

PAINT AND SPRAY SYSTEMS SPECIALTY CORRECTION LIST

This list is to be used in conjunction with the attached General Correction List. Note that this correction list is not all inclusive. See additional items on the General Correction List.

Items listed require amended construction documents such as revised plans, supplemental instructions, addenda, field orders, or change orders before plans approval will be issued. Answers in letter form may be provided to explain the changes to the construction documents. All drawing revisions should be clouded with a corresponding revision number tag.

Sprinkler systems and sprinkler system components are reviewed for compliance with the following State of Tennessee adopted codes:

- National Fire Protection Association (NFPA) 30, 2012 edition
- National Fire Protection Association (NFPA) 33, 2011 edition
- International Building Code (IBC), 2012 edition
- International Fire Code (IFC), 2012 edition
- National Electric Code / National Fire Protection Association (NFPA) 70, 2011 edition

Submittal Requirements

1. Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of the referenced code in accordance with IBC 107.2.1. All documents shall be sealed (with signature and date) by a Tennessee registrant. Rule 0120-02-.08(3)

Architectural Requirements

2. On the cover sheet of the plans, identify the specific sprinkler/fire extinguisher standard to be used in the paint and spray application and mixing room design drawings and scope of protection: e.g., *Equipped Throughout, Partial, Incidental Area*. IBC 107.2.1, IBC 903.3.1
3. The Paint and Spray Operations Design Intent drawings shall be indexed on the Cover Sheet of the plan set. IBC 107.2.1
4. Identify the locations of the mixing room, spray area, spray room and/or booth. IBC 107.2.1
5. Spray rooms shall be enclosed with not less than 1-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 711, or both. Floors shall be waterproofed and drained in an approved manner. IBC 416.2, NFPA 33, 5.1.6
6. Spray application operations and processes shall not be conducted in any building that is classified as an assembly, educational, institutional, or residential occupancy, unless they are located in a room that is separated both vertically and horizontally from all surrounding areas by construction having a fire resistance rating of not less than 2 hours. The room shall be protected by an approved automatic

sprinkler system designed and installed in accordance with NFPA 13, Standard for the Installation of Sprinkler Systems. NFPA 33, 4.2

7. Walls, doors, and ceilings that intersect or enclose a spray area shall be constructed of noncombustible or limited-combustible materials or assemblies and shall be securely and rigidly mounted or fastened. The interior surfaces of the spray area shall be smooth, designed and installed to prevent pockets that can trap residues, and designed to facilitate ventilation and cleaning. NFPA 33, 5.1 4.2
8. A clear space of not less than 3 ft. shall be maintained on all sides and above the spray booth. This clear space shall be kept free of any storage or combustible construction.
IFC 2404.3.2.5 NFPA 33, 5.3.2
Exception No. 1: This requirement shall not prohibit locating a spray booth closer than 3 ft. to or directly against an interior partition, wall, or floor/ceiling assembly that has a fire resistance rating of not less than 1 hour, provided the spray booth can be maintained and cleaned.
Exception No. 2: This requirement shall not prohibit locating a spray booth closer than 3 ft. to an exterior wall or a roof assembly, provided the wall or roof is constructed of noncombustible material and provided the spray booth can be maintained and cleaned.
9. Spray booths shall be separated from other operations by a minimum distance of 3 ft. or by a partition, wall, or floor/ceiling assembly having a minimum fire resistance rating of 1 hour. Multiple connected spray booths shall not be considered as "other operations" except as provided for in Section 13.3 of NFPA 33. NFPA 33, 5.3
10. Means of egress shall be provided in accordance with IBC Chapter 10 and the requirements of NFPA 101, Life Safety Code. IFC 2404.3.2.4, NFPA 33, 5.1.7
11. Supply details of how the fire suppression piping is installed and maintains effective sealing/isolation of high/low pressure zones (i.e. the booth or spray area). Also these details must be effective in how they establish other requirements of design such as the build-up of flammable or combustible dusts, overspray, etc. Piping may be run inside or outside of the containment zone. NFPA 33, 3.3.10, NFPA 33, 9.4.7, NFPA 33, 10.2

Spray Application

12. Spray application operations and processes shall be confined to spray booths, spray rooms, or spray areas. IBC 416, NFPA 33, 4.1.
13. A premanufactured paint booth must be listed by a nationally recognized testing laboratory (U.L., ETL, etc.) or designed by a Tennessee registered professional engineer competent in the area of storage, handling, and spray application of flammable and combustible materials and related safety systems. Provide the following information: model number, booth length and width, minimum exhaust CFM, maximum supply CFM, and any application restrictions and shall be designed, constructed and operated in accordance with the International Fire Code. IBC 416.4
14. Spray booths, spray rooms, or other enclosures used for spray application of flammable and combustible materials shall not be used for drying, curing, or fusing operations. NFPA 33, 13.2

15. Identify type and quantity of chemicals for each room to determine classification of hazard of contents. IBC Table 307.1(1), Section 404 Table 414.2.2, IFC Table 5003.1.1(1)
16. Spray booths shall be constructed of approved noncombustible materials. Aluminum shall not be used. Where walls or ceiling assemblies are constructed of sheet metal, single-skin assemblies shall be no thinner than 0.0478 inch (18 gauge) and each sheet of double-skin assemblies shall be no thinner than 0.0359 inch (20 gauge). Structural sections of spray booths are allowed to be sealed with latex-based or similar caulks and sealants. IFC 2404.3.2.1
17. The interior surfaces of spray booths shall be smooth; shall be constructed so as to permit the free passage of exhaust air from all parts of the interior, and to facilitate washing and cleaning; and shall be designed to confine residues within the booth. Aluminum shall not be used. IFC 2404.3.2.2, IBC 416.3.1

Paint Area/Mixing Room Construction

18. Walls, doors, and ceilings that intersect or enclose a spray area shall be constructed of noncombustible or limited-combustible materials or assemblies and shall be securely and rigidly mounted or fastened. The interior surfaces of the spray area shall be smooth, designed and installed to prevent pockets that can trap residues, and designed to facilitate ventilation and cleaning. NFPA 33, 5.1
19. For spray areas and non-listed booths, air intake filters that are part of a wall or ceiling assembly shall be listed Class 1 or Class 2, in accordance with UL 900, Test Performance of Air Filters. NFPA 33, 5.1.1
20. Panels for light fixtures or for observation shall be of heat-treated glass, laminated glass, wired glass, or hammered wired glass and shall be sealed to confine vapors, mists, residues, dusts, and deposits to the spray area. NFPA 33, 5.5.1
Exception: Listed spray booth assemblies that have vision panels constructed of other materials shall be permitted.
21. Panels for light fixtures shall be separated from the fixture to prevent the surface temperature of the panel from exceeding 200°F. NFPA 33, 5.5.2
22. The panel frame and method of attachment shall be designed to not fail under fire exposure before the vision panel fails. NFPA 33, 5.5.3
23. Observation panels for spray booths that are used exclusively for powder coating processes shall be permitted to be constructed of fire-resistant combustible materials. NFPA 33, 5.5.4
24. Ventilation. Spray areas that are equipped with ventilation distribution or baffle plates or with dry overspray collection filters shall meet the requirements of 5.6.1 through 5.6.5. NFPA 33, 5.6
25. Distribution plates or baffles shall be constructed of noncombustible materials and shall be readily removable or accessible for cleaning on both sides. NFPA 33, 5.6.1
26. Filters shall not be used when applying materials known to be highly susceptible to spontaneous heating or spontaneous ignition. NFPA 33, 5.6.2
27. Supports and holders for filters shall be constructed of noncombustible materials. NFPA 33, 5.6.3

28. Overspray collection filters shall be readily removable or accessible for cleaning or replacement. NFPA 33, 5.6.4

Ventilation and Mechanical

29. Spray areas equipped with overspray collection filters shall have an effective means to ensure that the performance requirements of Section 7.2 are met. NFPA 33, 7.2.1
30. Mechanical ventilation shall be kept in operation at all times while spray operations are being conducted and for a sufficient time thereafter to allow the vapors from drying coated objects or material and residues to be exhausted. Where spray operations are conducted automatically without an attendant constantly on duty, the operating controls of the spray apparatus shall be arranged so that the spray apparatus cannot function unless the exhaust fans are operating. NFPA 33, 7.2.3
31. Exhaust ducts from spray operations must be routed to the outside in the most direct manner available and extend to at least 6 feet above any exterior wall or roof. NFPA 33, 7.4
32. Exhaust ducts from spray operations must not penetrate a fire wall. NFPA 33, 7.4
33. Exhaust ducts from spray operations must not discharge towards any combustible construction within 25 feet of the duct's outlet nor discharge toward any unprotected opening in any noncombustible or limited-combustible construction that is within 25 feet of the exhaust discharge point. NFPA 33, 7.4
34. Individual spray booths shall be separately ducted to the building exterior.
NFPA 33, 7.6 and exceptions
35. Exhaust plenums and exhaust ducts and fasteners shall be constructed of steel, except as allowed in 7.7.1, 7.7.2, and 7.7.3. NFPA 33, 7.7
36. Exhaust ducts must be designed to support the weight of the duct itself and any anticipated residual material buildup inside. Exhaust ducts must also support the anticipated weight of any accumulated sprinkler discharge when sprinkler protection is provided inside of the ducts. NFPA 33, 7.8.1
37. Exhaust ducts must be complete themselves and not use other building components such as walls and ceilings to complete the duct enclosure. NFPA 33, 7.8.4
38. Exhaust ducts shall be provided with doors, panels, or other means to facilitate inspection, maintenance, cleaning, and access to fire protection devices. NFPA 33, 7.9
39. Air. An adequate supply of clean make-up air shall be provided to compensate for the air exhausted from spray operations. The intake for this make-up air shall be located so that the air exhausted from spray operations is not recirculated. NFPA 33, 7.3
40. Exhaust ducts from spray operations shall be permitted to be round, rectangular or any other suitable shape and must be provided with doors, panels and other means to facilitate inspection cleaning and maintenance and to access fire protection devices. NFPA 33, 7.9

41. The exhaust fan assembly must meet all the following: NFPA 33, 7.10.1

- (1) Rotating element of the exhaust fan shall be nonferrous, or the fan shall be constructed so that a shift of the impeller or shaft will not permit two ferrous parts of the fan to rub or strike.
- (2) There shall be ample clearance between the rotating element and fan casing to avoid a fire by friction, with necessary allowances being made for ordinary expansion and loading and to prevent contact between moving parts and the duct or fan housing.
- (3) Fan blades shall be mounted on a shaft that is sufficiently heavy to maintain alignment even when the blades of the fan are heavily loaded.
- (4) All bearings shall be of the self-lubricating type or shall be lubricated from a point outside the duct and preferably shall be located outside the duct and the booth.

Fire Suppression

1. Spray areas/rooms/booth which include associated plenums and ductwork, as well as particulate filters, solvent concentrator units, recirculation units, and mixing room and must be protected by an automatic fire suppression system. NFPA 33, 9.1

42. The automatic fire protection system shall be permitted to be, and shall be installed in accordance with, any of the following: NFPA 33, 9.1.1, 33, 9.4.2 and Rule 0780-2-7

- (1) An automatic water sprinkler system that meets all applicable requirements of NFPA13, *Standard for the Installation of Sprinkler Systems*
- (2) An automatic foam water sprinkler system that meets all applicable requirements of NFPA16, *Standard for the Installation of Foam-Water Sprinkler and Foam-Water Spray Systems*
- (3) A carbon dioxide extinguishing system that meets all applicable requirements of NFPA 12, *Standard on Carbon Dioxide Extinguishing Systems*
- (4) A dry chemical extinguishing system that meets all applicable requirements of NFPA 17, *Standard for Dry Chemical Extinguishing Systems*
- (5) A gaseous agent extinguishing system that meets all applicable requirements of NFPA 2001, *Standard on Clean Agent Fire Extinguishing Systems*

43. The automatic sprinkler system must be a wet pipe system, a dry pipe system, a preaction system, or an open head deluge whichever is more appropriate for the operation to be protected, subject to the authority having jurisdiction. NFPA 33, 9.4.1

44. The sprinklers for each spray area and mixing rooms shall be controlled by a separate, accessible, listed indicating valve. The sprinkler system in the stacks and ducts must be automatic and not subject to freezing. NFPA 33, 9.4.5

45. Sprinklers protecting spray areas and mixing rooms shall be protected against overspray residue so that they will operate quickly in event of fire. NFPA 33, 9.4.7]

46. Sprinklers shall be permitted to be covered by cellophane bags having a thickness of 0.003 in. or less or by thin paper bags. These coverings shall be replaced frequently so that heavy deposits of residue do not accumulate. Provide details on the access panels or other means within plans that permit easy maintenance of the bags. NFPA 33, 9.4.7.1

47. Clean agent CO2 and dry chemical systems must be capable of discharging its contents into the entire protected area simultaneously, including the exhaust plenum and exhaust ductwork. Provide flow

calculations for all nozzles. Any field installation of fixed fire suppression systems must be by licensed sprinkler contractors or fixed fire suppression system contractor. NFPA 33, 9.5 and Rule 0780-2-7 and 0780-2-14

48. Automated powder application equipment, both listed and unlisted, shall be further protected by listed optical flame detection, installed and supervised in accordance with NFPA 72. The optical flame detection shall, in event of ignition, react to the presence of flame within one-half (0.5) second and shall accomplish all of the following:
 - (1) Stop any conveyors into and out of the spray area. NFPA 33, 9.7.1(1)
 - (2) Shut off ventilation. NFPA 33, 9.7.1(2)
 - (3) Shut off application, transfer, and powder collection equipment. NFPA 33, 9.7.1(3)
 - (4) Close segregation dampers in associated ductwork to interrupt airflows from application equipment to powder collectors. NFPA 33, 9.7.1(4)
 - (5) Disconnect power to the high voltage elements in the spray area and de-energize the system. NFPA 33, 9.7.1(5)

49. Automated liquid electrostatic spray application equipment, both listed and unlisted, shall be further protected by listed optical flame detection, installed and supervised in accordance with NFPA 72. The optical flame detection shall, in event of ignition, react to the presence of flame within one-half (0.5) second and shall accomplish all of the following: NFPA 33, 9.8.1
 - (1) Meet all of the requirements of NFPA 33, 9.2.1.
 - (2) Disconnect power to the high voltage elements in the spray area and de-energize the system.
 - (3) For continuous spray application operations, one or more manual emergency system shutdown stations shall be installed to serve each spray area. When activated, the stations shall accomplish at least the functions listed in NFPA 33, 9.2.1. At least one such station shall be within ready access of operating personnel. If access to this station is likely to involve exposure to danger, an additional station shall be located adjacent to an exit from the area.

Electrical

50. Electrical wiring and utilization equipment shall meet all of the applicable requirements of Article 500 Hazardous (CLASSIFIED) Locations Classes I, II, and III, Divisions 1 and 2, 501 Class I Locations, 502 Class II Locations, and 516 Spray Application, Dipping and Coating Processes of NFPA 70 National Electric Code, and NFPA 33, Spray Application Using Flammable or Combustible Materials, Chapter 4 unless the exceptions are met. NFPA 33, 6.2.1

51. For the purposes of NFPA 33, the Zone system of electrical area classification shall be applied as follows: NFPA 33, 6.2.2
 - (1) The inside of open or closed containers or vessels shall be considered a Class I, Zone 0 location.
 - (2) A Class I, Division 1 location shall be permitted to be alternatively classified as a Class I, Zone 1 location.
 - (3) A Class I, Division 2 location shall be permitted to be alternatively classified as a Class I, Zone 2 location.
 - (4) A Class II, Division 1 location shall be permitted to be alternatively classified as a Zone 21 location.
 - (5) A Class II, Division 2 location shall be permitted to be alternatively classified as a Zone 22 location.

52. Where areas in the same facility are classified separately, a Class I, Zone 2 location shall be permitted to abut, but shall not overlap, a Class I, Division 2 location. A Class I, Zone 0 or Class I, Zone 1 location shall not abut a Class I, Division 1 or a Class I, Division 2 location. NFPA 33, 6.2.4 and NFPA 70, 505.7(B)
53. Open flames, spark-producing equipment or processes, and equipment whose exposed surfaces exceed the auto ignition temperature of the material being sprayed shall not be located in a spray area or in any surrounding area that is classified as Division 2, Zone 2, or Zone 22. Exception: This requirement shall not apply to drying, curing, or fusing apparatus covered by NFPA 33, Chapter 13. NFPA 33, 6.2.5
54. Any utilization equipment or apparatus that is capable of producing sparks or particles of hot metal and that is located above or adjacent to either the spray area or the surrounding Division 2, Zone 2, or Zone 22 areas shall be of the totally enclosed type or shall be constructed to prevent the escape of sparks or particles of hot metal. NFPA 33, 6.2.6
55. Zone 20. As defined in 506.5(B)(1) of NFPA70, National Electrical Code, a Zone 20 location shall be any location where one of the following conditions exists: NFPA 33, 6.3.2.3
 - (1) An ignitable concentration of combustible dust is present continuously.
 - (2) An ignitable concentration of combustible dust is present for long periods of time.
56. Zone 21. As defined in 506.5(B)(2) of NFPA70, National Electrical Code, a Zone 21 location shall be any location where one of the following conditions exists: NFPA 33, 6.3.2.4
 - (1) An ignitable concentration of combustible dust is likely to exist occasionally under normal operating conditions.
 - (2) An ignitable concentration of combustible dust might exist frequently because of repair or maintenance operations or because of leakage.
 - (3) Equipment is operated or processes are carried on of such a nature that equipment breakdown or faulty operations could result in the release of an ignitable concentration of combustible dust and also cause simultaneous failure of electrical equipment in a mode to cause the electrical equipment to become a source of ignition.
 - (4) An ignitable concentration of combustible dust could be communicated from an adjacent Zone 20 location, unless communication is prevented by adequate positive pressure ventilation from a source of clean air and effective safeguards against ventilation failure are provided.
57. Zone 22 as defined in 506.5(B)(3) of NFPA70, NEC, a Zone 22 location shall be any location where one of the following conditions exists: NFPA 33, 6.3.2.5
 - (1) An ignitable concentration of combustible dust is not likely to occur in normal operation, and if it does occur, will only persist for a short period.
 - (2) Combustible dust is handled, processed, or used, but the dust is normally confined within closed containers or closed systems from which it can escape only as a result of the abnormal operation of the equipment with which the dust is handled, processed, or used.
 - (3) An ignitable concentration of combustible dust could be communicated from an adjacent Zone 21 location, unless communication is prevented by adequate positive pressure ventilation from a source of clean air and effective safeguards against ventilation failure are provided.

Electrical Devices in Spray Areas.

58. The spray area as defined in 3.3.2.3 shall be Class I, Division 1; Class I, Zone 1; Class II, Division 1; or Zone 21, whichever is applicable. NFPA 33, 6.4.1
59. Electrical wiring and utilization equipment that is located in the spray area and is not subject to deposits of combustible residues shall be suitable for Class I, Division 1; Class I, Zone 1; Class II, Division 1; or Zone 21 locations, whichever is applicable. NFPA 33, 6.4.2
60. Electrical wiring and utilization equipment that is located in the spray area and is subject to deposits of combustible residues shall be listed for such exposure and shall be suitable for Class I, Division 1; Class I, Zone 1; Class II, Division 1; or Zone 21 locations, whichever is applicable. NFPA 33, 6.4.3
61. Electrical Devices in Areas Adjacent to or Connected to Spray Areas. Electrical wiring and utilization equipment located in areas adjacent to or connected to the spray area, including but not limited to vestibules and tunnels, shall be classified in accordance with NFPA 33, 6.5.1 through 6.5.5.
62. Electrical wiring and utilization equipment located outside, but within 20 ft horizontally and 10 ft vertically, of an unenclosed spray area and not separated from the spray area by partitions extending to the boundaries of the area designated as Division 2, Zone 2; or Zone 22 in Figure 6.5.1 shall be suitable for Class I, Division 2; Class I, Zone 2; Class II, Division 2; or Zone 22 locations, whichever is applicable. NFPA 33, 6.5.1

Light Fixtures

63. Light fixtures that are attached to the walls or ceilings of a spray area; are separated from the spray area by glass panels that meet the requirements of NFPA 33, 5.5; and are located within a Class I, Division 2, Class I, Zone 2, or Class II, Division 2 location shall be suitable for such location. NFPA 33, 6.6.2
64. Light fixtures that are attached to the walls or ceilings of a spray area; are separated from the spray area by glass panels that meet the requirements of NFPA 33, 5.5. Such fixtures shall be serviced from outside the spray area. NFPA 33, 6.6.2
65. Light fixtures, that are an integral part of the spray area and are serviced from Inside the Spray Area, that are an integral part of the walls or ceiling of a spray area shall be permitted to be separated from the spray area by glass panels that are an integral part of the fixture. Such fixtures shall be listed for use in Class I, Division 2; Class I, Zone 2; Class II, Division 2; or Zone 22 locations, whichever is applicable, and also shall be listed for accumulations of deposits of combustible residues. Such fixtures shall be permitted to be serviced from inside the spray area. NFPA 33, 6.6.3
66. Light fixtures that are located inside the spray area shall meet the requirements of Section 6.4 and Section 6.7. NFPA 33, 6.6.4

Static Electricity

67. Static Electricity. All electrically conductive objects in the spray area, except those objects required by the process to be at high voltage, shall be electrically connected to ground with a resistance of not more than 1 megohm (10^6 ohms). This requirement shall apply to containers of coating material, wash cans, guards, hose connectors, brackets, and any other electrically conductive objects or devices in the area. This requirement shall also apply to any personnel who enter the spray area. NFPA 33, 6.7
68. If spray application operations are conducted within a closed-top, open-face or open-front booth, any electrical wiring or utilization equipment located outside the booth or room but within 3 ft of any opening shall be suitable for Class I, Division 2; Class I, Zone 2; Class II, Division 2; or Zone 22 locations, whichever is applicable. NFPA 33, 6.5.2

Storage, Handling, and Distribution of Flammable and Combustible Liquids

69. Storage mixing and handling of flammable and combustible liquids shall meet the applicable requirements of NFPA 30 Flammable and Combustible Liquids Code. NFPA 33, 8.1
70. The volume of Class I, Class II, and Class IIIA liquids stored in a storage cabinet shall not exceed 120 gal. NFPA 33, 8.2.1
71. The total aggregate volume of Class I, Class II, and Class IIIA liquids in a group of storage cabinets shall not exceed the maximum allowable quantity of flammable and combustible liquids per control area based on the occupancy where the cabinets are located, as set forth in Section 9.6 of NFPA 30, *Flammable and Combustible Liquids Code*. NFPA 30, 9.5.2, NFPA 33, 8.2.1.1
72. Where a pump is used to supply the liquid used in the spray application process, an automatic means shall be provided to shut off the supply of liquid in the event of fire. When pressurized tanks larger than 19 L (5 gal) are used to supply the liquid used in the spray application process, an automatic means shall be provided to shut off liquid flow at the tank outlet in the event of fire. NFPA 33, 8.4.5
73. The amount of liquid permitted in a single spray area shall not exceed 60 gal. NFPA 33, 8.3.3
74. The quantity of liquid located in the vicinity of spraying operations but outside of identified storage areas, such as storage cabinets, an inside liquid storage area, or a warehouse or outside of other specific process areas that are cut off by at least a 2-hour fire separation from the spraying operations shall not exceed the quantity given in either of the following, whichever is greater: NFPA 33, 8.2.2
- (1) The amount required to supply spraying operations for one continuous 24-hour period
 - (2) The aggregate sum of the following:
 - (a) 25 gal of Class IA liquids in containers
 - (b) 120 gal of Class IB, Class IC, Class II, or Class III liquids in containers
 - (c) 1585 gal of either of the following:
 - i. Class IB, IC, II, or IIIA liquids in metal portable tanks or metal intermediate bulk containers, each not exceeding 793 gal
 - ii. Class II or Class IIIA liquids in nonmetallic intermediate bulk containers, each not exceeding 793 gal
 - (d) Twenty portable tanks or intermediate bulk containers, each not exceeding 793 gal of Class IIIB liquids

Mixing

75. At least one mixing room must be provided that is either adjacent to or directly connected to each spray area or booth. Dispensing or transfer of liquids from containers and filling of containers, including portable mixing tanks and "pressure pots," shall be done only in a spray area with the ventilation in operation or in a mixing room. NFPA 33, 8.3.1 and office policy
76. All mixing rooms must meet all of the following: NFPA 33, 8.3.2
- (1) The mixing room shall meet the construction requirements of NFPA 33, 5.1.
 - (2) The total area of the mixing room cannot exceed 150 square feet.
 - (3) The mixing room must be designed to contain a spill.
 - (4) The mixing room used for mixing and dispensing operations shall be provided with continuous mechanical ventilation capable of providing air movement of not less than 1 ft³/min/ft² of floor area or 150 Ft³/min, whichever is greater. The ventilation system shall be in operation at all times.
 - (5) Dispensing and mixing rooms shall be classified, for purposes of electrical area classification, the same as enclosed spray booths, in accordance with NFPA 33, 6.5.4.
 - (6) The mixing room shall be provided with an approved automatic fire protection system that meets all applicable requirements of NFPA 33, Chapter 9.
 - (7) The mixing room shall be provided with portable fire extinguishers located in accordance with NFPA 10 *Standard for Portable Fire Extinguishers*.
77. Where a separate mixing room is provided and the mixing room is located adjacent to or within 6 ft of an adjacent spray area/areas the combined quantities of liquids located in the spray areas and the mixing room cannot be more than 120 gal. NFPA 33, 8.3.4

Distribution Systems

78. Piping for flammable or combustible liquids that carry material between tanks and mixing rooms must be steel or other materials mechanically and thermally capable of withstanding heat and physical damage. Piping must also be bonded to ground. NFPA 33, 8.4.1
79. Piping for spray areas must be steel or other materials mechanically and thermally capable of withstanding heat and physical damage. Where tubing or hoses are used, a mechanical shut-off valve must be provided. NFPA 33, 8.4.2
80. Where a pump is used to supply the liquid used in the spray application process, piping, tubing, hose, and other accessories shall be designed to withstand the maximum working pressure of the pump, or means shall be provided to limit the discharge pressure of the pump. NFPA 33, 8.4.4
81. Liquids shall be transported by means of closed containers, approved safety cans, or approved portable tanks or shall be transferred by means of a piping system. Open containers shall not be used for moving or storing liquids. NFPA 33, 8.5.1
82. Containers that are pressurized to supply spray nozzles, air storage tanks, and coolers shall comply with all applicable requirements of the ASME Boiler and Pressure Vessel Code, Section VIII, for construction, tests, and maintenance. NFPA 33, 8.5.5
- Exception:* The following need not meet this requirement:
- (1) Pressure containers less than 150 mm (6 in.) in diameter

- (2) Pressure containers that operate at less than a gauge pressure of 15 psi
- (3) Siphon-type spray cups

Drying, Curing or Fusion Processes

- 83. Spray booths or spray rooms used for batch-type spray application operations, including automobile refinishing operations, shall be permitted to be used alternately for drying, curing, or fusing operations, provided they meet all applicable requirements of NFPA 33, and the requirements of NFPA 86 *Standard for Ovens and Furnaces*. NFPA 33, 13.1
- 84. Spray booths, spray rooms, or other enclosures used for spray application of flammable and combustible materials shall not be used for drying, curing, or fusing operations. NFPA 33, 13.1.2
- 85. If a spray booth, spray room, or other enclosure is also used for air-drying, curing, or fusing operations and the air temperature therein is not elevated above ambient conditions, the ventilation system shall maintain the concentration of any vapors in the exhaust stream below 25 percent of the lower flammable limit. If the temperature in the spray area is elevated for the purpose of accelerating the drying or curing process, then the requirements of NFPA 33, Section 13.3, Spray Booths and Spray Rooms Used for Drying at Elevated Temperatures shall apply NFPA 33, 13.2
- 86. Where a spray booth or spray room is used for drying, curing, or fusing operations, the interlocks specified below shall be provided. NFPA 33, 13.3.1.3
 - (1) Spraying apparatus, drying apparatus, and the ventilating system shall be equipped with interlocks arranged so that the spraying apparatus cannot be operated when drying apparatus is in operation or is energized.
 - (2) Where industrial air heaters are used to elevate the air temperature for drying, curing, or fusing operations, means shall be provided to deter entry into the spray booth or spray room during the drying, curing, or fusing operation and interlocks shall be provided to shut down the drying, curing, or fusing operation if entry is made. NFPA 33, 13.3.1.3.2
- 87. A high temperature limit switch must be provided to automatically shut off the drying booth if the air temperature in the spray area exceeds 200°F. NFPA 33, 13.3.1.2, 13.5.3
- 88. Radiant drying apparatus that is permanently attached to the walls, ceiling, or partitions of the spray area shall be listed for exposure to flammable or combustible vapors, mists, dusts, residues, or deposits. NFPA 33, 13.3.1.4
- 89. Fusion apparatus shall be ventilated at a rate that is sufficient to maintain the concentration of ignitable vapors in the area at or below 25 percent of the lower flammable limit. NFPA 33, 13.6
- 90. Drying, curing, or fusing apparatus shall be affixed with a permanently attached, prominently located warning sign indicating that ventilation shall be maintained during the drying, curing, or fusing period and that spraying shall not be conducted in the vicinity in such manner as to deposit residue on the apparatus. NFPA 33, 13.7