

**Type USE or USE-2** — Cable suitable for underground installations, including direct burial. Although both the conductor insulation and the outer covering are suitable for use where exposed to sunlight, the cables are not suitable inside the premises or aboveground other than to terminate at service or metering equipment.

**Submersible water pump cable** — A multiconductor cable containing two, three, or four single-conductor, Type USE or USE-2 cables in a flat or twisted assembly. The cable is tag-marked "For use within the well casing for wiring deep-well water pumps where the cable is not subject to repetitive handling caused by frequent servicing of the pump units."

**338.6 Listing Requirements.** Type SE and USE cables and associated fittings shall be listed.

## Part II. Installation

### 338.10 Uses Permitted.

**(A) Service-Entrance Conductors.** Service-entrance cable shall be permitted to be used as service-entrance conductors and shall be installed in accordance with 230.6, 230.7, and Parts II, III, and IV of Article 230.

#### **(B) Branch Circuits or Feeders.**

**(1) Grounded Conductor Insulated.** Type SE service-entrance cables shall be permitted in wiring systems where all of the circuit conductors of the cable are of the thermoset or thermoplastic type.

Branch circuits using Type SE cable as a wiring method are permitted only if all circuit conductors within the cable are insulated. The equipment grounding conductor (EGC) is the only conductor permitted to be bare or covered within Type SE cable used for branch circuits.

**(2) Use of Uninsulated Conductor.** Type SE service-entrance cable shall be permitted for use where the insulated conductors are used for circuit wiring and the uninsulated conductor is used only for equipment grounding purposes.

*Exception: In existing installations, uninsulated conductors shall be permitted as a grounded conductor in accordance with 250.32 and 250.140, where the uninsulated grounded conductor of the cable originates in service equipment, and with 225.30 through 225.40.*

Service-entrance cable containing a bare grounded (neutral) conductor is not permitted for new installations where it is used as a branch circuit to supply appliances such as ranges, wall-mounted ovens, counter-mounted cooking units, or clothes dryers. The exception permits a bare neutral service-entrance cable for existing installations only.

**(3) Temperature Limitations.** Type SE service-entrance cable used to supply appliances shall not be subject to conductor

temperatures in excess of the temperature specified for the type of insulation involved.

### Δ (4) Installation Methods for Branch Circuits and Feeders.

**(a) Interior Installations.** Interior installations shall comply with the following:

- (1) In addition to the provisions of this article, Type SE service-entrance cable used for interior wiring shall comply with the installation requirements of Part II of Article 334, excluding 334.80.
- (2) Where more than two Type SE cables containing two or more current-carrying conductors in each cable are installed in contact with thermal insulation, caulk, or sealing foam without maintaining spacing between cables, the ampacity of each conductor shall be adjusted in accordance with Table 310.15(C)(1).
- (3) For Type SE cable with ungrounded conductor sizes 10 AWG and smaller, where installed in contact with thermal insulation, the ampacity shall be in accordance with 60°C (140°F) conductor temperature rating. The maximum conductor temperature rating shall be permitted to be used for ampacity adjustment and correction purposes, if the final ampacity does not exceed that for a 60°C (140°F) rated conductor.

Type SE cable is used for a variety of interior circuits, including ranges, clothes dryers, heating, and air-conditioning equipment and as feeders to supply panelboards that are not the service equipment.

While all conductors in nonmetallic-sheathed cable are required to have an insulation temperature rating of 90°C, 334.80 limits the operating (calculated load) ampacity to those contained in the 60°C column of Table 310.16. This limitation applies to all uses of NM cable. In contrast to this restriction, Type SE cable is limited to operating at a 60°C ampacity only if the ungrounded conductor sizes are 10 AWG and smaller and it is installed in thermal insulation. Type SE cable is permitted to have conductors with either 75°C or 90°C insulation. If the cable surface does not have a temperature marking, the conductors have a 75°C insulation temperature rating, and ampacity adjustment or correction is based on that rating. If the cable is marked with a conductor insulation temperature rating, ampacity adjustment or correction of the conductor can be made based on the conductor temperature marked on the cable.

Where Type SE cable with ungrounded conductor sizes 10 AWG and smaller is installed in thermal insulation, the adjusted and/or corrected operating ampacity of the conductors cannot exceed those contained in the 60°C column of Table 310.16. If the cable is not installed in thermal insulation, the limiting factor on conductor ampacity is the requirement, as stated in 110.14(C), for coordinating the operating ampacity of the conductor with the terminal temperature ratings of the electrical equipment.

**(b) Exterior Installations.** Exterior installations shall comply with the following: