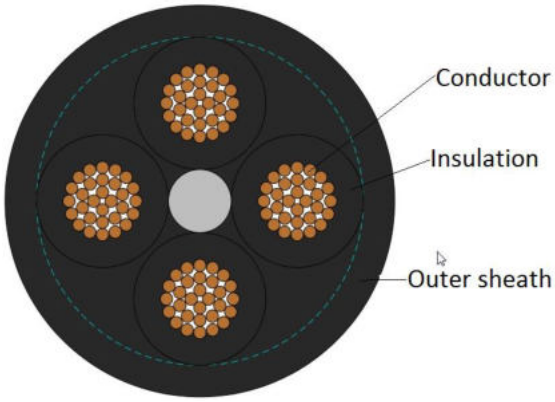
Application

ÖLFLEX® TRAIN 350 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 350 are oil-, fuel- , acid- and alkali resistant acc. to EN 50264-3-2.

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: 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 IEC 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
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: 300/500 V AC
Max. permissible operating voltage:	U_m: 600 V AC V_0: 450 V DC
Test voltage	core / core: 2 kV AC; 4.8 kV DC

Mechanical and thermal properties

Min. bending radius	Outer diameter ≤ 12.0 mm: 4 x outer diameter for cautions bending (one bend at end of core): 3 x outer diameter Outer diameter > 12.0 mm: 5 x outer diameter for cautions bending (one bend at end of core): 4 x outer diameter
Temperature range	-40 °C up to +90 °C max. conductor temp. 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 according to EN 50264-1 / EN 45545-2:

Classification	EN 45545-2: Hazard Level HL1, HL2, HL3
Flammability	flame retardant acc. IEC 60332-1-2 resp. EN 60332-1-2 no flame propagation acc. to: ≥ 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, clause 9.1.2
Smoke density	acc. to EN 50264-1, light transmission: min. 70% acc. to IEC 61034-2 resp. EN 61034-2
Halogen-free	acc. to IEC 60754-1 resp. EN 60754-1 (chlorine and bromine) acc. to EN 60684-2 (fluorine)
Corrosivity	acc. to EN 50264-1, pH ≥ 4.3 and conductivity ≤ 10 µS/mm acc. to IEC 60754-2 resp. EN 60754-2
Toxicity	acc. to EN 50264-1 (≤ 3) acc. to EN 50305 acc. to EN 45545-2 (≤ 6)

Fire protection according to NF:

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
EU Directives	These cables are conform to the EU-Directives 2014/35/EC (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 [mm]	Max. conductor resistance (20°C) [Ohm/km]	Conductor ø reference value [mm]	Core ø reference value [mm]	Outer ø [mm]	Fire load reference value [kJ/m]	Weight [kg/km]
15350000	2X1	0.21	20.0	1.3	2.1	**5.4** -0.1+0.6	564	54
15350001	4X1	0.21	20.0	1.3	2.1	**6.2** -0.1+0.6	690	81
15350002	7X1	0.21	20.0	1.3	2.1	**7.7** -0.2+0.5	985	128
15350003	9X1	0.21	20.0	1.3	2.1	**9.6** -0.3+0.4	1500	179
15350004	12X1	0.21	20.0	1.3	2.1	**10.1** -0.3+0.6	1439	204
15350005	19X1	0.21	20.0	1.3	2.1	**12.1** -0.4+0.5	2051	309
15350006	24X1	0.21	20.0	1.3	2.1	**14.4** -0.3+0.6	2683	396
15350007	32X1	0.21	20.0	1.3	2.1	**15.9** -0.4+0.7	3447	520
15350008	37X1	0.21	20.0	1.3	2.1	**16.7** -0.5+0.6	3642	580
15350009	40X1	0.21	20.0	1.3	2.1	**17.8** -0.5+0.7	4212	644
15350010	4X1.5	0.26	13.7	1.6	2.6	**7.6** -0.3+0.4	946	116
15350011	7X1.5	0.26	13.7	1.6	2.6	**9.2** -0.3+0.4	1348	184
15350012	9X1.5	0.26	13.7	1.6	2.6	**11.7** -0.4+0.5	2323	273
15350013	12X1.5	0.26	13.7	1.6	2.6	**12.4** -0.4+0.5	2093	302
15350014	19X1.5	0.26	13.7	1.6	2.6	**15.0** -0.4+0.5	3230	473
15350015	24X1.5	0.26	13.7	1.6	2.6	**17.3** -0.5+0.6	3749	577
15350016	32X1.5	0.26	13.7	1.6	2.6	**19.6** -0.5+0.6	5139	778
15350017	37X1.5	0.26	13.7	1.6	2.6	**20.6** -0.6+0.7	5625	879
15350018	4X2.5	0.26	8.21	2.0	3.0	**8.6** -0.3+0.5	1183	169
15350019	7X2.5	0.26	8.21	2.0	3.0	**10.6** -0.4+0.6	1652	270
15350020	9X2.5	0.26	8.21	2.0	3.0	**13.7** -0.4+0.6	3013	402
15350021	12X2.5	0.26	8.21	2.0	3.0	**14.5** -0.4+0.6	2786	461
15350022	19X2.5	0.26	8.21	2.0	3.0	**17.0** -0.5+0.7	3629	680
15350023	24X2.5	0.26	8.21	2.0	3.0	**20.1** -0.5+1.1	4909	879