

Loss prevention standards

Thatched Roofs

Thatched roofs can catch light easily and burn rapidly. From maintaining the thatch to understanding the local water supplies, this document is intended to provide guidance in minimising the risks.



Thatched Roofs



Introduction

Thatching is attractive, environmentally friendly, and offers good sound and thermal insulation – **but it's also** combustible, burning rapidly once ignited. To prevent homes and businesses being devastated by the effects of fire, smoke and water along with storm **damage, it's vital** these risks are understood and that precautions are taken to minimise the potential for damage.

A significant proportion of thatched properties in Britain have Listed Building status. These require approval for alterations such as changing the thatch type, the ridge style, the chimney height and retrofitting of wood burning stoves.



Open fires and wood burning stoves account for a high proportion of thatch fires. Retrofitting stoves within thatch properties built for open fires or fireplaces presents additional hazards that require additional precautions.

Varieties of thatch are available which differ in appearance, usage, application, durability and combustibility – and require regular inspection and ongoing maintenance.

Thatch Types

Water Reed/Norfolk Reed

Reed is the better quality, most durable type of thatch, with a life expectancy of 40 to 60 years.

Combed Wheat/Devon Reed

These forms of wheat straw are similar in appearance to reed, are a good quality thatch, with a life expectancy of 25 to 35 years.

Long Straw

Long straw is a softer in appearance thatch, of lower quality with a life expectancy of 15 to 25 years. It's also the more combustible thatch type.

Fibre Thatch

Fibre thatch is synthetic, made from Glass Reinforced Plastic (GRP). It's produced in sheets which are moulded and coloured to look like real thatch. It's seldom used, with the glue and fixings known to cause issues.

Maintenance

Thatch should be regularly inspected (with increased frequency during the latter part of its lifespan) and well maintained by a competent thatcher. Essential remedial work should be undertaken without any delays, to help prolong the thatch life expectancy and reduce the risk from storm damage.

Roof ridges are commonly formed from thatching straws of long straw, combed wheat or sedge. These usually require earlier replacement than the thatch coat, typically lasting 10 to 15 years. This is also in part due to the decay of wooden fixings.

LOSS PREVENTION STANDARDS

Factors affecting the longevity of a thatch include but are not limited to the following:

- Elevations and ridges exposed to the weather – these will wear faster than sheltered locations
- Wet climate locations (West of England/Wales) – where moisture encourages decay
- Shaded areas and nearby trees – allowing moss and lichen growth; without direct sunlight and sufficient warmth to dry the thatch; resulting in moisture build-up and preventing water being expelled
- Shallow pitched roof sections (less than 45%) and coat/ridge sections beneath chimneys – allowing moisture build-up
- Presence of netting (usually wire) – to reduce damage by strong winds and deter bird activity
- Bird activity – removal of straw thatch for nesting and searching for food (insects)
- Rodent activity
- Failure of fixing supports – resulting in slippage of sections
- Density of thatch and workmanship quality

Thatch Depth

Thatch can be anything from less than 1m thick to more than 2m. Where thatch is deeper, the roof is more susceptible to heat build-up (thatch having good insulation properties) with there being a greater surface area of thatch next to the chimney. Increased thatch depth arises where additional coats of straw thatch are laid upon existing coats for repair, rather than fully removing and re-roofing at significant additional cost. Increasing the depth of thatch also reduces the height between the thatch and the top of the chimney, increasing the risk of the thatch catching light from embers.

Thatch Property Features and Concerns

- Thatch is combustible and can burn rapidly
- Thatched roofs are designed to repel water, making firefighting challenging
- As thatch is external:
 - Fire detectors located inside the building may not activate
 - An alarm is often only raised once someone has spotted the fire from the outside
 - Occupants may be unaware of the fire, resulting in a delayed emergency call and fire service response
- Properties with thatched roofs are often in remote rural areas, so:
 - **The Fire Service's response** is usually not as quick as in urban areas
 - Fire water supplies may be far from the building, with lower water pressure and reduced flow

Causes of Fires

According to [Fire Safety for Thatch](#), published by the Thatch Advice Centre, a high proportion of thatched property fires are caused by chimneys and wood-burning stoves. This is due to embers landing on and igniting the surface of roofs, and chimney fires. Other known causes of fire include:

- Heat transfer from the chimney or flue, to the adjoining thatch, that is of a sufficient temperature, normally around 200°C, can result in charring, pyrolysis and eventually fire
 - Conducted heat can pass through brickwork to the thatch
 - Hot gases may also be able to pass by convection through gaps in poorly maintained brickwork mortar
- Old, inappropriate and poorly installed flue liners
- Electrical defects or damage to electrical cables within loft areas and external areas close to the thatch
- Heat emitting lighting within roof and external close to thatch

LOSS PREVENTION STANDARDS

- Hot work and DIY
- Garden fires, barbeques or fireworks close to the property
- Smoking materials left in loft areas or thrown out of dormer windows
- Birds dropping lit cigarettes onto thatched roofs

General Precautions

Chimneys

- Chimneys should be swept at least twice a year along their entire length, to prevent a build-up of soot and tar deposits
 - If spark arrestors are fitted and wood is burnt, the spark arrestors should be cleaned and the chimney swept at least every 3 months.

The use of spark arrestors is no longer recommended, as they are prone to the accumulation of tar deposits, other materials and are difficult to access for cleaning. Blockages can lead to increased flue temperatures and a positive air pressure within the flue resulting in carbon monoxide leaking (or being forced) into rooms adjoining the chimney stack. Ignited accumulation of tar deposits and other combustible materials can drip or fall on to the thatch below.

If an arrestor is already fitted, the National Association of Chimney Sweeps recommends it's taken down and cleaned every 3 months.

It's recommended that sweeping takes place before October to remove any debris within the chimney before the first ignition in Autumn and again during the Winter season between January and March. Increased cleaning frequency should be considered based on usage. This work should be carried out by a [HETAS](#) (Heating Equipment Testing and Approval Scheme) approved chimney sweep, or a member of [NACS](#) (National Association of Chimney Sweeps) or [The Guild of Master Chimney Sweeps](#)

- Ensure the top of the chimney stack is at least 1.8m above the highest point of the thatch, allowing sparks and embers to die out before they settle on the thatch
- Chimneys should be checked at least once every 3 years by a registered chimney engineer who is accredited by a professional body, such as HETAS or [NACE](#) (the National Association of Chimney Engineers). This is to ensure that the brick, stonework and mortar is in good condition – especially where it passes through the thatch, to prevent heat transfer to the thatch. The condition of flues and brickwork can be examined by endoscopic camera equipment
- Seek professional advice before making any chimney or flue alterations which pass through, or near to, thatch
- An insulated fire-resistant lining should be fitted where the chimney stack passes through the thatch. It's also recommended that a vertical heat barrier is installed externally between the thatch and the stack. This work should only be done by a professional thatcher
- Chimney lining is a sensible precaution, and essential if either a wood-burning or multi-fuel stove is used. This can be done by installing a twin-walled rigid liner, or a flexible stainless-steel liner.

If a wood-burning or a multi-fuel stove is used, a twin-walled ridged liner with suitable insulation to reduce heat transmission should be installed, or alternatively a lining made of pumice. Although there are various methods of lining a flue, only linings which are rigid, insulated, and capable of being correctly supported and centralised to prevent touches with the chimney are suitable for thatch. Because of this, flexible stainless-steel liners should be avoided in thatch properties.

Always seek professional advice before fitting a liner, and any flue work should be undertaken by an installer accredited by a professional body such as HETAS or NACE

LOSS PREVENTION STANDARDS

- Installing a bird guard to the top of the chimney pot prevents birds depositing twigs and other combustible materials into the chimney. It's essential these don't impair the function of the chimney, restrict airflow, or prevent or restrict chimney cleaning
- Avoid burning wet or unseasoned wood, as it leaves greater tar deposits in the flue, increasing the risk of chimney fires. Where possible, burn seasoned hardwood – it has a lower resin content than softwood, reducing tar build-up in the chimney or flue
- Avoid burning contaminated or impregnated fuel, such as timber which is painted or treated with preservatives, or waste products
- Monitor the flue temperature by fitting a flue thermometer, as this will provide a good indication of the temperature in the upper part of the flue near to the thatch, ensuring it doesn't reach the critical 200°C level
- Consider installing heat detectors in the thatch around the chimney, as this will give an audible warning to alert those within the property that the thatch is reaching a critical temperature. These systems need to be maintained, and a response strategy agreed in the event **that they're activated**
- If fully replacing the thatch, extending or refurbishing the property, consider using fire barriers between the thatch and roof timbers
- Don't store combustible materials in the roof or loft space
- Treat internal wooden elements and the thatch with a fire-resistant coating or impregnation, to help prevent and delay the ignition of combustible elements
- Don't allow anyone to smoke within roof voids or close to the thatch when undertaking maintenance work
- Seek advice from [Historic England](#) (or a similar regional authority) before making changes to any listed property

Electrical Installations

- To ensure its integrity, electrical wiring should be checked by an electrician at least every 5 years, and this should include all wiring within the property, including aerials. All recommendations from the inspection should be implemented within the timescales given.
This work should be carried out by an accredited contractor who is a member of, or approved or registered with, an appropriate organisation. For example:
 - National Inspection Council for Electrical Installation Contracting ([NICEIC](#))
 - Electrical Contractors' Association ([ECA](#))
 - National Association of Professional Inspectors and Testers ([NAPIT](#))
 - Electrical Contractors Association in Scotland ([SELECT](#))
 - Safety Assessment Federation ([SAFed](#))
- Consider an annual thermographic survey of electrical installations.
Consider protection of electrical circuits by Arc Fault Detection Devices (AFDDs) to detect the presence of dangerous electrical arcing that could result in fire, within cables, connections and appliances which would go undetected by other forms of safety devices
- Check the roof for signs of mice or other vermin as they can cause damage to electrical wires and lead to dangerous arcing and result in a fire
 - Remove external climbing vegetation and any tree branches close by, because these may help vermin access the roof
- Electrical wiring in roof spaces – especially those in close proximity to the thatch – should be protected against vermin. Wiring could be enclosed with galvanised steel conduit or high impact plastic conduit, or a mineral-insulated wiring cable system could be used

LOSS PREVENTION STANDARDS

- Roof space lighting should be an enclosed bulkhead fitting – so a fully enclosed unit with a protective cover is provided, to prevent hot glass and metal coming into contact with combustible materials including loose thatch matter (accidentally or from breakage)
- Recessed lighting within the roof **space should be replaced with ‘firesafe design’** recessed light fittings or fitted with proprietary intumescent covers. This is to protect against overheating, ignition of combustible materials including loose thatch matter and fire spread
- TV aerials should be fitted to a free-standing pole or gable end, away from the thatch to reduce lightning attraction and the risk of thatch ignition
- Avoid fitting lightning attractors on or near chimney stacks – these should be a safe distance from the building. Incoming overhead power or telephone cables should also be kept a safe distance from the thatch
- Avoid placing internal or external high wattage security lights near thatch or underneath overhangs, as they produce a lot of heat. Avoid placing internal or external electrical and aerial cables on or near thatch
- Avoid using external festive lights

Wood-burning or Multi-fuel Stoves

- Think carefully before installing a stove in a thatched property because:
 - Stoves generate far higher flue temperatures than conventional open fires – and increased flue temperatures increase the risk of heat transfer through to the thatch. These higher temperatures are because stoves are enclosed, so less cool, ambient air is drawn through the flue
 - Ignited materials within the flue are at a higher temperature, so they transfer through the flue quickly and remain large in size – large embers are more likely to ignite the external surface of the thatch
 - Stoves generate considerable heat within the flue, which can transfer through sound brickwork – especially if the chimney is only a single brick thick (common in pre-1960s houses). A suitable flue must be installed in order to reduce heat transfer
- When attempting to ignite a stove, avoid using paper-based materials, which are more likely to be carried through the flue and onto the thatch. Firelighters and kindling are recommended instead
- Ensure the stove door is closed and air vents are set to the minimum **‘slow burn’ setting** - before going to bed, leaving the room containing a stove or leaving the property unattended
- Avoid leaving a stove set to its maximum air intake, as this increases the intensity of the fire, the flue temperature, and the risk of ignited materials being ejected onto the thatch
- Consider installing a stove pipe thermometer. This attaches to the stove pipe and enables monitoring of the flue temperature. Both under and over-performing temperatures present risks, so it is important stoves are set to burn at their optimum level

Other Precautions

- A mains-powered fire alarm system should be installed, with smoke detectors on every floor of the property, including the roof space. Also:
 - All smoke detectors should be mains-powered with battery back-up
 - Smoke detectors should be interlinked so that activating one detector activates them all – this will help ensure early activation of, and response to, the alarm
 - Smoke alarm detectors should be tested regularly
 - For commercial properties and larger homes, remote signalling is recommended in addition to local audible signalling. These systems should be maintained regularly by an accredited service provider (the installer can provide further guidance)
- Carbon monoxide detectors should be installed in rooms with open fires or wood-burning stoves
- A fire blanket should be accessible at all times in the kitchen. Cooking – especially frying and grilling – is a significant cause of fires, so **don't leave** cooking unattended. Also be aware that tackling cooking-related fires with water can lead to them spreading rapidly
- Fire extinguishers should be easily accessible within the property, including in the loft. These should be serviced regularly by accredited providers
- An external water tap fed from the mains should be provided, including a hose capable of reaching all parts of the roof
- Wire netting fitted to the exterior of the thatch can protect against damage from vermin, birds and bad weather. When netting is replaced, ensure contractors fit it in line with Fire Service guidance – in the event of a fire, sections of netting may need to be removed in order to remove ignited thatch
- A loft hatch should be installed in each thatched roof space for firefighting purposes. The recommended minimum size is 600mm x 900mm
- Avoid all hot work (e.g. welding, grinding, brazing) within the loft, or areas near or above the thatch. Sparks from hot work can travel up to 10 metres, so:
 - Consider using good quality push-fit or compression fittings for water systems, rather than soldered fittings
 - Where hot works can't be avoided, ensure the work is undertaken by qualified contractors using a formal hot work management and permit system. Aviva can provide further guidance in respect of hot works in our Loss Prevention Standard entitled *Hot Work Operations*
 - Place suitable fire extinguishers within the working area, for the duration of the work and at least 4 hours after completion
 - Frozen pipes should only be thawed using cloths soaked in hot water (never tools such as blow torches)
- Don't set off fireworks, light bonfires or start barbeques if there's a risk a spark or debris could land on a thatched roof. Consider factors such as separation distance and weather conditions
- Formulate an escape plan, including the means of escape, raising the alarm, alerting occupants and contacting the fire brigade. Your local Fire Service should be able to help create a suitable plan
- Thermal imaging technology can in addition to detection of electrical faults, be used to monitor temperatures of chimney stacks and surrounding thatch as well as identify vermin infestations
- If the property is let, or used by house sitters, consider prohibiting the use of open fires and wood-burning stoves – clearly displaying notices and removing all fuel. If allowing use, provide instructions and fire safety precaution information, both verbally and in writing in a welcome pack

LOSS PREVENTION STANDARDS

Checklist

A generic Thatched Roofs Checklist is presented in Appendix 1 which can be tailored to your own organisation.

Specialist Partner Solutions

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For more information please visit:

[Aviva Risk Management Solutions – Specialist Partners](#)

Sources and Useful Links

- [The Thatch Advice Centre](#)
- [Thatching Advisory Services](#)
- [HM Government – Fire Safety Information](#)
- [National Society of Master Thatchers](#)
- [English Heritage](#)

Additional Information

Relevant Loss Prevention Standards include:

- Electrical Installations – Inspection and Testing
- Hot Work Operations
- Smoking and the Workplace
- Managing Contractors
- Thermographic Surveys
- Trees – Property Damage
- Weight of Snow
- Windstorm – Protection of Buildings

To find out more, please visit [Aviva Risk Management Solutions](#) or speak to one of our advisors.

Email us at riskadvice@aviva.com or call 0345 366 6666.*

*Calls may be recorded and/or monitored for our joint protection.

Appendix 1 – Thatched Roofs Checklist



Location	
Date	
Completed by (name and signature)	

	Thatched Roofs Checklist	Y/N	Comments
1.	Is the building listed, or does it contain extensive ornate architectural or period features?		
2.	Does the nature and level of occupation of the building increase the risk factors to the building and/or thatched roof (e.g. is it used as a permanent residence, holiday home or commercial property)?		
3.	Are occupants permitted to use open fires or wood-burning stoves? If so, are instructions and fire safety information communicated to them in person, and left in writing?		
4.	Is the building situated in an isolated, secluded or exposed area, e.g. on a coastline or elevated area?		
5.	Is the property in a good condition and state of repair?		
6.	Is the thatched roof in a good condition and state of repair?		
7.	Has the thatched roof been inspected by a professional and competent thatcher? If yes, please state the dates or frequency of inspections.		
8.	Were any remedial works recommended following the thatch inspection? If yes, have these been completed?		

LOSS PREVENTION STANDARDS

	Thatched Roofs Checklist Contd.	Y/N	Comments
9.	Are any planned thatch repairs or re-thatching work scheduled for a future date?		
10.	When was the roof coat last re-thatched or repaired?		
11.	When was the ridge last repaired?		
12.	What is the approximate depth of the thatch, e.g. less than 1m, between 1–2m, greater than 2m?		
13.	Is the roof 100% thatched? If not, state the percentage and nature of the remainder of the roof.		
14.	Are any lower levels thatched, e.g. extensions or porches?		
15.	Are there any windows that open onto a thatched section?		
16.	Is the thatched roof coat or ridge constructed with straw? If not, please state the materials used for the coat work and ridge, e.g. reed.		
17.	Has the thatch been treated with a fire-retardant material? Does this need to be inspected and/or re-applied?		
18.	Have fire barriers been fitted: <ul style="list-style-type: none"> • Directly beneath the thatch (between rafters and thatch)? • Using thatchbatts or aluminium foil? 		
19.	Are any of the timber elements of the roof coated or impregnated with materials that reduce their combustibility?		
20.	Is there anything in the loft space that increases the risk to the roof, e.g. electrical devices or boilers?		

LOSS PREVENTION STANDARDS

	Thatched Roofs Contd.	Y/N	Comments
21.	Is the roof space used for storage?		
22.	Are there any chimneys or flues through the thatched roof?		
23.	Are the chimneys structurally sound, well maintained and in good condition?		
24.	Do all the chimneys extend more than 1.8m above the roof ridge height? If not, what heights do they extend to?		
25.	Are these chimneys ever used? If so, how many are there and are they clearly identified?		
26.	Are the timber joists built into the chimney stack?		
27.	Does the building contain and use any of the following: <ul style="list-style-type: none"> • An open fireplace? • A solid fuel stove? • A solid fuel Aga? 		
28.	Is there evidence of staining on the plasterwork or wallpaper around the chimney breast, or any black or brown deposits on the chimney in the roof space?		
29.	Is the chimney flue specifically insulated for use in a thatched roof, i.e. insulated flue liners or similar?		
30.	Has a trained and competent chimney engineer inspected the chimney and flue linings in the last 3 years?		
31.	Are chimneys swept twice annually , i.e. prior to first use before October and during Winter between January and March)?		
32.	Are the chimneys fitted with spark arrestors?		

LOSS PREVENTION STANDARDS

	Thatched Roofs Contd.	Y/N	Comments
33.	Where chimneys are fitted with spark arrestors, are these cleaned regularly at least four times a year by a qualified chimney sweep?		
34.	Is the chimney fitted with a heat or temperature monitoring device?		
35.	Are other fire precaution measures in place, e.g. heat sensors fitted within the thatch around the chimney, stove pipe monitors or tar removers?		
36.	Are procedures in place to make sure that anyone carrying out repairs or alterations involving hot work is appropriately managed, and taking suitable precautions? Ideally, all hot work should be prohibited, and carried out only as a last resort.		
37.	Is smoking prohibited in the loft space and close to the thatch?		
38.	Has the fixed electrical wiring installation been formally inspected and tested in the last 5 years by a competent contractor, i.e. a contractor who's approved by, or a member of , an appropriate organisation such as NICEIC, NAPIT or ECA?		
39.	If required, are portable appliances appropriately inspected and tested?		
40.	Are there any visible wiring or electrical defects?		
41.	Is electrical wiring in the roof spaces protected against vermin?		
42.	Are recessed light fittings installed within the roof space? Where they're present, are these of a 'firesafe design', or fitted with proprietary intumescent covers?		
43.	Is roof space lighting an enclosed type, e.g. a bulkhead fitting?		

LOSS PREVENTION STANDARDS

	Thatched Roofs Contd.	Y/N	Comments
44.	Is there any external climbing vegetation or tree branches in close proximity of the thatch? Could they help vermin access the roof, resulting in damage to electrical cables?		
45.	Do you have access to, or use a third party with, a thermographic camera to check the temperature of the thatch and chimney stack?		
46.	Are charcoal or gas barbeques used? If yes, are they at least 10m from the thatched roof?		
47.	Are bonfires prohibited?		
48.	Are fireworks prohibited?		
49.	When bonfires and fireworks are in the local area close to the property, is there monitoring for rogue embers and fireworks coming into contact with the thatch?		
50.	In relation to questions 46–49, is the prevailing wind direction and strength taken into account?		
51.	Is there an automatic fire alarm system in the building, and does this extend to all roof spaces?		
52.	Is the fire alarm system signal monitored off-site?		
53.	Are carbon monoxide detectors installed in every room containing a fuel-burning appliance?		
54.	Are fire and carbon monoxide detection and alarm systems in full working order? Are they regularly serviced, maintained and tested?		

LOSS PREVENTION STANDARDS

	Thatched Roofs Contd.	Y/N	Comments
55.	<p>Are there sufficient fire extinguishers in the building?</p> <p>Is there a fire blanket(s) in the kitchen?</p> <p>Are there any other fire suppression systems in place?</p> <p>Have people been trained to use these devices?</p>		
56.	<p>What's the local fire brigade provision in the area?</p> <p>It's important to consider:</p> <ul style="list-style-type: none"> • The type of brigade • Travel distance • Response time 		
57.	<p>Are there fire hydrants within 200m of the property?</p> <p>If not, what's the availability of other water supplies for firefighting purposes in the area, e.g. ponds or lakes?</p>		
58.	<p>Is there an external water tap fed from the rising mains, with a hose capable of reaching all parts of the roof?</p>		

59.	Additional comments:
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Please Note

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