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# The requirements of BS8489-1 Watermist Fire System standard and how to demonstrate compliance

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*a vital part of your world*

# Overview

**What is watermist**

**Testing protocols**

**Consultations**

**Local application and volume  
protection**

**Watermist system design**

**AMAO and hydraulics**

**Components**

**Water supplies**

**Summary**



# So what is a watermist system?

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- **Specifically designed nozzles in pipework secured to a building and connected to a water supply via control valves**
- **Key property –the large surface area of water droplets enables high heat absorption and efficient cooling**



# What can a Watermist system do?

- Flammable liquids –flame extinguishment
- Ordinary combustibles –fire suppression
- Property protection and life safety

# BS8489-1 requirements -testing

## Testing

Specific area within building can be protected by watermist where relevant fire test protocols exist.

## Test protocols

Test protocols must be representative of actual conditions, thus:

- Similar fuel ✓
- Comparable compartment volume ✓
- Compartment height is comparable ✓
- Similar ventilation conditions ✓
- Obstructions are representative ✓
- Duration of protection is compatible with the protection needed ✓

# BS8489-1 requirements –testing cont'd

- **Desirability of third party testing and certification.**
- **Test facilities that operate a quality system with watermist in their scope of accreditation.** ✓
- **Test protocol recognised** ✓
- **Test lab record published** ✓
- **Equipment and systems have demonstrated performance** ✓
- **Equipment and components listed for their intended application** ✓

# BS8489-1 requirements –testing cont'd

- Design uses components tested. ✓
- Design as per successful test results/ test report ✓
- Maximum and minimum nozzles heights and spacing per report ✓
- Minimum flows and pressures in tests to be met or exceeded. ✓
- Installed as per manufacturer's design manual and training to replicate the system as tested. ✓

# BS8489-1 Consultations

- **Water Mist system designers need to consult with:**
- **Fire Authority**
- **Licencing Authority**
- **Building Control**
- **Insurer**
- **Water undertaker**



# BS8489-1 requirements - Protection

- **Local Application:**
  - extinguishing systems designed for object protection with design parameters established by representative fire tests.
  - Where the potential exists for fire to spread and involve adjacent objects the design should encompass the combined hazards.
- **Volume Protection:**
  - Either open nozzles or automatic nozzles
  - Systems designed for hazards within a volume with design parameters established by representative fire tests.

# BS8489-1 Volume protection test requirements

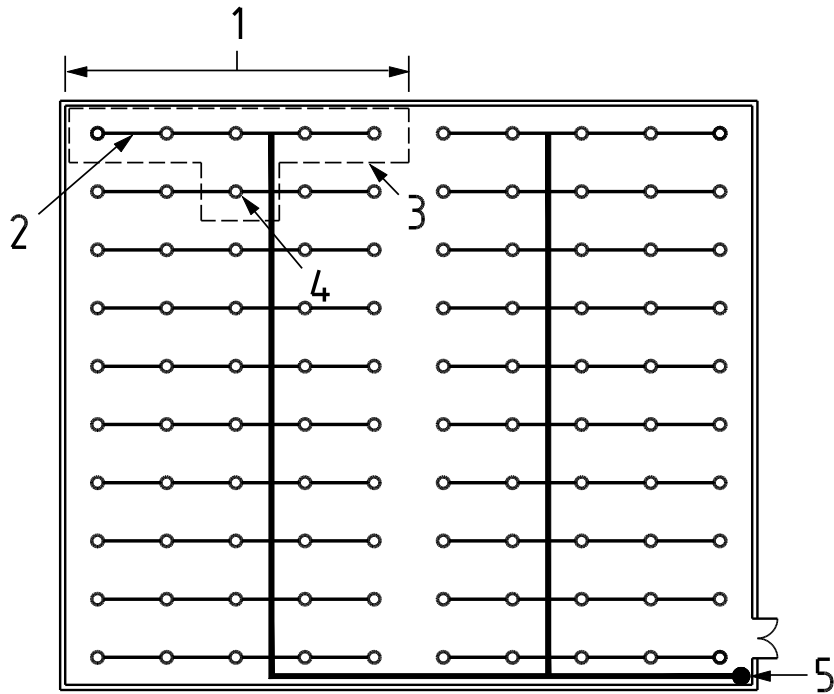
- Tests must mimic the volume to be protected and the hazards identified. ✓
- Use of previous testing – verified by AHJ/Test Lab. ✓
- Tests for specific hazards per tables 1 and 2 of BS8989-1 ✓
- Other tests may be used IF shown to give acceptable/equivalent results. ✓
- Test for applications other than those specified may be used if:
  - a) Repeatable ✓
  - b) Clear pass/fail criteria ✓
  - c) Third party verified ✓

# BS8489-1 Design Nozzle layouts

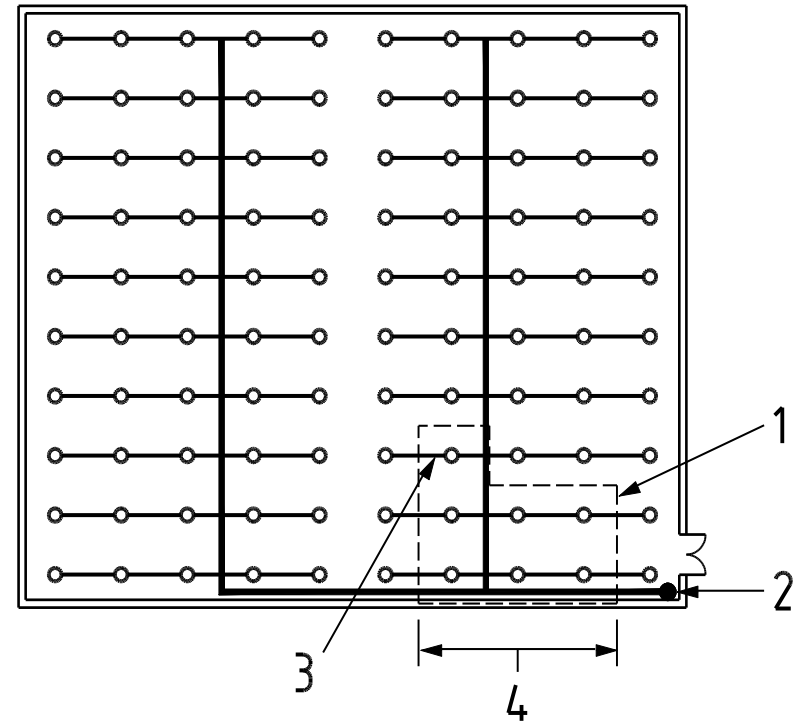
- **Position/orientation per manufacturer's design manual** ✓
- **Within maximum /minimum tested heights.** ✓
- **Within maximum / minimum spacings.** ✓
- **Within maximum / minimum distances from walls** ✓
- **Obstruction addressed per manufacturer's design manual** ✓
- **Ceiling construction ( flat/sloping etc) mist design factors included.** ✓
- **Within maximum / minimum nozzle pressure/flows tested.** ✓
- **Additives identified where used.** "

# BS8489-1 piping hydraulics -AMAO

**Most Unfavourable AMAO**



**Most Favourable AMAO**



# BS8489-1

## requirements - components

- In accordance with LPS1283/FM5560 or equivalent ✓
- Consider components supported by accredited third party assessment
- Nozzles;
  - - corrosion resistant ✓
  - - permanently marked ✓
  - - open nozzles blockage prevention ✓
  - - automatic nozzles – thermal release per BSEN12259-1 quick response ✓
- Piping:
  - - Stainless steel ✓
  - - Copper ✓
  - - Galvanised steel( with strainers) ✓

# BS8489-1

## water supplies - duration

- Extinguishing systems – 2 times the duration to extinguish and prevent re-ignition as established by test. ✓
- Suppression systems:
  - – to suit hazard ( per table 1) with 60 minutes minimum ✓
  - - automatic nozzle systems flow based upon the most favourable ‘Assumed Maximum Area of Operation’ (AMAO) – minimum 4 nozzles ✓
- System piping – hydraulically designed. ✓

# BS8489-1 requirements – water supplies

- Capable of supplying both the hydraulically most unfavourable AND the most favourable AMAOs. ✓
- Wholesome/demineralised/deionised/ sweet industrial water ✓
- Towns main
- One or more automatic starting pumpsets ( manual stop)
- One or more pressurised cylinders
- Ensure continuity and reliability ✓
- Pump suction tanks > 30% of full capacity -where infill rate is sufficient to meet discharge duration requirements and can be tested. ✓
- Dedicated pump house: 60 min. fire resistance if separate building, 120minutes if adjacent to or within a watermist protected building. ✓

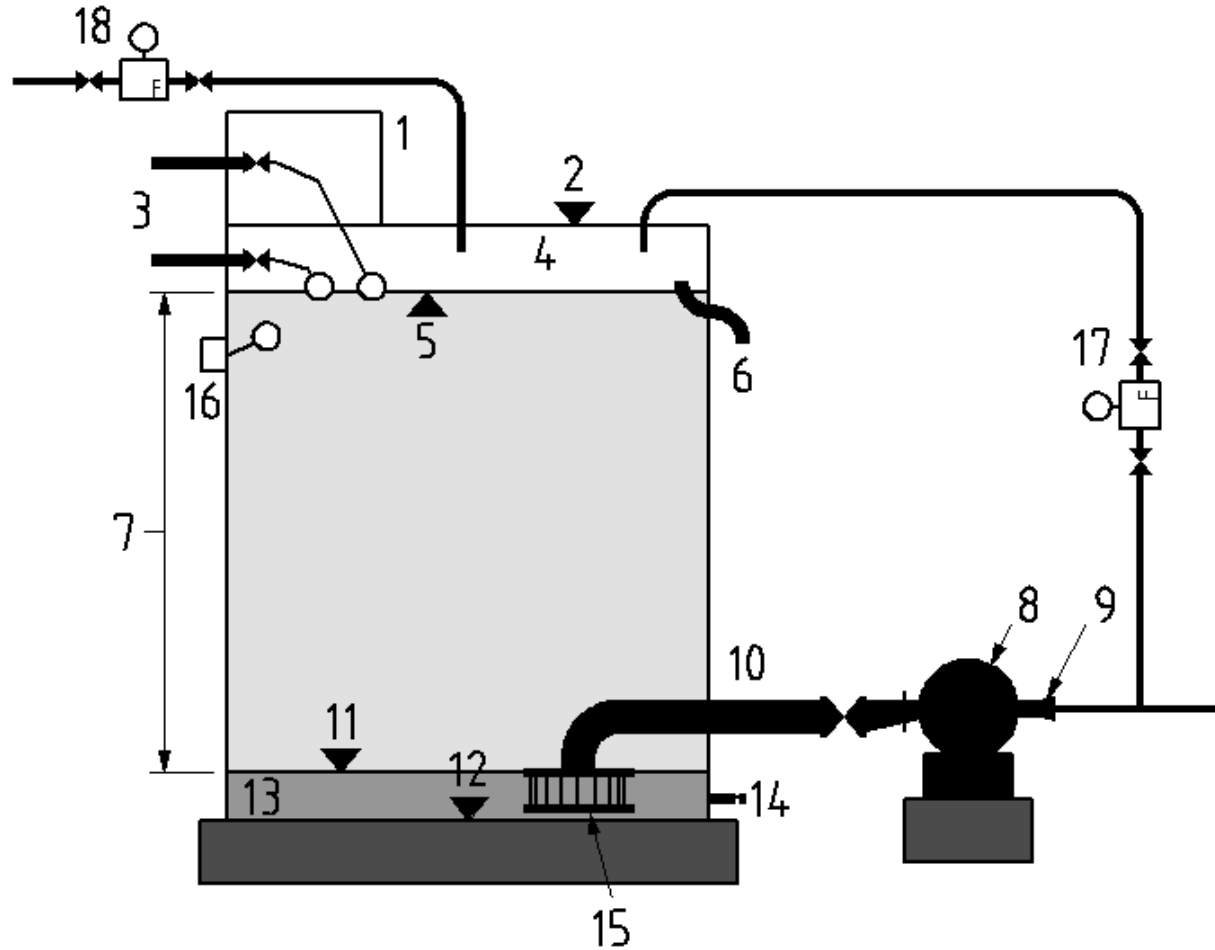
# BS8489-1 requirements – water supplies cont'd

- Permanent pump flow/pressure test facility ✓
- Cylinders – permanent means to check pressure and water content. ✓
- Pump driver power 110% of rated power demand ✓
- Pump continuous flow to prevent overheating ✓
- Pump suction strainer ✓
- Multiple pumps :
  - - common suction ✓
  - - individual pump isolation ✓
  - -sequence starting ✓
- Starting to ensure sustained system pressure ✓





# BS8489-1 requirements – water supplies cont'd



# BS8489 -1 compliance

- **Presentation – check list**
- **Due diligence by AHJ**
- **Installer Schemes – audited and certified.**
- **Fire test reports readily made available.**
- **Fire tests relevant for identified hazards.**

**Thankyou !!**