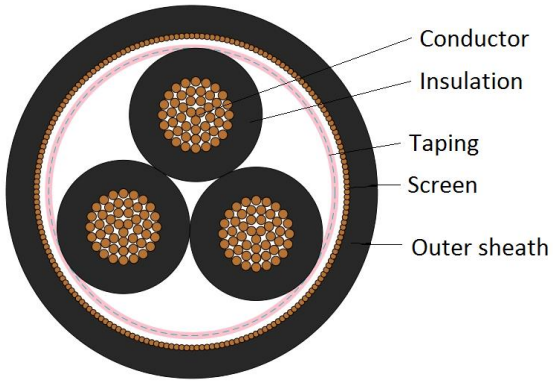
Application

ÖLFLEX® TRAIN 345 C are halogen-free, highly flame retardant cables for use in railway vehicles and buses. They are designed for fixed installation and for applications, where limited movement may occur. They are particularly used in areas, where human and animal life as well as valuable property are exposed to high risk of fire hazards.
ÖLFLEX® TRAIN 345 C are oil-, fuel-, acid- and alkali resistant acc. to EN 50264-3-2.
The screen is a protection against electrical interference.

Application range:
railway vehicles and buses: connecting lamps, heating equipment, switchgear, terminal boxes and power supply

Design



Design	acc. to EN 50264-3-2, 600V, MM
Norm references	EN 50264-3-2. Code designation MM MM = extra low temperature, extra oil and fuel resistant
Classification	EN 45545-2: Hazard Level HL1, HL2, HL3 NF F 16-101: depending on dimension (see table) Internal Category A1, A2, B External Category A1, A2, B Category C for flame propagation Category F0 for smoke
Conductor	fine wire strands of tinned copper acc. to IEC 60228 resp. EN 60228, Class 5
Core isolation	electron beam cross-linked polymer compound EI 109 acc. to EN 50264-1
Core identification	acc. to EN 50264-3-2, with or without GN/YE ground conductor black cores with white numbers acc. to DIN EN 50334
Taping	plastic foil Taping
Screen	braid of tinned copper, coverage = 85% (nominal value)
Outer sheath	electron beam cross-linked polymer compound, halogen free and flame retardant, EM 104 acc. to EN 50264-1 colour: black, similar RAL 9005

Electrical properties

Nominal voltage	U_0 / U: 0.6/1 kV AC
Max. permissible operating voltage:	U_m: 1.2 kV AC V_0: 0.9 kV DC
Test voltage	core / core: 3.5 kV AC; 8.4 kV DC core / screen: 3.5 kV AC; 8.4 kV DC

Mechanical and thermal properties

Min. bending radius	fixed installation ≤ 12 mm: 3 x outer diameter fixed installation > 12 mm: 4 x outer diameter occasional flexing ≤ 12 mm: 4 x outer diameter occasional flexing > 12 mm ≤ 20 mm: 5 x outer diameter occasional flexing > 20 mm: 6 x outer diameter
Temperature range	fixed installation: -45 °C up to +120 °C max. conductor temp. (20.000h) occasional flexing: -35 °C up to +120 °C max. conductor temp. (20.000h) - 50° acc. to GOST 33326-2015 and GOST 20.57.406-81 (method 203-1 und 205-1)
Short circuit temperature	max. +200°C (5s)

Fire protection acc. to EN 50264-1 / EN 45545:

Classification	EN 45545-2: Hazard Level HL1, HL2, HL3
Flammability No flame propagation acc. to	acc. to IEC 60332-1-2 resp. EN 60332-1-2 ≥ 12 mm: IEC 60332-3-24 resp. EN 60332-3-24 > 6 mm und < 12mm: IEC 60332-3-25 resp. EN 60332-3-25 ≤ 6 mm: EN 50305
Smoke density	acc. to EN 50264-1, light transmission: min. 70% acc. to IEC 61034-2; EN 61034-2
Halogen-free	acc. to IEC 60754-1; EN 60754-1; EN 50267-2-1 (chlorine and bromine) acc. to EN 60684-2 (fluorine)
Corrosivity	acc. to EN 50264-1, pH ≥ 4.3 and conductivity ≤ 10µS/mm acc. to IEC 60754-2; EN 60754-2; EN 50267-2-2
Toxicity	acc. to EN 50264-1 (≤ 3) acc. to EN 50305

Fire protection acc. to NF (depending on dimension, see table):

Classification	NF F 16-101: Internal Category A1, A2, B External Category A1, A2, B Category C for flame propagation Category F0 for smoke

Flammability	acc. to NF C 32-070, Category C1 and C2
Smoke density	acc. to NF X 10-702
Toxicity	acc. to NF X 70-100

Material properties

Ozone resistance	acc. to EN 50264-3-2, method B acc. to EN 50305
Mineral oil resistance	acc. to EN 50264-3-2
Fuel resistance	acc. to EN 50264-3-2
Acid and alkali resistance	acc. to EN 50264-3-2
UV resistance	acc. to EN 50525-1 are cables with black sheath suitable for a permanent outdoor use.
Tests	acc. to EN 50264-3-2
General requirements	These cables are conform to the EU Directive 2014/35/EU (Low Voltage Directive)
Environmental information	These cables meet the substance-specific requirements of the EU Directive 2011/65/EU (RoHS).

Art. No.	Number of cores x cross section [mm²]	Max. wire [ø]	Max. conduct. resist. (20°C) [Ω/km]	Conductor ø reference value [mm]	Core ø reference value [mm]	Outer ø [mm]	Fire load reference value [kJ/m]	Weight [kg/km]	NF F 16-101
15345040	2X0.5	0.21	40.1	0.95	2.15	**6.5** -0.3/+0.5	0.16	68	-
15345041	4X0.5	0.21	40.1	0.95	2.15	**7.4** -0.3/+0.5	0.22	96	-
15345042	7X0.5	0.21	40.1	0.95	2.15	**8.7** -0.3/+0.5	0.28	125	-
15345043	9X0.5	0.21	40.1	0.95	2.15	**11.0** -0.4/+0.6	0.57	221	-
15345044	12X0.5	0.21	40.1	0.95	2.15	**11.5** -0.4/+0.6	0.55	239	-
15345045	19X0.5	0.21	40.1	0.95	2.15	**13.8** -0.4/+0.6	0.82	341	-
15345046	24X0.5	0.21	40.1	0.95	2.15	**15.9** -0.5/+0.7	1.02	445	-
15345047	32X0.5	0.21	40.1	0.95	2.15	**17.8** -0.5/+0.7	1.33	564	-
15345048	37X0.5	0.21	40.1	0.95	2.15	**18.7** -0.5/+0.7	1.48	621	-
15345049	40X0.5	0.21	40.1	0.95	2.15	**19.7** -0.5/+0.7	1.65	688	-
15345050	2X0.75	0.21	26.7	1.15	2.35	**6.9** -0.3/+0.5	0.18	77	-
15345051	4X0.75	0.21	26.7	1.15	2.35	**7.8** -0.3/+0.5	0.23	109	-
15345052	7X0.75	0.21	26.7	1.15	2.35	**9.3** -0.3/+0.5	0.31	153	-
15345053	9X0.75	0.21	26.7	1.15	2.35	**11.8** -0.4/+0.6	0.64	266	-
15345054	12X0.75	0.21	26.7	1.15	2.35	**12.4** -0.4/+0.6	0.61	282	-
15345055	19X0.75	0.21	26.7	1.15	2.35	**15.0** -0.4/+0.6	0.94	435	-
15345056	24X0.75	0.21	26.7	1.15	2.35	**17.5** -0.5/+0.7	1.21	557	-
15345057	32X0.75	0.21	26.7	1.15	2.35	**19.1** -0.5/+0.7	1.47	684	-
15345058	37X0.75	0.21	26.7	1.15	2.35	**20.1** -0.6/+0.8	1.63	756	-
15345059	40X0.75	0.21	26.7	1.15	2.35	**21.2** -0.6/+0.8	1.84	836	-
15345060	2X1	0.21	20.0	1.3	2.5	**7.2** -0.3/+0.5	0.19	87	-
15345061	4X1	0.21	20.0	1.3	2.5	**8.2** -0.3/+0.5	0.25	123	-
15345062	7X1	0.21	20.0	1.3	2.5	**9.7** -0.3/+0.5	0.32	177	-

15345063	9X1	0.21	20.0	1.3	2.5	**12.4** -0.4/+0.6	0.69	300	-
15345064	12X1	0.21	20.0	1.3	2.5	**13.4** -0.4/+0.6	0.71	341	-
15345065	19X1	0.21	20.0	1.3	2.5	**15.7** -0.5/+0.7	0.99	505	-
15345066	24X1	0.21	20.0	1.3	2.5	**18.4** -0.5/+0.7	1.30	639	-
15345067	32X1	0.21	20.0	1.3	2.5	**20.1** -0.6/+0.8	1.59	790	-
15345068	37X1	0.21	20.0	1.3	2.5	**21.1** -0.6/+0.8	1.72	870	-
15345069	40X1	0.21	20.0	1.3	2.5	**23.0** -0.6/+0.8	2.16	1047	-
15345000	2X1.5	0.26	13.7	1.6	3.0	**8.2** -0.3/+0.5	0.30	125	X
15345001 15345025	3X1.5 3G1.5	0.26	13.7	1.6	3.0	**8.7** -0.2/+0.5	0.34	149	X
15345002 15345026	4X1.5 4G1.5	0.26	13.7	1.6	3.0	**9.4** -0.3/+0.5	0.40	180	X
15345070	7X1.5	0.26	13.7	1.6	3.0	**11.6** -0.4/+0.6	0.45	261	-
15345071	9X1.5	0.26	13.7	1.6	3.0	**14.7** -0.4/+0.6	0.83	390	-
15345072	12X1.5	0.26	13.7	1.6	3.0	**15.7** -0.5/+0.7	0.78	448	-
15345073	19X1.5	0.26	13.7	1.6	3.0	**18.6** -0.5/+0.7	1.17	649	-
15345074	24X1.5	0.26	13.7	1.6	3.0	**21.3** -0.6/+0.8	1.42	801	-
15345075	32X1.5	0.26	13.7	1.6	3.0	**24.0** -0.6/+0.8	1.90	1066	-
15345076	37X1.5	0.26	13.7	1.6	3.0	**25.2** -0.8/+1.0	2.11	1202	-
15345003	2X2.5	0.26	8.21	2.0	3.4	**9.0** -0.3/+0.6	0.36	160	X
15345004 15345027	3X2.5 3G2.5	0.26	8.21	2.0	3.4	**9.5** -0.3/+0.6	0.40	196	X
15345005 15345028	4X2.5 4G2.5	0.26	8.21	2.0	3.4	**10.8** -0.4/+0.7	0.50	259	X
15345077	7X2.5	0.26	8.21	2.0	3.4	**13.2** -0.4/+0.6	0.57	362	-
15345078	9X2.5	0.26	8.21	2.0	3.4	**16.5** -0.5/+0.7	0.98	538	-
15345079	12X2.5	0.26	8.21	2.0	3.4	**17.7** -0.5/+0.7	0.95	615	-
15345080	19X2.5	0.26	8.21	2.0	3.4	**20.6** -0.6/+0.8	1.31	874	-
15345081	24X2.5	0.26	8.21	2.0	3.4	**24.3** -0.6/+0.8	1.79	1160	-
15345006	2X4	0.31	5.09	2.7	4.1	**10.8** -0.4/+0.7	0.50	237	X
15345007	3X4	0.31	5.09	2.7	4.1	**11.4** -0.4/+0.7	0.55	290	X
15345008	4X4	0.31	5.09	2.7	4.1	**12.4** -0.4/+0.7	0.64	354	X
15345009	2X6	0.31	3.39	3.2	4.6	**11.8** -0.4/+0.7	0.55	294	X
15345010	3X6	0.31	3.39	3.2	4.6	**12.5** -0.4/+0.7	0.61	368	X
15345011	4X6	0.31	3.39	3.2	4.6	**14.0** -0.4/+0.7	0.78	470	X
15345012	2X10	0.41	1.95	4.2	5.6	**14.2** -0.4/+1.4	0.76	428	X
15345013	3X10	0.41	1.95	4.2	5.6	**15.2** -0.5/+1.5	0.87	572	X
15345014	4X10	0.41	1.95	4.2	5.6	**16.6** -0.5/+1.5	1.01	711	X
15345015	2X16	0.41	1.24	5.2	6.6	**16.4** -0.4/+1.5	1.01	637	X
15345016	3X16	0.41	1.24	5.2	6.6	**17.8** -0.4/+1.6	1.18	836	X
15345017	4X16	0.41	1.24	5.2	6.6	**19.4** -0.1/+1.8	1.35	1040	X
15345018	2X25	0.41	0.795	6.5	8.3	**20.2** -0.4/+1.6	1.49	940	X
15345019	3X25	0.41	0.795	6.5	8.3	**21.4** -0.1/+1.8	1.61	1219	X
15345020	4X25	0.41	0.795	6.5	8.3	**24.1** -0.1/+2.1	2.04	1601	X
15345021	2X35	0.41	0.565	7.7	9.5	**23.2** -0.4/+2.2	1.95	1287	X
15345022	3X35	0.41	0.565	7.7	9.5	**24.6** -0.1/+2.4	2.09	1668	X
15345023	2X50	0.41	0.393	9.7	11.7	**27.6** -0.8/+2.4	2.51	1733	X
15345024	3X50	0.41	0.393	9.7	11.7	**29.8** -1.0/+2.6	2.81	2336	X