

TECHNICAL INFORMATION SHEET NUMBER 5

September 2013

WALL INSULATION IN SQUASH COURTS

INTRODUCTION

It is necessary to ensure that adequate heating is provided to maintain the squash courts and spectator areas at a temperature of 15°C +/- 3°C (60° +/- 5°F). As the vast majority of courts in this country are built using two leaves of brick/block or perhaps concrete with an air space between them, some form of cavity wall insulation will be required.

The thermal insulation of a masonry cavity wall can be greatly improved by the introduction of insulating materials into the cavity. In general, the cost of this form of insulation can be considered to be a good investment, since it can allow economies in the cost of a heating installation both in capital outlay and running expenses.

A further advantage, and one not dependent on the provision of heating, is that the insulation inhibits the passage of energy either as heat loss in the winter, or heat gain in the summer. This produces a stabilising influence on the inner face, thereby slowing any sudden change in wall temperature, one of the conditions that most often leads to condensation.

Against these advantages however, must be weighed the slightly increased risk of rain penetration due to extreme conditions of exposure, or localised climatic conditions and the physical installation of the insulation material itself.

CHOICE OF MATERIALS

Products suitable for introduction into an existing wall construction are generally blown, injected or, in some cases, poured into the cavity.

The main problem likely to be encountered will be due to mortar droppings on the wall ties, and perhaps other materials bridging the cavity. Whilst the cavity is generally open and therefore well ventilated, these obstructions may not cause a problem, but if one occurs it will usually go undetected until well established. With the introduction of a cavity fill material, they can provide a ready collection point for moisture which is unlikely to dry out, and therefore, damp will migrate to the inner cavity wall leaf.

Should this happen such as to cause damp problems, the only remedy is to cut out the defective areas from the outside, remove obstructions and complete the filling. In this instance, the use of non-setting materials such as fibres or beads can be an advantage since the completion of the filling does not rely upon the chemical bonding of new material to old.

In all cases, when you obtain quotes from specialist installers, check the experience and competence of the company concerned and ensure that the product has been approved by the Agreement Board and has a current Certificate of Approval.

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1. Urea-Formaldehyde (UF) Foam

The foam is injected into the cavity, usually through holes in the outer leaf, where it subsequently hardens and dries.

A great deal of research has gone into this product since early problems were encountered due to lack of bonding between successive injected areas with subsequent shrinkage, causing minute fissures that allowed water to cross between outer and inner leaves. The incorrect alignment of cavity wall ties can also cause problems in this respect.

2. Rock Fibre

Fibres coated with a water repellent are blown into the cavity where they form a water repellent mat. This method does not have the same drying and shrinkage problems as those associated with UF foam, but is generally more expensive.

3. Polyurethane Granules

These are irregularly shaped granules usually between 5mm and 20mm in size.

4. Expanded Polystyrene Beads

These are white spheres with a diameter between 2mm and 7mm. They are extremely free running and so require few filling holes. Equally, unnecessary holes at low level will allow the product to escape.

5. Glass Fibre

This material has been introduced as an alternative to rock fibre, and installed by a similar method. Since the material is less dense, the cost is subsequently lower.

6. Polyurethane (foamed) in new walls

Two liquid components are mixed and injected into the cavity where they foam and rise to fill the space. The foam adheres strongly to masonry and does not shrink.

7. New construction

Rigid panels of insulation materials are fixed with clips to the cavity face of the inner skin. There are many types of panels available.

8. Concrete Wall Panels

Where condensation is a problem, insulating the external walls using rigid insulating slabs fixed to the outer face, then covered with a mesh fabric and waterproof rendering coats will improve the insulation value of the walls. Careful detailing at the openings and at the junction with the upper wall cladding, where this occurs on earlier courts is necessary.

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CONDENSATION

It is not proposed to discuss condensation at any length since it is a complicated subject in itself and has been dealt with in England Squash & Racketball Technical Information Sheet No. 9. However, one cannot discuss insulation without provoking thoughts as to how it might affect the possibility of condensation on the wall surfaces.

The introduction of insulation materials is unlikely to cure an existing condensation problem and although unusual, the introduction could actually cause condensation where non existed previously.

The avoidance of condensation is achieved by careful consideration of a number of factors including type and extent of heating, insulation of structure. Geographic location, prevailing wind and proximity of trees all need to be considered, but **most** important is the degree of ventilation provided to the courts.

CONCLUSION

If you have decided to install heating for the general comfort of your membership, both while they are playing and watching, or if you have decided to maintain a general level of heating as a means of helping to avoid condensation, then wall insulation is to be recommended if any as a means of reducing heat loss and thereby heating bills.

If your courts are only intermittently heated, please check the costing carefully, experience has shown that the savings on heating bills would only be marginal and probably not cost effective.

For an unheated court, the introduction of wall insulation would have little or no effect on the playing characteristics and therefore, would not be a viable proposition.

Please note that the information for the maintenance and provision of squash courts contained in the England Squash Technical Information Sheets apply to courts built in the United Kingdom only.

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