

INFORM

INFORMATION FOR TRADITIONAL BUILDING OWNERS

Rot in timber



Introduction

Timber is an integral part of almost all historic buildings. It is used for diverse elements such as floor boards, roof joists, stairs, doors, window frames and skirting. In common with all building elements, if not properly maintained, wood can suffer from decay and damage through the actions of a number of agents. One of the most serious of these is rot. Rot is caused by damp wood being attacked by one or more types of fungi. There are various species of fungi which can cause rot, the most common being *Coniophora puteana* and *Serpula lacrymans* known as wet rot and dry rot respectively. Likewise there are various steps which can be taken to cure rot when it is found in a building. This INFORM seeks to guide building owners through the different types of rot and how to identify them, action which can be taken to eradicate the problem and how and why rot spreads.

Understanding the spread of rot

For rot to take hold in wood there are several elements which must be present:

- The fungal spore which introduces the rot
- A food source i.e. the wood in which the rot takes hold
- Moisture

Once a rot fungus is established in timber it can spread and grow throughout the wood as long as the conditions remain conducive. In suitably damp conditions dry rot can spread over inorganic substrates such as brick work and plaster to infect other timbers. It is important to note that when conditions change for example the moisture source is removed or the food source exhausted, rot will stop spreading and die off. The final stage of the spread of rot is when the fungus develops what is known as a fruit body which is a large fleshy body commonly bracket like in shape. This releases spores into the atmosphere to spread the rot further.



*The fruiting body of the dry rot fungus
City of Edinburgh Council*



Cuboidal cracking caused by dry rot (City of Edinburgh Council)

Types of rot

Whilst a wide variety of species of rot exist the two most common in Scotland are dry rot and wet rot. Proper diagnosis of the kind of rot being dealt with is vital to the effective treatment of both its causes and its symptoms.

Dry Rot

It is important to note that dry rot is something of a misnomer as, common to all rots, it requires moisture to exist. The term dry rot comes from the state in which it leaves timber, in a dry crumbly condition. Dry rot can survive in a range of conditions but will thrive when humidity is over 90% and the temperature is around 23 OC. Dry rot fungus has the ability to produce vein like strands (known as rhizomorphs) through which food and water can flow. These can penetrate a variety of building materials as well as wood

such as plaster and masonry and allow dry rot to spread quickly.

Detecting dry rot in its early stages can be difficult. When it is taking hold dry rot appears white or greyish with the texture of cotton wool although can also appear yellowish or mauve in colour. As dry rot usually develops out of sight behind panelling or under floors it is unlikely it will be noticed at this stage. If wood appears soft to the touch or shrinkage is taking place this will likely be a sign of some form of timber decay occurring. A mushroom like odour may also be a sign of rot. When dry rot is fruiting (producing spores) a larger body known as a sporophore is created. This is circular or semi circular in form and is commonly reddish in colour with a white edge. Other signs of dry rot include a fine reddish dust on the surface of wood and cuboidal cracking light brown in colour.



Brown discoloration showing the presence of wet rot



Exposed wall showing presence of dry rot

Wet Rot

Wet rot comes in a variety of forms. It requires a higher moisture content than dry rot, between 50-60%, and can in many ways be seen as the natural decay process of wood. Where wet rot exists there is usually some underlying failure in a buildings structure which is allowing excessive moisture to penetrate into wood such as a leaking pipe, gutter or roof. There is often no outward growth where wet rot is present although some forms such as cellar rot will result in dark brown strands appearing on nearby wood or plaster. The fruiting bodies of wet rot are similar in form to those of dry rot although appear in a wider range of colours from green to red although these are rarely found indoors. There are several signs which are indicative of wood suffering from this type of decay:

- Timber will feel spongy or soft to the touch
- Wood may be discoloured either darker or lighter depending on the type of rot present
- Skirtings or panels may become warped
- Paint can be lifted from the surface of wood if wet rot is present

Dealing with rot

Once rot has established itself in wood it is important to treat it as early as possible. The most effective solution to curing any problem with rot in historic timbers is to remove the source of moisture which created the conditions for the rot to develop in the first place. The process of drying an area of a building could take some considerable time, however, and there are a number of short term measures which can be used to prevent the spread of rot whilst this drying process is taking place.



Defective rainwater goods can cause moisture ingress leading to damp conditions ideal for rot

Moisture control

In common with all living organisms rot and fungi which attack wood in historic buildings require water to live. Removing the source of the moisture which has caused the rot to develop is one of the first steps in tackling such problems. If the moisture level drops below 20% decay will cease. In a well maintained building the moisture level in timber will not rise above 20% and rot has little chance of developing. Even in a well maintained building, however, areas which are not properly ventilated can quickly become damp (see INFORMS Damp and Ventilation). The primary control measure for the long term eradication of rot in timber is therefore the elimination of moisture. A detailed survey should be carried out to identify the source of excess moisture which can include:

- Defective plumbing
 - Blocked rainwater goods
 - Defective damp proof courses
 - Damage to roof structure
 - Masonry decay or damaged rendering
- Proper ventilation of areas susceptible to damp or moisture penetration such as cellars, solum (the area underneath a floor) or voids in walls.



Timbers replaced following an outbreak of rot

Removing affected timbers

Where rot has occurred it is important to remove any timber which has been affected. This will reduce the likelihood of the rot re-appearing and also re-instate the structural stability of a building which may have been compromised. Where the rot was in a relatively small area the wholesale removal of large areas of timber will not be necessary, for example where a floor board has suffered from attack, once the cause of the moisture is rectified there should not be any need to remove the floor boards adjacent unless they too show signs of rot.

Drying of affected areas

Once the source of moisture has been removed it is important to allow any affected area to dry out as quickly as possible. This may involve the use of dehumidifiers or

heaters although it is important not to heat wood too quickly or cracking will occur. Ventilation is also of vital importance to the drying process. Where existing vents have been blocked in the past these should be unblocked. In severely damp areas it may be necessary to introduce new ventilation for a time for example by lifting up floorboards adjacent to a damp wall.

Application of fungicidal fluid to rotten wood

The application of fungicidal fluid to an affected area of timber is a simple short term treatment. When these are being applied to an affected area this should be done by brush or coarse spray. The use of atomised sprays should be avoided as these are less targeted and can introduce harmful agents to a building.



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Further reading

- Ridout, B. Timber Decay in Buildings ISBN 0-419-18820-7
- BRE Digest 299: Dry Rot
- Glasgow West Conservation Trust: Rot and Insect attack

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