

SECTION 26 05 19
WIRE AND CABLE - 600 VOLT AND BELOW (POWER CABLE)

PART 1 - GENERAL

1.1 SUMMARY

- A. Section Includes:
1. Material and installation requirements for:
 - a. Power cable.
 - b. Wire connectors.
 - c. Insulating tape.
 - d. Pulling lubricant.
- B. Related Specification Sections include but are not necessarily limited to:
1. **Section 26 08 13** - Medium Voltage Equipment Acceptance Testing.

1.2 QUALITY ASSURANCE

- A. Referenced Standards:
1. Insulated Cable Engineers Association (ICEA):
 - a. S-58-679, Standard for Control Cable Conductor Identification.
 2. National Electrical Manufacturers Association (NEMA):
 - a. ICS 4, Industrial Control and Systems: Terminal Blocks.
 3. National Electrical Manufacturers Association/Insulated Cable Engineers Association (NEMA/ICEA):
 - a. WC 57/S-73-532, Standard for Control Cables.
 - b. WC 70/S-95-658, Non-Shielded Power Cables Rated 2000 Volts or Less for the Distribution of Electrical Energy.
 4. National Fire Protection Association (NFPA):
 - a. 70, National Electrical Code (NEC).
 - b. 262, Standard Method of Test for Flame Travel and Smoke of Wires and Cables for Use in Air-Handling Spaces.
 5. Telecommunications Industry Association/Electronic Industries Alliance/American National Standards Institute (TIA/EIA/ANSI):
 - a. 568, Commercial Building Telecommunications Cabling Standard.
 6. Underwriters Laboratories, Inc. (UL):
 - a. 44, Standard for Safety Thermoset-Insulated Wires and Cables.
 - b. 83, Standard for Safety Thermoplastic-Insulated Wires and Cables.
 - c. 467, Standard for Safety Grounding and Bonding Equipment.
 - d. 486A, Standard for Safety Wire Connectors and Soldering Lugs for use with Copper Conductors.
 - e. 486C, Standard for Safety Splicing Wire Connections.
 - f. 510, Standard for Safety Polyvinyl Chloride, Polyethylene and Rubber Insulating Tape.
 - g. 1277, Standard for Safety Electrical Power and Control Tray Cables with Optional Optical-Fiber Members.
 - h. 1581, Standard for Safety Reference Standard for Electrical Wires, Cables, and Flexible Cords.
 - i. 2250, Standard for Safety Instrumentation Tray Cable.
 7. Build America, Buy America Act (**BABA**).

1.3 DEFINITIONS

- A. **Cable:** Multi-conductor, insulated, with outer sheath containing either building wire or instrumentation wire.
- B. **Power Cable:** Multi-conductor, insulated, with outer sheath containing building wire, No. 8 AWG and larger.
- C. **Control Cable:** Multi-conductor, insulated, with outer sheath containing building wires, No. 14, No. 12 or No. 10 AWG.
- D. **Building Wire:** Single conductor, insulated, with or without outer jacket depending upon type.

1.4 SUBMITTALS

- A. Shop Drawings:
 - 1. Product technical data:
 - a. Provide submittal data for all products specified in PART 2 of this Specification Section except:
 - 1) Wire connectors.
 - 2) Insulating tape.
 - 3) Cable lubricant.
- B. Informational Submittals:
 - 1. Product data sheets.
 - 2. Pulling tension, installation instructions.
 - 3. Accessories data sheets (breakout boots, cable glands, special tools, etc).
 - 4. Manufacturer cable test reports.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
 - 1. Building wire, power and control cable
 - a. Prysmian Group.
 - b. Southwire Company.
 - c. United Wire & Cable.
 - d. Approved Equal.

2.2 MANUFACTURED UNITS

- A. Power Cable:
 - 1. Conductor shall be copper with 600 V rated insulation.
 - 2. Surface mark with manufacturer's name or trademark, conductor size, insulation type and UL label.
 - 3. Conform to NEMA/ICEA WC 70/S-95-658 and UL 44 and UL 1277 for type XHHW-2 insulation with an overall PVC jacket.
 - 4. Number of conductors as required, including a bare ground conductor.
 - 5. Individual conductor color coding:

| VOLTAGE | PHASE A | PHASE B | PHASE C | NEUTRAL | GROUND |
|------------|---------|---------|---------|---------|---------|
| 12.47 KV | RED | ORANGE | BLACK | N/A | BARE CU |
| 4.16 KV | RED | BLACK | BLUE | N/A | BARE CU |
| 480Y/277 V | BROWN | ORANGE | YELLOW | GREY | GREEN |
| 208Y/120 V | BLACK | RED | BLUE | WHITE | GREEN |

- a. ICEA S-58-679, Method 4.
 - b. See PART 3 of this Specification Section for additional requirements.
 6. Conform to NFPA 70 Type TC and IEEE 1202 or CSA FT-4.
- B. Wire Connectors:
1. Twist/screw on type:
 - a. Insulated pressure or spring type solderless connector.
 - b. 600 V rated.
 - c. Ground conductors: Conform to UL 486C and/or UL 467 when required by local codes.
 - d. Phase and neutral conductors: Conform to UL 486C.
 2. Compression and mechanical screw type:
 - a. 600 V rated.
 - b. Ground conductors: Conform to UL 467.
 - c. Phase and neutral conductors: Conform to UL 486A.
 3. Terminal block type:
 - a. High density, screw-post barrier-type with white center marker strip.
 - b. 600 V and ampere rating as required, for power circuits.
 - c. 600 V, 20 ampere rated for control circuits.
 - d. 300 V, 15 ampere rated for instrumentation circuits.
 - e. Conform to NEMA ICS 4 and UL 486A.
- C. Insulating and Color Coding Tape:
1. Pressure sensitive vinyl.
 2. Premium grade.
 3. Heat, cold, moisture, and sunlight resistant.
 4. Thickness, depending on use conditions: 7, 8.5, or 10 mil.
 5. For cold weather or outdoor location, tape must also be all-weather.
 6. Color:
 - a. Outer Jacket Color Codes:

| | |
|------------------------------|--------|
| 1000 V OR LESS CABLES | BLACK |
| 5 KV CABLES | YELLOW |
| 15 KV CABLES | RED |

- b. Insulating tape: Black.
- c. Color coding tape: Fade-resistant color as specified herein.
7. Comply with UL 510.

- D. Pulling Lubricant: Cable manufacturer's standard containing no petroleum or other products which will deteriorate insulation.

PART 3 - EXECUTION

3.1 QUALITY CONTROL

- A. Cable manufacturer date must be no more than two years from the ship date.
- B. Acceptance Testing:
 - 1. See Specification Section 26 08 13.

END OF SECTION