Traction cable
RADOX JUMPER 3600V OM S

Product description:

RADOX JUMPER 3600V OM S	Single core cables with standard wall thickness, screened
Nominal voltage:	3600 / 6000 V AC
Hazard level:	M (extra low temperature, extra oil and extra fuel resistant)

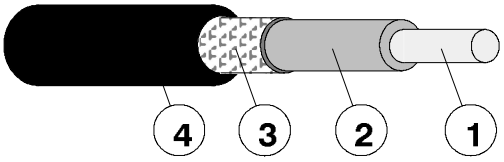
General properties:

Halogen free, electron-beam cross-linked cables with improved behaviour in case of fire, easy to strip, soldering resistant and flexible.

Application:

Jumper cables are for use in rolling stock where permanent bending stresses occur during service, e.g as inter vehicle jumper cable, bogie drop cable etc., without torsional stress.
Guidelines for selection and installation are described in the standard EN 50343.

General composition of cable:



1.	Conductor :	specially stranded tin plated copper, acc. to EN 60228 cl. 5	
2.	Insulation :	inside: RADOX EI 110,	colour: white
		outside: RADOX EI 109,	colour: white
3.	EMC-screen	Tin plated copper braid	
4.	Sheath	RADOX EM 104J,	colour: black

Marking:

[a] **HUBER+SUHNER RADOX JUMPER 3600V** [b] **OM S** [c]-[d] [e] [f]

		example:
[a]	Meter marking (in m)	= 1234 = m
[b]	Construction	1X150
[c]	Part number	12345678
[d]	Batch number	1234567
[e]	Production week and year	03-2017
[f]	Production place (only if China)	CN

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Technical Data:

Voltage rating cond.-earth	U_0	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_m	7200	V AC
maximum permissible Voltage rating DC cond.-earth	V_0	5400	V DC
maximum permissible Voltage rating DC cond.-cond.		9000	V DC
Test voltage		12000	V AC

Temperature range

fixed installation	- 50 ... + 110	°C
installation with restricted movement[1)]	- 40 ... + 110	°C
free installation	- 30 ... + 110	°C

[1)] With a maximum movement of the freely movable cable length +/- 75 mm per 1 meter of cable length

Min. bending radius *)

fixed installation	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
installation with restricted movement			10 x D
free installation			10 x D

smaller bending radius on request

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

Conditions:

The upper temperature limit is determined by long term ageing according to EN 50305 Par. 7 and extrapolation to 20,000 hours.
The lower temperature limit is determined by bending and elongation tests according to EN 60811-1-4 Par. 8
The specified bending radii require a careful and proper handling using proven fastening technologies.

The cables are in conformity with:

Fire protection on railway vehicles, hazard level	**HL1 - HL3**	**EN 45545**
Vertical flame spread	50 < L ≤ 540 mm	EN 60332-1-2
Vertical flame spread, bunched, D ≤ 6 mm	L ≤ 1.5 m	EN 50305, 9.1.2
Vertical flame spread, bunched, 6 < D < 12 mm	L ≤ 2.5 m	EN 50305, 9.1.1 (EN 60332-3-25)
Vertical flame spread, bunched, D ≥ 12 mm	L ≤ 2.5 m	EN 60332-3-24
Smoke density	T ≥ 70 %	EN 61034-2
Toxicity	ITC ≤ 6	EN 50305, 9.2
Fire protection on railway vehicles, level of protection	**1 - 4**	**DIN 5510**
Vertical flame spread	50 < L ≤ 540 mm	EN 60332-1-2
Vertical flame spread, bunched, D ≤ 6 mm	L ≤ 1.5 m	EN 50305, 9.1.2
Vertical flame spread, bunched, 6 < D < 12 mm	L ≤ 2.5 m	EN 60332-3-25
Vertical flame spread, bunched, D ≥ 12 mm	L ≤ 2.5 m	EN 60332-3-24
Smoke density	T ≥ 60 %	EN 61034-2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	EN 50267-2-2
Amount of halogen acid gas	HCl + HBr ≤ 0.5 %	EN 50267-2-1
Content of fluorine	HF ≤ 0.1 %	EN 60684-2, 45.2
Toxicity	ITC ≤ 3	EN 50305, 9.2
Fire protection on railway vehicles, hazard level	**LR1 - LR4**	**UNI CEI 11170**
Vertical flame spread	50 < L ≤ 540 mm	EN 60332-1-2
Vertical flame spread, bunched, D ≤ 6 mm	L ≤ 1.5 m	EN 50305, 9.1.2
Vertical flame spread, bunched, 6 < D < 12 mm	L ≤ 2.5 m	EN 60332-3-25
Vertical flame spread, bunched, D ≥ 12 mm	L ≤ 2.5 m	EN 60332-3-24
Smoke density	T ≥ 70 %	EN 61034-2
Corrosivity of combustion gases	pH ≥ 4.3, C ≤ 10 µS/mm	EN 50267-2-2
Amount of halogen acid gas	HCl + HBr ≤ 0.5 %	EN 50267-2-1
Toxicity	ITC ≤ 3	EN 50305, 9.2

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Test Eh, hammer test ..... 20 J ..... EN60068-2-75, IEC 60068-2-75

Requirement of hazard level code M (acc. to EN 50264-1 or EN 50306-1)
Extra low temperature ..... - 40 °C
Extra oil resistance ..... IRM 902, 72h, 100°C
Extra fuel resistance ..... IRM 903, 168h, 70°

The fire safety certifications are not available yet. Once the products are manufactured for the first time, the product will be tested in accredited laboratories against the railway vehicle fire safety standards which have to be agreed with the customer.

Table:

Cross section mm²	**Conductor** construction n x m	$D_{nom.}$ mm	**Core-D** D_{nom} mm	**Screen** D_{nom} mm	cross section mm²	**Cable dia.** mm	R_{20} conductor [1] Ω/km	screen Ω/km	Z_T max mΩ/m	**C**[2] nom pF/m	**Fireload** kJ/m	**Weight** copper kg/100m	cable kg/100m	**H + S** Part. Nr.
16	266 x 0.30	6.0	10.6	11.3	3.9	14.5 ± 0.3	1.220	7.54	250	420	2950	21	40	84 116 591
25	518 x 0.25	7.6	12.4	13.3	5.5	16.5 ± 0.3	0.779	5.40	250	490	3700	31	55	84 116 592
35	700 x 0.25	8.7	13.6	14.5	4.8	18.0 ± 0.3	0.554	7.24	320	530	4320	39	67	84 120 466
50	854 x 0.28	10.9	16.5	17.4	6.3	21.5 ± 0.3	0.385	4.91	250	590	6215	55	95	84 103 131
70	1008 x 0.30	12.2	18.0	18.9	8.3	23.0 ± 0.3	0.271	3.41	250	630	7480	75	118	84 120 693
95	1316 x 0.30	14.1	20.3	21.4	10.6	26.0 ± 0.5	0.206	2.70	250	670	9030	96	151	84 121 058
120	960 x 0.40	16.2	22.5	23.4	8.3	28.5 ± 0.5	0.164	3.75	250	740	10395	121	188	84 117 907
150	880 x 0.40 + 588 x 0.30	17.6	24.2	25.1	9.5	30.0 ± 0.5	0.132	3.16	250	760	11340	150	222	84 121 069
185	1520 x 0.40	19.7	26.3	27.6	16.6	33.0 ± 0.5	0.108	1.74	150	810	12475	196	278	84 116 587
185	1520 x 0.40	19.7	26.3	28.3	26.0	36.7 ± 0.7	0.108	0.757	-	810	17353	211	320	85 082 004[3]

1) conductor resistance according to IEC 60228
2) capacity in water typical value
3) RADOX JUMPER 3600V 1X185 OM S UIC 552, Outer conductor wrapped, cross sections according requirements of UIC 552