

Graded battens that meet BS 5534 have been on the market for a few years now but they are under the spotlight with the NHBC directive that only factory graded battens should be used on NHBC sites.

Both LABC and NFRC recommend their use; and they are a requirement of Competent Roofer.

### **Why use graded battens?**

BS 5534 is the British Standard for Roofing Battens. Within BS 5534 there are the specific grade and identification requirements for battens. It does not set out how or where they should be graded but that they should meet the Standard.

The requirements for battens have been there for many years but it is only recent technological advances that have made the production economical on a commercial scale.

Most forms of contract and building regulations require the roofing to meet a minimum standard of BS 5534 and thus implicitly the battens must meet the grade and identification requirements.

### **What is the process?**

Presently the only process is a visual assessment. Battens are too small to be mechanically strength graded in a 'bending' machine (like scaffold boards) and X-Ray and Ultra sound technology, although established for larger sections, has not been developed for battens.

Visual assessment can take two forms:

Machine – using a combination of laser and camera scanning.

Manual – individual graders visually assessing each piece.

Both should take place in a factory controlled environment and preferably with a recognised third party assessment; ideally encompassing both the process and the product. (This is only a recommendation).

Laser and camera scanning takes the human error and judgement from the process. The parameters are set within the software and the result is a consistent output. Most factory controlled processes include placebo or other processes to ensure the system is correctly calibrated and the end result meets the grade.

Manual systems depend on the individual grader to measure the defects. Done correctly this produces accurate results. However, at commercial speeds, using typical production methods, visually grading small sections accurately can be difficult.

### **On site grading:**

There are many aspects to grade and it is difficult and slow to do this on the roof. Additionally once graded every piece has to be marked 'BS5534'. It is questionable as to whether this is a practical process on site.

### **NHBC:**

The NHBC insist on factory graded product. Their view is that the product should arrive on site, fit for purpose, graded to meet the British Standard requirements and that the operatives job is to install the product and not to worry about any grading that may or may not be required.

### **HSE:**

The HSE have revised HSG33 Health and Safety in Roofwork. They only recognise that factory graded battens provide a secure foothold when installing a pitched roof (as an alternative to roof ladders). Their recommendation was updated recently to insist on factory graded battens for use on 600mm centres (previous advice only related to 450mm centres).

### **Does the factory graded batten meet the standard?**

The market at the moment is buyer beware. Mystery shopping has shown that many 'BS' battens do not comply; even those with a third party accreditation.

### **The 10% failure rule!**

Many batten suppliers are now using this to allow for a 10% failure rate within each delivery.

BS 4978:2007+A:2011 - Visual Strength Grading of Softwood does give 'Acceptable limits for visually graded softwood'.

"Not more than 10% of the pieces exceed the permissible limits of the grade and not more than 3% of the pieces in the sample exceed the permissible limits by more than one third." This is presently being transferred to the visual grading of tiling Battens. Such a tolerance is NOT permitted in BS 2482:2009 (Scaffold Boards). Tiling Battens are a unique situation, as for the majority of their use they are load sharing but during construction they are a principal member. Tiling Battens should be graded in accordance with BS 5534 and NOT with BS 4978.

### **BS 5534 does not include a 10% error rate within it:**

The standard does not allow for any miss-grading or off grades. There are a set of visual rules that are to be met.

All production processes, even machine ones, can have errors. When deriving grade rules statistical probability is used and the key figure is the 5th percentile. This allows that there could be a 5% error and the parcel meets the grade requirements.

This error is a marginal error (those pieces at the borderline that are difficult to assess, NOT those with significant error that are totally off grade) Camera scanning with a marginal error rate of less than 5% exceeds the expectations of the grading model and the resulting product actually exceeds the expected requirements set out by statistical modelling. (Such models are common through construction and across a broad range of materials).

### **Cynical grading:**

This is a supplier allowing 10% obvious or significant failures within each graded parcel so that it nominally complies with the rules set out in BS 4978. Such a parcel should be rejected as out of grade.

### **'Principal member or load sharing':**

This is not agreed within the industry. Once it is fixed the batten is certainly load sharing. Importantly during the installation process it is a principal member. A principal member is one where an individual failure can have catastrophic effects (a batten breaks and an operative has an incident). For a roofing batten in this instance with the indicating parameters there is no redundancy of strength and it is at the maximum stress level. It should be argued that the 10% rule should not apply because of this.



## John Brash roofing battens

John Brash offers JBi and JB-GREEN battens manufactured from side boards to ensure stable and straight batten, free from distortion and allowing an easy final grade for knots and wane. A simple grading guide is produced to assist this process. These battens are for use when factory graded battens are NOT required.

### JB-RED:

This is our BBA accredited graded batten that meets the performance requirements of BS5534 and has been produced using a system of camera and laser scanning.

## John Brash roofing battens

BBA (British Board of Agrèment) third party PRODUCT accreditation both ensures that the processes and process plan is in place and audited AND that the final product also meets the required standard and meets all the performance aspects expected. Full factory control processes are in place and a consistent high grade product is produced.

John Brash has total confidence in JB-RED roofing battens and JB-RED carries full product liability insurance.



JB-RED Roofing Battens are fit for purpose, meet or exceed the performance requirements of BS 5534 and do not require further on site grading. A quick visual check is always recommended to assess for any handling damage, end splits (these can develop post grading) and any obvious error – A COMMON SENSE CHECK. Any such fault or error should be removed, cut out and not fixed. This is very different from full visual grading on site.

Independent assessment and mystery shopping by customers has confirmed a lower than 5% error factor; with those errors being marginal. This exceeds the statistical model expectation for a BS 5534 Roofing batten.

With all installations there is waste. When using JB-RED this is from optimising the best length of batten, cutting squarely to the rafter centre and allowing for batten joints to be staggered. There also may be small end splits to be cut off.