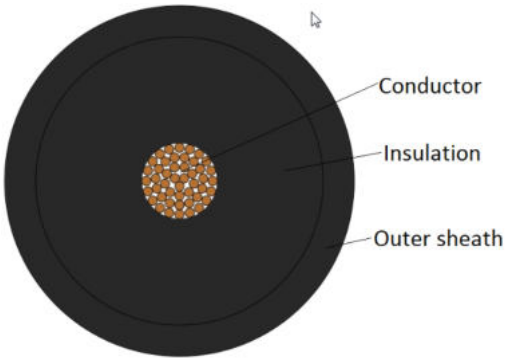
Application

ÖLFLEX® TRAIN 381 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 381 are oil-, fuel-, acid- and alkali resistant acc. to EN 50264-3-1.

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

Design



Design	acc. to EN 50264-3-1, 3600 V, MM
Norm references	EN 50264-3-1. 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 F1 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	black
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: 3.6/6 kV AC
Max. permissible operating voltage	U_m: 7.2 kV AC V_0: 5.4 kV DC
Test voltage	11 kV AC; 26 kV DC
Dielectric strength	U: 20 kV AC acc. to EN 50264-3-1

Mechanical and thermal properties

Min. bending radius	Cable diameter ≤ 12.0 mm: 4 x outer diameter for cautions bending: 3 x outer diameter (one bend at end of core) Cable diameter > 12.0 mm: 5 x outer diameter for cautions bending: 4 x outer diameter (one bend at end of core)
Temperature range	-40 °C up to +90 °C max. conductor temp. up to +120 °C max. conductor temp. (20.000h) -50 °C 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 45545-2:

Classification	EN 45545-2: Hazard Level HL1, HL2, HL3
Flammability	Flame retardant acc. to 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 and < 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 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 acc. to NF:

Classification	NF F 16-101: Internal Category A1, A2, B External Category A1, A2, B Category C for flame propagation Category F1 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 50264-3-1, method B acc. to EN 50305
Mineral oil resistance	acc. to EN 50264-3-1
Fuel resistance	acc. to EN 50264-3-1
Acid and alkali resistance	acc. to EN 50264-3-1
UV resistance	Acc. to EN 50525-1 are cables with black sheath suitable for a permanent outdoor use.
Tests	acc. to EN 50264-3-1
Environmental information	These cables meet the substance-specific requirements of the EU Directive 2011/65/EU (RoHS).

Art. No.	Conductor 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]
15381000	2.5	0.26	8.21	2.0	7.4	**9.1** ± 0.2	1523	118
15381001	4	0.31	5.09	2.7	8.1	**9.6** ± 0.2	1743	146
15381002	6	0.31	3.39	3.2	8.6	**10.2** ± 0.3	1918	176
15381003	10	0.41	1.95	4.2	9.6	**11.2** ± 0.3	2088	232
15381004	16	0.41	1.24	5.2	10.6	**12.1** ± 0.3	2420	303
15381005	25	0.41	0.795	6.5	12.5	**14.4** ± 0.3	3321	445
15381006	35	0.41	0.565	7.7	13.7	**15.6** ± 0.3	3726	566
15381007	50	0.41	0.393	9.7	15.7	**17.3** ± 0.3	4325	747
15381008	70	0.51	0.277	11.4	17.4	**19.0** ± 0.4	4860	972
15381009	95	0.51	0.210	13.4	19.4	**20.9** ± 0.4	5476	1250
15381010	120	0.51	0.164	15.0	21.0	**22.4** ± 0.4	6561	1557
15381011	150	0.51	0.132	17.0	23.0	**24.2** ± 0.4	7371	1895
15381012	185	0.51	0.108	18.5	25.1	**26.8** ± 0.4	8181	2281
15381013	240	0.51	0.0817	22.0	29.0	**30.0** ± 0.5	10984	2982
15381014	300	0.51	0.0654	23.2	30.2	**32.6** ± 0.5	11052	3554