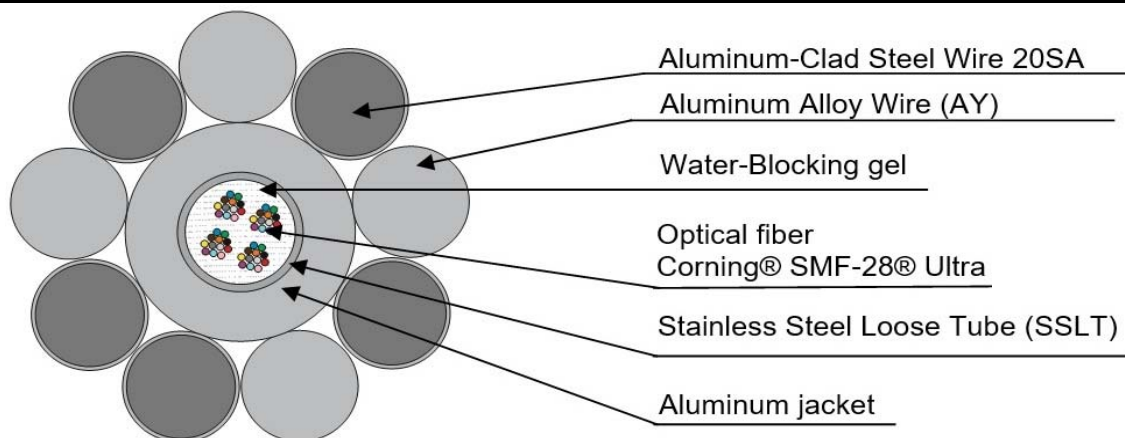




## Product Datasheet № 0162-006471A Optical Ground Wire (OPGW)

OPGW-C-A-48 G.652D - 11,6mm – 48kA<sup>2</sup>·s – 51kN

### Construction



### Design

| Construction element | Material             | Count | Diameter    |                    |
|----------------------|----------------------|-------|-------------|--------------------|
|                      |                      |       | Metric (mm) | Customary (inches) |
| Center member        | AC-SSLT              | 1     | 5.80        | 0.2283             |
| 1st stranded layer   | 20% ACS wire/AY-wire | 5/4   | 2.90        | 0.1142             |

### Technical Specifications

| Mechanical                                     | Metric                    | Customary                |
|------------------------------------------------|---------------------------|--------------------------|
| Cable diameter                                 | 11.6 mm                   | 0.457 in                 |
| Cable unit weight                              | 359 kg/km                 | 0.241 lb/ft              |
| Rated breaking strength (RBS) (without SSLT's) | 52.0 kN                   | 11,690 lb                |
| Maximum rated design load (MRDL) (60% RBS)     | 31.2 kN                   | 7,014 lb                 |
| Zero Fiber Strain Margin (ZFSM) (40% RBS)      | 20.8 kN                   | 4,676 lb                 |
| Cross-sectional area of ACS wire               | 35.1 mm <sup>2</sup>      | 0.054 in <sup>2</sup>    |
| Cross-sectional area of AY wire                | 43.2 mm <sup>2</sup>      | 0.067 in <sup>2</sup>    |
| Cable total cross-sectional area               | 78.3 mm <sup>2</sup>      | 0.121 in <sup>2</sup>    |
| Modulus of Elasticity, initial                 | 73.8 kN/mm <sup>2</sup>   | 10,706 ksi               |
| Modulus of Elasticity, final                   | 102.1 kN/mm <sup>2</sup>  | 14,811 ksi               |
| Temperature coefficient of linear expansion    | 16,13 E <sup>-6</sup> /°C | 8,96 E <sup>-6</sup> /°F |
| Southwire Sag10™ coefficient chart number      | 1-917                     | -                        |
| Lay direction of outer layer                   | Left                      | -                        |

| Electrical                                                                        | Metric                  | Customary     |
|-----------------------------------------------------------------------------------|-------------------------|---------------|
| DC resistance at 20°C (68°F)                                                      | 0.565 Ω/km              | 0.9091 Ω/mile |
| Short current circuit capacity                                                    | 47.8 kA <sup>2</sup> ·s | -             |
| Basis: Initial cable temp = 40°C (104°F), Final = 210°C (410°F), Duration = 0.5 s |                         |               |
| Short current circuit for 1 sec                                                   | 6.9 kA                  | -             |

|                                         |                       |                         |
|-----------------------------------------|-----------------------|-------------------------|
| $R_{ac}/R_{dc}$ ratio                   | 1.012                 | -                       |
| AC resistance at 25°C (77°F)            | 0.5814 $\Omega$ /km   | 0.9357 $\Omega$ /mile   |
| AC resistance at 50°C (122°F)           | 0.6315 $\Omega$ /km   | 1.0162 $\Omega$ /mile   |
| AC resistance at 75°C (167°F)           | 0.6815 $\Omega$ /km   | 1.0967 $\Omega$ /mile   |
| Geometric Mean Radius (GMR)             | 2.3503 mm             | 0.0077 ft               |
| Inductive Reactance ( $X_a$ ) @ 60 Hz   | 0.3668 $\Omega$ /km   | 0.5903 $\Omega$ /mile   |
| Capacitive Reactance ( $X'_a$ ) @ 60 Hz | 0.1891 M $\Omega$ -km | 0.1175 M $\Omega$ -mile |

|                                                    |                   |
|----------------------------------------------------|-------------------|
| <b>Optical</b>                                     |                   |
| ITU-T fiber compliance                             | G.652D & G.657.A1 |
| Fiber manufacturer                                 | Corning           |
| Number of optical fibers in total (Actual/Maximum) | 48/48             |

#### Color identification of the fibers in SSLT:

| Fiber | Color of the fibers 1-12 | Fiber | Color of the fibers 13-24 |
|-------|--------------------------|-------|---------------------------|
| 1     | Blue                     | 13    | Blue + 1 ring             |
| 2     | Orange                   | 14    | Orange + 1 ring           |
| 3     | Green                    | 15    | Green + 1 ring            |
| 4     | Brown                    | 16    | Brown + 1 ring            |
| 5     | Gray                     | 17    | Gray + 1 ring             |
| 6     | White                    | 18    | White + 1 ring            |
| 7     | Red                      | 19    | Red + 1 ring              |
| 8     | Black                    | 20    | Natural + 1 ring          |
| 9     | Yellow                   | 21    | Yellow + 1 ring           |
| 10    | Purple                   | 22    | Purple + 1 ring           |
| 11    | Pink                     | 23    | Pink + 1 ring             |
| 12    | Turquoise                | 24    | Turquoise + 1 ring        |

| Fiber | Color of the fibers 25-36 | Fiber | Color of the fibers 37-48 |
|-------|---------------------------|-------|---------------------------|
| 25    | Blue + 2 ring             | 37    | Blue + 3 ring             |
| 26    | Orange + 2 ring           | 38    | Orange + 3 ring           |
| 27    | Green + 2 ring            | 39    | Green + 3 ring            |
| 28    | Brown + 2 ring            | 40    | Brown + 3 ring            |
| 29    | Slate + 2 ring            | 41    | Slate + 3 ring            |
| 30    | White + 2 ring            | 42    | White + 3 ring            |
| 31    | Red + 2 ring              | 43    | Red + 3 ring              |
| 32    | Natural + 2 ring          | 44    | Natural + 3 ring          |
| 33    | Yellow + 2 ring           | 45    | Yellow + 3 ring           |
| 34    | Violet + 2 ring           | 46    | Violet + 3 ring           |
| 35    | Rose + 2 ring             | 47    | Rose + 3 ring             |
| 36    | Aqua + 2 ring             | 48    | Aqua + 3 ring             |

#### Color identification of the binding yarns for bundles of 12-fibers:

| Bundl | Fiber | Color of the yarns |
|-------|-------|--------------------|
| 1     | 1-12  | Blue               |
| 2     | 13-24 | Orange             |
| 3     | 25-36 | Green              |
| 4     | 27-48 | Brown              |

Note: Other colors on request

**Fiber Dimensional Specifications:**

|                          |                       |
|--------------------------|-----------------------|
| Core-Clad Concentricity  | 0.5 $\mu$ m           |
| Cladding Diameter        | 125 $\pm$ 0.7 $\mu$ m |
| Cladding Non-Circularity | 0.7%                  |
| Coating Diameter         | 242 $\pm$ 5 $\mu$ m   |

**Final Maximum Individual Attenuation Limits:**

|            |       |
|------------|-------|
| Wavelength | dB/km |
| 1310 nm    | 0.34  |
| 1383 nm    | 0.34  |
| 1490 nm    | 0.23  |
| 1550 nm    | 0.20  |
| 1625 nm    | 0.22  |

| Packaging and Handling                                   | Metric  | Customary |
|----------------------------------------------------------|---------|-----------|
| Maximum available reel length                            | 8,310 m | 27,264 ft |
| Minimum bending radius, no load (tension < 5% RBS)       | 152 mm  | 6 in      |
| Minimum bending radius, loaded (tension $\geq$ 5% RBS)   | 178 mm  | 7 in      |
| Standard sheave diameter: first, last, angles $\geq$ 60° | 483 mm  | 19 in     |
| Standard sheave diameter: tangents and angles $\leq$ 60° | 305 mm  | 12 in     |

| Operating Parameters                   | Metric          | Customary        |
|----------------------------------------|-----------------|------------------|
| Operation temperature                  | -60°C ... +85°C | -76°F ... +185°F |
| Installation temperature               | -30°C ... +50°C | -22°F ... +122°F |
| Transportation and storage temperature | -60°C ... +70°C | -76°F ... +158°F |
| Design life                            | 50 years        |                  |

| Standards  | International | USA       |
|------------|---------------|-----------|
| ACS wire   | IEC 61232     | ASTM B415 |
| AY wire    | IEC 60104     | ASTM B398 |
| OPGW cable | IEC 60794     | IEEE 1138 |

| Key Performance Testing                         |                                                       |                                          |
|-------------------------------------------------|-------------------------------------------------------|------------------------------------------|
| Parameter                                       | Nominal Value                                         | Evaluation criterion                     |
| Tensile strength (IEC 60794-1-2 method E1)      | 31.2 kN                                               | $\Delta\alpha^* \leq 0,05$ dB; no damage |
| Crush (IEC 60794-1-2 method E3)                 | 1,5 kN/cm                                             |                                          |
| Repeated bending (IEC 60794-1-2 method E6)      | 20 cycles @ bending radius                            |                                          |
| Torsion (IEC 60794-1-2 method E7)               | 10 cycles @ torsion angle $\pm$ 360° applied over 4 m |                                          |
| Impact (IEC 60794-1-2 method E4)                | Impact energy 20 J                                    |                                          |
| Water penetration (IEC 60794-1-2 method F5B)    | 3 m for 24 hours                                      | No water through end of cable            |
| Temperature cycling** (IEC 60794-1-2 method F1) | -60°C to +85°C for 3 cycles over $\geq$ 24 hours      | $\Delta\alpha \leq 0,05$ dB/km           |
| Compound flow (IEC 60794-1-2 method E14)        | 70°C                                                  | No dripped compound                      |

\* - attenuation increase at standard wavelengths.

\*\* - other temperature range on request.

**Packing and Marking Notes**

1. Standard packaging is non-returnable wooden reels.
2. Drum diameter  $\geq 40 \times$  cable OD.
3.  $\geq 2$  m inside end of the cable is affixed to flange.
4. Cable ends sealed with waterproof covers.
5. Flange labelling will include the cable type, production date, ordered/actual cable lengths, gross weight.
6. Additional flange marking: drum number, notice "do not lay flat!", rotation direction
7. Certificate of Compliance (CoC) for each reel contains type of the cable, technical standard number, cable length, fiber type, fiber coloring, fibers/SSLT, SSLT identification coloring, final attenuation for all fibers, refractive index of the fiber, fiber manufacturer and production date.
8. CoC in plastic bag is fixed on the inner flange. Additional information for the CoC upon request.

*All values are nominal and are subject to normal manufacturing tolerances and to change without notice.*