

OUTLINE OF SUBPART "S"

Electrical Standards

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1910.301 Introduction

1910.302 Electric Utilization Systems (scope and application)

1910.303 General Requirements

- (a) Approval (NRTL's)
- (b) (1) Suitability of electrical equipment - General Duty Clause
- (b) (2) Installation and Use (in accordance with listing requirements)
- (c) Splices
- (e) Marking, Mfg. Name, voltage, current, wattage, etc.
- (f) Identification of disconnection means and
circuits
- (g) (1) Working Clearances - Concrete, tile, brick are grounded / (conductive)
- (g)(2) Guarding of live parts (50 volts or more), 600 volts or less

1910.304 Wiring design and protection

- (a) (2) Reverse polarity
- (a) (3) Grounding Terminal - can't be used for anything else.
- (b) (2) Rating of outlet device (ampacity for load)
- (c) Outdoor wiring and clearances
- (d) Disconnecting means, main service
- (e) Overcurrent protection (readily accessible , physical damage protection)
- (f) (4) Grounding path
- (f) (5) (iv) Grounding of fixed equipment
- (f) (5) (v) Grounding of cord and plug connected equipment

1910.305 Wiring methods, components, and equipment for general use

- (a) (1) Raceways, Cable Armor & Metal Enclosures - connected together to provide effective electrical continuity.
- (a) (2) Temporary wiring - grounded receptacles required, lamps protected from damage 7' , no earth returns allowed, open conductors for branch circuits only and not laid on floor supported every 10 ' , flexible cords protected from damage.
- (b) (1) Cabinets, boxes, and fittings. Unused openings shall be Effectively closed, wires entering boxes protection from abrasion

- (b) (2) Covers and canopies. Boxes shall have approved covers. Flexible cord pendants pass through covers must have bushings.
- (e) Damp or wet locations - enclosures shall be weatherproof.
- (g) (1) Flexible cords and cables-uses and prohibitions
- (g) (1) (i) Uses Permitted: Pendants, wiring of fixtures, elevator cables, cranes and hoists, stationary equipment to facilitate frequent interchange, prevention of transmission of noise or vibration, appliances, data processing cables.
- (g) (1) (iii) Uses Not Permitted: as a substitute for fixed wiring of the structure, where run through holes in walls ceilings (including drop or hung ceilings) or floors, where run through doorways or windows, where attached to building surfaces, where concealed behind building walls ceiling or floors.
- (g) (2) Flexible cords and cables-identification, splices, and terminations (hard service cords of #14 gage or larger (per NFPA 70) can be spliced if the splice retains the insulation characteristics and outer sheath properties (ie. Type SO flexible cord is oil resistant outer sheath etc.)
- (j) Lighting fixtures, lampholders, lamps and receptacles - Fixtures and receptacles installed in a wet or damp location shall be suitable for the location.
- (j) (4) Motors - Disconnect in sight from controller location and not over 50'.
- (j) (5) Transformers
- (j) (6) Capacitors
- (j) (7) Storage Batteries

1910.306 Specific purpose equipment and installations

- (a) Electric signs and outline lighting
- (b) Cranes and hoists
- (c) Elevators, dumbwaiters, escalators, and moving walks
- (d) Electric welders
- (e) Data processing systems
- (f) X-ray equipment
- (g) Induction and dielectric heating equipment
- (h) Electrolytic cells
- (i) Electrically driven or controlled irrigation machines
- (j) Swimming pools, fountains, and similar installations
- (j) (2) GFCI

1910.307 Hazardous (Classified locations)

Scope

Electrical Installations

- (1) Electrical Installations - Intrinsically safe
- (2) Electrical Installations - Approved for
- (3) Electrical Installations - Safe for
Equipment in Div. 2 locations

0.308 Special systems

Systems over 600 volts

Emergency power systems

Class 1, Class 2, Class 3 remote control, signaling, and power-limited circuits

Fire protective signaling systems

Communication systems

0.331 Safety-related Work Practices

Scope

Unqualified persons

Qualified persons

0.332 Training

Scope employees who face risk of shock

Content of Training

- (1) Practices addressed in this standard
 - (2) Additional requirements for unqualified persons
 - (3) Additional requirements for qualified persons
- ### Type of training

0.333 Selection and use of Work Practices

General

- (1) Deenergized parts - Live parts SHALL be de-energized and locked out prior to working on them (exception: employer can prove greater hazard or infeasibility)
- (2) Energized parts - must protect against ALL electrical hazards (shock, electrocution, burns, fire, explosion, & arc blast)
Lockout and Tagging
Working on or near exposed energized parts
- (3) Overhead lines-clearances
- (4) Illumination
- (5) Confined work spaces
- (6) Conductive materials and equipment
- (7) Portable ladders
- (8) Conductive apparel-jewelry

- (c) (9) Housekeeping
- (c) (10) Interlocks

1910.334 Use of Equipment

- (a) Portable electrical equipment & cordsets (extension cords)
- (a) (1) Handling-flexible cords - not handled in a manner which will cause damage - don't use extension cords to raise or lower equipment
- (a) (2) Visual inspection - daily or before use, employees trained to inspect for such things as damage to insulation, crushed outer jacket, missing broken or bent pins, any external defects or indications of internal defects
Must be removed from service until repaired (procedures needed)
- (a) (3) Grounding - don't mess with the ground pin it's purpose is to prevent electrocution from equipment malfunction
- (iii) Grounding adapters prohibited
- (a) (5) Connecting attachment plugs - no wet hands
- (b) Power and Lighting circuits opening and closing of circuits
- (b) (3) Overcurrent modification
- (c) Test instruments and equipment
- (c) (1) Use by qualified persons only
- (c) (2) Visual inspection - before each use
- (c) (3) Ratings - full rating for the circuits and equipment to which they will be used
- (d) Flammable or ignitable materials

1910.335 Safeguards for personnel protection

- (a) (1) PPE shall be used where there are potential electrical hazards (1910.132 requires hazard assessment and employer certification)
PPE shall be maintained in accordance with 1910.137 Use of protective equipment leather covers, dielectric head protection, eyes, face, electric arcs or flashes and electrical explosion. No synthetic or synthetic blend clothing can be worn
- (a) (2) Insulated tools (must meet ASTM 1505) shall be used , fuse handlers, nonconductive ropes, protective shields and barrers, alerting techniques, safety signs and tags, barricades, attendants.

1910.399 Definitions