§ 111.01–15 Temperature ratings.

(a) In this subchapter, an ambient temperature of 40°C (104°F) is assumed except as otherwise stated.

(b) A 50°C (122°F) ambient temperature is assumed for all rotating electrical machinery in boiler rooms, engine rooms, auxiliary machinery rooms, and weather decks, unless it can be shown that a 45°C (113°F) ambient temperature will not be exceeded in these spaces.

(c) A 45°C (113°F) ambient temperature is assumed for cable and all other non-rotating electrical equipment in boiler rooms, in engine rooms, in auxiliary machinery rooms, and on weather decks. For installations using UL 489 (incorporated by reference; see 46 CFR 110.10–1) SA marine type circuit breakers, the ambient temperature for that component is assumed to be 40°C (104°F). For installations using Navy type circuit breakers, the ambient temperature for that component is assumed to be 50°C (122°F).

(d) Unless otherwise indicated in this subchapter, a 55°C (131°F) ambient temperature is assumed for all control and instrumentation equipment.

(e) If electrical equipment is utilized in a space in which the equipment’s rated ambient temperature is below the assumed ambient temperature of the space, its load must be derated. The assumed ambient temperature of the space plus the equipment’s actual temperature rise at its derated load must not exceed the equipment’s total rated temperature (equipment’s rated ambient temperature plus its rated temperature rise).


§ 111.01–17 Voltage and frequency variations.

Unless otherwise stated, electrical equipment must function at variations of at least ±5 percent of rated frequency and +6 percent to −10 percent of rated voltage. This limitation does not address transient conditions.


§ 111.05–3 Equipment Ground, Ground Detection, and Grounded Systems

§ 111.05–1 Purpose.

This subpart contains requirements for the grounding of electric systems, circuits, and equipment.

Note: Circuits are grounded to limit excessive voltage from lightning, transient surges, and unintentional contact with higher voltage lines, and to limit the voltage to ground during normal operation. Conductive materials enclosing electric conductors and equipment, or forming part of that equipment, are grounded to prevent a voltage above ground on the enclosure materials.


§ 111.05–3 Design, construction, and installation; general.

(a) An electric apparatus must be designed, constructed, and installed to prevent any person from accidentally contacting energized parts.

(b) Exposed, noncurrent-carrying metal parts of fixed equipment that may become energized because of any condition must be grounded.

(c) Exposed, noncurrent-carrying metal parts of portable equipment must be grounded through a conductor in the supply cable to the grounding pole in the receptacle.