

The correct use and application of thermal mass such as rammed earth is dependent on the prevailing climate in a district.

### **Temperate / Cold Temperate climates**

Rammed earth is ideally placed within the building and situated where it still can be exposed to winter sunlight (via windows) but insulated from heat loss.

The rammed earth is warmed passively by the sun or additionally by internal heating systems during the day. Heat stored in the mass is then released back into the interior during the night. It is essential that it be used in conjunction with the standard principles of passive solar design.

### **Hot, arid climates (e.g. desert)**

This is a classical use of building materials of high thermal mass. Examples include adobe or rammed earth houses. Its function is highly dependent on marked diurnal temperature variations. The wall predominantly acts to retard heat flow from the exterior to the interior during the day. The high volumetric heat capacity and thickness prevents heat from reaching the inner surface. When temperatures fall at night, the walls re-radiate the heat back into the night sky. In this application it is important for such walls to be massive to prevent the ingress of heat into the interior.

### **Hot humid climates (e.g. sub-tropical/tropical)**

The use of rammed earth is the most challenging in this environment where night temperatures remain elevated. Its use is primarily as a temporary heat sink. However, it needs to be strategically located to prevent overheating. It should be placed in an area that is not directly exposed to solar gain and also allow adequate ventilation at night to carry away stored energy without increasing internal temperatures any further. If to be used at all it should be used in judicious amounts and again not in large thicknesses.

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Reference: [Wikipedia](http://en.wikipedia.org/wiki/Thermal_mass) [http://en.wikipedia.org/wiki/Thermal\\_mass](http://en.wikipedia.org/wiki/Thermal_mass)