


15320000	DATA SHEET	
Valid from: 06.11.2019	ÖLFLEX® TRAIN 320 TW-E 300V	

Application

ÖLFLEX® TRAIN 320 TW-E are halogen-free, highly flame retardant cables with reduced insulation wall thickness 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 life as well as valuable property are exposed to high risk of fire hazards.

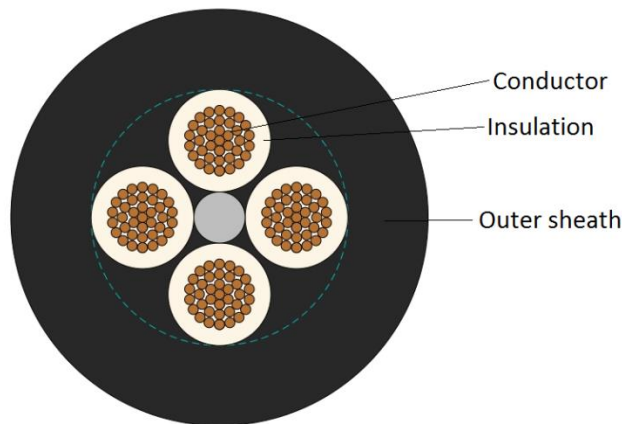
ÖLFLEX® TRAIN 320 TW-E are oil-, fuel-, acid- and alkali resistant acc. to EN 50306-4.

Relevant for the installation are the indications in EN 50355 and EN 50343.

Application range:

railway vehicles, control and monitoring circuits as well as locking circuits and internal wiring of equipment in trains and locomotives

Design




Design	according to EN 50306-4, class 1E
Norm references	EN 50306-4 bzw. VDE 0260-306-4. 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	tinned- copper strand, 19 or 37 wires, SRC (Special Round Conductor) acc. to EN 50306-2
Core isolation	electron beam cross-linked polymer compound acc. to EN 50306-2
Core identification	white cores with black numbers acc. to DIN EN 50334 resp. VDE 0293-334
Outer sheath	electron beam cross-linked polymer compound, halogen free and flame retardant, S2 acc. to EN 50306-1 colour: Black, similar RAL 9005
Electrical properties	
Nominal voltage	U_0 / U : 300/500 V AC according to EN 50306 U_m : 550V AC according to EN 50306 U_0 / U : 600/1000 V AC
Test voltage	core / core: 3.5 kV AC or 8.4 kV DC

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Mechanical and thermal properties

Min. bending radius	Cable diameter \leq 12.0 mm
	for cautions bending: 3 x cable diameter (one bend at end of core) fixed installation: 4 x cable diameter occasional flexing: 5 x cable diameter
	Cable diameter $>$ 12.0 mm
	for cautions bending: 4 x cable diameter (one bend at end of core) fixed installation: 5 x cable diameter occasional flexing: 6 x cable diameter
Temperature range	fixed installation: -45 °C up to +125 °C max. conductor temp. (20.000h) occasional flexing: -35 °C up to +105 °C max. conductor temp.
	- 50° according to GOST 33326-2015 and GOST 20.57.406-81 (method 203-1 und 205-1)
Short circuit temperature	max. +160°C (5s)


Fire protection according to EN 50306-4 / EN 45545:

Classification	EN 45545-2: Hazard Level HL1, HL2, HL3
Flammability	acc. to EN 60332-1-2 resp. VDE 0482-332-1-2
No flame propagation acc. to	\geq 12 mm: EN 60332-3-24 resp. VDE 0482-332-3-24 $>$ 6 mm und $<$ 12mm: EN 60332-3-25 resp. VDE 0482-332-3-25 \leq 6 mm: EN 50305, clause 9.1.2
Smoke density	acc. to EN 50306-1, 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 \geq 4.3 and conductivity \leq 10 μ S/mm acc. to IEC 60754-2; EN 60754-2; EN 50267-2-2
Toxicity (< 6)	acc. to EN 50305

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

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Material properties

Ozone resistance	acc. to EN 50306, method A or B
Mineral oil resistance	acc. to EN 50306
Fuel resistance	acc. to EN 50306
Acid and alkali resistance	acc. to EN 50306
UV resistance	acc. to EN 50525-1 (VDE 0285-525-1) are cables with black sheath suitable for a permanent outdoor use.
Tests	acc. to EN 50306-2 and EN 50306-4
EU Directives	These cables are conform to the EU-Directives 2014/35/EC (Low Voltage Directive)

Art. No.	Number of cores x cross section [mm ²]	Conductor [n x mmø]	Max. conductor resistance (20°C) [Ohm/km]	Conductor ø reference value [mm]	Core ø reference value [mm]	Outer ø [mm]	Fire load reference value [kWh/m]	Weight [kg/km]
15320000	4X0.5	19x0.18	40.1	0.9	1.4	6.0 ± 0.5	0.19	61
15320001	7X0.5	19x0.18	40.1	0.9	1.4	6.8 ± 0.5	0.23	84
15320002	13X0.5	19x0.18	40.1	0.9	1.4	8.8 ± 0.5	0.36	142
15320003	19X0.5	19x0.18	40.1	0.9	1,4	9.6 ± 0.6	0.40	181
15320004	37X0.5	19x0.18	40.1	0.9	1.4	12.9 ± 0.6	0.70	333
15320005	4X0.75	37x0.16*	26.7	1.1	1.6	6.5 ± 0.5	0.21	76
15320006	7X0.75	37x0.16*	26.7	1.1	1.6	7.4 ± 0.5	0.26	108
15320007	13X0.75	37x0.16*	26.7	1.1	1.6	9.7 ± 0.6	0.42	186
15320008	19X0.75	37x0.16*	26.7	1.1	1.6	10.6 ± 0.6	0.47	240
15320009	37X0.75	37x0.16*	26.7	1.1	1.6	13.8 ± 0.6	0.72	427
15320010	48X0.75	37x0.16*	26.7	1.1	1.6	15.6 ± 0.8	0.83	529
15320011	4X1	37x0.18*	20.0	1.2	1.7	6.8 ± 0.5	0.23	90
15320012	7X1	37x0.18*	20.0	1.2	1.7	7.8 ± 0.5	0.28	130
15320013	13X1	37x0.18*	20.0	1.2	1.7	10.3 ± 0.6	0.46	226
15320014	19X1	37x0.18*	20.0	1.2	1.7	11.3 ± 0.6	0.51	296
15320015	37X1	37x0.18*	20.0	1.2	1.7	14.8 ± 0.6	0.79	532
15320016	4X1.5	37x0.23*	13.7	1.6	2.2	7.9 ± 0.5	0.30	125
15320017	7X1.5	37x0.23*	13.7	1.6	2.2	9.3 ± 0.5	0.40	189
15320018	13X1.5	37x0.23*	13.7	1.6	2.2	12.3 ± 0.6	0.62	325
15320019	19X1.5	37x0.23*	13.7	1.6	2.2	13.6 ± 0.6	0.72	433
15320020	37X1.5	37x0.23*	13.7	1.6	2.2	18.0 ± 0.8	1.12	782
15320021	2X2.5	37x0.30*	8.21	2.1	2.8	8.2 ± 0.5	0.35	189
15320022	3X2.5	37x0.30*	8.21	2.1	2.8	8.6 ± 0.5	0.36	126
15320023	4X2.5	37x0.30*	8.21	2.1	2.8	9.4 ± 0.6	0.42	152

* These cables may be supplied in 19 strand conductors.

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