

Chapter E 516

FINISHING PROCESSES

E 516.01	Definition	E 516.04	Electrostatic equipment
E 516.02	Hazardous areas	E 516.05	Wiring and equipment
E 516.03	Wiring and equipment in hazardous areas		above hazardous areas
		E 516.06	Grounding

E 516.01 Definition. This chapter shall apply to locations where paints, lacquers or other flammable finishes are regularly or frequently applied by spraying, dipping, brushing or by other means, and where volatile flammable solvents or thinners are used or where readily ignitable deposits or residues from such paints, lacquers or finishes may occur.

Note: For further information regarding safeguards for finishing processes, see the NFPA Standard for Spray Finishing Using Flammable Materials (No. 33) and the NFPA Standard for Dip Tanks Containing Flammable or Combustible Liquids (No. 34).

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 516.02 Hazardous areas. Classification with respect to flammable vapors. For deposits and residues, see section E 516.03.

(1) The following areas shall be considered to be class I, division 1 locations:

- (a) The interiors of spray booths and their exhaust ducts.
- (b) 20 feet horizontally and up to an elevation of 12 feet above the floor or 7 feet above the work, whichever is higher where open-spraying operations more extensive than touch-up spraying are permitted. The dimensions may be reduced if the space is limited by a ceiling or permanent walls.
- (c) 20 feet horizontally and 12 feet above the floor or 7 feet above the top of dip tanks and their drain boards, whichever is higher. The dimensions may be reduced if the space is limited by a ceiling or permanent walls.

(d) Spaces where hazardous concentrations of flammable vapors are likely to occur.

(2) The following shall be considered to be class I, division 2 locations:

- (a) A rectangular base area 20 feet wide having a long side extending across the open face of the booth and 20 feet beyond either side of the booth and extending to the ceiling or 5 feet above the top of the booth.
- (b) Thirty feet horizontally beyond the limits of class I, division 1 areas (see subsection E 516.02 (1)) surrounding open spraying, dip tanks and drain boards and other hazardous operations. The vertical dimension of the class I, division 2 area shall be the same as the class I, division 1 area. The area need not extend above ceilings nor beyond permanent walls.

(3) Adjacent areas which are cut off from the defined hazardous areas by tight partitions without communicating openings, and within

which hazardous vapors are not likely to be released, shall be classed as non-hazardous.

(4) Drying and baking areas provided with positive mechanical ventilation adequate to prevent formation of flammable concentrations of vapors, and provided with effective interlocks to de-energize all electrical equipment (other than equipment approved for class I locations) in case the ventilating equipment is inoperative, may be classed as non-hazardous.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 516.03 Wiring and equipment in hazardous areas. (1) All electrical wiring and equipment within the hazardous areas defined in section E 516.02 shall conform to applicable provisions of chapter E 501.

(2) Unless specifically approved for the location, no electrical equipment shall be installed or used where it may be subject to hazardous accumulations of readily ignitable deposits or residues, except that wiring in rigid conduit or in threaded boxes or fittings containing no taps, splices or terminal connections may be installed in such locations.

(3) Illumination of readily ignitable areas through panels of glass or other transparent or translucent material is permissible only where: (a) fixed lighting units are used as the source of illumination, (b) the panel effectively isolates the hazardous area from the area in which the lighting unit is located, (c) the lighting unit is approved for its specific location, (d) the panel is of a material or is so protected that breakage will be unlikely and (e) the arrangement is such that normal accumulations of hazardous residue on the surface of the panel will not be raised to a dangerous temperature by radiation or conduction from the source of illumination.

(4) Portable electric lamps or appliances shall not be used within a hazardous area during operation of the finishing process. When such lamps or appliances are used during cleaning or repairing operations, they shall be of a type approved for class I locations, and all exposed metal parts shall be effectively grounded.

(5) Electrostatic spraying or detearing equipment shall be installed and used only as provided in section E 516.04.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 516.04 Electrostatic equipment. Where electrostatic spraying and detearing equipment is installed, such equipment shall be of approved type, and shall conform to the following requirements:

(1) No transformers, power packs, control apparatus, or other electrical portion of the equipment (except high voltage grids and their connections) shall be installed in any of the hazardous areas defined in section E 516.02 unless of a type approved for the location.

(2) High voltage grids or electrodes shall be located in suitable non-combustible booths or enclosures provided with adequate mechanical ventilation, shall be rigidly supported and of substantial construction, and shall be effectively insulated from ground by means of non-porous noncombustible insulators.

(3) High voltage leads shall be effectively and permanently supported on suitable insulators, shall be effectively guarded against accidental contact or grounding, and shall be provided with automatic means for discharging any residual charge to ground when the supply voltage is interrupted.

(4) Goods being processed shall be supported on conveyors in such a manner that minimum clearance between goods and high voltage grids or conductors cannot be less than twice the sparking distance. A conspicuous sign indicating the sparking distance shall be permanently posted near the equipment.

(5) Approved automatic controls which will operate without time-delay shall be provided to disconnect the power supply and to signal the operator in case of (a) stoppage of ventilating fans or failure of ventilating equipment from any cause, (b) stoppage of the conveyor carrying goods through the high voltage field, (c) occurrence of a ground or of an imminent ground at any point on the high voltage system, or (d) reduction of clearance below that specified in subsection E 516.04 (4).

(6) Adequate fencing, railings or guards which are electrically conducting and effectively grounded shall be provided for safe isolation of the process, and signs shall be permanently posted designating the process zone as dangerous because of high voltage.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 516.05 Wiring and equipment above hazardous areas. (1) All fixed wiring above hazardous areas shall be in metallic raceways or shall be type MI cable. Cellular metal floor raceways may be used only for supplying ceiling outlets or extensions to the area below the floor of a hazardous area, but such raceways shall have no connections leading into or through the hazardous area above the floor unless suitable seals are provided. No electrical conductor shall be installed in any cell, header or duct which contains a pipe for steam, water, air, gas, drainage, or for other service except electrical.

(2) Equipment which may produce arcs, sparks or particles of hot metal, such as lamps and lampholders for fixed lighting, cutouts, switches, receptacles, motors, or other equipment having make and break or sliding contacts, where installed above a hazardous area or above an area where freshly finished goods are handled, shall be of totally-enclosed type or shall be provided with suitable guards or screens to prevent escape of sparks or hot metal particles.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.

E 516.06 Grounding. All metallic raceways, and all non-current-carrying metallic portions of fixed or portable equipment, regardless of voltage, shall be grounded as provided in chapter E 250.

History: Cr. Register, November, 1961, No. 71, eff. 12-1-61.