

## 3/C CU 15kV 220 NLEPR 133% CPE MV-105

Type MV-105 Three Conductor Copper, 220 Mils No Lead Ethylene Propylene Rubber (NL-EPR) 133% Insulation Level, Tape Shield, Chlorinated Polyethylene (CPE) Jacket



Image not to scale. See Table 1 for dimensions.

### CONSTRUCTION:

1. **Conductor:** Class B compressed stranded bare copper per ASTM B3 and ASTM B8
2. **Conductor Shield:** Semi-conducting cross-linked copolymer
3. **Insulation:** 220 Mils No Lead Ethylene Propylene Rubber (NL-EPR) 133% Insulation Level,
4. **Insulation Shield:** Strippable semi-conducting cross-linked copolymer
5. **Copper Tape Shield:** Helically wrapped 5 mil copper tape with 25% overlap
6. **Grounding Conductor:** Class B compressed stranded bare copper ground per ASTM B3 and ASTM B8
7. **Filler:** Wax paper filler
8. **Binder:** Poly glass tape
9. **Overall Jacket:** Thermoplastic Chlorinated Polyethylene (CPE)

### APPLICATIONS AND FEATURES:

Southwire's 15KV cables are suited for use in wet and dry areas, conduits, ducts, troughs, trays, direct burial, and where superior electrical properties are desired. These cables are capable of operating continuously at the conductor temperature not in excess of 105°C for normal operation, 140°C for emergency overload, and 250°C for short circuit conditions. Rated at -35°C for cold bend. For uses in Class I and II, Division 2 hazardous locations per NEC Article 501 and 502. Rated for 1000 lbs./FT maximum sidewall pressure.

### SPECIFICATIONS:

- ASTM B3 Standard Specification for Soft or Annealed Copper Wire
- ASTM B8 Concentric-Lay-Stranded Copper Conductors
- UL 1072 Medium-Voltage Power Cables
- UL 1685 Vertical-Tray Fire Propagation and Smoke Release Test
- ICEA S-93-639 (NEMA WC 74) 5-46 KV Shielded Power Cable
- AEIC CS-8 Specification for extruded dielectric shielded power cables rated for 5 through 46KV

### SAMPLE PRINT LEGEND:

{SQFTG\_DUAL} SOUTHWIRE{R} POWER CABLE MASTER-DESIGN {UL} 3/C XXX AWG CU 220 MILS NL-EPR 15KV 133% INS LEVEL 25%TS GW 1 X X AWG CU MV-105 FOR CT USE SUN. RES. FOR DIRECT BURIAL {NESC}



**Table 1 – Weights and Measurements**

| Stock Number | Cond. Size | Diameter Over Conductor | Diameter Over Insulation | Diameter Over Insulation Shield | Ground    | Jacket Thickness <sup>1</sup> | Approx. OD | Approx. Weight | Max Pull Tension | Min Bending Radius |
|--------------|------------|-------------------------|--------------------------|---------------------------------|-----------|-------------------------------|------------|----------------|------------------|--------------------|
|              | AWG/Kcmil  | inch                    | inch                     | inch                            | No. x AWG | mil                           | inch       | lb/1000ft      | lb               | inch               |
| 643380       | 2          | 0.283                   | 0.760                    | 0.820                           | 1 x 6     | 110                           | 2.062      | 2275           | 1593             | 14.4               |
| 584041       | 1/0        | 0.362                   | 0.839                    | 0.899                           | 1 x 4     | 110                           | 2.233      | 2884           | 2534             | 15.6               |
| 646904       | 2/0        | 0.405                   | 0.882                    | 0.942                           | 1 x 3     | 110                           |            | 3253           | 3194             | 16.3               |
| 584042       | 3/0        | 0.456                   | 0.933                    | 0.993                           | 1 x 3     | 110                           | 2.436      | 3749           | 4027             | 17.1               |
| 560251       | 4/0        | 0.512                   | 0.989                    | 1.049                           | 1 x 3     | 110                           | 2.557      | 4309           | 5078             | 17.9               |
| 563785       | 350        | 0.661                   | 1.147                    | 1.207                           | 1 x 2     | 110                           | 2.898      | 6081           | 8400             | 20.3               |
| 561232       | 500        | 0.789                   | 1.275                    | 1.335                           | 1 x 1     | 135                           | 3.225      | 8058           | 12000            | 22.6               |
| TBA          | 750        | 0.968                   | 1.463                    | 1.523                           | 1 x 0     | 135                           | 3.631      | 11036          | 18000            | 25.4               |

All dimensions are nominal and subject to normal manufacturing tolerances

∅ Cable marked with this symbol is a standard stock item

<sup>1</sup> Comply with ICEA S-93-639 Appendix C for jacket thickness determination

**Table 2 – Electrical and Engineering Data**

| Cond. Size | DC Resistance @ 25°C | AC Resistance @ 90°C | Capacitive Reactance @ 60Hz | Inductive Reactance @ 60Hz | Zero Sequence Impedance* | Positive Sequence Impedance* | Shield Short Circuit Current 6 Cycles | Allowable Ampacity In Duct 90/105°C <sup>†</sup> | Allowable Ampacity In Air 90/105°C <sup>‡</sup> |
|------------|----------------------|----------------------|-----------------------------|----------------------------|--------------------------|------------------------------|---------------------------------------|--|---|
| AWG/Kcmil  | Ω/1000ft             | Ω/1000ft             | MΩ*1000ft                   | Ω/1000ft                   | Ω/1000ft                 | Ω/1000ft                     | Amp                                   | Amp  | Amp   |
| 2          | 0.162                | 0.203                | 0.053                       | 0.047                      | 0.577 + j0.419           | 0.203 + j0.047               | 2700                                  | 150/160  | 165/185   |
| 1/0        | 0.102                | 0.128                | 0.045                       | 0.043                      | 0.499 + j0.383           | 0.128 + j0.043               | 2957                                  | 195/210  | 215/240   |
| 2/0        | 0.081                | 0.101                | 0.042                       | 0.042                      | 0.471 + j0.366           | 0.102 + j0.042               | 3097                                  | 220/235  | 245/275   |
| 3/0        | 0.064                | 0.081                | 0.039                       | 0.040                      | 0.446 + j0.346           | 0.081 + j0.040               | 3263                                  | 250/270  | 285/315   |
| 4/0        | 0.051                | 0.064                | 0.036                       | 0.039                      | 0.426 + j0.327           | 0.065 + j0.039               | 3445                                  | 285/305  | 325/360   |
| 350        | 0.031                | 0.039                | 0.030                       | 0.036                      | 0.386 + j0.279           | 0.040 + j0.036               | 3959                                  | 375/400  | 435/490   |
| 500        | 0.022                | 0.028                | 0.026                       | 0.034                      | 0.362 + j0.247           | 0.028 + j0.034               | 4376                                  | 450/485  | 535/600   |
| 750        | 0.014                | 0.020                | 0.022                       | 0.032                      | 0.335 + j0.209           | 0.020 + j0.032               | 4987                                  | 545/585  | 670/745   |

\* Calculations are based on 5 mil 25 % over lapping copper tape shield / Conductor temperature of 90°C / Shield temperature of 45°C / Earth resistivity of 100 ohm-meter

<sup>†</sup> Ampacities are based on TABLE 310.60(C)(79) Detail 1. of the 2014 National Electrical Code (20°C Ambient Earth Temperature, Thermal Resistance ROH of 90)

<sup>‡</sup> Ampacities are based on TABLE 310.60(C)(71) of the 2014 National Electrical Code (40°C Ambient Air Temperature)

