

Mining and Petrochemical Tray-Rated, Loose Tube, Gel-Free Cable

60 F, 50 μm multimode, extended 10G distance (OM4)

CORNING

Corning dielectric, tray-rated, mining and petrochemical fiber optic cables are designed for indoor and outdoor use in mining and petrochemical backbones (aerial and duct) and horizontal intrabuilding and tunnel backbones where limited-smoke and zero-halogen requirements exist. The loose tube cable construction, pioneered by Corning, places fibers in buffer tubes and provides stable and highly reliable transmission parameters for a variety of voice, data, video and imaging applications. The SZ-stranded, loose tube design isolates fibers from installation and environmental rigors and allows for easy mid-span access. The design also provides high-fiber density within a given cable diameter, allowing flexibility to suit many system designs.

The cable's innovative waterblocking technology eliminates the need for traditional flooding compound and allows more efficient and craft-friendly cable preparation. The specially formulated black, UV-resistant, flame-retardant LSZH inner and outer jacket complies with IEEE-383 flame test. These extra-tough double jackets resist hazards found in mines and petrochemical complexes, making this cable ideal for any harsh environment requiring a more robust cable and suitable for direct buried applications. All-dielectric construction provides tensile strength and eliminates grounding concerns. With an extended storage and operating temperature range of -50°C to $+75^{\circ}\text{C}$ (-58°F to $+167^{\circ}\text{F}$), the cable is listed OFN-LS and CSA FT4-ST 1 for up to 288 fibers and cable tray-rated per CSA C22.2 No. 230 and No. 232.

Note: This cable is available in 12 different jacket colors – blue, orange, green, brown, slate, white, red, black, yellow, violet, rose and aqua. The colored jacket allows for easy visual identification of the cables while still providing all of the required environmental protection of an indoor/outdoor cable jacket. Black is the standard jacket color using the part numbers shown here. Contact Customer Care at 1-800-743-2675 to order other color options.

Features and Benefits

Loose tube construction

Stable and highly reliable transmission parameters

Waterblocking technology

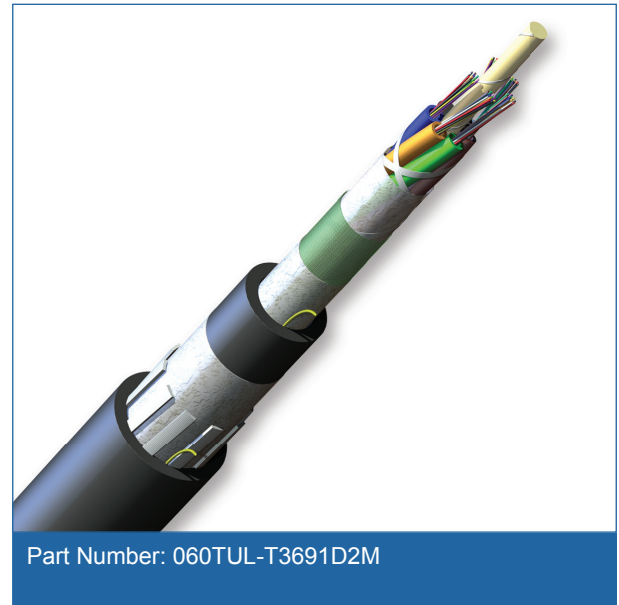
Allows efficient and craft-friendly cable preparation

Extra tough double jackets

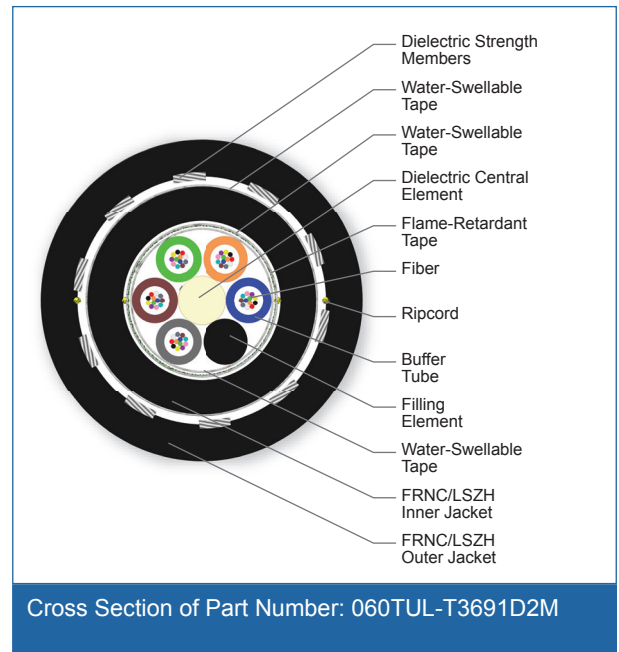
Ideal for harsh environments

Listed MSHA 30 CFR Pt 7-K

Mining Safety and Health Administration (MSHA) approved



Part Number: 060TUL-T3691D2M



Cross Section of Part Number: 060TUL-T3691D2M

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Features and Benefits

Common installations

Outdoor aerial and duct; indoor general purpose horizontal according to CSA C22.2

Standards

Listings

National Electrical Code® (NEC®) OFCR-LS; Sunlight Resistant (SUN RES); IEEE-383/IEEE-1202 flame test; Suitable for Direct Burial (DIR BUR); IEC 60332-3, IEC 60754-2, IEC 61034

Design and Test Criteria

ANSI/ICEA S-104-696, CSA OFN-LS FT-4-ST1, CSA C22.2 No. 230 and No. 232

Specifications

| General Specifications | |
|------------------------|---|
| Environment | Indoor/Outdoor Cables |
| Application | Aerial, Direct Buried, Duct, Tray Rated, (General Purpose Horizontal) |
| Cable Type | Loose Tube |
| Product Type | Dielectric |
| Flame Rating | LSZH™ (OFN-LS) |
| Fiber Category | 50 µm MM (OM4+) |

| Temperature Range | |
|-------------------|------------------------------------|
| Storage | -50 °C to 75 °C (-58 °F to 167 °F) |
| Installation | -30 °C to 60 °C (-22 °F to 140 °F) |
| Operation | -50 °C to 75 °C (-58 °F to 167 °F) |

| Cable Design | |
|-----------------|------------|
| Central Element | Dielectric |
| Fiber Count | 60 |

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| Cable Design | |
|---|--|
| Fiber Coloring | Blue, Orange, Green, Brown, Slate, White, Red, Black, Yellow, Violet, Rose, Aqua |
| Fibers per Tube | 12 |
| Number of Tube Positions | 6 |
| Number of Active Tubes | 5 |
| Buffer Tube Color Coding | Blue, Orange, Green, Brown, Slate |
| Buffer Tube Diameter | 2.5 mm (0.1 in) |
| Number of Filling Elements | 1 |
| Tape | Water-swellable |
| Tape, Layer 2 | Flame-retardant tape |
| Tape, Layer 3 | Water-swellable |
| Inner Jacket Material | Flame-retardant, non-corrosive/low-smoke, zero-halogen (FRNC/LSZH) material |
| Tape, Layer 4 | Water-swellable |
| Tensile Strength Elements and/or Armoring - Layer 1 | Dielectric strength members |
| Number of Ripcords | 4 |
| Outer Jacket Material | Flame-retardant, non-corrosive/low-smoke, zero-halogen (FRNC/LSZH) material |
| Outer Jacket Color | Black |

| Mechanical Characteristics Cable | |
|-----------------------------------|----------------------------|
| Max. Tensile Strength, Short-Term | 4500 N (1000 lbf) |
| Max. Tensile Strength, Long-Term | 1500 N (333 lbf) |
| Compressive Loading | 2400 N/cm (1370 lb/in) |
| Impact Resistance | 11.8 N*m (8.7 lb*ft) |
| Weight | 299 kg/km (201 lb/1000 ft) |
| Nominal Outer Diameter | 17.6 mm (0.69 in) |
| Min. Bend Radius Installation | 264 mm (10.4 in) |
| Min. Bend Radius Operation | 176 mm (6.9 in) |

| Chemical Resistance | | |
|----------------------------|---------------|----------------------|
| Chemical | Exposure Time | Exposure Temperature |
| ASTM #2 Oil | 4 h | 158 °F |
| De-Icing Fluid | 24 h | 122 °F |
| Diesel Fuel, MIL-F 16884 | 24 h | 95 °F |
| Hydraulic Fuel, MIL-H 5606 | 24 h | 120 °F |

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Chemical Resistance

| | | |
|-----------------------------|-------|--------|
| Hydraulic Fuel, MIL-H 16762 | 24 h | 120 °F |
| Lubricating Oil, MIL-L23699 | 24 h | 120 °F |
| Vegetation Killer | 168 h | 122 °F |

Chemical Characteristics

| | |
|------|---|
| RoHS | Free of hazardous substances according to RoHS 2011/65/EU |
|------|---|

Fiber Specifications

Optical Characteristics (cabled)

| | |
|---|--------------------------|
| Fiber Core Diameter | 50 μ m |
| Fiber Category | OM4 Extended Distance |
| Fiber Code | T |
| Performance Option Code | 91 |
| Wavelengths | 850 nm / 1300 nm |
| Maximum Attenuation | 3.0 dB/km / 1.0 dB/km |
| Serial 1 Gigabit Ethernet | 1100 m / 600 m |
| Serial 10 Gigabit Ethernet | 600 m / - |
| Min. Overfilled Launch (OFL) Bandwidth | 3500 MHz*km / 500 MHz*km |
| Minimum Effective Modal Bandwidth (EMB) | 5350 MHz*km / - |

* Assumes 0.7 dB maximum total connector/splice loss.

* Meets 0.75 ns optical skew when used in all Corning Plug and Play™/EDGE™ systems solutions.

Notes: 1) 50 μ m multimode fiber macrobend loss \leq 0.2 dB at 850 nm for two turns around 7.5 mm radius mandrel.

2) Improved attenuation and bandwidth options available.

3) Bend-insensitive single-mode fibers available on request.

4) Contact a Corning Customer Care Representative for additional information.

Ordering Information

| | |
|---------------------|--|
| Part Number | 060TUL-T3691D2M |
| Product Description | Mining and Petrochemical Tray-Rated, Loose Tube, Gel-Free Cable, 60 F, 50 μ m multimode, extended 10G distance (OM4) |

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The CORNING logo is displayed in white, uppercase letters within a solid blue square.

Notes



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