



**MECKLENBURG COUNTY**  
**Land Use and Environmental Services**  
**Code Enforcement Division**

To: Mecklenburg County Code Enforcement  
From: Patrick Granson, Director of Code Enforcement  
Date: May 1, 2020  
RE: Spray Booths or Rooms (Which are being installed or replaced in existing buildings.)  
Code Reference: North Carolina State Fire Code, National Electrical Code 500, 501, 502, 516, NFPA Standard 33, NFPA Standard 101

Definition: Spray Booth – a power-ventilated structure that encloses a spray application operation or process, and confines and limits the escape of the material being sprayed, including vapors, mists, dust, and residues that are produced by the spraying operation and conducts or directs these materials to an exhaust system.

Spray Room – a power-ventilated, fully-enclosed room used exclusively for open spraying or flammable or combustible materials. The spray room is considered part of the spray area. A spray booth is not a spray room.

**General Requirements:**

**Permitting:**

- A permit must be obtained from Mecklenburg County Code Enforcement before constructing or installing a spray booth or room.
- The Charlotte Fire Department or the Mecklenburg County Fire Marshal's Office must issue a permit for spraying flammable finishes. All spraying must be done in the booth or room.
- The booth or room must be inspected and approved by Mecklenburg County Code Enforcement and either the Charlotte Fire Department or the Mecklenburg County Fire Marshal's Office, as applicable before spraying is commenced.
- This memo is not intended to cover any minor spraying operations or occasionally used bench-top facilities.

**Building:**

- Appendix B reproduced and completed on the drawings.
- Floor plan showing entire space and function of each existing room (ex. office, warehouse, bathroom, hazardous area) and location of spray booth or room.
- If built or assembled on site, all materials used must be clearly shown on the plans with elevations and dimensions of the spray room or booth included.
- If a manufactured unit is being installed, all drawings by the manufacturer must be submitted with supporting documentation from the supplier that it is a listed and labeled unit.
- Any structural work being done to the existing building in which the spray room or booth is being installed must have an engineer's or architect's seal to reflect the changes being done to the structure.
- Show all egress doors and paths to an exit on plans.
- Show all existing emergency systems on plans.

**Electrical:**

- Provide a floor plan of the existing building with sufficient detail of the proposed area and include location(s) of the service(s) equipment. Provide details on any existing equipment to be relocated clear of any hazardous zones, or to be relocated to accommodate work clearances
- Provide details of proposed spray booth,
  - a. if to be installed in the field as a kit of listed and labeled components, or
  - b. if installed as an assembly and listed and labeled as an assembly
- Provide current service size, existing loads, existing panel schedules and provide details of all new loads with corroborating load calculation data.
- Provide an accurate riser diagram, with details of existing and any proposed upgrades and alterations.
- Provide details on all proposed conductors, types and size of all circuits.
- Provide details for any proposed new motors, type and size (horsepower), and the method of control associated with spray booth installation.
- Provide details on all safety interlocks of the air systems and boundary doors, and the exhaust fan systems. Provide details on all electrostatic grounding system requirements and grounding points, for the spray areas and mixing areas, to eliminate electrostatic transient buildup.
- Define all barriers and boundaries of all classified areas. Provide details on sealing of all conduit or cable penetrations through hazardous boundaries.
- Lighting must be from outside the booth or room unless a fixture is used that is listed or labeled for that specific interior use. It must be protected by glass panels (wire glass) sealed away from the booth. All switches and other electrical devices must be outside of the room and over 3' from the door opening. No portable lamps or plugs shall be used inside the booth or room during spraying operations.
- All electrical installation associated with spray booth must be accessible and ready for inspection, comply fully with the NEC, and approved by the electrical inspector.

**Mechanical:**

- Show a floor plan of existing equipment and new equipment being installed.
- Show any combustion/ventilation air, size and location, if any.
- If any new ductwork is being installed, show size, location, and material being used.
- Show any new gas piping being installed, i.e. size, type of material and for what equipment.
- The booth or room shall be continuously ventilated during spraying, mixing or dipping operations. The ventilating fan shall be interlocked with a solenoid valve in the air line such that the valve will be open to supply air for spraying only when the fan is operating. There must be at least one (1) complete air change every three minutes, with the air flow being so directed as to minimize the creation of dead air pockets with discharge direct to the outside of the building. Make-up air shall be interlocked with the exhaust fan which, in turn, shall be interlocked with spraying equipment.
- Show CFMS air being exhausted and what CFMS make up air is being provided. (Detail of exhausted fan must be provided.)
- The heating must be done by an indirect system such as hot water, steam, or hot air. The heating plant must not be in the spray room. No open flames shall be permitted in the spray room or in the spray booth area.
- The exhaust fan must have non-sparking blades with an enclosed belt and pulley arrangement well-grounded with the motor mounted out of the air stream carrying the exhaust.

**Fire:**

- Mixing must be in rooms built and equipped as required for spraying or dipping. Distance from spray area must comply with Chapter 6 of NFPA 33. Room shall be designed to contain a liquid spill.
- All spray booths or rooms shall be equipped with an automatic fire extinguishing system.
- The spray room must be constructed of materials having a fire resistance rating of at least one hour. (NFPA 33, 3-1.3). A spray booth must be of non-combustible construction with at least 3' clearance on all sides. (NFPA 33, 3-3.2). The interior of the room or booth must have a non-combustible surface at all points. The walls and ceilings must be reasonably smooth and tight. The floor must be free of pits or depressions and reasonably smooth for easy cleaning. Steel flooring is undesirable due to sparking. Mixing rooms shall be designed to contain a liquid spill.
- At least one exit shall be provided from the spray booth or room and be easily operated simply by pushing against it. The door shall be held tightly closed by a spring or closing device but operated without turning a knob or working a latch. A second exit door of the same type should be provided if the object being sprayed will come between the operator and the other exit door.
- "Smoking Prohibited by Law" signs shall be conspicuously posted in spray areas and in areas where flammable liquids are stored or dispensed.
- The quantity of flammable and combustible liquids kept in the vicinity of spraying operations outside an inside storage room or storage cabinet in any one fire area shall not exceed the greater of a supply for one day or one shift or 25 gallons (95L) of Class 1A liquids in containers and 120 gallons (450L) of class 1B, 1C, II or III liquids in containers or one approved portable tank not exceeding 660 gallons (2,500 L) of Class 1B, 1C, II or III.

**Sprinkler:**

- Show a floor plan of the exiting space (Same as Building requirements).
- If you have a sprinklered building, show all locations of existing sprinkler heads in the building. Any changes to the sprinkler system must be clearly shown on the plans.
- If a manufactured spray booth or room is being used, all the information about the spray booth or room is required. (Same as Building requirements).

**Water Supply:**

- When using the domestic water supply, the supply pipe to the sprinklers should be as follows:
  - 1" for one sprinkler head
  - 1 ¼" for two sprinkler heads
  - 1 ½" for three to five sprinkler heads
- Water supply should provide a flow of 20 GPM per head.
- Water supply should be controlled by an OS&Y valve. This valve should be kept locked in the open position with a lock and chain. It should also be located in an accessible place but not exposed to a fire in the spray booth.
- Piping for the sprinklers should be of the same material as the domestic pipe. If dissimilar metals are necessary, a dielectric union should be used between the two types of pipes. No check valve is required per the plumbing code.

**Sprinkler Heads:**

- No dry sprinkler heads are permitted.
- Sprinklers should be designed based upon extra hazard classification.
- Temperature rating of sprinkler heads should be 286 degrees F.
- Maximum coverage is 100 square feet per head, Maximum distance between heads is 12'.

**Sprinklers (cont):**

- Sprinklers must be protected from over spray by either of the following methods.
  - Cover with a paper bag or clear, lightweight polyethylene plastic bags having a thickness of 0.003” or less. These must be changed frequently to prevent excessive residue build up.
  - Cover with a liquid soap compound that can be easily washed off.

**Sprinkler Locations:**

- Inside booth with maximum coverage of 100 square feet.
- In exhaust ducts over 15’ in length. If ducts exceed 15’ in length the heads must be located no more than 10’ apart.
- In ducts which pass through combustible roofs or combustible walls. Ducts which pass near combustibles without a clearance of 18” should be sprinklered inside the ducts. If sprinklers are installed the 18” clearance can be reduced to 6”.
- In front and back of filters.

**Deflector Plates:**

- A deflector plate not less than 2 ½” not more than 5” deep should be installed at the front edge of the booth so as to confine most of the water discharged from the sprinkler(s) within the booth.

**Zoning:**

- The zoning plans examiner will sign off when he checks the land use requirements.

**Environmental Health:**

- Air Quality will have to be notified.