

|                          |                                      |                                                                                    |
|--------------------------|--------------------------------------|------------------------------------------------------------------------------------|
| 15327000                 | <b>DATA SHEET</b>                    |  |
| valid from<br>2025-04-22 | <b>ÖLFLEX® TRAIN 327 C TW-E 300V</b> |                                                                                    |

## Application

ÖLFLEX® TRAIN 327 C 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 327 C TW-E are oil-, fuel-, acid- and alkali resistant acc. to EN 50306-4.

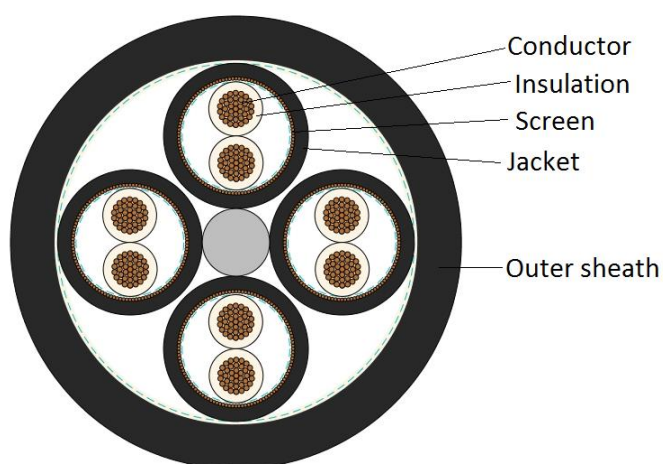
Relevant for the installation are the indications in EN 50355 and EN 50343.

The screen is a protection against electrical interference.

Application range:

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

## Design



|                     |                                                                                                                                                                                |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Design              | acc. to EN 50306-4, class 5E                                                                                                                                                   |
| Norm references     | EN 50306-4. Code designation MM S<br>MM = extra low temperature, extra oil and fuel resistant                                                                                  |
| Classification      | EN 45545-2: Hazard Level HL1, HL2, HL3<br>NF F 16-101: Internal Category A1, A2, B<br>External Category A1, A2, B<br>Category C for flame propagation<br>Category F1 for smoke |
| Conductor           | tinned- copper strand, 19 or 37 wires, SRC (Special Round Conductor)<br>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                                                                                                                            |
| Pairs               | braid of tinned copper wires, coverage = 85% (nominal value)<br>jacket: electron beam cross-linked polymer compound S2                                                         |
| 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                                 |

|                                         |                                       |             |
|-----------------------------------------|---------------------------------------|-------------|
| Creator: KASC/PDC<br>Released: HESC/PDC | Document: DB15327000EN<br>Version: 08 | Page 1 of 3 |
|-----------------------------------------|---------------------------------------|-------------|

|                          |                                      |                                                                                    |
|--------------------------|--------------------------------------|------------------------------------------------------------------------------------|
| 15327000                 | <b>DATA SHEET</b>                    |  |
| valid from<br>2025-04-22 | <b>ÖLFLEX® TRAIN 327 C TW-E 300V</b> |                                                                                    |

## Electrical properties at 20 °C

|                 |                                                                                                            |
|-----------------|------------------------------------------------------------------------------------------------------------|
| Nominal voltage | $U_0 / U$ : 300/500 V AC acc. to EN 50306<br>$U_m$ : 550V AC acc. to EN 50355<br>$U_0 / U$ : 600/1000 V AC |
| Test voltage    | core/core and core/screen: 3.5 kV AC or 8.4 kV DC                                                          |

## Mechanical and thermal properties

|                           |                                                                                                                                                                                                                                                     |
|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Min. bending radius       | Outer diameter $\leq$ 12.0 mm: 5 x outer diameter<br>for cautions bending (one bend at end of core): 4 x outer diameter<br><br>Outer diameter $>$ 12.0 mm: 6 x outer diameter<br>for cautions bending (one bend at end of core): 5 x outer diameter |
| Temperature range         | -40 °C up to +90 °C max. conductor temp.<br>up to +120 °C max. conductor temp. (20.000h)<br><br>-50°C acc. to GOST 33326-2015 and<br>GOST 20.57.406-81 (method 203-1 and 205-1)                                                                     |
| Short circuit temperature | max. +160°C (5s)                                                                                                                                                                                                                                    |

## Fire protection acc. to EN 50306-4 / EN 45545-2:

|                |                                                                                                                                                                                                                                                   |
|----------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Classification | EN 45545-2: Hazard Level HL1, HL2, HL3                                                                                                                                                                                                            |
| Flammability   | Flame retardand acc. to IEC 60332-1-2 resp. EN 60332-1-2<br>No flame propagation acc. to:<br>$\geq$ 12 mm: IEC 60332-3-24 resp. EN 60332-3-24<br>$>$ 6 mm und $<$ 12mm: IEC 60332-3-25 resp. EN 60332-3-25<br>$\leq$ 6 mm: EN 50305, clause 9.1.2 |
| Smoke density  | acc. to EN 50306-1. light transmission: min. 70%<br>acc. to IEC 61034-2 resp. EN 61034-2                                                                                                                                                          |
| Halogen-free   | acc. to IEC 60754-1 resp. EN 60754-1(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 resp. EN 60754-2                                                                                                                                   |
| Toxicity       | acc. to EN 50306-1: $\leq$ 3<br>EN 50305<br>EN 45545-2: $\leq$ 6                                                                                                                                                                                  |

|                                         |                                       |             |
|-----------------------------------------|---------------------------------------|-------------|
| Creator: KASC/PDC<br>Released: HESC/PDC | Document: DB15327000EN<br>Version: 08 | Page 2 of 3 |
|-----------------------------------------|---------------------------------------|-------------|

|                          |                                      |                                                                                    |
|--------------------------|--------------------------------------|------------------------------------------------------------------------------------|
| 15327000                 | <b>DATA SHEET</b>                    |  |
| valid from<br>2025-04-22 | <b>ÖLFLEX® TRAIN 327 C TW-E 300V</b> |                                                                                    |

### Fire protection acc. to NF:

|                |                                                                                                                                      |
|----------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Classification | NF F 16-101: Internal Category A1, A2, B<br>External Category A1, A2, B<br>Category C for flame propagation<br>Category F1 for smoke |
| Flammability   | No flame propagation 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 50306-2 and EN 50306-4, method A or B                                             |
| Mineral oil resistance     | acc. to EN 50306-2 and EN 50264-1 (EM104)                                                    |
| Fuel resistance            | acc. to EN 50306-2 and EN 50264-1 (EM104)                                                    |
| Acid and alkali resistance | acc. to EN 50306-2 and EN 50264-1 (EM104)                                                    |
| UV resistance              | acc. to EN 50525-1 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 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<br>cores x<br>cross<br>section<br>[mm <sup>2</sup> ] | Conductor<br>[n x mmø] | Max.<br>conductor<br>resistance<br>(20°C)<br>[Ohm/km] | Conductor<br>ø reference<br>value<br>[mm] | Core ø<br>reference value<br>[mm] | Outer ø<br>[mm] | Fire load<br>reference<br>value<br>[kJ/m] | Weight<br>[kg/km] |
|----------|----------------------------------------------------------------|------------------------|-------------------------------------------------------|-------------------------------------------|-----------------------------------|-----------------|-------------------------------------------|-------------------|
| 15327000 | 2X2X0.5                                                        | 19x0.18                | 40.1                                                  | 0.9                                       | 1.4                               | 10.7 ± 0.6      | 2270                                      | 179               |
| 15327001 | 3X2X0.5                                                        | 19x0.18                | 40.1                                                  | 0.9                                       | 1.4                               | 11.4 ± 0.6      | 2489                                      | 212               |
| 15327002 | 4X2X0.5                                                        | 19x0.18                | 40.1                                                  | 0.9                                       | 1.4                               | 12.4 ± 0.6      | 2848                                      | 254               |
| 15327003 | 7X2X0.5                                                        | 19x0.18                | 40.1                                                  | 0.9                                       | 1.4                               | 14.7 ± 0.8      | 3863                                      | 375               |
| 15327004 | 2X2X0.75                                                       | 37x0.16*               | 26.7                                                  | 1.1                                       | 1.6                               | 11.5 ± 0.6      | 2615                                      | 213               |
| 15327005 | 3X2X0.75                                                       | 37x0.16*               | 26.7                                                  | 1.1                                       | 1.6                               | 12.2 ± 0.6      | 2791                                      | 250               |
| 15327006 | 4X2X0.75                                                       | 37x0.16*               | 26.7                                                  | 1.1                                       | 1.6                               | 13.4 ± 0.6      | 3301                                      | 307               |
| 15327007 | 7X2X0.75                                                       | 37x0.16*               | 26.7                                                  | 1.1                                       | 1.6                               | 15.9 ± 0.8      | 4314                                      | 447               |
| 15327008 | 2X2X1                                                          | 37x0.18*               | 20.0                                                  | 1.2                                       | 1.6                               | 11.9 ± 0.6      | 2786                                      | 235               |
| 15327009 | 3X2X1                                                          | 37x0.18*               | 20.0                                                  | 1.2                                       | 1.6                               | 12.6 ± 0.6      | 3037                                      | 282               |
| 15327010 | 4X2X1                                                          | 37x0.18*               | 20.0                                                  | 1.2                                       | 1.6                               | 13.8 ± 0.6      | 3496                                      | 342               |
| 15327011 | 7X2X1                                                          | 37x0.18*               | 20.0                                                  | 1.2                                       | 1.6                               | 16.5 ± 0.8      | 4512                                      | 499               |
| 15327012 | 2X2X1.5                                                        | 37x0.23*               | 13.7                                                  | 1.6                                       | 2.2                               | 13.9 ± 0.6      | 3684                                      | 317               |
| 15327013 | 3X2X1.5                                                        | 37x0.23*               | 13.7                                                  | 1.6                                       | 2.2                               | 14.8 ± 0.8      | 4007                                      | 383               |
| 15327014 | 4X2X1.5                                                        | 37x0.23*               | 13.7                                                  | 1.6                                       | 2.2                               | 16.3 ± 0.8      | 5035                                      | 492               |
| 15327015 | 7X2X1.5                                                        | 37x0.23*               | 13.7                                                  | 1.6                                       | 2.2                               | 19.5 ± 0.8      | 6112                                      | 697               |

\* These cables may be supplied in 19 strand conductors.

|                                         |                                       |             |
|-----------------------------------------|---------------------------------------|-------------|
| Creator: KASC/PDC<br>Released: HESC/PDC | Document: DB15327000EN<br>Version: 08 | Page 3 of 3 |
|-----------------------------------------|---------------------------------------|-------------|