

TECHNICAL UPDATE

ROOF TILING AND UNDERLAYS THE NEW BS 5534 STANDARDS



Roof tiling and underlays: the new BS 5534 standards

Introduction: This technical update provides additional guidance on the 2014 and 2018 changes to BS 5534. It is important that all workmanship carried out during construction is completed in accordance with the relevant tolerances.

The change

BS 5534: 2014 'Slating and tiling for pitched roofs and vertical cladding – Code of practice', supersedes BS 5534:2003 which still remains current during a transitional period starting from 1st September 2014 until 28 February 2015 when it will then be withdrawn.

This Standard is intended to be read in conjunction with BS 5250, BS 9250 and particularly BS 8000-6 so now allowing both Standards to complement each other whereas before there were conflicts in the information they contained.

In the forward section to the new code of practice it identifies that it is a full revision of the standard, and includes a complete re-structuring. The COP states:

- a) Sub clause 5.2 and Annex H, which deal with structural stability, have been revised to reflect new knowledge and experience on wind loads and uplift resistances of the roof covering and underlay, expressed in terms of the relevant Euro codes for basis of structural design, enhanced safety factors, loads and resistances.
- b) The worked examples of wind uplift and fixing calculations given in Annex K have been updated.
- c) Wind uplift resistance of self-supporting underlays has been included. A pressure test (Annex A) has been introduced to determine the wind uplift resistance of underlays in order to determine their scope of application and classification.
- d) Clause 6, which deals with application and design details has been revised, including references to workmanship, which are now covered in the 2013 revision of BS 8000-6.
- e) Reliance on the tensile strength of mortar bedding to resist wind uplift has been withdrawn.

Updated information relating to the preservative treatment of timber battens has been contributed by the Wood Protection Association (www.wood-protection.org).

Product certification: Designers and specifiers are advised to consider the desirability of using roofing products, fittings and accessories that are supported by recognized UKAS-accredited third-party assessment.

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What this means to new building work

Fixings of roof coverings

The experience of recent weather patterns in the UK and Europe has resulted in changes to the theoretical wind loads used to calculate the mechanical fixing requirements of slates, roof tiles, ridge and hip tiles and roof systems. This means that roof tiles and fittings will under this new Code of Practice, require more mechanical fixings. For example:

- All single lapped tiles on a roof now need to be mechanically fixed.
- Tiles at the perimeter must now have a minimum of two fixings.

Underlays

The new Standard introduces minimum performance requirements for roofing underlays, together with a new test method for determining the wind resistance of unsupported underlay. The test will measure the upward deflection of an underlay and potential movement at its overlaps, when subjected to air pressures likely to be experienced in the UK. This is to ensure that an underlay cannot displace under a given wind load to the point where it makes contact with and displaces the roof tiles or slates.

A new labelling system is introduced to indicate where an underlay is suitable for different batten gauges.

Mechanical fixing of ridge and hip tiles

We have had many claims for mortar bedding on a roof cracking or breaking due in mainly to poor workmanship. This leaves the ridge or hip tiles vulnerable to dislodgement in high winds. Therefore, in the new Standard, no reliance is placed on the strength of the mortar to hold the roof components in place and ridge and hip tiles will be required to be mechanically fixed.

The industry has been moving towards mechanical fixing by installing dry ridge and hip systems as a standard practice. Mortar will still have its place though, e.g. with traditional and refurbishment projects; but they will need to be used in conjunction with mechanical fix options such as clips, nail or screws, with details and information on how to achieve this being available from the roof tile manufacturers.

In summary

Sadly, it reflects the change in climate we now have but also it's a result in tightening up in standards of workmanship.

A number of the major tile and underlay manufacturers have now produced guides to help understand the changes and choose correctly the tiles, fixings and underlays for a given site location.

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The new Code of Practice became live on 1st September but a transitional period until 28th February allows Developers to adopt the still current 2003 Code of Practice.

For sites with our Warranty in place, the requirements in our Technical Manual in particular; Appendix c – materials products and Building systems and Section 11 Roofs must also be met e.g. All ridge and hip tiles must be mechanically fixed.

Moving forward; all roofing underlay products having current third party product approvals (e.g. BBA, BRE or European Technical Approvals) will from 1st March 2015 need to be checked to ensure they have been tested to the new standard when certifying underlays for their fitness for purpose.

September 2014

Amendments to the original article

Since the above technical update was written a further revision has been made to BS 5534. BS 5534:2014 + A2:2018 was published on February 28th 2018 and introduces several amendments, as well as clarifications of the scope of the Standard. Following a four-month transition period, this standard became effective from July 1, 2018.

What are the main differences?

Updated references to new standards

BS 8612: Dry-fixed ridge, hip and verge systems for slating and tiling – specification, has now been added into BS 5534. This means that under BS 5534, only BS 8612 compliant dry fix systems are suitable for use. Not using one would be in breach of both of the standards.

Clarification on re-roofing and repairs

The addition of the phrase 'for normal re-roofing work, including repairs' has been added to the scope, to make it absolutely clear that re-roofing and repairs are covered under BS 5534.

Underlays

There have been a number of site issues where lightweight underlays have not been installed correctly, in particular the degree of drape when laid unsupported over rafters. As such, BS 5534 introduces several changes and roofing contractors need to make sure that underlays are installed correctly in accordance with the new recommendations:

- Ensure underlays are installed with a maximum 15mm drape – the amendments to BS 5534 recommend a maximum drape of approximately 15 mm. This avoids noise nuisance caused by excessive flapping of the underlay under wind action and prevents the transfer of wind loads to the roof covering for which it has not been designed to resist.

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- Avoid leaving underlays exposed for any length of time – Over-exposure to UV light could lead to premature failure of underlays. Therefore, BS 5534 now states that in certain conditions, particularly if there is persistent heavy rainfall combined with subsequent severe freeze / thaw conditions, an underlay should not be exposed for more than a few days.
- Counter battens – When counter battens are used above an underlay, it is important to ensure that the eaves detail is designed so as to avoid troughs and / or a negative slope, and to allow any surface moisture to drain effectively into the gutter.
- Underlay Zonal Classification – the updated BS 5534 clarifies the classification criteria for underlays, particularly in relation to their application in the various UK exposure zones.

Baby ridge and hip tiles

Roofing contractors should also take note of some new advice for fixing baby ridge and hip tiles. These are only recommended for low level roof details, such as bay windows and porches, no higher than 3m and may be bedded using only mortar, subject to self-weight being sufficient to resist the wind loads. This maybe a suitable approach for Warranty purposes, providing that the site can provide suitable evidence of the self-weight being sufficient to resist the wind loads and the correct mortar specification is used.

Summary

Outlined above are the main changes to BS 5534: 2014 + A2 2018, a full list of the changes can be found in the forward to the standard, available using from the Construction Information Service website.

Every care was taken to ensure information in this article was correct at the time of writing (November 2020). Guidance provided does not replace the reader's professional judgement and any construction project should comply with the relevant Building Regulations or applicable technical standards. For the most up to date LABC Warranty technical guidance please refer to your Risk Management Surveyor and the latest version of the [LABC Warranty technical manual](#).