X-Olene®- Okoseal® Shielded VFD
UL Type TC-ER (XHHW-2) and cUL Type CIC
600V VFD Power and Control Tray Cable
Three Copper Conductors, 90°C Wet or Dry
With Three Symmetrical Grounding Conductors and One Copper Shield Tape
For Cable Tray Use - Sunlight Resistant - For Direct Burial

Insulation
X-Olene® is Okonite’s trade name for its cross-linked polyethylene, with high dielectric strength insulation.

Assembly and Coverings
The three insulated conductors with three bare grounding conductors located in the outer interstices are cabled together per UL 1277 with fillers as needed and a binder tape overall. A 5 mil bare copper tape is helically wrapped over the cabled assembly with a 25% overlap. Extruded over the tape shield is a sunlight-resistant, flame retardant, black Okoseal (PVC) jacket which has excellent resistance to acids and most chemicals and is rated for low temperature applications.

Applications
X-Olene shielded Type TC-ER cables are used to supply power to motors from variable frequency drives, where an economical design is desired. These cables can also be used for other power, lighting, control or signal circuits; indoors or outdoors; in cable trays, raceways, direct burial, or where supported by messenger wire; for Class 1 circuits as permitted in Article 725 of the NEC; and in cable trays in Class I, Division 2 hazardous locations in industrial establishments where the conditions of maintenance and supervision assure that only qualified persons will service the installation. Cables marked TC-ER may also be used between a cable tray and the utilization equipment or device, when installed in accordance with NEC 336.10 (7).

Specifications
Conductors: Uncoated soft copper per ASTM B-3. Sizes smaller than 8 AWG are compressed-stranded per ASTM B-8. Sizes 8 AWG and larger are compact stranded per ASTM B-496.
Insulation: X-Olene per ICEA S-95-658/NEMA WC70 and UL 44, Listed UL Type XHHW-2.
Conductor Identification: Sizes 14, 12 and 10 AWG color-coded insulation per ICEA S-73-532/NEMA WC57 Method 1, Table E-2 color sequence. Sizes 8 AWG and larger black insulation with surface printing of numbers and colors per ICEA S-73-532/NEMA WC57 Method 3, Table E-2.
Grounding Conductor(s): Three bare soft copper per ASTM B-3. Sizes 10 AWG and smaller are compressed stranded per ASTM B-8, and sizes 8 AWG and larger are compact stranded per ASTM B-496. Meets or exceeds requirements of NEC Table 250.122.
Shield: A 5 mil bare copper tape is helically applied with 25% minimum overlap.

Jacket: The Okoseal (PVC) compound meets or exceeds the requirements of UL 1277 as tested in accordance with UL 1581.

Product Features
- Insulated conductors are UL Listed Type XHH/XHHW-2.
- 90°C continuous rating in wet or dry locations.
- 130°C emergency overload rating.
- 250°C short circuit rating.
- Three symmetrical grounding conductors and a helically applied copper tape provides a relatively low resistance return path, adequate for VFD and other modern AC drive/motor applications.
- Type TC-ER VFD cables are quality control inspected to meet or exceed applicable industry standards.
- Thermal stability at elevated temperatures.
- Mechanically rugged.
- High dielectric strength.
- Small diameter, lightweight.
- Minimum installation temperature of -40°C.

Applicable Standards
- UL Listed per Standard 1277 as Type TC-ER cable per E60422.
- UL Listed for cable tray use, direct burial and sunlight resistant.
- CSA C22.2 No. 239 Type CIC (Control and Instrumentation Cable) for sizes 4/0 AWG and smaller.
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| Catalog Number | Conductor Size | Insulation Thickness - mils | Jacket Thickness - mils | Jacket Thickness - mm | Approx. O.D. - Inches | Approx. O.D. - mm | Approx. Cross-Sectional Area (sq. In.) | Approx. Ship Weightlbs./1000' | 75°C Wet | NEC Ampacity (1) | Approx. O.D. - Inches | Approx. O.D. - mm | Approx. Net Weight lbs./1000' | 90°C Wet | NEC Ampacity (1) | Approx. O.D. - Inches | Approx. O.D. - mm | Approx. Net Weight lbs./1000' | 90°C Wet | NEC Ampacity (1) |
|----------------|---------------|-----------------------------|-------------------------|----------------------|----------------------|---------------------|------------------------------------------|-------------------------------|----------|----------------|---------------------|---------------------|-----------------------------|------------|----------------|---------------------|---------------------|-----------------------------|------------|----------------|---------------------|---------------------|-----------------------------|------------|----------------|---------------------|---------------------|-----------------------------|------------|----------------|
| 202-31-6414    | 14(7x)        | 30                          | 3 #18                   | 45                   | 1.14                 | 0.411               | 10.44                      | 0.13                          | 128      | 151            | 15                  | 15                  | 15                          | 15         | 15             | 15                  | 15                  | 15                          | 15         | 15             |
| 202-31-6412    | 12(7x)        | 30                          | 3 #16                   | 45                   | 1.14                 | 0.450               | 11.43                      | 0.16                          | 170      | 193            | 20                  | 20                  | 20                          | 20         | 20             | 20                  | 20                  | 20                          | 20         | 20             |
| 202-31-6410    | 10(7x)        | 30                          | 3 #14                   | 45                   | 1.14                 | 0.501               | 12.73                      | 0.20                          | 239      | 262            | 30                  | 30                  | 30                          | 30         | 30             | 30                  | 30                  | 30                          | 30         | 30             |
| 112-31-6408    | 8(7x)         | 45                          | 3 #14                   | 60                   | 1.52                 | 0.648               | 16.46                      | 0.33                          | 353      | 392            | 55                  | 50                  | 50                          | 50         | 50             | 50                  | 50                  | 50                          | 50         | 50             |
| 112-31-6406    | 6(7x)         | 45                          | 3 #12                   | 60                   | 1.52                 | 0.726               | 18.44                      | 0.41                          | 496      | 535            | 75                  | 65                  | 65                          | 65         | 65             | 65                  | 65                  | 65                          | 65         | 65             |
| 112-31-6404    | 4(7x)         | 45                          | 3 #12                   | 60                   | 1.52                 | 0.821               | 20.85                      | 0.53                          | 676      | 740            | 95                  | 85                  | 85                          | 85         | 85             | 85                  | 85                  | 85                          | 85         | 85             |
| 112-31-6402    | 2(7x)         | 45                          | 3 #10                   | 80                   | 2.03                 | 0.984               | 24.99                      | 0.76                          | 1017     | 1081           | 130                 | 115                 | 115                         | 115        | 115            | 115                 | 115                 | 115                         | 115        | 115            |
| 112-31-6401    | 1(19x)        | 55                          | 3 #10                   | 80                   | 2.03                 | 1.106               | 28.09                      | 0.96                          | 1253     | 1333           | 145                 | 130                 | 130                         | 130        | 130            | 130                 | 130                 | 130                         | 130        | 130            |
| 112-31-6410    | 1/0(19x)      | 55                          | 3 #10                   | 80                   | 2.03                 | 1.186               | 30.12                      | 1.10                          | 1476     | 1565           | 170                 | 150                 | 150                         | 150        | 150            | 150                 | 150                 | 150                         | 150        | 150            |
| 112-31-6412    | 2/0(19x)      | 55                          | 3 #10                   | 80                   | 2.03                 | 1.274               | 32.36                      | 1.27                          | 1776     | 1892           | 195                 | 175                 | 175                         | 175        | 175            | 175                 | 175                 | 175                         | 175        | 175            |
| 112-31-6414    | 4/0(19x)      | 55                          | 3 #8                    | 80                   | 2.03                 | 1.490               | 37.85                      | —                             | 2669     | 2812           | 260                 | 230                 | 230                         | 230        | 230            | 230                 | 230                 | 230                         | 230        | 230            |
| 112-31-6420    | 250(37x)      | 65                          | 3 #8                    | 80                   | 2.03                 | 1.637               | 41.58                      | —                             | 3065     | 3242           | 290                 | 255                 | 255                         | 255        | 255            | 255                 | 255                 | 255                         | 255        | 255            |
| 112-31-6425    | 350(37x)      | 65                          | 3 #7                    | 110                  | 2.79                 | 1.900               | 48.26                      | —                             | 4308     | 4574           | 350                 | 310                 | 310                         | 310        | 310            | 310                 | 310                 | 310                         | 310        | 310            |
| 112-31-6430    | 500(37x)      | 65                          | 3 #6                    | 110                  | 2.79                 | 2.153               | 54.69                      | —                             | 5906     | 6296           | 430                 | 380                 | 380                         | 380        | 380            | 380                 | 380                 | 380                         | 380        | 380            |
| 112-31-6440    | 750(61x)      | 80                          | 3 #5                    | 110                  | 2.79                 | 2.578               | 65.48                      | —                             | 8530     | 9157           | 535                 | 475                 | 475                         | 475        | 475            | 475                 | 475                 | 475                         | 475        | 475            |
| 112-31-6450    | 1000(61x)     | 80                          | 3 #4                    | 140                  | 3.56                 | 2.968               | 75.39                      | —                             | 11367    | 12129          | 615                 | 545                 | 545                         | 545        | 545            | 545                 | 545                 | 545                         | 545        | 545            |

Okonite’s web site, www.okonite.com contains the most up to date information.

† Cross-sectional area for calculation of cable tray fill in accordance with NEC Section 392.22.

(1) Ampacities
Ampacities are based on Table 310.15(B)(16) of the National Electrical Code for XHHW-2 conductors rated 90°C, in a multi-conductor cable, at an ambient temperature of 30°C (86°F).
The ampacities shown also apply to cables installed in cable tray in accordance with NEC Section 392.80.