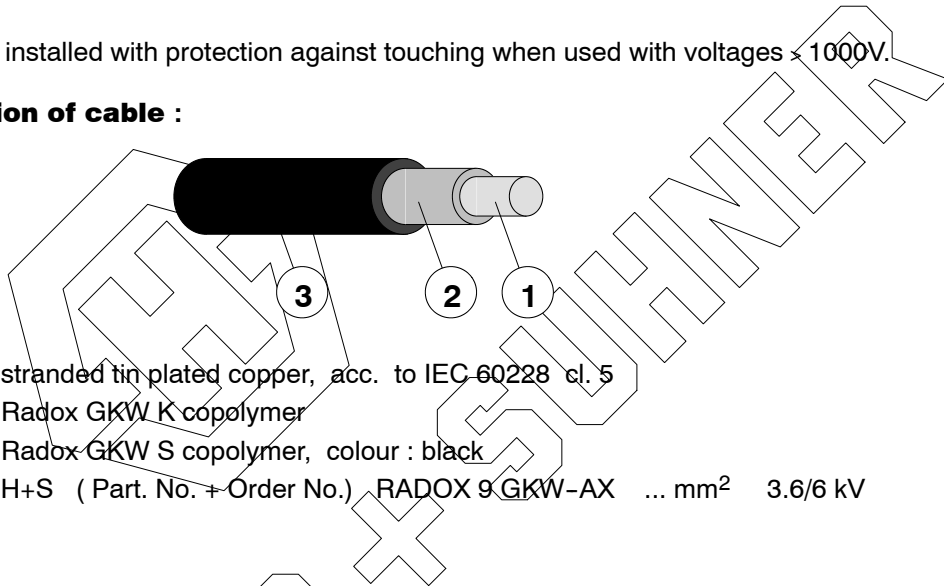
### Application :

For permanently protected installation, inside and outside railway rolling stock, buses and other vehicles to connect fixed and moving parts using DC or AC technology particularly converters.

For applications with high bending frequencies, such as bogie or connections between wagons, the specially developed H+S cable families are to be used.

These cables must be installed with protection against touching when used with voltages > 1000V.

### General composition of cable :



1. Conductor : stranded tin plated copper, acc. to IEC 60228 cl. 5
2. Insulation : Radox GKW K copolymer
3. Sheath : Radox GKW S copolymer, colour : black

Cable marking : H+S ( Part. No. + Order No.) RADOX 9 GKW-AX ... mm<sup>2</sup> 3.6/6 kV

### Technical Data :

Voltage rating cond.-earth	U <sub>0</sub>	3600	V AC
Voltage rating cond.-cond.	U	6000	V AC
maximum permissible Voltage rating AC cond.-earth		4300	V AC
maximum permissible Voltage rating AC cond.-cond.	U <sub>m</sub>	7200	V AC
maximum permissible Voltage rating DC cond.-earth	V <sub>0</sub>	5400	V DC
maximum permissible Voltage rating DC cond.-cond.		9000	V DC

Test voltage 50 Hz, 15 min. 12 kV

#### Temperature range

fixed installation - 40 ... + 120 °C

free installation / sporadic movement / during installation - 25 ... + 90 °C

#### Min. bending radius \*)

fixed at bending angle ≤ 90° all D 2 x D

at bending angle > 90° D ≤ 10 mm 3 x D

at bending angle > 90° D > 10 mm 4 x D

free installation / sporadic movement D ≤ 10 mm 3 x D

D > 10 mm 5 x D

\*) provided that careful and competent handling is used in combination with proven fixture methods

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The product fulfils the test and specification requirements described in this document for the stated areas of application and operating conditions. HUBER+SUHRNER AG does not expressly or implicitly guarantee performance under additional or changed conditions. Deviations are to be agreed upon in writing.

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## The cables are in conformity with:

Fire protection on railway vehicles, category	int. Ia, Ib, II, ext. Ia, Ib, II.	BS 6853
Fire protection on railway vehicles, protection level	1, 2, 3, 4	DIN 5510-2
Fire protection on railway vehicles, class	C / F0	NF F16-101
Fire protection on railway vehicles, category	int. A1, A2, B, ext. A1, A2, B	NF F16-101
Vertical flame spread, bunched	$L \leq 2.5$ m	EN 50266 mod. to BS 6853
Smoke density	$A_0 \leq$ BS 6853	BS 6853 annex D
Toxicity	$R \leq 1.0$	BS 6853 annex B
Vertical flame spread	$50 < L \leq 540$ mm	EN 60332-1-2, IEC 60332-1-2
Vertical flame spread, bunched, $D \geq 12$ mm	$L \leq 2.5$ m	EN 50266-2-4, IEC 60332-3-24
Vertical flame spread, bunched, $D < 12$ mm	$L \leq 2.5$ m	EN 50266-2-5, IEC 60332-3-25
Smoke density	$T \geq 60\%$	EN 50268-2, IEC 61034-2
Vertical flame spread, bunched	$L \leq 300$ mm	NF C32-070 # 2.2
Smoke density	$I.F. \leq 5$	NF X10-702-2
Toxicity	$I.F. \leq 5$	NF X70-100-1
Amount of halogen acid gas	$HCl+HBr \leq 0.5\%$	EN 50267-2-1, IEC 60754-1
Corrosivity of combustion gases	$pH \geq 4.3, \sigma \leq 10 \mu S/mm$	EN 50267-2-2, IEC 60754-2
Content of fluorine	$HF \leq 0.1\%$	EN 60684-2, # 45.2
Toxicity	$ITC \leq 5$	EN 50305 # 9.2

## Applicable documents:

H+S: 557578 (e) : Technical Datasheet : Traction cable Radox 4/9 GKW-AX Current rating for single core cables  
H+S: 95348(e) : Technical Specification, Radox 4 GKW-AX und Radox 9 GKW-AX



# Traction Cable Radox 9 GKW-AX

Cable type mm <sup>2</sup>	Conductor construction* n x mm	Conductor dia nom mm	Wall min mm	Cable-D D <sub>nom</sub> mm	R <sub>20</sub> * max Ω / km	C <sub>H2O</sub> ** nom pF/m	Fire load kJ/m	Weight cooper kg / 100m	Weight cable kg / 100m	H + S Part No.
1.5	30 x 0.26	1.52 ± 0.05	1.30	4.40 ± 0.10	13.7	171	329	1.3	3.3	12 537 829
2.5	50 x 0.26	1.95 ± 0.05	1.35	4.90 ± 0.15	8.21	205	382	2.2	4.5	12 537 830
4.0	56 x 0.31	2.46 ± 0.10	1.45	5.70 ± 0.15	5.09	223	510	3.4	6.5	12 537 831
6.0	84 x 0.31	2.93 ± 0.10	1.50	6.30 ± 0.15	3.39	243	604	5.2	8.8	12 537 832
10	80 x 0.41	3.89 ± 0.20	1.50	7.50 ± 0.20	1.95	293	787	9.1	14	12 545 520
16	119 x 0.41	5.30 ± 0.20	1.70	9.40 ± 0.30	1.24	337	1212	13	21	12 544 525
25	182 x 0.41	6.60 ± 0.20	1.75	11.0 ± 0.30	0.795	373	1811	21	30	12 547 257
35	266 x 0.41	7.80 ± 0.20	1.95	12.5 ± 0.30	0.565	408	2027	30	41	12 547 260
50	378 x 0.41	9.30 ± 0.20	2.30	14.5 ± 0.30	0.393	431	2544	43	57	12 545 521
70	348 x 0.51	11.4 ± 0.30	2.20	16.5 ± 0.30	0.277	518	3125	61	76	12 547 262
95	444 x 0.51	12.8 ± 0.30	2.50	18.5 ± 0.30	0.210	519	3607	78	98	12 547 264
120	551 x 0.51	14.6 ± 0.40	2.70	20.8 ± 0.30	0.164	538	4456	94	122	12 545 522
150	722 x 0.51	16.8 ± 0.40	2.75	23.1 ± 0.30	0.132	596	5140	127	157	12 547 268
185	874 x 0.51	18.3 ± 0.40	2.95	25.0 ± 0.30	0.108	609	6235	153	187	12 545 523
240	1147 x 0.51	21.1 ± 0.60	3.05	28.0 ± 0.30	0.0817	673	6902	201	240	12 547 678
300	1443 x 0.51	23.7 ± 0.60	3.10	30.9 ± 0.50	0.0654	730	7643	253	297	12 551 573
400	2016 x 0.51	29.1 ± 0.70	3.30	36.5 ± 0.50	0.0495	866	9949	353	409	12 564 160

\* (typical value x single wire diameter, conductor resistance at 20 °C according to IEC 60228)

\*\* (capacity in water typical value)