

A microscopic view of Legionella bacteria, appearing as numerous blue, rod-shaped organisms with rounded ends, scattered across the left and center of the image. The background is a dark blue gradient. A diagonal graphic element consisting of three parallel red lines runs from the bottom left towards the top right, separating the bacterial image from the text area.

## **CORRECT INSULATION CAN HELP PREVENT LEGIONELLA**

Protect against bacterial growth when installing pipework

PAROC Hvac Section AluCoat T, PAROC Hvac Bend AluCoat T

# WHAT IS LEGIONELLA?

Legionellosis is a collective term for diseases caused by legionella bacteria including the most serious Legionnaires' disease, as well as the similar but less serious conditions of Pontiac fever and Lochgoilhead fever. Legionnaires' disease is a potentially fatal form of pneumonia and everyone is susceptible to infection. Legionella bacteria are typically spread through aerosols, for example when showering. Legionella bacteria thrive in temperatures between 20 °C and 45 °C.



## EXTRACTS FROM THE UK REGULATIONS

*Dept of Health, Health Technical Memorandum 04-01 Part A*

9.3 All pipework and valves should be insulated, except for any exposed final connections to sanitary appliances.

9.7 The control of water temperature in the cold water service... will essentially rely on good insulation and water turnover.

*Health & Safety Executive Approved Code of Practice L8*

80 Hot and cold water systems should be designed and constructed so they: ...minimise heat gain/loss (eg; hot and cold water pipes and storage tanks should be insulated).

*Health & Safety Executive HSG274 Part 2*

2.6 Temperature control is the traditional strategy for reducing the risk of legionella in water systems. Cold water systems should be maintained, where possible, at a temperature below 20 °C. Hot water should be stored at least at 60 °C and distributed so that it reaches a temperature of 50 °C (55 °C in healthcare premises) within one minute at the outlets.

*Hot water systems*

2.37 The general principles of design aim to avoid temperatures within the system that encourage the growth of legionella. Consideration should be given to the following:

...all pipe branches to individual outlets should be insulated and sufficiently short to enable the hot water at each outlet to reach 50 °C (55 °C in healthcare premises) within one minute of turning on the tap...

## Cold water systems

2.57 An annual inspection of the cold water storage tank should be done to check its condition inside and outside, and the water within it...The thermal insulation should be in good condition so that it protects from extremes of temperature.

2.60 Maintaining regular movement of cold water in sections prone to stagnation and guarding against excessive heat gain by using insulation on the cold water tanks and pipework is the most effective legionella control measure in Cold Water Distribution Systems. For most buildings, carrying out these measures is all that is required.

[https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/524880/DH\\_HTM\\_0401\\_PART\\_A\\_acc.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/524880/DH_HTM_0401_PART_A_acc.pdf)

<http://www.hse.gov.uk/pubns/priced/l8.pdf>

<http://www.hse.gov.uk/pubns/priced/hsg274part2.pdf>

## CONDENSATION INSULATION

Cold water pipes must also be insulated to prevent condensation. Refer to our BS5422 Guide to Thicknesses, Tables 6 & 8. The surface layer of reinforced aluminum foil, standard with PAROC HVAC Section AluCoat T and PAROC Hvac Bend AluCoat T, acts as a vapor barrier.

## ENERGY SAVINGS

Appropriate insulation thicknesses are very effective in saving energy. Simply put, cold pipes are kept cold and hot pipes retain their heat. Refer to our BS5422 Guide to Thicknesses, Tables 10, 11, 15, 16, 17, 18.

THE TABLE BELOW SHOWS HEAT GAIN CONTROL BY THICKNESS OF INSULATION.

EXAMPLE STAGNANT WATER IN PIPEWORK		
Starting water temperature: 5 °C Ambient temperature: 20 °C Copper pipe diameter: 22 mm		
Insulation	Thickness [mm]	Time to 19 °C [hours]
PAROC Hvac Section AluCoat T	30	8
PAROC Hvac Section AluCoat T	70	12

## CALCULATE BENEFITS WITH PAROC CALCULUS

With our program PAROC Calculus you can run bespoke calculations for heat loss or gain, condensation risk and timed temperature changes. You can either use a web version of the program or download it to your computer.

[www.paroc.co.uk/tools-and-documents/calculators](http://www.paroc.co.uk/tools-and-documents/calculators)

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