# Ecoflex® 10 FRNC

## extremely flexible, low-loss and halogen-free

Ecoflex 10 FRNC is a flexible and very low-loss 50 ohm coaxial cable designed for the frequency range up to 6 GHz. State-of-the-art production methods and the use of a low attenuation PE-LLC dielectric with a gas content of over 70 % enable low attenuation values that set standards for flexible coaxial cables of this size.

The high flexibility of Ecoflex 10 FRNC is ensured by a 7-strand stranded inner conductor made of low-oxygen copper. The inner conductor is compressed, calibrated, and then provided with a pre-coating in a special process to achieve good attenuation and matching values. Another advantage is the double shielding: an overlapping copper foil and an overlying copper braid ensure a high shielding effectiveness of > 90 dB at 1 GHz.

The jacket of the cable is made of a special thermoplastic copolymer, the halogen-free, flame-retardant material FRNC (Flame Retardant Non Corrosive). Therefore, Ecoflex 10 FRNC has low fire load, low fire propagation, and minimal smoke production. Due to the fire protection class Cca, Ecoflex 10 FRNC is suitable for installation in public buildings.

### Key features

| | |
|---|---|
| Diameter | 10.2 ± 0.2 mm |
| Impedance | 50 ± 2 Ω |
| Attenuation at 1 GHz/100 m | 13.49 dB |
| **f max** | **6 GHz** |
| **Euroclass according to EN 50575** | **Cca** |

### Characteristics

- Certified according to EN 50575:2014 + A1:2016 for applications in buildings with requirements for fire behavior
- Flame retardancy tested according to DIN EN 60332-1-2:2005-06 + DIN EN 60332-1-1:2017-09
- Heat release tested according to DIN EN 50399:2017-02
- Vertical flame spread tested according to DIN EN 50399:2017-02
- Smoke production tested according to DIN EN 50399:2017-02
- Burning droplets tested according to DIN EN 50399:2017-02
- Acidity of combustion gases tested according to DIN EN 60754-2:2015-08 (pH value > 4.3)
- Conductivity of combustion gases tested according to DIN EN 60754-2:2015-08 (< 2.5 µS/mm)
- Smoke density according to IEC 61034
- Jacket material according to DIN EN 50290-2-27 (HD 624.7)
- RoHS compliant (Directive 2011/65/EC & 2015/863/EU RoHS 3)
- Fire-resistant, low smoke, halogen-free (LSZH)
- UV-resistant
- Manufactured according to DIN EN 45545-2 Table 5 R15 HL2

## Technical Data

| | |
|---|---|
| Inner conductor | stranded (Cu) copper wire |
| Inner conductor Ø | 2.85 mm (7 × 1.0 mm, 10 AWG) |
| Dielectric | foamed cellular polyethylene (PE) with skin |
| Dielectric Ø | 7.2 mm |
| Outer conductor 1 | overlapping copper (Cu) foil |
| Shielding factor | 100 % |
| Outer conductor 2 | Copper (Cu) shield braiding of bare copper wires |
| Shielding factor | 75 % |
| Outer conductor Ø | 7.9 mm |
| Jacket | highly flexible thermoplastic copolymer (FRNC) black |
| Weight | 136 kg/km |
| Min. Bending radius | 4 × Ø single, 8 × Ø repeated |
| Temperature range | -55 to +85 °C transport & fixed installation<br>-40 to +85 °C mobile application |
| Pulling strength | 600 N |

## Electrical Data at 20 °C

| | |
|---|---|
| Capacitance (1 kHz) | 78 nF/km |
| Velocity factor | 0.85 |
| Shielding attenuation 1 GHz | ≥ 90 dB |
| DC-resistance inner conductor | ≤ 3.5 Ω/km |
| DC-resistance outer conductor | 6.6 Ω/km |
| Insulation resistance | ≥ 10 GΩ*km |
| Test Voltage DC (wire/screen) | 7 kV |
| Max. voltage | 5 kV |

| | Ecoflex 10 FRNC | RG 213/U | RG 58/U |
|---|---|---|---|
| Capacitance | 78 pF/m | 101 pF/m | 102 pF/m |
| Velocity factor | 0.85 | 0.66 | 0.66 |
| Attenuation (dB/100m) | | | |
| 10 MHz | 1.14 | 2.00 | 5.00 |
| 100 MHz | 3.80 | 7.00 | 17.00 |
| 500 MHz | 9.12 | 17.00 | 39.00 |
| 1000 MHz | 13.49 | 22.50 | 54.60 |
| 3000 MHz | 25.37 | 58.50 | 118.00 |

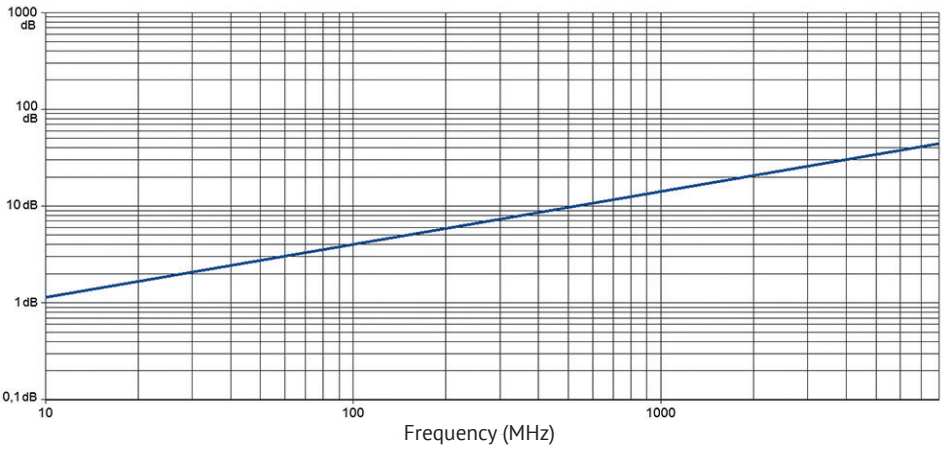
## Typ. Attenuation (dB/100 m at 20 °C)

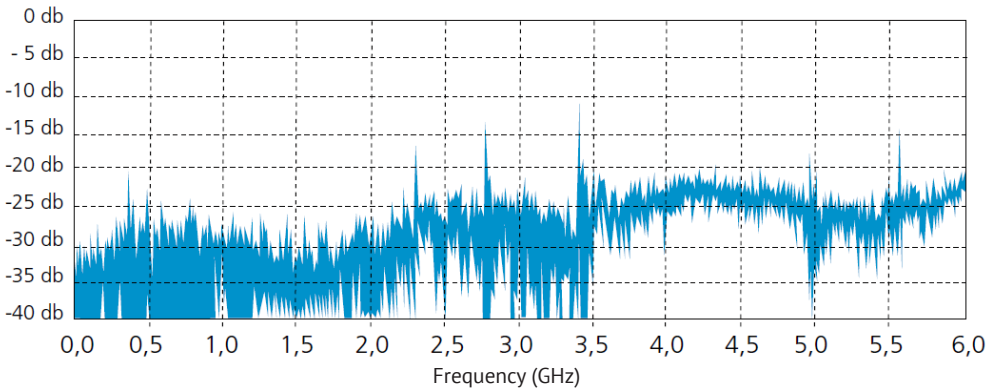
| | | | |
|---|---|---|---|
| 5 MHz | 0.76 | 1000 MHz | 13.49 |
| 10 MHz | 1.14 | 1296 MHz | 15.68 |
| 50 MHz | 2.66 | 1500 MHz | 17.01 |
| 100 MHz | 3.80 | 1800 MHz | 18.91 |
| 144 MHz | 4.66 | 2000 MHz | 20.14 |
| 200 MHz | 5.51 | 2400 MHz | 22.42 |
| 300 MHz | 6.94 | 3000 MHz | 25.37 |
| 432 MHz | 8.46 | 4000 MHz | 29.55 |
| 500 MHz | 9.12 | 5000 MHz | 33.44 |
| 800 MHz | 11.88 | 6000 MHz | 37.05 |

## Max. Power Handling (W at 40 °C)

| | | | |
|---|---|---|---|
| 10 MHz | 3.960 | 2400 MHz | 210 |
| 100 MHz | 1.210 | 3000 MHz | 180 |
| 500 MHz | 510 | 4000 MHz | 150 |
| 1000 MHz | 350 | 5000 MHz | 130 |
| 2000 MHz | 230 | 6000 MHz | 120 |

## Typ. Attenuation (dB/100 m at 20°C)




## Typ. Return Loss