

ORANGE Heritage FACT SHEETS

Rising damp

Rising damp, a worldwide phenomenon, is a major cause of decay to masonry materials such as stone, brick and mortar.

WHAT IS RISING DAMP?

Rising damp occurs as a result of capillary suction of moisture from the ground into porous masonry buildings. The moisture evaporates from either face of the wall, allowing more to be drawn from below. Usually the moisture starts at floor level and gradually rises as each course of bricks becomes saturated.

Rising damp may show as a high tide like stain on wallpaper and other interior finishes, and when more severe as blistering of paint and loss of plaster. It is generally associated with the lack of a damp proof membrane or the breakdown of the membrane. Leaking roofs with water running down the brickwork in the cavity and building up above the damp course is another cause. Damp walls encourage the growth of moulds, which with high humidity can lead to health problems for occupants.

THE DAMP-PROOF COURSE (DPC)

To prevent rising damp it is normal practice to build in an impermeable barrier at the base of the wall just above ground level. This is known as the damp-proof course (DPC) or sometimes as the damp course. Modern DPCs are generally 0.5 mm thick black polyethylene sheeting. Early DPCs included overlapping roofing slates, lead sheets, glazed ceramic tiles (made for the purpose) and various bitumen-based materials including tar-sand mixes, which were laid hot.

Insertion of a new Damp-Proof Course

In many severe cases of damp, the only effective solution is the insertion of a new DPC in the base of the walls. It can provide a permanent cure to rising damp, whereas the other treatments mentioned all involve ongoing maintenance. New DPCs can be inserted by physical or chemical means. The traditional physical means is the way known as undersetting, which is a treatment for cracking and footing failure. Sections of the base of the wall are removed and progressively replaced with new materials and a new DPC is inserted at the base of the walls. This can provide a permanent cure to rising damp.

Another physical method involves sawing a horizontal slot through the wall along a mortar joint, the insertion of a DPC membrane and the repacking of the joint. A shortcoming of any sawing technique is the inability to cut beneath an existing floor when working on internal walls. Thus a line of damp bricks is left above floor level, which may lead to fungal rot in skirting boards and floor timbers. A potential disadvantage is that salt-laden masonry may be left in the wall above the new DPC. The salt can still cause decay due to its hygroscopic nature and changes in humidity, and should therefore be removed by clay poulticing or a sacrificial render treatment. This method is best reserved for situations where salt concentrations are low.

THE ROLE OF SALTS

On its own, rising damp can make buildings unsightly and unpleasant to occupy. The situation is made much worse if there are appreciable quantities of soluble salts present, for the rising damp will carry salts up onto the masonry to where the damp evaporates. There the salts are left behind and can often be seen as a white efflorescence on the wall surface. When these salts grow as crystals within the pores of the masonry they can disrupt even the strongest material, leading to fretting and crumbling of the surface. This process is known as salt attack, and when severe can lead to the slow but complete loss of stones and bricks in a wall.

CONTROL AND TREATMENT

Having diagnosed the course of the damp problem, the obvious response is to prevent it recurring by fixing leaks, removing bridges, or by inserting a new DPC. Sound home and attention to underfloor ventilation maintenance will help prevent further damp problems and may reduce the severity of an existing problem to an extent that major works are not necessary. These measures include regular maintenance of plumbing, roof and guttering systems, attention to site drainage and to underfloor ventilation.

Site Drainage

It is important that water does not lie against the base of wall; surrounding paths and ground levels should be sloped to drain water away from walls. Make sure that down-pipes don't discharge stormwater onto lower walls or plinths. Stormwater should be carried away by large regularly, cleaned drains.

Ventilation

Maintaining underfloor ventilation is an important part of controlling damp for it allows soil moisture to evaporate beneath the floor and to pass out through the vents in the lower walls. Without this ventilation the moisture 'stress' on the walls would be much greater. One of the worst mistakes of renovators is to remove a ventilated timber floor and replace it with a concrete slab poured on sand or fill. The concrete prevents evaporation and all the soil moisture rising beneath the building is now focused on the walls.

Sacrificial Treatments

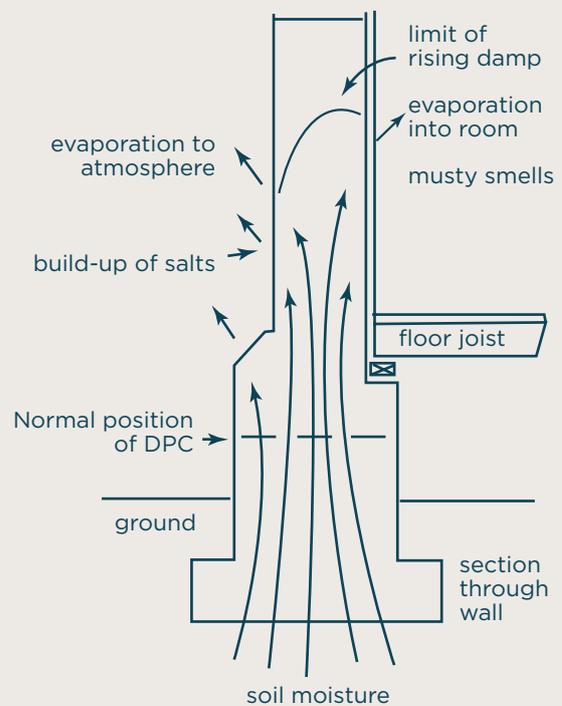
Sacrificial treatments can be useful ways of controlling mild damp. Particularly when coupled with the housekeeping measures of attention to ventilation and site drainage they may limit the damp to such an extent that it becomes a manageable problem that can be lived with, without the need for expensive and invasive major works. In sacrificial treatments, deliberately weak mortars and renders are used to encourage any salt attack to decay the new mortar and render and not the original masonry. Formulation of appropriate mortar mixes requires expert advice, as they are designed to crumble. Sacrificial mortars and renders need ongoing maintenance.

FAQ's

The mortar is crumbling and falling out from between the brickwork of my old house, is it OK to patch it up with cement?

No. If the mortar's crumbling it's because it's doing its job. Houses were constructed with soft lime mortars, which tend to crumble in time. Mortar should always be softer than the brick or stone of a wall in order to allow the building to absorb movement, and to carry away any moisture that finds its way into the walls.

Damp will always follow the path of least resistance as it evaporates. Damp from the ground carries harmful salts, which crystallise as they reach the air. These crystals expand as they form and can flake away the surface of brick. Replace it with soft lime mortar using a traditional recipe, and your house will be much better off than using modern, hard cement.



FURTHER READING

NSW Heritage Office, 1998. The maintenance of Heritage Assets; A Practical Guide

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