

Loss Prevention Standards

Sprinkler Systems – Winter Precautions

Introduction

Water begins to form ice particles when temperatures fall to 4°C or lower. As water freezes it expands, and if this occurs within pipework such as a sprinkler system, the expansion can crack joints and damage sprinkler heads. When the temperatures increase, the ice melts and water escapes through the damaged sections of the system. If this occurs during occupied hours the water leakage may be manageable, but the damage caused will result in the sprinkler system having to be isolated for a period of time, as well as costly repairs to the sprinkler system.

If however the thaw occurs during unoccupied hours, the consequences could include severe damage to buildings and contents, an impact on the organisation's business operations, along with expensive sprinkler pump repairs/replacement, etc. The following precautions provide guidance on how to control and reduce the risks of frost damage occurring.



Wet Systems (Installations which remain charged with water at all times)

Prior to the onset of winter, review the heating provision in all areas of the building containing sprinkler pipework. It is essential that sufficient heating be maintained throughout the protected property at all times, to prevent frost damage. Particular attention must be given to periods when the premises are not in use, i.e. outside normal working hours, during weekend and holiday periods. Under normal working conditions machinery can cause the ambient temperature to rise, and this loss of heat when the premises are unoccupied must be allowed for when determining the level of heating required.

Automatic heating controlled by thermostats and frost-stats located in vulnerable areas must be well maintained. Settings of these controls should take into account that in severe weather, temperatures may drop suddenly, and the heating will need to operate in good time to prevent frost damage.

Some sprinkler pipework may be protected by trace heating and lagging. Lagging should be examined and kept in good repair, must not obstruct the sprinkler heads, and when installed on external pipework it should be weatherproof. Electric trace heating systems should be circuit tested to ensure that they are in good working order.

Close attention should be given to pipes in concealed and/or roof spaces which may need additional lagging.

Where subsidiary stop valves have been installed to control sprinklers in exposed positions, these should be closed and the pipework drained throughout the winter period.

During the winter period, wherever possible keep all windows and doors tightly closed to ensure that there are no draughts into infrequently visited areas.

Alternate Wet and Dry Systems (Installations which are charged with air during the winter months)

These installations should be changed from the summer water setting to a winter air setting. This change over must be undertaken by a competent engineer or an approved sprinkler contractor (for example, one approved by the Loss Prevention Certification Board), in accordance with the valve manufacturer's service instructions.

Once the system has been charged with air, a daily check must be made of the pressure gauges to ensure that any gradual escape of air is made good. Where an automatic air supply is available this should be checked weekly.

If the air supply is taken from any source other than a dedicated supply, the system pressure must be checked daily to ensure that the system is not over pressurised.

Even when set for winter operation, the sprinkler control valves and pump houses have sections of pipework which contain water. It is essential that the valve chamber be heated to at least 4°C, and in the case of pump rooms containing diesel engines, a minimum temperature of 10°C must be maintained.

Areas which have trapped sections of pipework should be periodically bled (weekly), to ensure that any residual water which might accumulate is removed from the system.

Checklist

A generic Sprinkler Systems Winter Precautions Checklist is presented in Appendix 1 which can be tailored to your own organisation.

Additional Information

Aviva Loss Prevention Standard: Sprinkler Systems – How they Operate

Aviva Loss Prevention Standard: Sprinkler Systems – Review of Hazard

Aviva Loss Prevention Standard: Sprinkler Systems – Flexible Connections

Further risk management information can be obtained from [Aviva Risk Management Solutions](#)

Please Note

This document contains general information and guidance and is not and should not be relied on as specific advice. The document may not cover every risk, exposure or hazard that may arise and Aviva recommend that you obtain specific advice relevant to the circumstances. AVIVA accepts no responsibility or liability towards any person who may rely upon this document.

Appendix 1 – Sprinkler Systems – Winter Precautions Checklist

Location	
Date	
Completed by (name and signature)	

	Winter Precautions Checklist	Y/N	Comments
1.	Is the heating system operational and set to frost-stat control, to maintain a minimum temperature of 4°C at all times?		
2.	Is there sufficient heating provision in areas usually heated by operating machinery?		
3.	Is any trace heating in working order, in a good state of repair and maintained?		
4.	Are there areas of concealed pipework, such as in attics, above suspended ceilings, etc. that require trace heating and lagging?		
5.	Are all trace heating systems operational and set at the required temperature?		
6.	Is all pipework lagging in good condition (if not repair any damage)?		
7.	Have any areas changed occupancy, such as old boiler rooms/compressor houses, etc. that used to provide background heat but no longer do?		
8.	Are alternate systems changed over to air prior to the onset of winter?		
9.	Are dry and alternate systems checked regularly to ensure they have not tripped and filled with water? <i>Areas which have trapped sections of pipework should be periodically bled (weekly), to ensure that any residual water which might accumulate is removed from the system.</i>		
10.	Are the valve chamber(s) and pump house heated to at least 4°C?		
11.	For pump rooms containing diesel engines, is a temperature of at least 10°C maintained?		
12.	Additional comments:		

