

# Roof battens

Roofing battens are fundamental to a roof structure and are used in a loadbearing capacity. They are designed to carry the load of slated and tiled roofs as well as imposed loads caused by wind and snow. In addition, they may be required to provide a reasonably secured foothold for roofers while slated and tiled roofs are being covered.

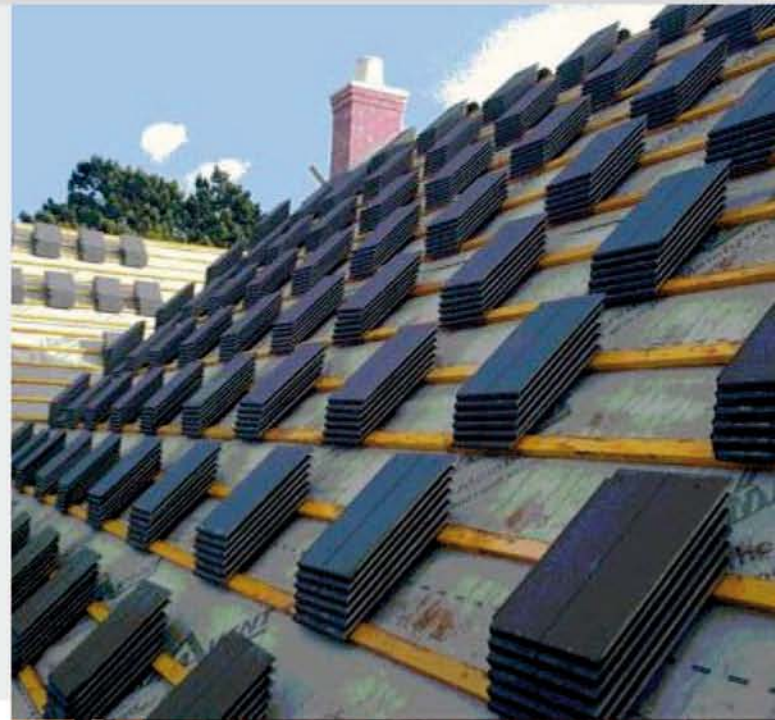
Although there are no legal requirements for the quality of roofing battens, **BS 5534:2003 +A1:2010 Code of practice for slating and tiling (including shingles)** is the standard that sets out specific requirements for roofing battens and includes requirements for grading, species, preservative treatment and marking.

## Sizes

The actual batten thickness (the smaller dimension) should not be less than that given in the following table, nor more than 3mm oversize. The actual batten width should be within  $\pm 3$ mm of the basic size.

Battens for spans greater than those given here, or for other loading conditions, should be designed in accordance with Annex E of BS 5534. For natural slating, they should not be less than 50mm x 25mm, irrespective of strength and stiffness calculation.

Minimum timber batten sizes (roofing and vertical work)		
Application	Basic minimum size of batten	
	Up to 450mm span (mm)	Up to 600mm span (mm)
<b>Slates (double-lap)</b>		
Natural: sized or random	50 x 25	50 x 25
Fibre-cement or concrete	38 x 25	50 x 25
<b>Clay and concrete tiles</b>		
Double-lap	38 x 25	38 x 25
Single-lap	38 x 25	50 x 25



## Sustainable timber

Timber is the most sustainable building product available. It is naturally renewable - over 97% of softwood timber used in the UK comes from Europe, where the forest area is increasing by the equivalent of 90 football pitches every hour of the day and night.\*

For reassurance for softwoods and hardwoods look for certification labels like FSC (Forest Stewardship Council) or PEFC (Programme for the Endorsement of Forest Certification).

Always ask your supplier about their responsible purchasing policies.

\*IIED & ECCM, Using Wood to Mitigate Climate Change, 2004 and UNECE-FAO, State of the Europe's Forests, 2011.



This information sheet provides general advice only and is not specific to the requirements of a particular building project. It is the builder's responsibility to check compliance with Building Regulations and standards.



### Should I use 'BS 5534' battens?

Recently, timber roof battens have been supplied as being one of the following types:

- **BS 5534 battens** — these are fully graded to meet the requirements of BS 5534
- **Graded battens** — usually graded, with the exception of a final grading for knots and wane
- **Standard/Ungraded battens** — may be smaller than those permitted in BS 5534 or have other strength-reducing characteristics.

Battens which do not fully comply with BS 5534 (supplied as 'graded' and 'standard' battens) require further on-site grading by competent and preferably trained individuals. Companies and individuals using battens that are not fully graded need to understand the degree of grading that has been undertaken by the producer/supplier and what responsibilities and liabilities are being taken by using non-'BS 5534' battens.

The National Federation of Roofing Contractors (NFRC) has published two helpful documents, the updated Technical Bulletin 33 (TB 33) *Graded Battens for Slating and Tiling* and Health and Safety Guidance Sheet Q *Correct Installation and Safe Use of Slating and Tiling Battens*.

Battens that have been marked to TB 33 indicate that some grading has taken place by the supplier, but this marking does not mean that the batten has been fully graded. The June 2011 version of TB 33 and Guidance Sheet Q state that all battens must fully comply with BS 5534 at the point where they become fixed to the roof, and preferably should be purchased as factory-graded battens (ie fully graded before reaching the site).

### Demand for graded battens

Fully graded BS 5534 battens are becoming a standard warranty requirement with these guarantee schemes:

- National House Builders Council (NHBC)
- Local Authority Building Control (LABC)
- Roof Sure
- Roof Sure Plus
- NFRC Co-partnership
- Trustmark
- Competent Roofer

Since October 2011, NHBC Standards require that all timber used for battens and counter battens should be indelibly marked with the appropriate markings of BS 5534.

### Health and safety in roof work

The NFRG, in conjunction with the Health and Safety Executive (HSE), carried out tests on roofing safety. As reported in the 2012 HSE publication HSG33 *Health and safety in roof work*, timber battens can provide a reasonably secure foothold while slated and tiled roofs are being covered provided that the following criteria are adhered to:

- the battens are fixed to rafters set at centres not more than 600mm apart
- the battens are a minimum size of 50mm x 25mm and meet the grading requirements specified in BS 5534 and TB 33
- the battens are at least 1.2m long to ensure they span a minimum of three trusses
- the battens are only fixed with the recommended nails
- roofers never deliberately walk on the battens mid-span between the trusses
- roofers always walk on the rafter line when installing the tiles and slates.

### Durability of battens

Most timber battens are supplied treated with a wood preservative to achieve a 60-year design life in a Usage Class 2 situation in accordance with BS 8417:2011 *Preservation of Wood. Code of Practice*.

While best practice in the timber trade requires that cut ends of treated timber are always treated with a brush-on preservative, this is not often carried out on cut roofing battens. However, cut ends of battens that are in contact with mortar should be treated with a liberal brush-applied coating of preservative.

## How to tell if battens are fully compliant with BS 5534

Each batten that fully complies should be indelibly marked with the following information:

- supplier
- 'Graded BS 5534'
- size
- if applicable, the third-party certification scheme logo
- origin (imported or British grown, and/or species code – see table).

Timber species for roof battens		
	Species	Code
Imported	redwood	PNSY
	whitewood	WPCA
	spruce/pine/fir (USA, Canada)	WPCE
	southern pine (USA)	WPNE
British grown	larch	WLAD
	British pine	WPNN
	British spruce	WPCS

Battens that are produced under independent third-party schemes such as the BM TRADA Certification Q-Mark Timber Tiling Batten Scheme and BRE's 'Tickmark' Scheme are now appearing on the market.

Some companies are now adding dyes to their preservative-treated BS 5534 battens and marking and marketing them using colour. Coloured battens still need to be marked with the supplier, species code, size, the words 'Graded to BS 5534' and, if applicable, the third-party certification scheme logo, to show they have been fully graded to meet the requirements of BS 5534.



## Do factory-graded BS 5534 battens cost more?

The answer is yes. However, using either ungraded or partially graded battens may result in:

- more time spent on site to grade battens
- requirement for a competent or trained grader
- a wastage that can be often be as high as 40%
- having to mark every batten to comply with some contracts
- extra costs to dispose of waste
- responsibilities and liabilities of grading being passed to roofer
- the risk of using non-compliant battens being passed to the roofer.

Therefore, the real cost differential between factory-graded BS 5534 battens and ungraded battens is significantly less than it would appear on face value.

## Fixing battens

BS 5534 and BS 8000-6: 1990 Workmanship on building sites. Code of practice for slating and tiling of roofs and claddings provide recommendations for types of mechanical fixings, setting out of battens and installation methods.

BS 5534 states that nails should be round shank of not less than 3.35mm (10 gauge). Nails used are typically 65mm long to provide 40mm penetration into the rafter. However, length and type of nail used depends on the amount of weather exposure of the site.

For example, for extra protection in coastal regions, nails should be coated with zinc or zinc alloy. Timber which has been treated with a copper-containing wood preservative can cause corrosion of uncoated mild steel nails, and therefore galvanized nails should be used.



Set out the roof carefully to ensure that:

- minimum cutting of slates and tiles is necessary
- the horizontal lines of the courses will be regular and true
- the perpendicular lines of the slate or tile edges will be to a true alignment.

## Nailing battens to rafters

Follow this procedure:

- position nails down the middle of each batten and nail to the middle of each rafter to minimise the risk of splitting
- ensure that all joints are square cut and butted up at the centre of the rafter to ensure maximum support and provide secure fixing to the rafter
- angle nails slightly inwards towards the centre of each rafter to minimise risk of splitting rafter and to provide sufficient holding power.

No splits should exist after nailing, and any battens split at fixings should be replaced.

For trussed rafter roofs where the batten gauge is greater than 200mm:

- do NOT have more than one joint in any four consecutive battens on the same support
- do NOT have more than three joints in any 12 consecutive battens on the same support.

## Further information and advice

Building Research Establishment (BRE): [www.bre.co.uk](http://www.bre.co.uk)

BS 5534:2003+A1:2010 Code of practice for slating and tiling (including shingles), BSI

BS 8000-6:1990 Workmanship on building sites. Code of practice for slating and tiling of roofs and claddings, BSI

BS 8417:2011 Preservation of Wood. Code of Practice, BSI

HSE HSG33 Health and safety in roof work, available at [www.hse.gov.uk/pubns/books/hsg33.htm](http://www.hse.gov.uk/pubns/books/hsg33.htm)

LABC Roofing Battens Guide for Small Builders & Designers, available at [www.jb-bestofbritish.co.uk/wp-content/uploads/2012/06/LABC-Guide-for-builders-on-roofing-battens.pdf](http://www.jb-bestofbritish.co.uk/wp-content/uploads/2012/06/LABC-Guide-for-builders-on-roofing-battens.pdf)

NFRC Technical Bulletin 33 (TB 33) Graded Battens for Slating & Tiling and Health and Safety Guidance Sheet Q Correct Installation and Safe Use of Slating and Tiling Battens, available at [www.nfrc.co.uk/nfrc/media-centre/publications-list](http://www.nfrc.co.uk/nfrc/media-centre/publications-list)

The United Kingdom Accreditation Service (UKAS): [www.ukas.org](http://www.ukas.org)

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**Choose and Use** is a series of information sheets for builders produced by TRADA, The Timber Research and Development Association.

They offer up-to-date advice on how to select the right timber and timber products for different applications.

You can often save time and money by choosing the correct timber material or timber products as well as ensuring you comply with current Building Regulations and Building Codes. For more information about specific products visit [www.trada.co.uk](http://www.trada.co.uk) or contact your local supplier.