

Application Bulletin 13

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Application Bulletin: **Spray Booths** • Technology: **FirePro Condensed Aerosol**

Application
Spray Booths

The Risk
Flammable solvent vapours, paint overspray, filters and electrical equipment, where sparks, static or hot surfaces can ignite fires that spread rapidly.

This Bulletin Covers
- Design considerations
- Environmental requirements
- End user responsibilities
- Post-discharge procedure
- Myths & comparative analysis

Mandatory Message to End Users
"Any work in the booth at the time of discharge, particularly wet coatings, may need to be cleaned or refinished. The booth must be cleaned and filters replaced before spraying resumes."

Condensed Aerosol Fire Suppression in Spray Booths

Design Considerations, Environmental Requirements, End User Responsibilities, Myths & Comparative Analysis

1. Introduction

Spray booths are used for applying paints, lacquers, coatings and adhesives, and contain flammable solvent vapours, paint overspray deposits, filters and electrical equipment such as lighting, fans and heaters.

These spaces present a high fire risk because flammable vapours can be ignited by sparks, static discharge or hot surfaces, and fires can spread rapidly through overspray and filters.

FirePro condensed aerosol (CA) technology provides an effective, LPCB-certified suppression solution for spray booths, particularly where water-based systems would spread burning solvents and damage finished work, and gaseous systems are impractical due to booth construction and airflow.

This bulletin outlines the design considerations, environmental requirements, end user responsibilities, and common misconceptions relevant to FirePro systems in spray booth applications.

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2. Purpose of FirePro in Spray Booths

FirePro is designed to:

- Rapidly suppress fire at an early stage
- Control solvent and coating fires
- Prevent fire spreading through filters and ductwork
- Protect surrounding buildings and equipment

However, FirePro is **not designed to**:

- Prevent ignition of flammable vapours
- Replace extraction, ventilation or hazardous area controls
- Protect wet or freshly coated work from residue

> **Therefore:**
> *FirePro must form part of an overall spray booth safety strategy, including extraction, hazardous area controls, good housekeeping and safe working procedures.*

This requirement must be clearly communicated to the end user during system design, installation, and handover.

3. Important Note on Residue and Finished Work

FirePro is not a clean gas agent and does not claim zero-residue discharge.

A light, dry aerosol particulate may settle on surfaces after activation, including:

- Items being sprayed, especially wet coatings
- Booth walls, lights and filters
- Fans, heaters and control panels

> **Mandatory message to end users:**
> *"Any work in the booth at the time of discharge, particularly wet coatings, may need to be cleaned or refinished. The booth must be cleaned and filters replaced before spraying resumes."*

This is a mandatory operational requirement.

4. Why Sprinklers and Water-Based Systems Are Unsuitable for Many Spray Booths

Water-based systems present significant risks in spray booths.

4.1 Spread of Burning Solvents

- Water can spread burning solvents and coatings across the booth floor

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- May carry fire beyond the booth

4.2 Damage to Finished Work

- Water ruins wet and cured finishes
- Rework costs can exceed the fire damage

4.3 Contaminated Run-Off

- Firewater mixed with paints and solvents must be contained
- Requires drainage and environmental controls

4.4 Electrical and Equipment Damage

- Water damages fans, heaters, lighting and controls
- Extended downtime before the booth can be used again

4.5 Water Mist Limitations

- High booth airflow can carry mist away from the fire
- Still introduces moisture onto work and equipment

5. Why FirePro Is Well Suited for Spray Booth Protection

FirePro offers significant advantages in spray booths.

5.1 No Water or Moisture

Eliminates risks of:

- Spreading burning solvents
- Water damage to finished work
- Contaminated firewater run-off

5.2 Effective on Typical Spray Booth Fire Risks

- Suitable for:
  - Solvent and coating fires (Class B)
  - Overspray and filter fires (Class A)
  - Electrical fires in fans and lighting

5.3 Rapid Flame Suppression

- Interrupts combustion chain reactions
- Effective on fast-developing vapour and liquid fires

5.4 No Cylinders or Pipework

- Compact, self-contained units
- Simple to fit to new or existing booths

5.5 Minimal Pressure Rise

- No requirement for pressure relief venting

5.6 High Leakage Tolerance

- Performs effectively in booths with filter openings once fans have stopped

5.7 Long 15-Year Life

- Reduced maintenance and lifecycle costs

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6. Spray Booth Protection Requirements (Mandatory)

6.1 Occupancy and Pre-Discharge Warning

- The booth must be evacuated before discharge
- Audible and visual pre-discharge alarms and a discharge delay must be provided
- Manual hold and release controls should be located outside the booth

6.2 Extraction and Supply Fan Shutdown

- All fans must stop on fire detection
- Dampers should close where fitted

6.3 Spray Equipment Shutdown

- Spray guns, paint supply pumps and heaters must stop on detection

6.4 Housekeeping and Filters

- Overspray deposits must be cleaned regularly
- Filters must be changed in line with the manufacturer's schedule

6.5 Hazardous Area Compliance

- The booth must have a current hazardous area classification
- All equipment, including detection and generators, must be suitable for the zone (ATEX/DSEAR)

7. Environmental Conditions

Maintaining suitable conditions enhances system performance:

TEMPERATURE	HUMIDITY
Within the booth operating range, including during curing cycles	Controlled to suit the coating process
AIRFLOW	**POST-DISCHARGE VENTILATION**
All fans must stop during discharge	Ventilate within 10–15 minutes before re-entry

8. Design Considerations for Spray Booths

8.1 Fire Load Assessment

- Include:
  - Coatings and solvents in use
  - Overspray deposits and filters
  - Items being sprayed

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8.2 Enclosure Volume and Leakage

- Calculate full booth volume, including plenums where protected
- Apply leakage compensation for filter faces and openings

8.3 Aerosol Generator Placement

- Ensure even distribution throughout the booth
- Keep generators clear of direct overspray

8.4 Detection and Control Integration

- Fast detection is critical (flame detection is commonly used)
- Integration with:
  - Fire alarm system
  - Fan and damper shutdown
  - Spray equipment and heater shutdown

8.5 Ductwork and Extraction

- Consider fire spread through extraction ducts
- Separate protection for ducts may be required

9. Post-Discharge Procedure

1. Confirm the booth is clear of people and fans are stopped
2. Ventilate within 10–15 minutes before re-entry
3. Inspect the booth, work and equipment
4. Clean:
   - Booth walls and lights
   - Fans and controls
   - Affected work pieces
5. Replace filters
6. Confirm no risk of re-ignition
7. Recommission FirePro system

10. Common Myths & Factual Counterpoints

Myth 1: "Aerosol will ruin every job in the booth."

Fact: Residue is light and dry. Wet coatings may need refinishing, but water would cause far greater damage.

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Myth 2: "Sprinklers are enough for spray booths."

Fact: Water can spread burning solvents, damage work and equipment, and create contaminated run-off.

Myth 3: "Booth airflow makes suppression impossible."

Fact: Fans are shut down on detection. FirePro's high leakage tolerance allows for filter openings once airflow stops.

11. Transparency Statement

FirePro UK maintains full transparency:

- FirePro is designed to suppress fire, not prevent vapour ignition
- FirePro is not a zero-residue agent; a light particulate will settle on work and surfaces
- The booth must be evacuated before discharge
- Post-discharge cleaning and filter replacement are mandatory
- FirePro is not certificated for deep-seated fires
- FirePro introduces no water, avoiding solvent spread and contaminated run-off
- FirePro is often the most practical solution where gas or water systems are unsuitable

12. Summary

FirePro condensed aerosol provides an effective and practical fire suppression solution for spray booths, where water-based systems spread burning solvents and gaseous systems conflict with booth construction and airflow.

Its ability to suppress solvent and coating fires rapidly, without water, makes it well suited to protecting spray booths and the buildings around them.

However, successful protection depends on:

- Evacuation and pre-discharge warning
- Automatic fan and spray equipment shutdown
- Hazardous area compliance
- Mandatory post-discharge cleaning and filter replacement

Key operational requirement:
The booth must be evacuated before discharge, and all fans and spray equipment must shut down automatically on fire detection.

If you would like to learn more about FirePro, or discuss a spray booth application, please visit us at **www.fireprouk.com** – see contact details below.

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