Risk Insights

Advice for you and your business

Spray Paint Booth

How safe is your spray paint booth?

The primary objective of a properly designed spray paint booth is to help prevent fire and explosion by containing the flammable vapours, removing them effectively, and controlling ignition sources. Spray paint booths are not designed to protect the worker from overexposure to hazardous products. **The worker should wear approved respiratory protection.**

Containing flammable vapours

Containing flammable vapours limits the chance that those vapours will be ignited. To help contain vapours properly, consider the following rules:

- The quantity of flammable and combustible liquids in the spray paint booth area should not exceed a one-day supply
- The process area should not have more than three approved flammable liquid storage cabinets
- Mixing of flammable or combustible liquids should be done only in a mixing room or spray area

Removing flammable vapours

After containing flammable vapours, proper removal is essential to helping prevent fires. Proper removal is achieved by having an adequate ventilation system in the spray paint booth. The mechanical ventilation of the spray paint booth should be capable of removing vapours and mists to a safe location, as well as confining and controlling combustible residues, dusts, and deposits. The ventilation system should be able to limit the vapour and mist concentration to below 25% of the Lower Flammable Limit – the minimum concentration that is ignitable.

To help ensure adequate ventilation, the exhaust ducts should meet several standards, including:

- Ducts and fasteners must be constructed of steel and properly supported
- There should be 18 inches (0.45 m) of clearance between ducts and unprotected combustible material(s)
- The ducts must be exhausted directly to the outside
- The ducts should not penetrate a firewall
- The discharge point of the exhaust ducts must be at least 6 ft (1.8 m) from an exterior wall or roof
- The discharge point should not be directed towards any combustible construction or unprotected opening within 25 ft (7.6 m)

Controlling ignition sources

Electrical wiring and equipment are the main ignition sources in spray paint booths. Controlling these items is a significant step towards eliminating ignition sources and helping to prevent fires.

Electrical wiring and equipment must be suitable for Class I, Division 1, or Class II, Division 1 locations (whichever is applicable).

Electrical wiring and equipment located outside of the booth, but within 20 ft (6.1 m) horizontally and 10 ft (3 m) vertically, must be suitable for Class I, Division 2 or Class II, Division 2 locations (whichever is applicable).

Extension cords or other electrical plug-in cords should **NOT** to be used in a spray paint booth or within the above dimensions outside of a booth.

[3584-013-ed02E | 09.2017]

Spray Paint Booth *(continued)*

Light fixtures, as with all electrical wiring and equipment, must also meet the same requirements for Class and Division. In addition, they:

- Should be serviced from outside of the spray area
- Panels for light fixtures or for observation should be made of heat-treated glass, wired glass, or hammered-wired glass and must be sealed to confine vapours, mists, residues, dusts, and deposits to the spray area
- Portable electric light fixtures should **NOT** be used in a spray paint booth

Construction

- Construction of the spray paint booth as well as precautions taken by the worker can help ensure that fires do not occur
- All spray paint booths should be equipped with an approved Fire Suppression System – See *Prevent & Protect* bulletin ***Spray Paint Booth Fire Suppression System***
- To ensure that proper cleaning can take place, all parts including filters should be readily removable and accessible
- All components of the spray paint booth must be made of non-combustible material
- The interior surface should be smooth to prevent buildup of paint residue and ensure proper ventilation and cleanup

Precautions

- All workers and any electrically conductive parts should be bonded or grounded to prevent the creation of any static sparks
- Proper cleaning must be scheduled on a regular basis to help ensure that buildup of paint residue does not occur

The leading causes of fire in spray paint booths include the following:

- Use of spark-producing equipment such as cutting, welding, and grinding near the spray area
- Friction, caused in most cases by overheated bearings on the exhaust fan shaft or by rubbing of exhaust fan blades against overspray deposits on walls of the exhaust duct
- Arcing electrical equipment
- Spontaneous combustion of paint residue
- Discharge of static electricity

Complying with all standards to contain and remove vapours as well as controlling ignition sources can help to avoid fires and explosions. Utilizing a manufactured spray paint booth and following all safety procedures and proper maintenance schedules can help to ensure the safety of your business. The National Fire Protection Association (NFPA) Standard 33 outlines all of the requirements for a properly installed spray paint booth.