



Spray Application of Flammable or Combustible Liquids

Ohio Fire Code 2007

Section 1501.1 Flammable Finishes



Scope. This rule shall apply to locations or areas where any of the following activities are conducted:

The application of flammable or combustible paint, varnish, lacquer, stain, fiberglass resins or other flammable or combustible liquid applied by means of spray apparatus in continuous or intermittent processes.

Operations involving the spray application of flammable and combustible materials shall comply with the Ohio Fire Code, Ohio Building Code, Ohio Mechanical Code, NFPA 33, *Standard for Spray Application Using Flammable or Combustible Materials* and all other applicable codes. **The information on this bulletin is not all inclusive and you should consult a design professional for a complete listing of applicable codes.**

1501.2 Permits. Permits shall be required as set forth in rule 1301:7-7-01 of the Administrative Code.

Definitions

Limited Spraying Space- An area in which spraying operations for *touch-up* or *spot painting* of a surface area of 9 square feet or less is conducted.

Spray booth-A mechanically ventilated appliance of varying dimensions and construction provided to enclose or accommodate a spraying operation and to confine and limit the escape of spray vapor and residue and to exhaust it safely.

Spray room-A room designed to accommodate spraying operations constructed in accordance with the *building code* as listed in rule 1301:7-7-45 of the Administrative Code and separated from the remainder of the building by a minimum 1-hour fire barrier.

Spraying space- An area in which dangerous quantities of flammable vapors or combustible residues, dusts or deposits are present due to the operation of spraying processes. The fire code official is authorized to define the limits of the spraying space in any specific case.

Spray Finishing

1504.1 General. The application of flammable or combustible liquids by means of spray apparatus in continuous or intermittent processes shall be in accordance with the requirements of paragraphs (C)(1503) and (D)(1504) of this rule.

1504.2 Location of spray-finishing operations. Spray-finishing operations conducted in buildings used for Group A, E, I or R occupancies shall be located in a spray room protected with an approved automatic sprinkler system installed in accordance with paragraphs (C)(3)(a)(i)(903.3.1.1) of rule 1301:7-7-09 of the Administrative Code and separated vertically and horizontally from other areas in accordance with the building code as listed in rule 1301:7-7-45 of the Administrative Code. **In other occupancies, spray-finishing operations shall be conducted in a spray room, spray booth or limited spray space approved for such use.**

1504.3 Design and construction. Design and construction of spray rooms, spray booths and spray spaces shall be in accordance with paragraphs (D) (3) (1504.3) to (D)(3)(c)(i)(1504.3.3.1) of this rule.

1504.3.2 Spray booths. The design and construction of spray booths shall be in accordance with paragraphs (D)(3)(b)(i) (1504.3.2.1) to (D)(3)(b)(vi)(1054.3.2.6) of this rule, paragraphs (D)(4)(1504.4) to (D)(8)(1504.8) of this rule and NFPA33 as listed in rule 1301:7-7-45 of the Administrative Code.

1504.4 Fire Protection. Spray booths and spray rooms shall be protected by an approved automatic fire-extinguishing system complying with rule 1301:7-7-09 of the Administrative Code. Protection shall also extend to exhaust plenums, exhaust ducts and both sides of dry filters when such filters are used.

1504.9 Limited spraying spaces. Limited spraying spaces shall comply with paragraphs (D)(9)(a)(1504.9.1) to (D)(9)(d) (1504.9.4) of this rule.

1504.9.1 Job size. The aggregate surface area to be sprayed shall not exceed 9 square feet.

1504.9.2 Frequency. Spraying operations shall not be of a continuous nature.

1504.9.3 Ventilation. Positive mechanical ventilation providing a minimum of six complete air changes per hour shall be installed. Such system shall meet the requirements of this code for handling flammable vapor areas. Explosion venting is not required.

1504.9.4 Electrical wiring. Electrical wiring within 10 feet of the floor and 20 feet horizontally of the limited-spraying space shall be designed for Class I Division 2 locations in accordance with the *building code* and NFPA 70 as listed in rule 1301:7-7-45 of the Administrative Code.

1507.1 Ventilation. Mechanical ventilation of flammable vapor areas shall be provided in accordance with Section 510 of the *mechanical code* as listed in rule 1301:7-7-45 of the Administrative Code.



Spray Application of Flammable or Combustible Liquids

Ohio Building Code 2007

Application of Flammable Finishes-Section 416

- 416.1 General.** The provisions of this section shall apply to the construction, installation and use of buildings and structures, or parts thereof, for the spraying of flammable paints, varnishes and lacquers or other flammable materials or mixtures or compounds used for painting, varnishing, staining, or similar purposes. Such construction and equipment shall comply with the *fire code*.
- 416.2 Spray rooms.** Spray rooms shall be enclosed with fire barriers with not less than a 1-hour fire-resistant rating. Floors shall be water-proofed and drained in an approved manner.
- 416.2.1 Surfaces.** The interior surfaces of spray rooms shall be smooth and shall be so constructed to permit the free passage of exhaust air from all parts of the interior and to facilitate washing and cleaning, and shall be so designed to confine residues within the room. Aluminum shall not be used.
- 416.3 Spraying spaces.** Spraying spaces shall be ventilated with an exhaust system to prevent the accumulation of flammable mist or vapors in accordance with the *mechanical code*. Where such spaces are not separately enclosed. Noncombustible spray curtains shall be provided to restrict the spread of flammable vapors.
- 416.3.1 Surfaces.** The interior surfaces of spraying spaces shall be smooth and continuous without edges; shall be so constructed to permit the free passage of exhaust air from all parts of the interior and facilitate washing and cleaning; and shall be so designed to confine residues within the spraying space. Aluminum shall not be used.
- 416.4 Fire protection.** An automatic fire-extinguishing system shall be provided in **all spray, dip and immersing spaces and storage rooms** and shall be installed in accordance with Chapter 9.

NFPA 33

Administration 1.1 Scope.

- 1.1.1** This standard shall apply to the spray application of the flammable or combustible materials, as herein defined, either continuously or intermittently by any of the following methods: Compressed atomization, Airless or hydraulic atomization, Electrostatic application methods, other means of atomized application.
- 1.1.3** This standard shall also apply to spray application of water-borne, water-based, and water-reducible materials that contain flammable or combustible liquids or that produce combustible deposits or residues.
- Definition: Spray area.** Any fully enclosed, partly enclosed, or unenclosed area in which dangerous quantities of flammable or combustible vapors, mists, residues, dusts, or deposits are present due to the operation of spray processes, including (a) any area in the direct path of spray application process; (b) the interior of a spray booth or spray room or limited finishing workstation, as herein defined; (c) the interior of exhaust plenum, eliminator section, or scrubber section; (d) the interior of any exhaust duct or exhaust stack leading from a spray application process; (e) the interior of any air recirculation particulate filters; (f) any solvent concentrator (pollution abatement) unit or solvent recovery (distillation) unit.
- 14.3 Limited Finishing Workstations.** A limited finishing workstation shall be designed and constructed in accordance with the requirements of 14.3.1 through 14.3.9
- A dedicated make-up air supply and air supply plenum.
 - Curtains or partitions that are noncombustible or limited combustible, as defined in NFPA 220 Standard on Types of Building Construction, or that can successfully pass Test Method 2 of NFPA 701, Standard methods of Fire Tests for Flame Propagation of Textiles and Films.
 - A dedicated mechanical exhaust and filtration system.
 - An approved automatic extinguishing system that meets the requirements of Chapter 9.
- 14.3.2** The amount of material sprayed in limited finishing workstation shall not exceed 3.8L (1 gal.) in any 8 hour period.
- 14.3.3** The limited finishing workstation shall meet all applicable requirements of Chapter 4 through Chapter 10 and Chapter 18 of this standard.
- 14.4** Curtains or partitions shall be fully closed during any spray applications.
- 14.3.5** The area inside the curtains or partitions shall be considered Class I, Division I; Class I, Zone I; or Class II, Division I hazardous (classified) location, as defined by NFPA 70.



Spray Application of Flammable or Combustible Liquids

NFPA 33

- 14.3.5.1** A Class I, Division 2; Class II, Division 2 hazardous (classified) location, as applicable, shall extend horizontally and vertically beyond the volume enclosed by the outside surface of the curtains or partitions as follows:
- 1525mm (5ft) horizontally and 915mm (3ft) vertically, as shown in Figure 14.3.5.1 (a), if the spray application equipment is interlocked with the exhaust ventilation system.
 - 3050mm (10ft) horizontally and 915mm (3ft) vertically, as shown in Figure 14.3.5.1 (b), if the spray application equipment is not interlocked with the exhaust ventilation system.
- 14.3.5.2** For the purposes of this subsection, *interlocked* shall mean that the spray application equipment cannot be operated unless the exhaust ventilation system is operating and functioning properly and spray application is automatically stopped if the exhaust ventilation system fails.
- 14.3.6** Any limited finishing workstation used for spray application operations shall not be used for any operation that is capable of producing sparks or particles of hot metal or for operations that involve open flames or electrical utilization equipment capable of producing sparks or particles of hot metal.
- 14.3.7** Drying, curing, or fusion apparatus shall be permitted to be used in a limited finishing workstation if they meet the requirements of 14.3.7.1 through 15.3.7.3.