

Application Bulletin 7

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Application Bulletin: **Unprotected Voids** • Technology: **FirePro Condensed Aerosol**

Application
Unprotected Voids

The Risk
Concealed roof, ceiling and floor voids containing insulation, cabling, timber framing and debris, where fire can develop undetected and spread rapidly.

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

Mandatory Message to End Users
"Void spaces must remain accessible for periodic inspection and should not contain sensitive or unprotected equipment unless assessed for compatibility."

Condensed Aerosol Fire Suppression in Unprotected Voids

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

1. Introduction

Unprotected voids such as roof voids, ceiling voids, and floor voids present a significant and often overlooked fire risk.

These concealed spaces frequently contain combustible materials including insulation, cabling, timber framing, and accumulated debris. Fires in voids can develop undetected, spread rapidly, and compromise structural integrity before becoming visible, making early suppression critical.

FirePro condensed aerosol (CA) technology provides an effective, LPCB-certified suppression solution for these enclosed and inaccessible spaces, particularly where traditional systems (sprinklers or gas suppression) are impractical due to limited access, complex geometry, or infrastructure constraints.

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

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2. Purpose of FirePro in Void Spaces

FirePro is designed to:

- Suppress fire at an early stage within concealed spaces
- Prevent fire spread across hidden compartments
- Protect the building structure and adjacent compartments
- Reduce the risk of undetected fire escalation

However, FirePro is **not designed to compensate for poor housekeeping or uncontrolled fire loading within voids**.

> **Therefore:**
> *Void spaces must be properly managed, maintained, and kept free from unnecessary combustible materials.*

This requirement must be clearly communicated during system design and handover.

3. Important Note on Residue in Concealed Spaces

FirePro does not provide zero-residue discharge.

A light, dry aerosol particulate will disperse throughout the void and settle on surfaces such as:

- Insulation materials
- Structural elements
- Cable trays and services

In most void applications, this has **no operational impact**, as these spaces are not occupied or sensitive to surface residue.

> **Mandatory message to end users:**
> *"Void spaces must remain accessible for periodic inspection and should not contain sensitive or unprotected equipment unless assessed for compatibility."*

4. Why Sprinklers and Water-Based Systems Are Unsuitable for Void Spaces

Water-based systems are typically ineffective or impractical in concealed voids.

4.1 Physical Installation Constraints

- Limited access makes pipework installation difficult or impossible
- Irregular geometry prevents effective sprinkler coverage

4.2 Delayed Activation

- Heat may not reach sprinkler heads quickly due to compartmentalisation
- Fire can grow significantly before activation

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4.3 Incomplete Coverage

- Obstructions (beams, insulation, ducts) block water distribution

4.4 Water Damage to Building Structure

- Water can damage ceilings, walls, and finishes below
- Leads to secondary property damage and disruption

4.5 Water Mist Limitations

- Poor penetration through dense insulation materials
- Reduced effectiveness in concealed zones

5. Why FirePro Is Well Suited for Void Protection

FirePro is particularly effective in concealed and inaccessible spaces.

5.1 No Pipework or Infrastructure Required

- Compact, self-contained units
- Ideal for retrofit or restricted-access voids

5.2 Total Flooding Capability

- Aerosol disperses around obstructions
- Reaches areas inaccessible to water or gas systems

5.3 Rapid Fire Suppression

- Effective on common void risks:
  - Cable fires (Class A/C)
  - Insulation fires (Class A)
  - Wood/timber structures

5.4 No Water Damage

- Eliminates risk of damage to ceilings, finishes, or services below

5.5 Minimal Pressure Impact

- No need for pressure relief venting

5.6 High Leakage Tolerance

- Performs effectively in non-sealed void spaces

5.7 Long 15-Year Operational Life

- Minimal maintenance for hard-to-access areas

6. Void Protection Requirements (Mandatory)

6.1 Housekeeping and Fire Load Control

- Void spaces must be kept free from:
  - Unnecessary storage
  - Loose combustible debris
  - Abandoned materials

6.2 Access for Inspection

- Adequate access panels must be maintained
- Enables inspection and maintenance of both void and system

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6.3 Cable and Service Management

- Cable trays should be organised and secured
- Avoid overheating risks from overloaded cables

6.4 Detection Systems

- Early detection strongly recommended:
  - Linear heat detection
  - Aspirating smoke detection (where feasible)

6.5 Ventilation Control

- Mechanical airflow (if present) must shut down on activation

7. Environmental Conditions

Void spaces can experience variable conditions; design must account for:

TEMPERATURE May fluctuate significantly (especially roof voids)	**HUMIDITY** Can be high or variable; generally not critical for FirePro performance
AIR MOVEMENT Should be minimised or controlled during discharge	**POST-DISCHARGE VENTILATION** Natural or mechanical ventilation after 10–15 minutes

8. Design Considerations for Void Spaces

8.1 Compartment Geometry

- Voids often include:
  - Beams
  - Insulation layers
  - Service penetrations
- Design must ensure adequate aerosol distribution

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8.2 Volume and Segmentation

- Large voids may require zoning
- Fire breaks or compartmentation should be considered

8.3 Aerosol Generator Placement

- Strategic positioning required to:
  - Avoid dead zones
  - Maximise distribution
- Multiple units may be necessary in complex layouts

8.4 Detection Integration

- System activation should be linked to:
  - Fire alarm system
  - Detection devices within the void

8.5 Installation and Maintenance Access

- Units must be installed where they remain accessible for inspection
- Consider long-term maintenance constraints

9. Post-Discharge Procedure

1. Confirm fire has been suppressed
2. Ventilate the void space where feasible
3. Inspect:
   - Structural elements
   - Cabling and services
   - Insulation materials
4. Remove any damaged or compromised materials
5. Clean accessible areas if required
6. Recommission FirePro system

10. Common Myths & Factual Counterpoints

Myth 1: "Voids don't need fire protection."

Fact: Many serious fires originate in concealed spaces and spread undetected, causing major structural damage.

Myth 2: "Sprinklers will protect void spaces."

Fact: Sprinklers are often ineffective due to access limitations, obstructions, and delayed activation.

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Myth 3: "Aerosol won't reach hidden areas."

Fact: FirePro aerosol disperses throughout enclosed spaces and can navigate around obstructions more effectively than traditional systems.

11. Transparency Statement

FirePro UK maintains full transparency:

- FirePro is designed to suppress fire, not eliminate poor housekeeping risks
- FirePro is not a zero-residue agent; dry particulate will settle within the void
- Void spaces must be maintained and inspected regularly
- Detection is critical for effective early activation
- FirePro is not certificated for deep-seated fires within dense insulation
- FirePro introduces no water, avoiding damage to building finishes and services
- FirePro is often the only practical suppression solution for inaccessible void spaces

12. Summary

FirePro condensed aerosol provides an effective and practical fire suppression solution for unprotected voids, where traditional systems are often impractical, ineffective, or impossible to install.

Its ability to disperse throughout concealed spaces, suppress fire rapidly, and operate without water or complex infrastructure makes it ideally suited to roof voids, ceiling voids, and floor voids.

However, successful implementation depends on:

- Proper housekeeping and fire load control
- Early detection integration
- Correct system design and positioning

Key operational requirement:
Void spaces must be kept clear, accessible, and properly managed to ensure effective fire protection and system performance.

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

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