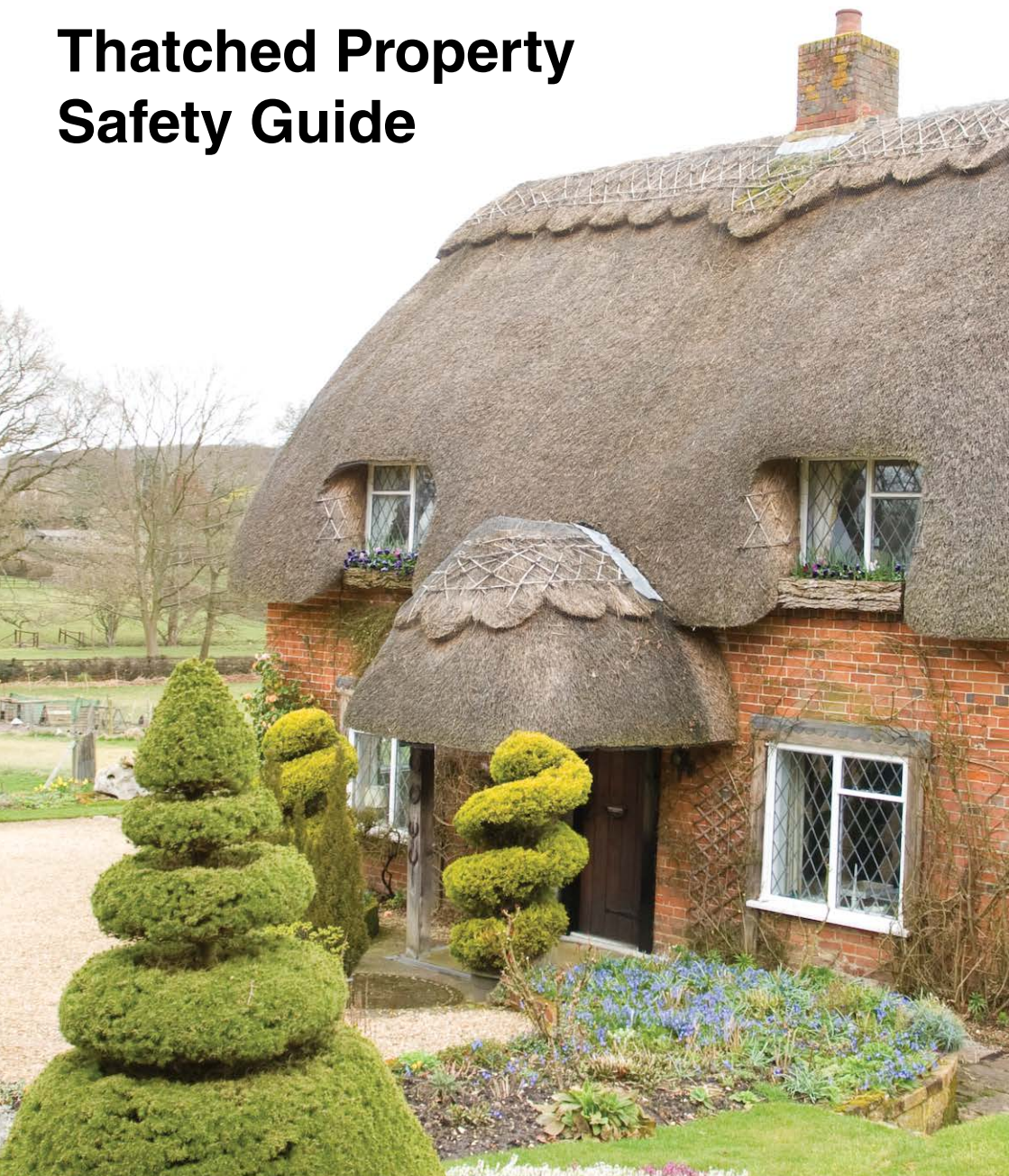


# Thatched Property Safety Guide



Royal Berkshire Fire and Rescue Service acknowledges the kind permission of Hampshire Fire and Rescue Service in allowing us to reproduce this guide.

Royal Berkshire Fire and Rescue Service acknowledges the kind permission of the fire and rescue services within the Anglia region for their contribution to this guide.

Royal Berkshire Fire and Rescue Service acknowledges the kind permission of John Albion, Duffield & Pratt to use their publications in the production of this guide.

Royal Berkshire Fire and Rescue Service also acknowledges Mrs M Sanders, Dr R E Angold, Dr P A Sadd from the National Society of Master Thatchers (NSMT) for their research into fires in thatched properties.

All material © Hampshire Fire and Rescue Service 2009 – additional photographs courtesy of Hertfordshire Fire and Rescue Service and Norfolk Fire and Rescue Service.

Royal Berkshire Fire and Rescue Service logos and straplines © Royal Berkshire Fire and Rescue Service 2014.



<b>Introduction</b> .....	<b>2</b>
<b>Causes</b> .....	<b>3</b>
What is heat transfer?	
<b>Precautions</b> .....	<b>4 - 7</b>
Open fires and wood burners	
Faulty chimneys	
Chimney fires	
Seasoned wood	
Height of chimney	
<b>Safety devices</b> .....	<b>8 - 10</b>
Spark arrestors	
Heat detectors	
The Dorset model	
Tar removers	
Stovepipe monitors	
<b>Advice and information</b> .....	<b>11 - 15</b>
Chimneys	
Fire escape plan	
Smoke detectors	
Kitchens	
Electrics	
Contractors	
Bonfires	
Water supplies	
Sprinkler systems	
<b>Checklist</b> .....	<b>16 - 17</b>
Summary of advice	
<b>Useful contacts</b> .....	<b>17</b>



# Introduction

## Thatched roofing is enjoying a revival in the UK

**Roofing was traditionally made from several materials depending on location and availability.**

Today, however, only three materials are widely used, long straw, combed wheat reed and water reed, all of which will burn rapidly in a fire.

This booklet has been produced as a useful guide for householders to help prevent a fire occurring. Keep this guide in a safe place and pass it to the new occupier should you move.

Although thatch fires are not common, over 90% of thatch roof fires start as a result of a faulty flue or chimney. The thatch is designed to repel water which makes extinguishing such fires difficult.



**“ Prevention is essential, detection is nearly always too late! ”**

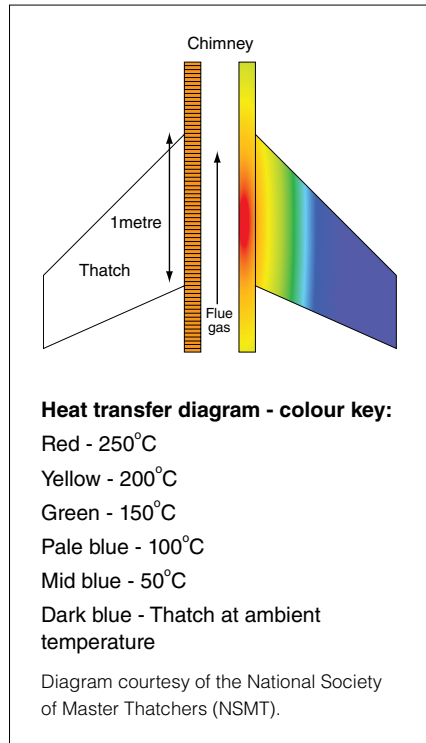
## What is heat transfer?

A government backed team of scientists from the National Society of Master Thatchers (NSMT) conducted research into the causes of preventable thatch fires.

It was believed that the major cause of thatch fires was from sparks of burning brands issuing from the chimney and igniting the thatch. However, controlled tests showed that it is difficult to ignite thatch with such a short lived point of ignition.

Research identified that a major cause of chimney-related thatch fires is due to heat transfer through the chimney brickwork and into the adjacent thatch.

The temperature of the flue gases inside the chimney heats the surrounding brickwork and the 'hot bricks' of the chimney then heat the adjacent thatch. As thatch is an extremely good insulator the heat is retained in the centre of the thatch around the chimney.



Over a period of time the temperature of the thatch chimney interface can become critical (approx. 200°C) and lead to a chain of events that cause a thatch fire.

# Precautions

## Open fires and wood burners

Many thatched homes were built with single skin brick chimneys that rise centrally through a deep layer of thatch.

They were designed to cater for open fireplaces where flue gases do not reach sufficiently high temperatures to pose a threat to the thatch adjacent to the chimney.

Modern enclosed solid fuel appliances are designed to burn at a much increased temperature to promote a more efficient 'clean burn'.

Solid fuel stoves can generate flue gas temperatures in excess of 300°C to 600°C. When fitted into elderly chimneys with only a four inch layer of brick between the flue, this can result in thatch vulnerability to heat transfer.



Modern chimney linings can prevent flue leaks but do not significantly reduce the temperature achieved by heat transfer within the thatch when the appliance is in constant or regular use.

It has been shown in tests that the thatch adjacent to the chimney can reach 85% of the flue gas temperature after only one day of continuous use. The critical temperature of 200°C can be achieved and sustained with relative ease.

## Faulty chimneys

**Old or poorly maintained chimneys can deteriorate to the point where smoke and hot gases can escape from the chimney into the upper rooms, the roof space, or directly into the thatch.**

**⚠ Vital signs to look out for that may indicate a problem:**

- Staining of the plasterwork or wallpaper around the chimney breast
- Black or brown localised deposits on the chimney or in the roof space
- Soot on cobwebs in the loft

Chimneys built pre-1960s (as is the case of most thatched homes) are likely to be single brick thickness and unlined.

The protective parging or roughcast plasterwork will crumble and disintegrate with age.

Due to the age of many thatched properties, built before the introduction of Building Regulations, the construction of chimneys can be highly unconventional.

Period homes often have timber lintels over the fireplace and timber joists built into chimney stacks. These can be exposed to scorching when the protective layer inside the chimney disintegrates.



# Precautions

## Chimney fires

**A chimney fire can occur in any home with a working flue.**

Soot is not merely a by-product of burning it is a combustible material in its own right. A soot-lined chimney is lined with fuel just waiting to burn and the structure can be significantly damaged.

In a thatched property the conventional chimney fire carries the additional risk of igniting the roofing material.



## Seasoned wood

**The combustion products from burning sap in 'green' wood are the main cause of tar deposits within a chimney.**

**⚠ The benefits of using properly seasoned wood are:**

- The sap and tar content is substantially reduced
- Wood with a lower sap content gives off more heat
- Better value for money
- Reduction of tar deposit in the chimney

Stack wood outside where it is exposed to the wind and sun. The wood should either be stored under a shelter or the top layer should be covered to protect the stack against excessive rain.

Storing wood inside will result in 'sweating' and any sap drawn to the cut surface of the wood will condense on the surface as opposed to being taken away.





## **Height of chimney**

**A chimney with only a small section of visible stack is likely to indicate deep thatch.**

Raising the height of the chimney does not reduce the risk of fire.

The risk of fire is increased in proportion to the depth of thatch that is in contact with the chimney. More than one metre of thatch around a chimney can be a potential hazard.

At the time of re-thatching, have recent layers of thatch removed to reduce the risk.

# Safety devices

## Spark arrestors

In the past, accepted wisdom largely dictated that a major cause of fire in thatched homes was attributed to sparks issuing from the chimney and igniting the thatch.

As a consequence, many thatch householders installed spark arrestors. Further to the research carried out by the NSMT it was established that many of the thatch properties that suffered chimney-related fires had some type of restrictor on the roof. The cause was often found to be due to a blocked spark arrestor.

We do not recommend spark arrestors to be installed but if already fitted it is essential that they are regularly cleaned and maintained by a qualified chimney sweep.

## Bird guard

Fitting a bird guard will prevent birds from nesting in a chimney and will allow the flue to function to its full efficiency.

## Heat sensors

Various systems are available where heat detectors connected to a control panel are inserted into the thatch around the chimney.

They are designed to give an audible early warning of potential overheating of the thatch so measures can be taken to reduce the temperature of the chimney (for example, extinguish the fire in the grate and inspect the chimney).

Installation costs and an annual maintenance programme need to be considered, together with a plan of what action needs to be taken when the alarm is given.

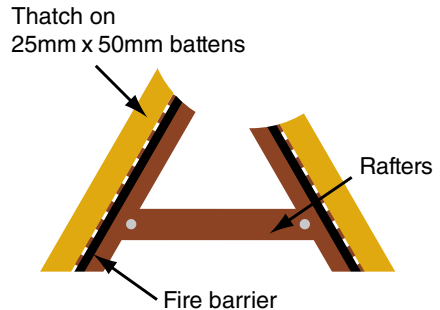
## The Dorset model

The planning demands for new thatched properties in the county of Dorset resulted in a design guide called the 'Dorset model'.

Some of the principles could be considered if any major renovation work or re-roofing is planned.

The following establishments worked in close association to meet the criteria of the specialist advisors appointed to the technical committee:

- The local fire service
- Thatchers
- Builders
- Electricians
- Scientists
- Building Control divisions throughout Dorset



**⚠ Consideration could be given to:**

- Constructing a fireproof barrier between the roof timbers and the thatch layer. The thatch would then be viewed as 'sacrificial' in the event of fire and the fireproof barrier would help stop the roof fire from getting into the structure of the house. This would therefore drastically reduce the effect of a thatch roof fire.
- Providing a 6mm aluminium sheet between the thatch and the chimney. The aluminium sheet will serve to dissipate the heat from the chimney, preventing the thatch from reaching 200°C at the chimney interface.

# Safety devices

## Tar removers

**The build-up of tar deposits within the flue can increase the risk of a chimney fire.**

There are chemical products available that can be applied to the embers of the hearth fire or firebox in a stove to dry out the tar deposits in the flue and cause them to disintegrate.

The treatment should be repeated at the recommended intervals to prevent new deposits from forming.

Routine sweeping and scraping of the flue will still be required, especially where heavy tar deposits persist.

A qualified chimney sweep will be able to give further advice with regard to your particular requirements.

## Stovepipe monitors

**Stovepipe monitors can be used to monitor the temperature of the flue gases leaving the appliance and give a good indication of the temperature in the upper part of the chimney.**

The firebox can be managed to ensure that the flue gas temperature is not excessive (approx. 200°C) at the level of the thatch.





## Chimneys

**Chimneys should be checked or surveyed to ensure that they are structurally sound, well-maintained, and able to cope with the demands of modern heating appliances.**



**⚠ The following key points should be considered:**

- Ensure that chimneys are regularly swept by an experienced and qualified chimney sweep who should be able to identify potential problems at an early stage.
- If a chimney lining has been installed it should be regularly inspected, especially when the main fuel is wood, as tar deposits are highly combustible and corrosive.
- A qualified chimney engineer can identify and help address potential hazards.
- A number of different types of liner are available to address the risk of heat transfer from the flue to the thatch.
- Only a competent chimney engineer who understands the special risks associated with thatched properties should install any lining.

# Advice and information

## Fire escape plan

**Make sure all your family know what to do in the event of a fire and how to escape safely.**

**⚠ Your fire plan should include:**

- Planning your escape routes and keeping exits clear.
- Keeping door and window keys handy.
- Considering how a fire in your house will be detected. Have you got a sufficient amount of smoke detectors and are they in the correct position?

## Smoke detectors

**Royal Berkshire Fire and Rescue Service strongly recommends smoke detectors are installed in your property.**

**⚠ The householder should ensure the following:**

- Fit a smoke detector on every floor of your home, ideally in the hallway or landing ceilings.

- Have smoke detectors in the loft space and link to others inside the house.
- Don't put a smoke detector in the kitchen where it can be set off accidentally.
- Test the batteries once a week. Detectors are available with 10-year batteries.





## Kitchens

**Two-thirds of fires that start inside the house relate to the kitchen.**

**⚠️ Consideration should be given to:**

- Keeping items that can catch fire easily, such as tea towels and oven gloves, away from cookers and toasters.
- Never fill chip pans more than one-third full of oil and consider a thermostatically controlled deep fat fryer.
- Our Community Safety Department does NOT recommend fire extinguishers to be used in the kitchen.

## Electrics

**Check for signs of loose wiring and faulty plugs or sockets, such as scorch marks or flickering lights. Replace any worn or taped-up cables and leads.**

**⚠️ The following key points should be considered:**

- Have your electrical system checked by a qualified electrician in accordance with the Institution of Electrical Engineers (IEE) guidance.
- If your incoming power supply is overhead, check to see if it is the insulated type. If you are in doubt your power supplier can give you further advice.
- Do not overload sockets!



## Contractors

If you are having any work done on your house that will involve 'hot works' such as plumbing or paint stripping, make sure the contractors are fully aware of the potential risk of a thatch fire.



## Bonfires

It is always good practice to limit the number and location of any bonfires to reduce the risk of fire to your property.

It is also a good idea to discuss this with any neighbours who have a bonfire near your property.



## Water supplies

**Assess the water supplies to your property. Consider having an outside tap with enough hose pipe to reach around your house including the roof.**

This will help you control any small fires you discover. Only tackle a fire if it is safe to do so.

Find out the location of your local fire hydrants.



## Sprinkler systems












**In recent years there have been many advances in sprinkler systems.**






Sprinklers are designed to save lives, but because they control fires so quickly they also reduce property damage significantly.

Modern sprinkler heads lie flush with the ceiling, beneath a barely visible cover plate, and are coloured to blend in with surrounding decor.

## Summary of advice

**Recent research has shown the major cause of fires in thatched properties is heat transfer from the chimney into the thatch. The thatch then reaches its ignition temperature and a roof fire can develop.**

-  It is important to insulate the chimney flue to prevent the heat from transferring into the thatch layer. This is especially important when a solid fuel or wood burner is installed as they burn at higher temperatures than conventional open fires.
-  Have the chimney swept regularly by a qualified chimney sweep. A chimney in regular use should be swept twice a year.
-  Only burn seasoned wood.
-  Have the chimney inspected by a qualified chimney engineer.
-  If you have a spark arrestor fitted clean it regularly. This should be done every three months on chimneys in regular use and the arrestor should be taken down to clean.
-  Fit a bird guard to deter birds from building nests in chimneys.
-  Develop a fire plan for your home.
-  Smoke alarms should be installed throughout your home. If you have a loft space then an interlinked smoke alarm should be installed which is linked to at least one other within your home.
-  Install a fire blanket in the kitchen.
-  Check the electrical system throughout your home.
-  Be careful when using blowtorches or heat guns (if plumbing or painting etc).

-  Restrict the use of bonfires near to your property.
-  Consider a system of heat sensors within the thatch around the chimney. This will give you an early warning of any overheating of the thatch.
-  Install an outside tap with enough hose to reach around the house including the roof. This can be used to extinguish any fires at an early stage.
-  Residential sprinkler systems will greatly improve the fire precautions within your home.
-  Consider forming a fireproof barrier between the roof timbers and the thatch layer when renovating or undertaking re-roofing. A thatch fire will be mainly restricted to the thatch and damage to the rest of the house will be limited.

**Contact your local authority Building Control or Planning Office**

**Communities and Local Government**

[www.gov.uk/firekills](http://www.gov.uk/firekills)

**The National Society of Master Thatchers (NSMT)**

[www.nsmtd.co.uk](http://www.nsmtd.co.uk)

**BFCMA (British Flue and Chimney Manufacturers Association)**

[www.feta.co.uk](http://www.feta.co.uk)

**HETAS (Heating Equipment Testing and Approval Scheme)**

[www.hetas.co.uk](http://www.hetas.co.uk)

**NACE (National Association of Chimney Engineers)**

[www.nace.me.uk](http://www.nace.me.uk)

**SFA (Solid Fuel Association)**

[www.solidfuel.co.uk](http://www.solidfuel.co.uk)

For further safety leaflets and information visit...

**[www.rbfrs.co.uk](http://www.rbfrs.co.uk)**

**ROYAL BERKSHIRE**  
**FIRE AND RESCUE SERVICE**

Royal Berkshire Fire and Rescue Service

Newsham Court

Pincent's Kiln

Calcot

Reading

RG31 7SD

**Tel:** 0118 945 2888

**Email:** [reception@rbfrs.co.uk](mailto:reception@rbfrs.co.uk)

**Web:** [www.rbfrs.co.uk](http://www.rbfrs.co.uk)