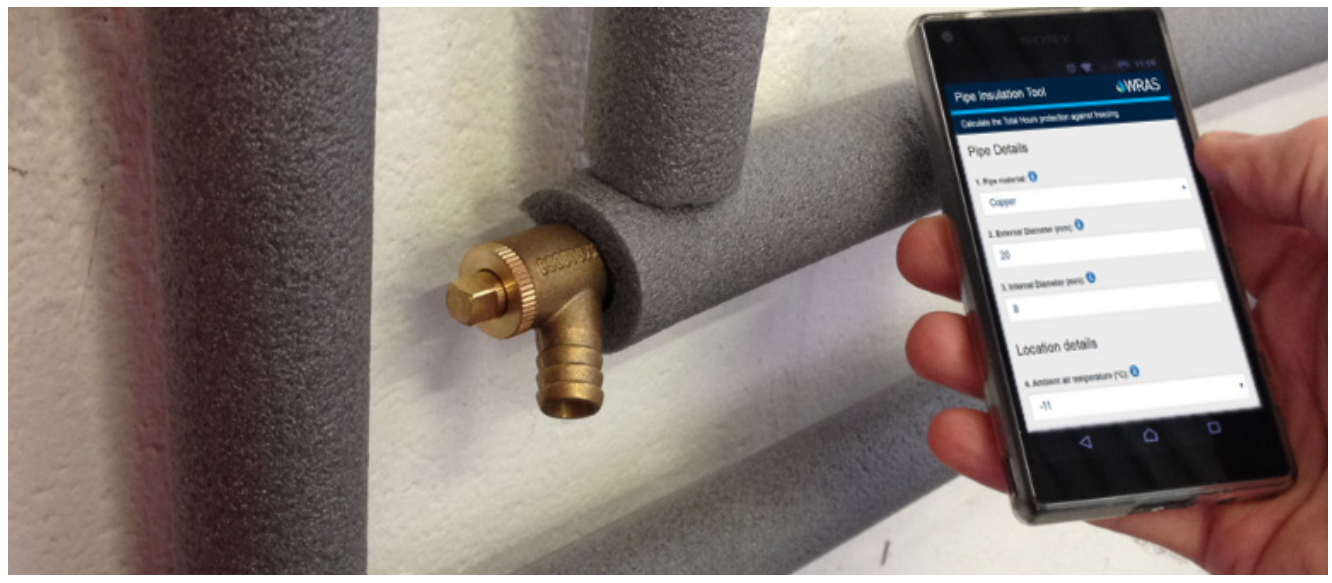
PIPE INSULATION TOOL
User guide

For app version 1.0.0



INTRODUCTION

The purpose of this pipe insulation tool is to enable users to calculate how many hours protection insulation will offer water within pipes against freezing, when there is no water demand i.e. no water is being drawn through pipework.

For the purposes of this tool, freezing is defined as a maximum of 50% ice formation. The calculator has been designed to indicate when 12 hours protection has been provided.

For situations where there will be no water demand for periods greater than 12 hours or where there is likely to be no positive change to the surrounding conditions after 12 hours (i.e. increase in the ambient temperature), users should consult with their local water company to determine the appropriate "total hours" protection requirements. In these situations consideration should be given to the viability of improving the level of insulation, the application of additional protection measures (e.g. trace heating) or the relocation of the plumbing system.

Further guidance is provided in Water Regulations Guide G4.11.

To use the tool detailed information is needed about the following 3 sections:

PIPE

Pipe material and thickness of the pipe wall are key factors in how quickly the heat energy is lost from the water within the pipe.

About the tool:
The calculation methods used are based on those set out in:

BS EN ISO 12241:2008
Thermal insulation for building equipment and industrial installations – Calculation rules

BS 5422:2009
Method for specifying thermal insulating materials for pipes, tanks, vessels, ductwork and equipment operating within the temperature range –40 °C to +700 °C

LOCATION

The location requirements relate to the key factors in determining how quickly the prevailing conditions affect water freezing in pipes. The harshest conditions which need to be considered are likely to occur overnight during the winter months.

Ambient air temperature
Users should input the lowest air temperature of the prevailing conditions the pipework is likely to be exposed to (at the location) where installed. Consideration should be given to the harshest conditions, including factors like wind chill, that are likely to occur – where necessary specialist advice should be sought.
Regional temperature information is provided by the Metrological Office on their website – **www.metoffice.gov.uk/climate/uk/regional-climates**.

Water supply temperature
Users should input the lowest likely temperature of water supplied to the premises.
Water temperature will generally be at its lowest during the winter months and is typically between 2°C and 7°C.

Tool tip: Where specific water supply temperature data is not available a value of 2°C should be used. (ref. BS 5422)

Ice formation
As water cools, ice will start to form within the water. The user can set the amount to a maximum of 50%, above this the water is considered to have frozen (ref. BS 5422).

INSULATION

Whilst insulation cannot totally prevent water freezing, if correctly selected it should help delay ice formation until warmer conditions return.

Key properties are the thickness and thermal conductivity of the insulation.
Surface emissivity (cooling by emitting thermal radiation) has a lesser influence on the overall rate of cooling water within pipes.

Manufacturers usually provide this information in their technical specifications.

Tool tip: Where surface emissivity values are not available 0 (zero) should be used.

Available from:

GET IT ON Google play

Download on the App Store

Download from Windows Phone Store

November 2016