



Property Risk Consulting Guidelines

XL Risk Consulting

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PRC.9.2.3.2

TRAVELING SPRAY BOOTHS

INTRODUCTION

Spray booths are normally stationary enclosures. However, some manufactured items, such as locomotives, buses and aircraft are too large to place inside a spray booth. Construction of a separate building or enclosure designed specifically for these spraying operations may be cost prohibitive.

Traveling spray booths are designed to move along large objects and spray them as they travel. Much of the equipment associated with a spray operation is mounted on the traveling unit. However, some equipment, such as ventilation ducts and electrical system components, may be fixed. Protection should consider both the traveling unit and the fixed equipment.

POSITION

Since this operation consists of a spray application of flammable or combustible materials, the requirements of NFPA 33 and PRC.9.2.3.1 applies.

Management Programs

Develop and implement written management programs in accordance with *OVERVIEW*, paying particular attention to the following elements.

Smoking Regulations

Prohibit smoking in all areas where a booth may travel and in all areas with associated fixed spray equipment. Also prohibit smoking in areas where flammable liquids are dispensed or stored. Ensure that smoking regulations are strictly enforced.

Maintenance

Develop written maintenance programs and procedures for traveling spray booths and use them to train maintenance personnel. Make sure the programs cover all parts of the booth that are subject to wear and leakage, including flexible lines, motors, fans, pumps and all booth moving parts. Also include checking booth track alignment. Always use a lockout-tagout system when working on the booth.

Regularly test all booth interlocks by actuating waterflow switches and detection systems. Confirm that the booth stops moving and that paint spray systems shut down.

Include all booth fire protection systems in the maintenance program. Maintain these systems as recommended by the manufacturers and by applicable NFPA codes. Maintenance programs should address all components of the protection system(s) designed specifically for the traveling booth, including flexible connections and moving parts.

Use only thin 0.8 mm maximum (0.003 in.) cellophane or paper bags to keep residue from accumulating on closed sprinkler heads or spray nozzles, and replace the bags whenever accumulations of residue are measurable. Do not cover open heads or nozzles. Refer to NFPA 33 and PRC.9.2.3.1.

Cleaning Operations/Housekeeping

The residue from sprayed materials is combustible, and thorough frequent cleaning is essential for safe, efficient spray operations. Clean the interior of the traveling booth and, the moving and fixed ventilation equipment as required to limit residue accumulation. Provide sufficient access panels to permit access to all areas.

Take all precautions required for the safe handling of flammable or combustible liquids used to clean a spray booth. Make sure all paint pumping and spraying equipment is shut down and that ventilation systems are running. Train cleaning personnel to follow established safe procedures and provide a fire watch until cleaning has been completed and all flammable liquids have been removed from the area. Refer to NFPA 33 and PRC.9.2.3.1.

Fire Extinguishing Systems

Protect fixed spray equipment and spray areas in accordance with NFPA 33 and PRC.9.2.3.1.

Connect traveling spray booths to a fixed mechanical exhaust system. Use metallic construction for the fixed ducts and equip them with automatic sprinkler protection designed for a minimum flow of 30 gpm (114 L/min) per sprinkler at a minimum of 15 psi (1 bar) pressure with up to 40 sprinkler calculated. Connect the exhaust duct sprinkler system to the building sprinkler system with a separate, accessible, listed indicating control valve.

Protect traveling booths in accordance with NFPA 33 and this section. Consider the movement and configuration of the booth in the fire protection system design. Use one of the following types of automatic fire extinguishing systems.

Sprinkler Systems

Design sprinkler systems in the spray booth for Extra Hazard (Group 2) in accordance with NFPA 13 and PRC.12.1.1.0.

Water Spray and AFFF Systems

Design water spray systems in accordance with NFPA 15, aqueous film forming foam (AFFF) systems in accordance with NFPA 16 and PRC.12.3.1.1, and water mist in accordance with NFPA 750 and PRC.12.6.1.1.

Carbon Dioxide, Dry Chemical, and Gaseous Agent Extinguishing Systems

Install automatic, clean agent, carbon dioxide or dry chemical systems where desirable. These systems should have connected reserve supplies and should be installed to function before automatic sprinkler protection if provided. A hazard analysis should be performed to determine the effectiveness of any clean agent protection. Design these systems to travel on board the spray booth frame. Carbon dioxide systems should be designed in accordance with NFPA 12 and PRC.13.3.1. Design dry chemical systems in accordance with NFPA 17 and PRC.13.1.1.1, gaseous agent extinguishing systems in accordance with NFPA 2001 and PRC.13.6.1.

Interlocks

Interlock the sprinkler waterflow switch to stop booth travel and shut down all spray application operations and the coating material delivery system. Heat actuated devices should initiate the same interlocks. Exhaust ventilation systems should continue to operate. Refer to NFPA 33 and PRC.9.2.3.1.

Water Supply

Because of the mobility of traveling spray booths, the design of the water supply connection to the booth presents a unique problem.

Preferred Water Supply Arrangement

Provide a flexible water supply line connected to the domestic water supply, dedicated fire mains, or yard hydrants. A listed indicating type control valve, installed at an accessible location, is recommended on the supply line. Suggested choices for the flexible supply line include swivel elbows on fixed piping systems, wire reinforced hydraulic type hose, stainless steel mesh hose, hard rubber hose, steel pipe, or some combination of these components. For some situations, consider installing a reel capable of taking up the slack on the flexible water supply, and feed water through the reel axle to the sprinklers.

Alternative Water Supply Arrangement

When a fixed water supply connection is not practical, a dedicated water storage tank with minimum 15 minute supply mounted to the travelling spray booth may be used. The water supply may also consist of an electric pump and suction tank or a pressure tank. When a pump and tank are used, connect the electric power supply for the pump such that disconnecting power to the booth will not shut off the pump power. The electric pump must be automatically started by heat-actuated devices and must also have means for manual actuation. Use listed heat actuated devices and locate them in the spray booth in accordance with their listing requirements.

Equip water tanks with level gauges. If a pressure tank is used, install a pressure gauge and low-pressure alarm.

Provide a 1-½ in. (40 mm) emergency water supply connection for the booth sprinkler system. Install 1-½ in. (40 mm) hose stations along the booth travel path such that at least one hose station can reach the emergency water connection regardless of the position of the booth. Use quick connect type fittings.

DISCUSSION

Spray operations require protection, even if the material being sprayed is water-borne or water based with high flash point or no flash point when evaluated by traditional test methods. Reasons for this include:

- The composition of spray materials is constantly being changed, and the different material formulation could be flammable or combustible in an atomized spray cloud.
- Spray booths may use several different spray materials, some of which could be flammable or combustible.
- The solvents used to clean the booths are usually flammable or combustible liquids.
- Dried residue from the spray application is combustible.
- Some spray booth operations very high property or production loss potentials.
- The traveling spray booth could be an obstruction to application of hose streams for the object being painted. This could adversely affect fire fighting efforts.

High-valued booths or booths important to production should be protected with **both** water-based extinguishing systems connected to unlimited volume water supplies **and** CO₂, clean agent, water mist, dry chemical systems. Less critical booths, e.g., booths that present only minor property and production loss potential may be protected with one extinguishing system. For water-based systems, connection to an unlimited-volume water supply is preferred.