

|                           |                               |  |
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| 15340000                  | <b>DATA SHEET</b>             |  |
| Valid from:<br>14.09.2018 | <b>ÖLFLEX® TRAIN 340 600V</b> |  |

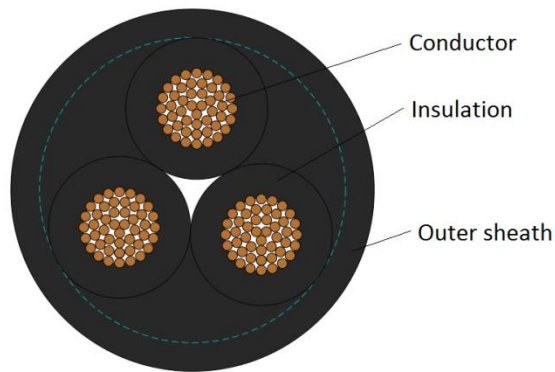
## Application

Design ÖLFLEX® TRAIN 340 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 340 are oil-, fuel-, acid- and alkali resistant acc. to EN 50264-3-2.

Application range:

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

## Design



|                     |  |
|---------------------|--|
| Design              | according to EN 50264-3-2, 600V, MM  |
| Norm references     | EN 50264-3-2 (VDE 0260-264-3-2). Code designation MM<br>MM = extra low temperature, extra oil and fuel resistant   |
| Classification      | EN 45545-2: Hazard Level HL1, HL2, HL3<br>NF F 16-101: depending on dimension (see table)<br>Internal Category A1, A2, B<br>External Category A1, A2, B<br>Category C for flame propagation<br>Category F0 for smoke |
| Conductor           | fine wire strands of tinned copper acc. to IEC/EN 60228 resp. VDE 0295, 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<br>black cores with white numbers acc. to DIN EN 50334 resp. VDE 0293-334   |
| Outer sheath        | electron beam cross-linked polymer compound, halogen free and flame retardant,<br>EM 104 acc. to EN 50264-1<br>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<br>$V_0$ : 0.9 kV DC |
| Test voltage                        | core / core: 3.5 kV AC; 8.4 kV DC      |

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### Mechanical and thermal properties

|                           |  |  |
|---------------------------|--|--|
| Min. bending radius       | fixed installation $\leq$ 12 mm:           | 3 x cable diameter   |
|                           | fixed installation $>$ 12 mm:              | 4 x cable diameter   |
|                           | occasional flexing $\leq$ 12 mm:           | 4 x cable diameter   |
|                           | occasional flexing $>$ 12 mm $\leq$ 20 mm: | 5 x cable diameter   |
|                           | occasional flexing $>$ 20 mm:              | 6 x cable 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° according to GOST 33326-2015 and<br>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:

|                              |  |                                       |
|------------------------------|--|---------------------------------------|
| 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                              |
| Smoke density                | acc. to EN 50264-1, light transmission: min. 70%<br>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)<br>acc. to EN 60684-2 (fluorine)                    |                                       |
| Corrosivity                  | acc. to EN 50264-1, pH $\geq$ 4.3 and conductivity $\leq$ 10 $\mu$ S/mm<br>acc. to IEC 60754-2; EN 60754-2; EN 50267-2-2 |                                       |
| Toxicity                     | acc. to EN 50264-1 ( $\leq$ 3)<br>acc. to EN 50305   |                                       |

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

|                |  |
|----------------|--|
| Classification | NF F 16-101: Internal Category A1, A2, B<br>External Category A1, A2, B<br>Category C for flame propagation<br>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 50264-3-2, method B<br>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 (VDE 0285-525-1) 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)                       |

| 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 |
|----------|--|---------------|-------------------------------------|----------------------------------|-----------------------------|----------------|----------------------------------|----------------|-------------|
| 15340040 | 2X0.5  | 0.21          | 40.1                                | 0.95                             | 2.15                        | 5.7 -0.3/+0.5  | 0.18                             | 49             | -           |
| 15340041 | 4X0.5  | 0.21          | 40.1                                | 0.95                             | 2.15                        | 6.6 -0.3/+0.5  | 0.23                             | 69             | -           |
| 15340042 | 7X0.5  | 0.21          | 40.1                                | 0.95                             | 2.15                        | 7.9 -0.3/+0.5  | 0.31                             | 102            | -           |
| 15340043 | 9X0.5  | 0.21          | 40.1                                | 0.95                             | 2.15                        | 9.8 -0.3/+0.5  | 0.49                             | 151            | -           |
| 15340044 | 12X0.5   | 0.21          | 40.1                                | 0.95                             | 2.15                        | 10.5 -0.4/+0.6 | 0.48                             | 164            | -           |
| 15340045 | 19X0.5   | 0.21          | 40.1                                | 0.95                             | 2.15                        | 12.4 -0.4/+0.6 | 0.68                             | 242            | -           |
| 15340046 | 24X0.5   | 0.21          | 40.1                                | 0.95                             | 2.15                        | 14.7 -0.4/+0.6 | 0.88                             | 312            | -           |
| 15340047 | 32X0.5   | 0.21          | 40.1                                | 0.95                             | 2.15                        | 16.2 -0.5/+0.7 | 1.10                             | 399            | -           |
| 15340048 | 37X0.5   | 0.21          | 40.1                                | 0.95                             | 2.15                        | 17.5 -0.5/+0.7 | 1.31                             | 470            | -           |
| 15340049 | 40X0.5   | 0.21          | 40.1                                | 0.95                             | 2.15                        | 18.5 -0.5/+0.7 | 1.48                             | 520            | -           |
| 15340050 | 2X0.75   | 0.21          | 26.7                                | 1.15                             | 2.35                        | 6.1 -0.3/+0.5  | 2.17                             | 59             | -           |
| 15340051 | 4X0.75   | 0.21          | 26.7                                | 1.15                             | 2.35                        | 7.0 -0.3/+0.5  | 2.65                             | 83             | -           |
| 15340052 | 7X0.75   | 0.21          | 26.7                                | 1.15                             | 2.35                        | 8.5 -0.3/+0.5  | 3.66                             | 127            | -           |
| 15340053 | 9X0.75   | 0.21          | 26.7                                | 1.15                             | 2.35                        | 10.8 -0.4/+0.6 | 5.40                             | 193            | -           |
| 15340054 | 12X0.75  | 0.21          | 26.7                                | 1.15                             | 2.35                        | 11.4 -0.4/+0.6 | 6.57                             | 208            | -           |
| 15340055 | 19X0.75  | 0.21          | 26.7                                | 1.15                             | 2.35                        | 13.8 -0.4/+0.6 | 9.52                             | 319            | -           |
| 15340056 | 24X0.75  | 0.21          | 26.7                                | 1.15                             | 2.35                        | 15.9 -0.5/+0.7 | 12.24                            | 392            | -           |
| 15340057 | 32X0.75  | 0.21          | 26.7                                | 1.15                             | 2.35                        | 17.9 -0.5/+0.7 | 15.52                            | 521            | -           |
| 15340058 | 37X0.75  | 0.21          | 26.7                                | 1.15                             | 2.35                        | 18.9 -0.5/+0.7 | 17.45                            | 591            | -           |
| 15340059 | 40X0.75  | 0.21          | 26.7                                | 1.15                             | 2.35                        | 20.0 -0.5/+0.7 | 20.76                            | 655            | -           |
| 15340060 | 2X1  | 0.21          | 20.0                                | 1.3                              | 2.5                         | 6.4 -0.3/+0.5  | 2.22                             | 67             | -           |
| 15340061 | 4X1  | 0.21          | 20.0                                | 1.3                              | 2.5                         | 7.4 -0.3/+0.5  | 2.74                             | 98             | -           |
| 15340062 | 7X1  | 0.21          | 20.0                                | 1.3                              | 2.5                         | 8.9 -0.3/+0.5  | 3.77                             | 149            | -           |
| 15340063 | 9X1  | 0.21          | 20.0                                | 1.3                              | 2.5                         | 11.4 -0.4/+0.6 | 5.72                             | 227            | -           |
| 15340064 | 12X1   | 0.21          | 20.0                                | 1.3                              | 2.5                         | 12.0 -0.4/+0.6 | 7.01                             | 245            | -           |
| 15340065 | 19X1   | 0.21          | 20.0                                | 1.3                              | 2.5                         | 14.5 -0.4/+0.6 | 10.24                            | 377            | -           |
| 15340066 | 24X1   | 0.21          | 20.0                                | 1.3                              | 2.5                         | 16.8 -0.5/+0.7 | 13.33                            | 467            | -           |
| 15340067 | 32X1   | 0.21          | 20.0                                | 1.3                              | 2.5                         | 18.9 -0.5/+0.7 | 16.82                            | 623            | -           |
| 15340068 | 37X1   | 0.21          | 20.0                                | 1.3                              | 2.5                         | 19.9 -0.5/+0.7 | 18.74                            | 702            | -           |

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|          |        |      |       |     |      |                       |       |      |   |
|----------|--------|------|-------|-----|------|-----------------------|-------|------|---|
| 15340069 | 40X1   | 0.21 | 20.0  | 1.3 | 2.5  | <b>21.2</b> -0.6/+0.8 | 22.53 | 784  | - |
| 15340000 | 2X1.5  | 0.26 | 13.7  | 1.6 | 3.0  | <b>7.4</b> -0.2+0.5   | 0.29  | 94   | X |
| 15340001 | 3X1.5  | 0.26 | 13.7  | 1.6 | 3.0  | <b>7.9</b> -0.1+0.6   | 0.32  | 114  | X |
| 15340025 | 3G1.5  |      |       |     |      |                       |       |      |   |
| 15340002 | 4X1.5  | 0.26 | 13.7  | 1.6 | 3.0  | <b>8.6</b> -0.1+0.6   | 0.37  | 140  | X |
| 15340026 | 4G1.5  |      |       |     |      |                       |       |      |   |
| 15340070 | 7X1.5  | 0.26 | 13.7  | 1.6 | 3.0  | <b>10.6</b> -0.4/+0.6 | 0.52  | 216  | - |
| 15340071 | 9X1.5  |      |       |     |      |                       |       |      |   |
| 15340072 | 12X1.5 | 0.26 | 13.7  | 1.6 | 3.0  | <b>14.5</b> -0.4/+0.6 | 0.86  | 363  | - |
| 15340073 | 19X1.5 |      |       |     |      |                       |       |      |   |
| 15340074 | 24X1.5 | 0.26 | 13.7  | 1.6 | 3.0  | <b>20.1</b> -0.6/+0.8 | 1.52  | 683  | - |
| 15340075 | 32X1.5 |      |       |     |      |                       |       |      |   |
| 15340076 | 37X1.5 | 0.26 | 13.7  | 1.6 | 3.0  | <b>23.8</b> -0.6/+0.8 | 2.22  | 1027 | - |
| 15340003 | 2X2.5  |      |       |     |      |                       |       |      |   |
| 15340004 | 3X2.5  | 0.26 | 8.21  | 2.0 | 3.4  | <b>8.2</b> -0.2+0.6   | 0.36  | 127  | X |
| 15340027 | 3G2.5  |      |       |     |      |                       |       |      |   |
| 15340005 | 4X2.5  | 0.26 | 8.21  | 2.0 | 3.4  | <b>9.6</b> -0.2+0.6   | 0.45  | 195  | X |
| 15340028 | 4G2.5  |      |       |     |      |                       |       |      |   |
| 15340077 | 7X2.5  | 0.26 | 8.21  | 2.0 | 3.4  | <b>11.8</b> -0.4/+0.6 | 0.60  | 301  | - |
| 15340078 | 9X2.5  |      |       |     |      |                       |       |      |   |
| 15340079 | 12X2.5 | 0.26 | 8.21  | 2.0 | 3.4  | <b>16.1</b> -0.5/+0.7 | 0.97  | 503  | - |
| 15340080 | 19X2.5 |      |       |     |      |                       |       |      |   |
| 15340081 | 24X2.5 | 0.26 | 8.21  | 2.0 | 3.4  | <b>22.9</b> -0.6/+0.8 | 1.91  | 1000 | - |
| 15340006 | 2X4    |      |       |     |      |                       |       |      |   |
| 15340007 | 3X4    | 0.31 | 5.09  | 2.7 | 4.1  | <b>9.6</b> -0.3+0.5   | 0.46  | 179  | X |
| 15340008 | 4X4    |      |       |     |      |                       |       |      |   |
| 15340009 | 2X6    | 0.31 | 3.39  | 3.2 | 4.6  | <b>10.8</b> -0.4+0.6  | 0.58  | 244  | X |
| 15340010 | 3X6    |      |       |     |      |                       |       |      |   |
| 15340011 | 4X6    | 0.31 | 3.39  | 3.2 | 4.6  | <b>11.5</b> -0.4+0.6  | 0.61  | 308  | X |
| 15340012 | 2X10   |      |       |     |      |                       |       |      |   |
| 15340013 | 3X10   | 0.41 | 1.95  | 4.2 | 5.6  | <b>13.0</b> -0.4+0.6  | 0.73  | 393  | X |
| 15340014 | 4X10   |      |       |     |      |                       |       |      |   |
| 15340015 | 2X16   | 0.41 | 1.95  | 4.2 | 5.6  | <b>13.2</b> -0.4+1.4  | 0.83  | 377  | X |
| 15340016 | 3X16   |      |       |     |      |                       |       |      |   |
| 15340017 | 4X16   | 0.41 | 1.24  | 5.2 | 6.6  | <b>14.0</b> -0.4+1.4  | 0.86  | 480  | X |
| 15340018 | 2X25   |      |       |     |      |                       |       |      |   |
| 15340019 | 3X25   | 0.41 | 1.24  | 5.2 | 6.6  | <b>15.4</b> -0.5+1.5  | 0.99  | 604  | X |
| 15340020 | 4X25   |      |       |     |      |                       |       |      |   |
| 15340021 | 2X35   | 0.41 | 0.795 | 6.5 | 8.3  | <b>15.2</b> -0.3+1.5  | 1.10  | 552  | X |
| 15340022 | 3X35   |      |       |     |      |                       |       |      |   |
| 15340023 | 2X50   | 0.41 | 0.795 | 6.5 | 8.3  | <b>16.2</b> -0.2+1.5  | 1.11  | 708  | X |
| 15340024 | 3X50   |      |       |     |      |                       |       |      |   |
| 15340025 | 2X50   | 0.41 | 0.565 | 7.7 | 9.5  | <b>18.2</b> -0.2+1.7  | 1.36  | 916  | X |
| 15340026 | 3X50   |      |       |     |      |                       |       |      |   |
| 15340027 | 2X25   | 0.41 | 0.795 | 6.5 | 8.3  | <b>19.0</b> -0.3+1.5  | 1.70  | 857  | X |
| 15340028 | 3X25   |      |       |     |      |                       |       |      |   |
| 15340029 | 4X25   | 0.41 | 0.795 | 6.5 | 8.3  | <b>20.2</b> -0.2+1.7  | 1.72  | 1102 | X |
| 15340030 | 2X35   |      |       |     |      |                       |       |      |   |
| 15340031 | 3X35   | 0.41 | 0.565 | 7.7 | 9.5  | <b>22.7</b> -0.1+1.9  | 2.07  | 1421 | X |
| 15340032 | 2X50   |      |       |     |      |                       |       |      |   |
| 15340033 | 3X50   | 0.41 | 0.393 | 9.7 | 11.7 | <b>21.4</b> -0.2+2.2  | 2.11  | 1141 | X |
| 15340034 | 2X50   |      |       |     |      |                       |       |      |   |
| 15340035 | 3X50   | 0.41 | 0.393 | 9.7 | 11.7 | <b>23.0</b> -0.0+2.2  | 2.16  | 1489 | X |
| 15340036 | 2X50   |      |       |     |      |                       |       |      |   |
| 15340037 | 3X50   | 0.41 | 0.393 | 9.7 | 11.7 | <b>26.2</b> -0.8+2.4  | 3.00  | 1627 | X |
| 15340038 | 2X50   |      |       |     |      |                       |       |      |   |
| 15340039 | 3X50   | 0.41 | 0.393 | 9.7 | 11.7 | <b>28.0</b> -0.8+2.4  | 3.20  | 2101 | X |
| 15340040 | 2X50   |      |       |     |      |                       |       |      |   |

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