

SECTION 16120

WIRES AND CABLES

Part 1 -Design Directives

All conductors shall be made of copper with class B concentric stranding. Compact stranded conductors are also acceptable in medium voltage products.

The use of multi-wire branch circuits shall be limited to those that supply non-harmonic loads. Branch circuits that serve loads with harmonic content shall have a separate neutral for each ungrounded circuit conductor.

Feeders that supply equipment or panelboards with a high concentration of harmonic loads shall have 200% rated neutrals. This applies especially to computer rooms and dormitory panelboards serving convenience outlets in individual rooms.

Conductor color-coding throughout the system, including factory manufactured cable assemblies such as type MC cable, shall conform to the conventions listed below:

208/120 Volt Systems – (A)-Black, (B)-Red, (C)-Blue, White for neutral conductor and Green for grounding conductors

480/277 Volt Systems – (A)-Brown, (B)-Orange, (C)-Yellow, Grey for neutral conductors. Use Green with Yellow stripe for grounding conductors.

Provide conductors suitable for the environment into which they are to be installed following the minimum guidelines listed below:

THHN/THWN for indoor branch circuits and feeders #8 and smaller

THHN/THWN or XHHW for indoor branch circuits and feeders larger than #8

XHHW-2 for outdoor and underground branch circuits and feeders in conduit (no substitutes)

MV-105 EPR 115 mil with copper tape shield for medium voltage cable (Okonite only)
5/8 kV for 4160 Volt system and 15kV for 13.2 kV system.

MC cable shall be used only for whips to connect light fixtures from a local junction box above a suspended ceiling. In some cases where a project is performed in an older wooden structure the use of MC cable will be allowed for all branch circuit and feeder wiring.

Where type MC or AC cables are installed they shall have stranded conductors.

MC cable shall be properly supported above suspended ceiling when used to connect to and between lighting fixtures. College staff will closely monitor this issue.

MI cable may be used to supply the alternate source of fire pumps when necessary to meet the separation criterion of the NEC.

Part 2 -Products

No designated manufacturers

Part 3 -Execution

Every effort shall be made to insure the integrity of the insulation when installing conductors. Pull all conductors simultaneously where more than one is being installed in the same raceway. When a wire pulling lubricant is required, use only Polywater Lubricant A.. Ideal yellow 77 shall never be used as a wire pulling lubricant.

Conductors pulled to junction, switch and outlet boxes shall have a minimum of 10 inches slack conductor left at the box for connection and splicing.

Conductors used in home runs serving 15 and 20 amp branch circuits shall be a minimum of number 12 AWG copper. If a home run is over 100 feet the contractor shall use the next larger size of conductor from the panel to the first device served by the circuit. Homeruns longer than 150 feet are strongly discouraged.