

## Plan Check Requirements for: SPRAY FINISHING

Facility Name: \_\_\_\_\_  
Address: \_\_\_\_\_  
Owners Name: \_\_\_\_\_ Phone: \_\_\_\_\_ Date: \_\_\_\_\_  
Permit Number if Applicable \_\_\_\_\_

### Applies To:

1. The application of flammable or combustible paints, varnishes, lacquers, stains or other flammable or combustible liquid applied as spray by compressed air, airless or hydraulic atomization, steam, electrostatic or other methods or means in continuous or intermittent processes;
2. Dip tank operations in which articles or materials are passed through contents of tanks, vats or containers of flammable or combustible liquids, including coating, finishing, treatment and similar processes
3. The application of combustible powders by powder spray guns, electrostatic powder spray guns, fluidized beds or electrostatic fluidized beds.

1) Conspicuous signs with the following warning shall be posted in the vicinity of spraying areas, dipping operations and paints storage rooms:

### NO WELDING

The user of welding or cutting equipment in or near  
The paint booth area!  
Danger of fire and explosion hazards!  
Welding and cutting shall be done only with the  
proper permitting of the Fire Department.

Indicate the sign and its location on the plans. Plan page number: \_\_\_\_\_.

- 2) Spray booths must be made of not less than 18 gage thickness steel. *Attach manufacturer's cut sheets of the spray booth to the plans.* Plan page or cut sheet page number: \_\_\_\_\_
- 3) Aggregate area of spray booths in a building shall not exceed the lesser of 10% of any floor of the building or the basic area allowed for Group H Division 2 occupancy. *Attach calculations to the plans showing this limit is not exceeded.* Plan page number: \_\_\_\_\_
- 4) Spray booth area cannot exceed the lesser of the aggregate area (from item #3 above) or 1,500 square feet. *Attach calculations to the plans showing this limit is not exceeded.* Plan page number: \_\_\_\_\_
- 5) Spray booth floors shall be of noncombustible and non-sparking materials. *Indicate materials of construction on the plans.* Plan page or cut sheet number: \_\_\_\_\_
- 6) If spray booth has ceiling baffles, the baffles shall be of noncombustible material and shall not be installed in the exhaust duct. *Indicate materials of construction and show location of baffles on the plans.* Plan or cut sheet page number: \_\_\_\_\_
- 7) If front opening exceeds 9 square feet and is not equipped with doors, a metal deflector or fire curtain at least 4.5 inches deep is required at the upper outer edge of the booth and extending down over the booth opening. *Indicate which option will be used and show location of deflector/curtain on plans.* Plan or cut sheet page number: \_\_\_\_\_
- 8) Three (3) feet clearance is required around the spray booth. *Indicate the clearance distance on the plans.* Plan page number: \_\_\_\_\_
- 9) Fixed lighting shall be of heat-treated or hammered wire glass. *Attach manufacturer's cut sheets of the lighting.* Plan or cut sheet page number: \_\_\_\_\_
- 10) Exit doors shall not be less than 2'6" x 6'8". *Indicate door dimensions on the plans.* Plan page number: \_\_\_\_\_.

- 11) If the booth uses dry filters or filter rolls which advances when air velocity drops below 100 linear ft/min, spraying must stop when roll fails to advance. *Show the electrical schematics for the spraying and roll interlock.* Plan page number: \_\_\_\_\_
- 12) When air velocity drops below 100 linear ft/min., a visible gage must indicate this situation and an audible alarm must sound. *Attach cut manufacturer's cut sheets for the gage and alarm.* Plan or cut sheet page number: \_\_\_\_\_
- 13) No open flames or spark-producing devices are allowed within 20 feet of the booth unless separated by a partition. *List all spark-producing devices and indicate where they will be stored and their distances from the spray booth.* Plan page number: \_\_\_\_\_
- 14) Space heaters, steam pipes or other hot surfaces shall not be located in the spraying area. *If any of these devices will be used, list them and show where they will be stored.* Plan page number: \_\_\_\_\_
- 15) Electrical equipment in spraying areas located such that deposits of combustible residues could readily accumulate thereon shall be specifically approved for locations containing deposits of readily ignitable residue and explosive vapors. *Attach manufacturer's cut sheets on all electrical equipment subject to combustible residues.*
- 16) Electrical wiring and equipment not subject to deposits of combustible residues but located inside the spray booth shall be of an explosion-proof type approved for use in a Class I, Division 1 hazardous location. *Indicate the type of electrical wiring used on the plans.* Plan page number: \_\_\_\_\_.
- 17) Electrical wiring, motors or other equipment used outside, but within 20 feet of the spray booth, shall be approved for use in a Class I, Division 2 hazardous location and protected from falling hot particles by partitions, guards or enclosures. *Indicate the type of electrical equipment and type of protection on the plans.* Plan page number: \_\_\_\_\_
- 18) Metal parts of the spray booth, exhaust ducts and piping shall be electrically grounded. *Show the grounding rod and bonding straps on the plans.* Plan page number: \_\_\_\_\_
- 19) Spraying equipment shall be interlocked with ventilation so that spraying operations cannot be conducted unless the ventilation system is working. *Show the electrical schematics for the spray and ventilation interlock on the plans.* Plan page number: \_\_\_\_\_
- 20) Air velocity over the open face of the spray booth shall not be less than 100 linear ft/min. *Attach manufacturer's cut sheets on the ventilation system to the plans.* Plan page number: \_\_\_\_\_
- 21) Each spray booth must have an independent exhaust discharging outside the building exterior. *Show the exhaust ducting on the plans.* Plan page number: \_\_\_\_\_
- 22) Electric motors driving exhaust fans shall not be inside spray booths or exhaust ducts. *Show location of all motors.* Plan page number: \_\_\_\_\_
- 23) Fan rotating elements shall be of nonferrous or noncombustible materials. *Specify materials of construction on plans.* Plan page number: \_\_\_\_\_
- 24) Exhaust ducts shall be constructed of steel having a thickness in accordance with the following table: Diameter of Duct (inches) Minimum Sheet Thickness (inches)  
 8 or less 0.021 (24 gage) Over 8 to 18 0.027 (22 gage) Over 18 to 30 0.033 (20 gage)  
 Over 30 0.044 (18 gage) *Indicate the duct diameter and thickness on the plans.* Plan page number: \_\_\_\_\_
- 25) The point of discharge of exhaust ducts shall be not less than the following:  
 30 feet from property line; 10 feet from openings into the building; 6 feet from exterior walls or roofs; 30 feet from combustible walls or openings into the building which are in the direction of the exhaust discharge; 10 feet above adjoining grade. *Indicate distances from exhaust duct discharge to property lines, building openings, exterior walls and roof, combustible walls and adjoining grade on the plans.* Plan page number: \_\_\_\_\_
- 26) Clearance between combustible construction and the exhaust duct shall be in accordance with the following table: Clearance required (inches) Type of Combustible Construction  
 18 Non-protected 12, 0.013 in. (28 gage) sheet metal on 1/4in insulating millboard  
 49 0.013 in. (28 gage) sheet metal on 1/8in insulating millboard

- spaced out 1 inch on noncombustible spacers 3 0.027 in. (22 gage) sheet metal on 1-inch rockwool batts reinforced with wire mesh *Indicate the clearance and type of construction on the plans.* Plan page number: \_\_\_\_\_
- 27) Ventilation air intakes shall extend within 6 inches of the floor. *Indicate the location of the air intakes on the plans.* Plan page number: \_\_\_\_\_
- 28) Ducting bends shall not be greater than 45 degrees. *Show all ducting and angles of bends in the plans.* Plan page number: \_\_\_\_\_
- 29) Cleanout openings shall be provided at intervals which allow thorough cleaning of the ducts. *Show all cleanout openings in the ducts.* Plan page number: \_\_\_\_\_
- 30) Cleanout openings shall be equipped with tight fitting sliding or hinged doors constructed of metal equal to or greater than the duct thickness. Such doors shall also be provided with a substantial latch to hold the door tightly closed. *Indicate the location and thickness of the hinged doors.* Plan page number: \_\_\_\_\_
- 31) Booths shall be protected by an approved fire-extinguishing system. The system shall be extended to exhaust plenums, exhaust ducts and both sides of dry filters when such filters are used. Plan page number of sprinkler system: \_\_\_\_\_
- 32) At least one 4A-40BC fire extinguisher shall be located within 30 feet of the spray booth. *Indicate the type and location of fire extinguishers on the plans.*  
Plan page number: \_\_\_\_\_
- 33) Spray guns and equipment cleaning machines shall be listed and approved for this use. *Attach manufacturer's cut sheets on the guns and equipment, including appropriate listings.*

### **For Drying Apparatus:**

- 34) If the drying apparatus is not of the portable infrared type, it shall be listed and approved for use with flammables. *Attach manufacturer's cut sheets on the drying apparatus.* Plan page number or cut sheet number: \_\_\_\_\_
- 35) Interlocks shall be provided which:
- 1) Prevent spraying while drying operations are in progress;
  - 2) Purge spray vapors for 3 minutes minimum before drying can begin;
  - 3) Shut down drying system if ventilation fails;
  - 4) Shut down drying system if air temperature exceeds 160F when other than portable infrared heaters are used; *Show the electrical schematics for the interlocks.* Plan page number: \_\_\_\_\_
- 36) If portable infrared drying apparatus is used, all electrical equipment located within 18" of floor level shall be approved for Class 1 Division 2 wiring. *List all electrical equipment and specify type of wiring.* Plan page number: \_\_\_\_\_
- 37) If a drying/baking unit using open flame is used, it shall:
- 1) Not be installed inside the spray area;
  - 2) Be provided with an interlock that ventilates the drying space prior to heating;
  - 3) Automatically shut down the heating system in the event of failure of the ventilation system. *Show location of the drying/baking unit as well as electrical schematics for the required interlocks.* Plan page number: \_\_\_\_\_

### **For Dipping Operations:**

- 38) If conveyor dipping system is used, an interlock is required such that failure of the ventilation system will stop the conveyor. *Show the electrical schematics for the ventilation and conveyor interlock.* Plan page number: \_\_\_\_\_.
- 39) Dip tanks shall be made of noncombustible materials and supports made of heavy metal or reinforced concrete. *Specify the materials of construction for the dip tank and drain board.* Plan page number: \_\_\_\_\_.

- 40) If a dip tank exceeds 150 gallon capacity or 10 square feet in liquid surface area, an overflow pipe is required located at least 6" below the tank top. *Show location of the pipe on the plans.* Plan page number: \_\_\_\_\_.
- 41) If a dip tank exceeds 500 gallon capacity, the tank shall have an automatic and manual drain which can drain the tank contents in event of fire. Manual operation must be from a safe location. If the liquid cannot gravity flow, a pump is required. *Attach manufacturer's cut sheets for the automatic drain which explains how it will be activated in a fire. Show the location of the manual drain on the plans.* Plan page number: \_\_\_\_\_.
- 42) If a dip tank uses a conveyor system, an interlock system must be provided which will stop the conveyor and open the bottom drain during a fire. *Show the electrical schematics for the interlock and drain on the plans.* Plan page number: \_\_\_\_\_.
- 43) Open flames and spark-producing devices shall be at least twenty feet from vapor areas unless separated by a tight partition. *Indicate on the plans any flame or spark-producing devices and their distances from the tank.* Plan page number: \_\_\_\_\_.
- 44) Electrical wiring and equipment in vapor areas shall be explosion-proof Class I, Division 1. *Indicate the type of wiring on the plans.* Plan page number: \_\_\_\_\_.
- 45) Electrical wiring and equipment outside of, but within 20 feet of, a vapor area and not separated by a vapor-tight partition shall be approved for Class I, Division 2. *Describe any equipment within 20' of the dip tank vapor area and specify the type of wiring on the plans.* Plan page number: \_\_\_\_\_.
- 46) Approved metal waste cans are required for waste and rags used in connection with the dipping operations. *Attach manufacturer's cut sheets for the waste cans.*
- 47) At least one 4A-40 BC fire extinguisher shall be located within 30 feet of the dip tank. *Indicate the type and location of fire extinguishers on the plans.* Plan page number: \_\_\_\_\_.
- 48) If dip tank exceeds 150 gallons capacity or 10 square foot liquid surface area, a fire extinguishing system or automatic-closing cover is required. *Indicate which system will be used on the plans.* Plan page number: \_\_\_\_\_.
- 49) If the: 1) dip tank exceeds 10 gallon capacity; and 2) surface area exceeds 4 square feet; and 3) tank contents has flash point under 110F where the tank temperature may exceed this flash point, a fire extinguishing system or automatic-closing cover is required. *Indicate which system will be used on the plans.* Plan page number: \_\_\_\_\_.
- 50) If automatic covers are used, they shall be provided with an interlock which closes them in the event of a fire. *Attach manufacturer's cut sheets on the heat sensor. Show the electrical schematics for the interlock.* Plan page number: \_\_\_\_\_.
- 51) If automatic covers are used, they shall be of substantial noncombustible construction or of tin-clad type with enclosing metal applied with locked joints. *Call out the materials of construction for the cover.* Plan page number: \_\_\_\_\_.
- 52) Tanks shall be provided with a noncombustible hood and vent. Vent ducts shall be treated as flues and kept away from combustible roof materials. *Call out the location and materials of construction for the hood and vent.* Plan page number \_\_\_\_\_.
- 53) Tanks shall be equipped with high-temperature/low level shutoff controls. The high-temperature sensor shall sound an alarm when the temperature of the quenching medium reaches 50F below the flash point. *Attach manufacturer's cut sheets on the high-temperature/low level sensor. Indicate the location of the alarm on the plans.* Plan page number: \_\_\_\_\_.
- 54) Hardening and tempering tanks over 500 gallon capacity or 25 sq. ft. surface area shall be equipped with either an automatic fire extinguishing system or automatic-closing tank cover. *Indicate whether any hardening or tempering tanks will be installed, and if so, whether a fire-extinguishing system or tank cover will be employed.* Plan page number: \_\_\_\_\_.
- 55) If flow-coating operations are used, paint shall be applied by a direct low-pressure pump with an interlock which will shut down the pump in case of fire. *Attach manufacturer's cut sheets on the heat sensor. Show the electrical schematics for the interlock.* Plan page number: \_\_\_\_\_.

56) All metallic equipment shall be grounded and bonded to prevent sparks from static electricity. *Indicate the type of grounding and bonding on the plans.* Plan page number: \_\_\_\_\_.

### **For Electrostatic Apparatus:**

57) Electrostatic apparatus shall be of approved types. *Attach manufacturer's cut sheets to on the electrostatic apparatus.* Plan page or cut sheet number: \_\_\_\_\_

58) A suitable sign stating that a distance of at least twice the sparking distance between the painted object and the electrode shall be conspicuously posted. *Show the sign location on the plans.* Plan page number: \_\_\_\_\_

59) An interlock system which will automatically disconnect the power supply to the high-voltage transformer and signal the operator is required when:

- 1) The ventilation equipment fails or is stopped;
- 2) The conveyor carrying parts past the high-voltage grid is stopped;
- 3) A ground on the high-voltage grid occurs; and
- 4) Twice the sparking distance clearance is compromised.

*Show the electrical schematics for the interlock and the ventilation system, conveyor, and grid.* Plan page number: \_\_\_\_\_

60) Railings, fencing, or guards shall be placed around the equipment to isolate it from personnel. They shall be adequately grounded and bonded and located at least 5 feet from the equipment. *Show the guard placement around the equipment and the bonding on the plans.* Plan page number: \_\_\_\_\_

61) Areas used for electrostatic spray finishing shall be equipped with a 4A-40BC fire extinguisher. *Indicate the type and location of the fire extinguisher on the plans.* Plan page number: \_\_\_\_\_.

### **For Powder Coating Processes:**

62) Powder coating shall be conducted in completely enclosed rooms constructed of noncombustible materials, enclosed powder coating facilities, or adequately ventilated spray booths. *Indicate the type of room to be used.* Plan page number: \_\_\_\_\_

63) Exhaust ventilation must be provided to maintain the atmosphere below the lower explosive limit. *Attach manufacturer's cut sheets on the exhaust ventilation system.* Plan page number: \_\_\_\_\_

64) Transformers, power packs, control apparatus and other electrical portions of equipment shall be located outside of the powder coating area. *Show the location of this equipment on the plans.* Plan page number: \_\_\_\_\_

65) Electrically conductive objects shall be adequately grounded. The powder-coating equipment shall carry a prominent, permanently installed warning regarding the necessity for grounding these objects. *Show location of grounding and bonding apparatus. Indicate the location of the warning sign.* Plan page number: \_\_\_\_\_

66) Electrical equipment shall be interlocked with the ventilation system so that equipment cannot be operated unless the ventilation fans are in operation. *Show the electrical schematics of the interlock on the plans.* Plan page number: \_\_\_\_\_

67) Powder coating areas shall be protected by an approved automatic fire-extinguishing system. *Show the fire-extinguishing system on the plans.*

Plan page number: \_\_\_\_\_

68) Upon detection of a fire by a flame detection device, an interlock system shall:

- 1) Shut down power to conveyors, ventilation, and transfer and powder collection equip;
- 2) Close dampers in ductwork;
- 3) Activate an alarm throughout the powder coating room or booth.

*Attach manufacturer's cut sheets on the flame detection device.* Plan or cut sheet page number: \_\_\_\_\_. *Show the electrical schematics for the interlock and conveyors,*

*ventilation, transfer and powder collection system, dampers, and alarm.* Plan page number: \_\_\_\_\_

### **For Organic Peroxide and Dual-Component Coatings:**

69) Spray guns and associated equipment shall be specifically manufactured for such use. *Attach manufacturer's cut sheets on the spray guns and associated equipment.* Plan page or cut sheet number: \_\_\_\_\_

70) Only non-sparking tools shall be used in areas where organic peroxides are stored, mixed or applied. *Specify the types of tools in the plans.*

Plan page number: \_\_\_\_\_

71) Personnel working with organic peroxides and dual-component coatings shall be specifically trained to work with these materials. *List the personnel and their specific training courses in the plans.* Plan page number: \_\_\_\_\_.