

Dampness In Buildings— Causes & Cures

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Introduction

Dampness in buildings is a universal problem. In spite of proper supervision during construction, buildings are still affected by it. Carelessness during construction and lack of knowledge on the subject add to the problem. Building materials such as bricks, concrete, plaster, timber, etc. have a moisture content which under normal circumstances is no cause for concern. The rise in moisture content of these materials to a level where it becomes visible or when it causes deterioration is the real dampness.

While in absolute terms the moisture content of different materials may be the same, the acceptable limit differs from material to material. For example 10 per cent by weight of water in timber is not harmful but the same level could saturate a brick or cause deterioration of plaster. Thus, a certain quantity of water makes one material distinctly damp but may not unduly affect another. Therefore, presence of water in quantities that do not cause changes in the appearance of materials or any kind of deterioration should not be a cause for concern.

Signs Of Dampness

In case of dampness it is very important to maintain a complete record from the period it is first noticed. Signs of dampness seen personally, photographed or made a record of should be trusted more than the information gathered otherwise. If it can be established that the information gathered otherwise. If it can be established that the occurrence of dampness is related to temperature or weather, this can help significantly in limiting the possible causes of the trouble.

Signs of dampness which are directly evident are:

- (a) Stains on different surfaces of buildings;
- (b) Visible water such as a film of moisture or drops of water on a surface.

Bad smell, mould, insects, salts and other corrosion products also testify to the presence of dampness. Detachment of paint film, wall papers, plaster, timber, floor and ceiling are indicative signs of dampness. Displacement of parapets, wall tiles, floor tiles, cracking of glass and walls, also take place due to dampness.

Stains

There is an infinite variety of sizes, shapes and colours of stains, a few of which are quite informative.

Clear water present in building materials darkens the colour of stains and pigments in the water cause colour changes.

There is no limit to the size of a dampness stain: One of the ways of telling whether a dampness stain is still active is to remove any growth of mould or efflorescence after a record has been made of the condition and to see how

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much it returns before the next inspection. This way it can sometimes be determined whether the dampness is declining or increasing. Similarly it can be useful to draw a pencil line around the outline of the dampness stain and to date it.

The size of the stain depends on the material behind a surface. The shape of stain is not only informative but can also be conclusive. The crescent shape in the corner of a surface is conclusive evidence of condensation while the convex shape of a stain indicates that the source of water is other than condensation.

Types And Causes Of Dampness

Dampness problems can be classified into various types. Some are associated with the presence of hygroscopic salts capable of absorbing sufficient amount of water from the air to cause disruption of paint films and plaster.

The types of dampnesses are:

- (a) Condensation — the deposition of moisture from the atmosphere, either

internal or external, on relatively cold surfaces;

(b) Rain Penetration — the passage of rain water through a structure intended to drain it off.

(c) Built-In Water — the presence of water which has been enclosed within the structure during the construction process, such as water used in mixing concrete, mortar plaster, water from atmosphere like rain, snow, frost, and dew.

(d) Pipe Leakage — the leakage of water from water supply line or drains.

(e) Spillage — the spillage of water from industrial or domestic activities.

(f) Seepage — the passage of water on or in the ground through structure wholly or partly laid underground.

(g) Rising Dampness — the slow rise of water from the ground up into the walls/floors due to defective or missing damp-proofing precautions.

Dampness associated with hygroscopic salts can be attributed to the following:

(h) Contaminated Sand or Gravel — Presence of salts contaminating sand/gravel in mortar and concrete mixes.

(i) Calcium Chloride — the presence of calcium chloride used as a quick setting agent in concrete or mortar mixes;

(j) Composition of Floor — magnesium oxychloride in floors which have broken down into chlorides;

(k) Industrial Contamination — the presence of salts from industrial processes;

(l) Animal contamination — the presence of salts from animal waste (either in stables or indirectly, from leaky drains);

(m) Flooding — large deposits of silt mud containing salts, brought in by floods.

Dampness Cures

The cure for dampness depends on a correct diagnosis. An experienced person can easily identify the cause and suggest suitable remedial measures.

Suggested below are certain remedial measures for each of the given dampness conditions:

Condensation

Condensations takes place on surfaces at temperatures below the dew point. Internal air should be allowed to circulate by providing proper ventilation especially in source rooms. All sources responsible for producing moisture in the building