

The Arcotherm Assessment Guide

- What specific job do you want the heating/cooling to do?
- What are the dates, time and length of use needed?
- Give a detailed description of the location?
- Is it an indoor or outdoor location?
- Is it a permanent or temporary building or structure?
- What level of comfort will the occupants/staff or guests (in the case of an event) expect?
- What activities are the occupants/staff or guests likely to be involved in before, during and after the event?
- What is the physical size of the area to be heated/cooled?
- How many people will be in this location?
- Is the location well ventilated?
- What windows, doors and other access routes are at the location?
- Does it open directly outdoors, or into another part of the building?
- What are the prevailing or forecast weather conditions?

Generally speaking the following guidelines apply when assessing a structure's insulation levels. However, the general age and condition of the accommodation could mean that some of the newer temporary outdoor structures such as marquees have a better insulation rating than that of a solid building.

Well insulated

Advanced construction, double insulated brick, few double-pane windows

Thick pavement foundation, well insulated roofing materials

Typical structures are new build commercial and industrial properties.

Typical heating power coefficient 0,9

Moderately insulated:

Standard construction, double-brick layer, few windows

Standard closed roof.

Typical structures: older properties built prior to sustainable buildings legislation, with less technical advances and materials available at time of build.

Typical heating power coefficient 1,9

Poorly insulated:

Simple construction, single-brick layer, simple windows, simple roof.

Typical structures: prefab style buildings, concrete wall builds, dated storage buildings

Typical heating power coefficient 2,9

Non-insulated:

A simple building in wood or in corrugated metal.

Typical structures: marquees, farm outbuildings, enclosed barns and large-scale wooden sheds

Typical heating power coefficient 4,0

$$V \times \Delta T \times K \times 3.97 = \text{BTUs}$$

V = The cubic capacity or volume of the structure in cubic metres

ΔT = The difference between the Internal and External air temperature

K = The structure's Insulation Coefficient

Example:

The client requests that a warehouse of 20m x 10m x 4m is kept at a temperature of 20°C: it is a steel clad structure with an Insulation Coefficient of 1.9, and with an expected outside night time temperature of -10°C

Therefore, with the volume at 800m³, the temperature differential at 30°C and the **Insulation Coefficient at 1.9**, the formula would be as follows:

$$800 \times 30 \times 1.9 \times 3.97 = 181,032 \text{ BTUs}$$

And if you're still not sure, call us anyway; we're happy to help you make the right choice.