

15345000	<b>DATA SHEET</b>	
Valid from: 2023-12-20	<b>ÖLFLEX® TRAIN 345 C 600V</b>	

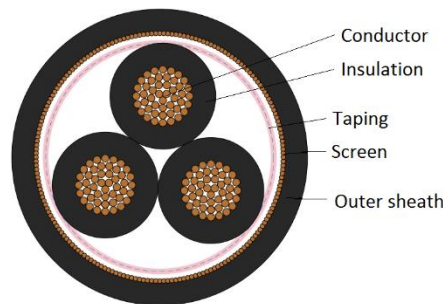
## Application

ÖLFLEX® TRAIN 345 C are halogen-free, highly flame retardant cables for use in railway vehicles. 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: connecting lamps, heating equipment, switchgear, terminal boxes and power supply

## Design



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
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 at 20 °C

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

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### Mechanical and thermal properties

Min. bending radius	<p>Outer diameter <math>\leq</math> 12.0 mm for cautions bending (one bend at end of core): 4 x outer diameter fixed installation: 5 x outer diameter occasional flexing: 6 x outer diameter</p> <p>Outer diameter <math>&gt;</math> 12.0 mm for cautions bending (one bend at end of core): 5 x outer diameter fixed installation: 6 x outer diameter occasional flexing: 7 x outer diameter</p>
Temperature range	<p>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)</p> <p>- 50° acc. to GOST 33326-2015 and GOST 20.57.406-81 (method 203-1 und 205-1)</p>
Short circuit temperature	max. +200°C (5s)

### Fire protection acc. to EN 50264-1 / EN 45545-2:

Classification	EN 45545-2: Hazard Level HL1, HL2, HL3
Flammability	<p>flame retardand acc. IEC 60332-1-2 resp. EN 60332-1-2 no flame propagation acc. to:</p> <p><math>\geq</math> 12 mm: IEC 60332-3-24 resp. EN 60332-3-24 <math>&gt;</math> 6 mm und <math>&lt;</math> 12mm: IEC 60332-3-25 resp. EN 60332-3-25 <math>\leq</math> 6 mm: EN 50305, clause 9.1.2</p>
Smoke density	<p>acc. to EN 50264-1, light transmission: min. 70% acc. to IEC 61034-2 resp. EN 61034-2</p>
Halogen-free	<p>acc. to IEC 60754-1; EN 60754-1; EN 50267-2-1 (chlorine and bromine) acc. to EN 60684-2 (fluorine)</p>
Corrosivity	<p>acc. to EN 50264-1, pH <math>\geq</math> 4.3 and conductivity <math>\leq</math> 10<math>\mu</math>S/mm acc. to IEC 60754-2 resp. EN 60754-2</p>
Toxicity	<p>acc. to EN 50264-1: <math>\leq</math> 3 EN 45545-2: <math>\leq</math> 6</p>

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

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

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### 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 [mm <sup>2</sup> ]	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	582	68	-
15345041	4X0.5	0.21	40.1	0.95	2.15	7.4 -0.3/+0.5	781	96	-
15345042	7X0.5	0.21	40.1	0.95	2.15	8.7 -0.3/+0.5	1012	125	-
15345043	9X0.5	0.21	40.1	0.95	2.15	11.0 -0.4/+0.6	2054	221	-
15345044	12X0.5	0.21	40.1	0.95	2.15	11.5 -0.4/+0.6	1975	239	-
15345045	19X0.5	0.21	40.1	0.95	2.15	13.8 -0.4/+0.6	2961	341	-
15345046	24X0.5	0.21	40.1	0.95	2.15	15.9 -0.5/+0.7	3674	445	-
15345047	32X0.5	0.21	40.1	0.95	2.15	17.8 -0.5/+0.7	4802	564	-
15345048	37X0.5	0.21	40.1	0.95	2.15	18.7 -0.5/+0.7	5321	621	-
15345049	40X0.5	0.21	40.1	0.95	2.15	19.7 -0.5/+0.7	5936	688	-
15345050	2X0.75	0.21	26.7	1.15	2.35	6.9 -0.3/+0.5	639	77	-
15345051	4X0.75	0.21	26.7	1.15	2.35	7.8 -0.3/+0.5	833	109	-
15345052	7X0.75	0.21	26.7	1.15	2.35	9.3 -0.3/+0.5	1110	153	-
15345053	9X0.75	0.21	26.7	1.15	2.35	11.8 -0.4/+0.6	2295	266	-
15345054	12X0.75	0.21	26.7	1.15	2.35	12.4 -0.4/+0.6	2203	282	-
15345055	19X0.75	0.21	26.7	1.15	2.35	15.0 -0.4/+0.6	3381	435	-
15345056	24X0.75	0.21	26.7	1.15	2.35	17.5 -0.5/+0.7	4357	557	-
15345057	32X0.75	0.21	26.7	1.15	2.35	19.1 -0.5/+0.7	5299	684	-
15345058	37X0.75	0.21	26.7	1.15	2.35	20.1 -0.6/+0.8	5862	756	-
15345059	40X0.75	0.21	26.7	1.15	2.35	21.2 -0.6/+0.8	6610	836	-
15345060	2X1	0.21	20.0	1.3	2.5	7.2 -0.3/+0.5	682	87	-
15345061	4X1	0.21	20.0	1.3	2.5	8.2 -0.3/+0.5	904	123	-
15345062	7X1	0.21	20.0	1.3	2.5	9.7 -0.3/+0.5	1160	177	-
15345063	9X1	0.21	20.0	1.3	2.5	12.4 -0.4/+0.6	2477	300	-

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15345064	12X1	0.21	20.0	1.3	2.5	<b>13.4</b> -0.4/+0.6	2555	341	-
15345065	19X1	0.21	20.0	1.3	2.5	<b>15.7</b> -0.5/+0.7	3567	505	-
15345066	24X1	0.21	20.0	1.3	2.5	<b>18.4</b> -0.5/+0.7	4692	639	-
15345067	32X1	0.21	20.0	1.3	2.5	<b>20.1</b> -0.6/+0.8	5720	790	-
15345068	37X1	0.21	20.0	1.3	2.5	<b>21.1</b> -0.6/+0.8	6208	870	-
15345069	40X1	0.21	20.0	1.3	2.5	<b>23.0</b> -0.6/+0.8	7762	1047	-
15345000	2X1.5	0.26	13.7	1.6	3.0	<b>8.2</b> -0.3/+0.5	1097	125	X
15345001	3X1.5	0.26	13.7	1.6	3.0	<b>8.7</b> -0.2/+0.5	1228	149	X
15345025	3G1.5								
15345002	4X1.5	0.26	13.7	1.6	3.0	<b>9.4</b> -0.3/+0.5	1443	180	X
15345026	4G1.5								
15345070	7X1.5	0.26	13.7	1.6	3.0	<b>11.6</b> -0.4/+0.6	1632	261	-
15345071	9X1.5	0.26	13.7	1.6	3.0	<b>14.7</b> -0.4/+0.6	2994	390	-
15345072	12X1.5	0.26	13.7	1.6	3.0	<b>15.7</b> -0.5/+0.7	2819	448	-
15345073	19X1.5	0.26	13.7	1.6	3.0	<b>18.6</b> -0.5/+0.7	4220	649	-
15345074	24X1.5	0.26	13.7	1.6	3.0	<b>21.3</b> -0.6/+0.8	5100	801	-
15345075	32X1.5	0.26	13.7	1.6	3.0	<b>24.0</b> -0.6/+0.8	6833	1066	-
15345076	37X1.5	0.26	13.7	1.6	3.0	<b>25.2</b> -0.8/+1.0	7609	1202	-
15345003	2X2.5	0.26	8.21	2.0	3.4	<b>9.0</b> -0.3/+0.6	1291	160	X
15345004	3X2.5	0.26	8.21	2.0	3.4	<b>9.5</b> -0.3/+0.6	1435	196	X
15345027	3G2.5								
15345005	4X2.5	0.26	8.21	2.0	3.4	<b>10.8</b> -0.4/+0.7	1814	259	X
15345028	4G2.5								
15345077	7X2.5	0.26	8.21	2.0	3.4	<b>13.2</b> -0.4/+0.6	2043	362	-
15345078	9X2.5	0.26	8.21	2.0	3.4	<b>16.5</b> -0.5/+0.7	3527	538	-
15345079	12X2.5	0.26	8.21	2.0	3.4	<b>17.7</b> -0.5/+0.7	3415	615	-
15345080	19X2.5	0.26	8.21	2.0	3.4	<b>20.6</b> -0.6/+0.8	4718	874	-
15345081	24X2.5	0.26	8.21	2.0	3.4	<b>24.3</b> -0.6/+0.8	6440	1160	-
15345006	2X4	0.31	5.09	2.7	4.1	<b>10.8</b> -0.4/+0.7	1788	237	X
15345007	3X4	0.31	5.09	2.7	4.1	<b>11.4</b> -0.4/+0.7	1983	290	X
15345008	4X4	0.31	5.09	2.7	4.1	<b>12.4</b> -0.4/+0.7	2320	354	X
15345009	2X6	0.31	3.39	3.2	4.6	<b>11.8</b> -0.4/+0.7	1978	294	X
15345010	3X6	0.31	3.39	3.2	4.6	<b>12.5</b> -0.4/+0.7	2179	368	X
15345011	4X6	0.31	3.39	3.2	4.6	<b>14.0</b> -0.4/+0.7	2798	470	X
15345012	2X10	0.41	1.95	4.2	5.6	<b>14.2</b> -0.4/+1.4	2741	428	X
15345013	3X10	0.41	1.95	4.2	5.6	<b>15.2</b> -0.5/+1.5	3128	572	X
15345014	4X10	0.41	1.95	4.2	5.6	<b>16.6</b> -0.5/+1.5	3648	711	X
15345015	2X16	0.41	1.24	5.2	6.6	<b>16.4</b> -0.4/+1.5	3647	637	X
15345016	3X16	0.41	1.24	5.2	6.6	<b>17.8</b> -0.4/+1.6	4241	836	X
15345017	4X16	0.41	1.24	5.2	6.6	<b>19.4</b> -0.1/+1.8	4844	1040	X
15345018	2X25	0.41	0.795	6.5	8.3	<b>20.2</b> -0.4/+1.6	5364	940	X
15345019	3X25	0.41	0.795	6.5	8.3	<b>21.4</b> -0.1/+1.8	5790	1219	X
15345020	4X25	0.41	0.795	6.5	8.3	<b>24.1</b> -0.1/+2.1	7352	1601	X
15345021	2X35	0.41	0.565	7.7	9.5	<b>23.2</b> -0.4/+2.2	7034	1287	X

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15345022	3X35	0.41	0.565	7.7	9.5	<b>24.6</b> -0.1/+2.4	7522	1668	X
15345023	2X50	0.41	0.393	9.7	11.7	<b>27.6</b> -0.8/+2.4	9038	1733	X
15345024	3X50	0.41	0.393	9.7	11.7	<b>29.8</b> -1.0/+2.6	10131	2336	X

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