

4123:1-3-14 Electrical conductors, wires and equipment.

(A) Reserved.

(B) Definitions.

- (1) "Circuit" means a conductor or system of conductors through which an electric current is intended to flow.
- (2) "Conductor" means a metallic material, usually in the form of a wire or cable, suitable for carrying an electric current. Does not include bus bars.
- (3) "Current-carrying" means a conducting part intended to be connected in an electric circuit to a source of voltage. Noncurrent-carrying parts are those not intended to be connected.
- (4) "De-energized" means being free from any electrical connection to a source of a potential different from that of the earth.
- (5) "Energized" means anything connected to an electrical source having a greater potential than that of the earth.
- (6) "Ground connection" means the equipment used in establishing a path between an electric circuit or equipment and earth. A ground connection consists of a ground conductor, a ground electrode and the earth which surrounds the electrode.
- (7) "Grounded" means connected to earth or to some extended conducting body which serves instead of the earth whether the connection is intentional or accidental.
- (8) "Grounded effectively" means permanently connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the building up of voltages which may result in undue hazard to connected equipment or to employees.
- (9) "Grounding conductor" means a conductor which is used to connect the equipment or the wiring system with a grounding electrode or electrodes.
- (10) "Insulated" means separated from other conducting surfaces by a dielectric substance or air space permanently offering a high resistance to the passage of current and to disruptive discharge through the substance or space. (Note: When any object is said to be insulated it is understood to be insulated in a suitable manner for the conditions to which it is subjected. Otherwise it is, within the purpose of this rule, uninsulated).
- (11) "Insulating" (where applied to the covering of a conductor or to clothing, guards, rods, and other safety devices) means that a device, when interposed between an employee and current-carrying parts, protects the employee making use of it against electric shock, from the current-carrying parts with which the device is intended to be used; the opposite of conducting.

- (12) "Phase" means one energized conductor of an electrical system.
- (13) "Switch" means a device for opening and closing or for changing the connection of a circuit. In this rule, a switch will always be understood to be manually operated, unless otherwise stated.
- (14) "Voltage (of a circuit)" means the greatest root-mean-square (effective) difference of potential between any two conductors of the circuit concerned. On various systems such as three-phase four-wire, single-phase three-wire and three-wire direct current, there may be various circuits of various voltages.
- (15) "Voltage to ground" means, in grounded circuits, the voltage between the given conductor and that point or conductor of the circuit which is grounded; in grounded circuits, the greatest voltage between the given conductor and any other conductor of the circuit.
- (16) "Voltage" (or "volts") means the highest effect electrical potential between any two conductors of the circuit concerned except where, in certain paragraphs of this rule, reference is made to the term "voltage (or volts) to ground".

(C) Installation and maintenance of temporary wiring.

- (1) All temporary wiring shall be installed with approved overload protection and maintained in accordance with the following:
 - (a) Main feed and secondary conductors shall be no less than eight feet above the floor or ground level unless in rigid or other conduit such as nonmetallic sheathed cable or metallic sheathed cable which provides equivalent protection and support. Temporary wiring run as open conductors shall be on insulators spaced no more than ten feet apart and shall not be exposed to mechanical damage. Extension cords shall not be considered as secondary conductors. No branch circuits or feeder conductors shall be laid on the floor except properly maintained extension cords feeding portable powered tools.
 - (b) All receptacles shall be grounded effectively.
 - (c) All lamps for general illumination shall be protected from accidental contact or breakage. Protection shall be provided by elevation of no less than seven feet from working surface or by a suitable fixture or lampholder with a guard.
 - (d) All temporary circuits shall be grounded effectively.
- (2) Bare conductors and earth returns.

No bare conductors nor earth returns shall be used for the wiring of any temporary circuit.
- (3) Disconnecting means.

Approved disconnecting switches or plug connectors shall be installed to permit the disconnection of all ungrounded conductors of each temporary circuit.

- (4) Construction sites.
All one-hundred-twenty-volt single-phase fifteen and twenty ampere receptacle outlets which are not a part of the permanent wiring of the building or structure, shall have ground fault circuit interrupters or the implementation of an assured equipment grounding program on construction sites.
- (5) All energized equipment exposed to contact shall be guarded.
- (6) Portable lights in damp locations shall not exceed twelve volts, except that one hundred twenty volt lights may be used if protected by a ground-fault circuit interrupter.

(D) Extension cords.

- (1) Extension cords used with portable electric tools and appliances shall be of three-wire type.
- (2) Three-wire type extension cords to lights or electrically powered tools or devices shall be equipped with a three-wire grounding type receptacle and attachment plug of nonconductive material. Splicing shall be done by vulcanized or plastic molded splice method. Insulation shall be equal to the capable being spliced and wire connections shall be soldered.
- (3) Where different voltages, frequencies, or type of current (alternating or direct) are to be supplied by portable cords, receptacles shall be of such design that attachment plugs used on such circuits are not interchangeable.

(E) Lockout and tagging of de-energized equipment or circuits.

The employer shall instruct employees to lock out all de-energized equipment or circuits and attach tags at all points where such de-energized equipment or circuits can be energized.

(F) Circuits in excess of two hundred fifty volts.

- (1) The employer shall instruct employees to de-energize and effectively ground circuits in excess of two hundred fifty volts before working on such circuits unless personal protective equipment is provided in accordance with paragraph (H)(3) of rule 4121:1-3-03 of the Administrative Code.
- (2) All circuits shall be worked as energized unless grounded effectively.

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