



Commercial softwood decking specification

THE DEFINITIVE GUIDE





Specifying softwood decking to make the most of the external landscape

External landscaping is often the final piece of the jigsaw puzzle for any site, usually being completed last, but it is one which helps to set the scene and create both a physical and emotional connection. It provides context for the building; not only affecting how it sits on the site and in the wider landscape, but also shaping the impressions of visitors as they approach it - especially for the first time.

For building users, external landscaping provides a connection with the outdoors, even acting as an extension of the interior space in the right circumstances.

It might be tempting to think of landscape design only in terms of garden areas and planting but getting the best from a site means achieving the correct mix of hard and soft landscaping. Both change and mature in their own ways and taking that into consideration when specifying finishes is an important part of successful design and creating the right feel.

▲ HARD LANDSCAPING

Hard landscaping - including decking - defines outdoor spaces and impacts the way they're used.

Designed to best effect, hard landscaping promotes inclusivity by making those spaces accessible to all building users and promoting closer contact with the environment and soft landscaped areas. Creating appropriate circulation routes around a building, or between multiple buildings on a site is also a critical function.

Whether it is a nature reserve, a shared space in an inner-city development, or the design of a major public project like the Olympic Park, carefully planned landscaping has a role to play. Commercial landscape design and specification encompasses the entire lifespan of a space, from the first outline sketches to planning long term maintenance.

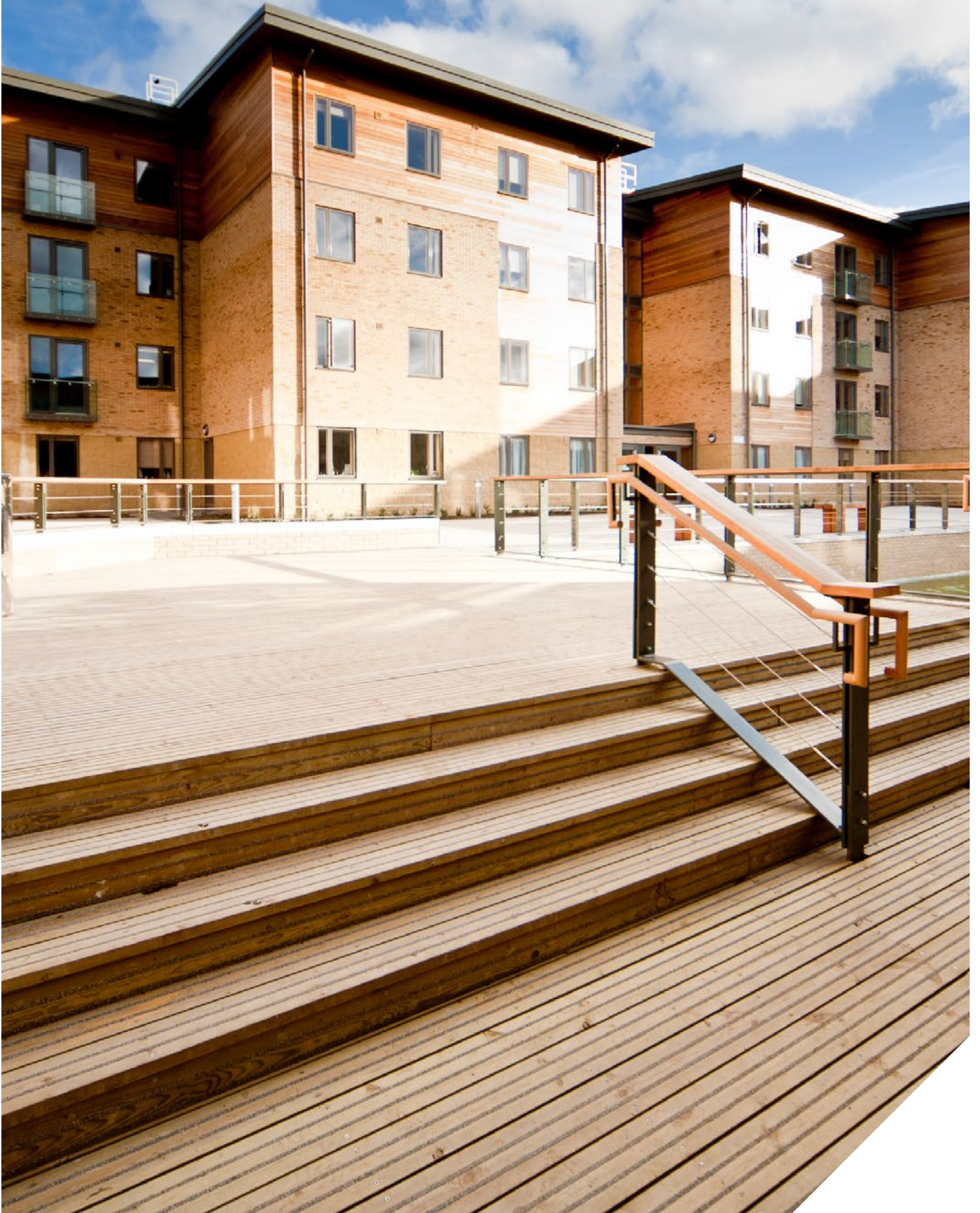
Creating attractive, vibrant, useable outdoor spaces is a key tenet of sustainable development, as defined and supported by national and local planning policy. New-build projects feature an approved landscaping plan as part of the planning process, so areas of decking fall within the scope of agreeing the scheme to be submitted.

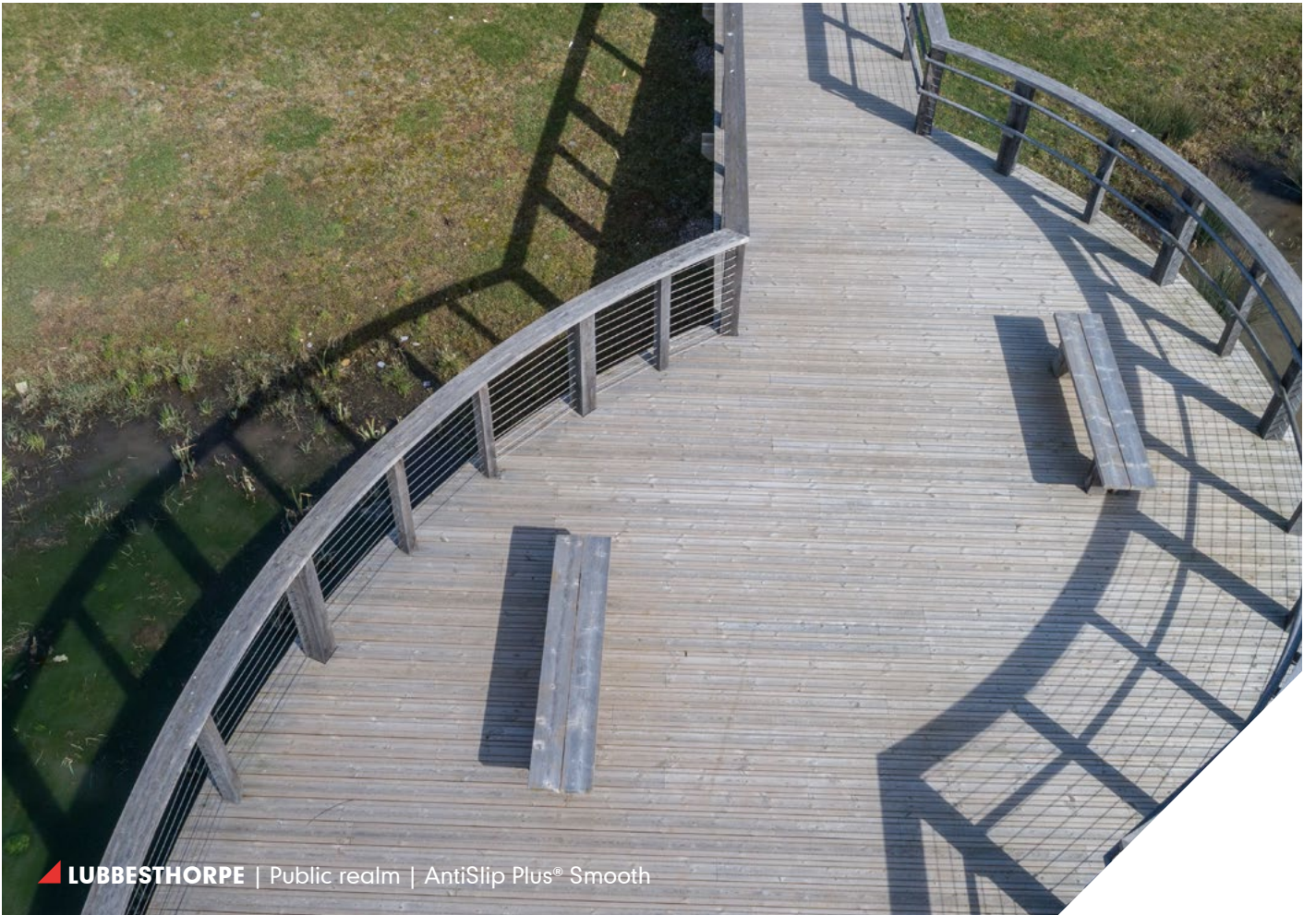
For existing buildings, the need to gain approval for a new area of decking depends on the size and scale of works to the building and the wider site. If a proposed deck exceeds certain height or area then planning permission should be sought. Other constraints that make planning permission necessary include listed building or conservation area status and proximity to a road.

Building regulations, meanwhile, apply to any structure that requires planning permission. Key areas are accessibility and safety, including slip resistance. This is explored in more detail in a later section.

Away from formal, prescribed legislative requirements, choosing the most appropriate type of decking is much more about look and feel. While architects continue to design highly engineered buildings in steel, concrete and glass, the inherent beauty of timber contrasts and softens their striking silhouettes.

And as the number of timber buildings increases to meet ongoing environmental challenges, timber decks will serve to complement their natural appearance, creating warm and inviting spaces.





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▲ THIRD-PARTY ACCREDITATION

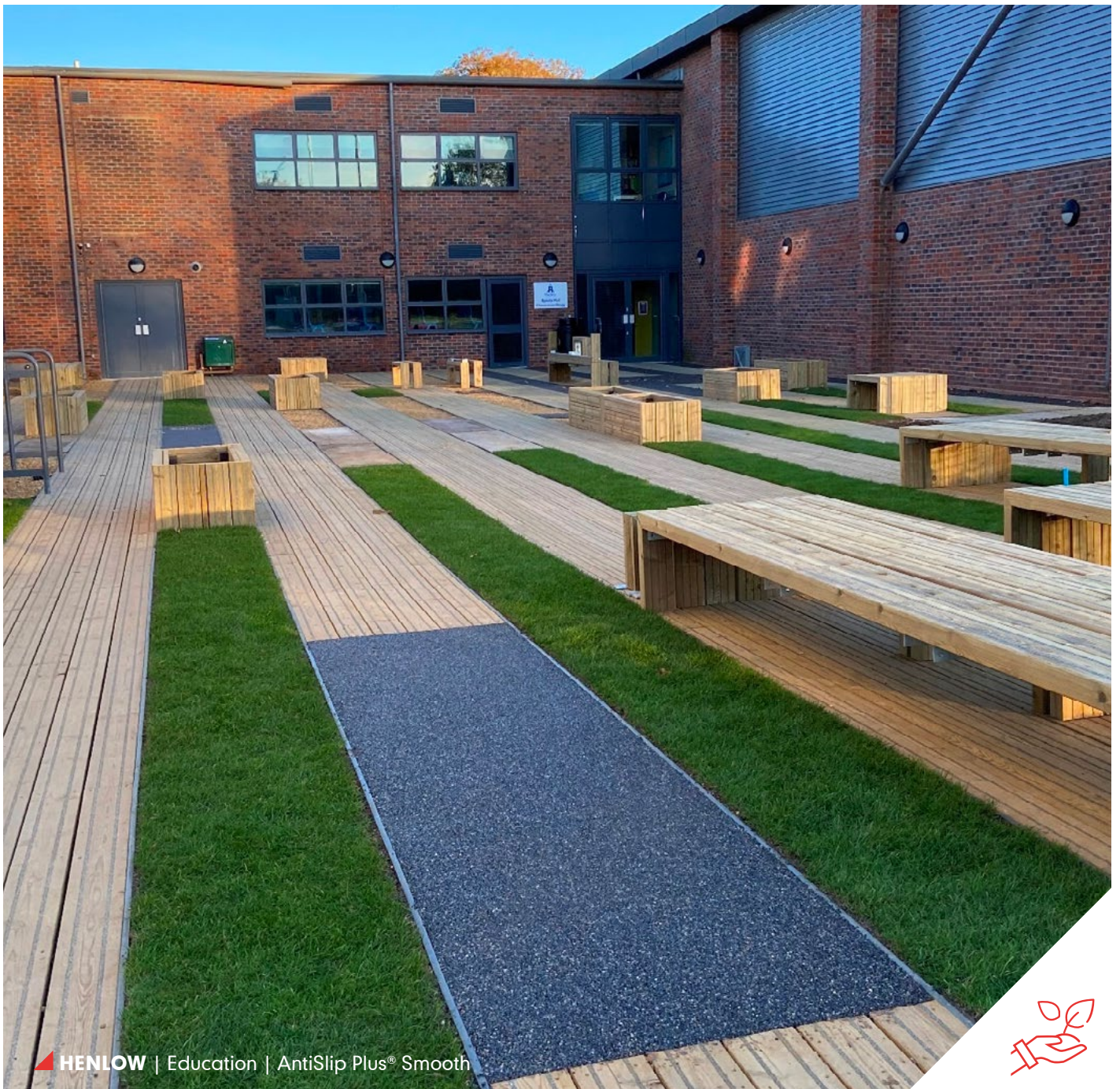
Much like a product's sustainability credentials, third-party certification is not specific to a particular application or applications. But it is something that informs the decision-making process from the outset. It is the case for many construction products - timber deck boards included - that independent third-party assessment is not just a 'nice to have'.

In fact, it is usually considered essential by specifiers and installers alike. Thanks to the Timber Decking and Cladding Association (TDCA), the DeckMark® quality assurance scheme offers the peace of mind that people are looking for in commercial decking products.

DeckMark® brings together a suite of existing standards including the ISO 9000 series of quality standards. There are two parts to the scheme: one covering products and one covering registered installers.

Manufacturers working under the scheme are independently audited every year to maintain their certification. DeckMark® demonstrates compliance with good manufacturing practices, while the complementary DeckMark® Plus standard shows that decking products exceed recognised standards.

DeckMark® Plus means that a product or system has undergone further evaluation from a technical or safety standpoint. It was developed in response to requests for information from specifiers seeking reassurance about product performance characteristics like loadbearing and slip resistance and is seen as particularly critical for components that are offered for outdoor use.



▲ UKCA MARKING

When a manufacturer applies the UKCA mark to their product(s), it is a declaration of conformity to the relevant harmonised European standards and national standards, which we will go on to look at in the next part of this document. It is a commitment to product quality that the manufacturer must be able to stand by.



What standards and guidelines apply to decking specification?

▲ STRUCTURAL STRENGTH

Any timber intended for structural use in construction must be graded, either by visual assessment (visual strength grading, VSG) or machine testing. It is then stamped as fit for purpose for the given strength class. Softwoods are graded in classes denoted with a 'C', and hardwoods with a 'D'.

Strength classes group materials possessing similar properties. The higher the number the stronger and more inflexible the timber. Softwood has twelve strength classes, from C14 to C50. Nearly all softwood for construction is either C16 or C24. Some decking manufacturers have adopted this grading standard for deck boards to grade out any strength reducing characteristics that may be present such as abnormal knots, slope of grain and distortion.

For the specifier, arguably the most pressing concern is choosing the grade most appropriate to the intended application.

Strength class determines the distance over which a deck board can span. Using C24 boards, for example, instead of C16, could allow the supporting structure to be spaced further apart and potentially save on material.

Alternatively, aesthetic considerations can influence specification. If the supporting structure is designed for C16 boards, retaining the original joist spacing but switching to a C24 board would allow the use of smaller deck boards and change the visual characteristic of the deck.

Nevertheless, for the majority of situations, C16 timber is sufficient. C24 is most commonly seen on high level decks to keep the board thickness down and aid level access (thinner C24 boards can span the same distance as a C16 counterpart), and bridges or elevated walkways to aid the design of the underlying structure.

The grading process encompasses a variety of other standards, most of which are more relevant to the timber supply and manufacturing process. BS EN 14081-1, for example, deals with the general requirements for 'strength graded structural timber with rectangular cross section', while -2 documents additional requirements for machine grading.

BS EN 14081 is supported by other national standards like BS 4978 (visual strength grading of softwood) and BS 5756 (visual strength grading of hardwood).



▲ PRESERVATIVE TREATMENT AND DURABILITY

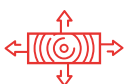
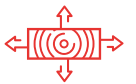
Much like strength grading, there are several standards dealing with the production of timber products that underpin what is of most concern to the specifier: what is the correct treatment for the intended application?

Manufacturers will typically preservative treat the timber using a vacuum pressure impregnation process under strict factory-controlled conditions; a common one is Naturewood, manufactured by Koppers Performance Chemicals. The use of chemicals is part of the wider awareness of environmental issues among specifiers and clients.

The code of practice for wood preservation is BS 8417, which these treatments should meet.

Timber is classified for durability in accordance with BS EN 350. There are five classes, with class 1 being most durable. BS EN 355, meanwhile, defines 'use classes' relating to timber use. Only use classes 3 and 4 are relevant to outdoor timber; use class 3 applies to timber deck boards which simply needs pre-treating for protection from the elements.

Timber in direct contact with fresh water or the ground needs to be treated to use class 4. Where decking is concerned, boards themselves may only need to be treated for use class 3, but any support structure including joists should also be treated to use class 4.



▲ ANTI-SLIP MEASURES

Perhaps surprisingly, there is a fine balance between achieving the right level of slip resistance on a deck and making it too 'grippy'.

Traditional decking boards with a high level of grip can actually exacerbate trip hazards, especially at the boundary with a different surface where there's a transition in grip level. For the less able, that high level of grip continues to cause a problem across the deck.

Slip resistance in commercial decking is best achieved through the use of factory applied anti-slip strips. A board can feature two or three strips depending on the level of resistance required, three being suited to high risk areas. Using a less abrasive grit for the inserts reduces any trip hazard while still achieving good levels of slip resistance.

As a further aid to accessibility and inclusivity, specifying anti-slip inserts in bright or contrasting colours helps to highlight changes in level or direction.

Decking is tested to confirm its slip resistance. The Health and Safety Executive's (HSE) preferred method is the pendulum test - described in BS 7976, parts 1 to 3 - which replicates the action of somebody's heel striking the surface and measures the dynamic coefficient of friction.

Testing generates a pendulum test value (PTV), also known as a slip resistance value (SRV), which falls into one of three categories. For pedestrians walking in a straight line on a level surface, a PTV of 24 or lower equates to a high slip potential. 25 to 35 is a moderate slip potential, while 36 or more means low potential.

Wet and dry tests are carried out, and lower figures are unsurprisingly achieved in wet conditions. Any decking should fall into the bracket of low slip potential.



▲ ENSURING AN EVEN SURFACE

Part of providing a pleasant experience for decking users of all abilities is making sure the deck provides a consistent, level surface over which to move. Unacceptable deviation in the deck surface creates a trip hazard and makes the experience of using the deck unpleasant or uncomfortable.

When looking at the strength grading of timber earlier, we mentioned that the support structure and deck boards must be specified to avoid excessive 'sag' or deflection in the deck boards. Typically, a maximum deflection of 3mm is the aim.

As well as the distance over which the deck boards span, product consistency is important in ensuring a level surface. Even with the natural variation that's possible in timber - such as moisture content - a manufacturer should be able to produce products within a tight tolerance.

Being able to rely on this tolerance and consistency in product quality is important for specifiers and installers alike, to ensure the best finish for the completed project and the best experience for users.

▲ 2012 OLYMPIC PARK

As one of the companies selected to supply timber products to the 2012 Olympic Games in London, Marley worked with Margaret Hickesh, the Principle Access Officer for the Olympic Delivery Authority (ODA), to research and develop a brand new commercial decking product – CitiDeck®.

One of the ODA's objectives was an inclusive Olympic Park for all visitors. With concern that traditional grooved deck boards would make for an uncomfortable experience, especially for people in wheelchairs, a product tailored to intensive use in urban environments was needed.

"I wish people knew just how uncomfortable it feels to travel over grooved deck boards," said Margaret. "The new CitiDeck® board developed for the park was so much better, not just for wheelchair users, but for a wide range of visitors, from children to the elderly and less able."

Based around a smooth deck board profile, the anti-slip inserts (of which there were two per board) featured a less abrasive grit to remove a potential trip hazard when moving from one surface to another. CitiDeck® easily achieved a PTV that designated it as low slip potential.

"It was important that the decking solution didn't become a trip hazard for children or those with mobility impairments," added Margaret.

Accumulation of dirt, litter or food waste wasn't an issue, and the product provided a low maintenance surface that was easy to keep clean. CitiDeck® is now commonly specified for commercial decking in urban environments, including schools, hospitals, pubs and restaurants.





Decking for recreational use

Smaller decking areas providing leisure space to domestic or domestic-type properties (such as holiday lodges and cabins) are more likely to feature grooved deck boards, as they contribute to a 'rustic' appearance.

Balconies, terraces and hot tub decks are the sorts of applications where a much-reduced level of foot traffic can be expected compared to the larger urban developments that have been the focus of this section so far.

Nevertheless, these spaces still need to be inclusive. Products with an appropriate slip resistance value are still necessary, and the wet PTV will be of particular interest for projects featuring something like a hot tub.

Anti-slip inserts can be specified if considered necessary, and their use is not affected by the choice of grooved or smooth boards.

Despite the popularity of grooved decking, there is evidence of movement toward smooth deck boards for clients and specifiers who want to achieve an alternative feel. The decision may ultimately come down to who is responsible for cleaning and maintenance, and how often it is likely to be carried out.

To a certain degree, specifying decking for smaller recreational areas can actually be more complicated than larger developments because there are fewer constraints. Depending on the project and the client, there is much more scope for personal preference, which increases the number of options available.

Consulting with the decking manufacturer and gaining the benefit of their expertise can help shape some of those decisions at the outset, ensuring the right blend of product performance and personal preference in the final solution.





Maintenance and long-term performance

Timber begins to season and mature as soon as it has been installed. Commercial decking boards are no different, blending into their environment and 'softening' with age depending on how much they are exposed to the elements.

The term 'weathering' is used to describe the natural process that occurs when uncoated timber is exposed to the elements. Typically, the process starts with the deck boards fading to a honey-like colour, then progressively changing over time to a silvery grey. This rate of weathering will vary depending on factors such as how much UV exposure the timber is subjected to. The full extent of this natural change of appearance may not be seen for many years.

Moisture content of the timber naturally fluctuates over the course of a year. It can be as low as 7% in summer, and at 20% or above in winter. Surface splits - small cracks that appear on board surfaces, usually in the centre between any anti-slip inserts - are likely to appear because of the fluctuation, especially in summer when the wood is drier.

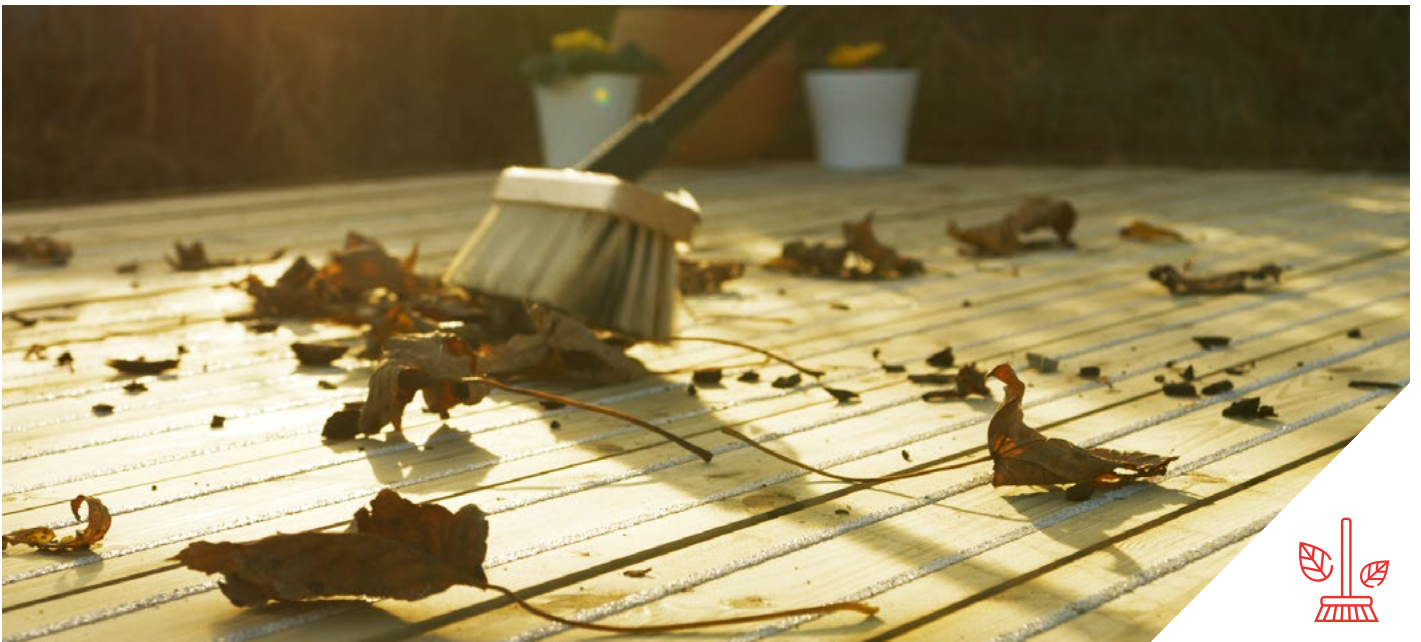
Splits are a natural characteristic of timber and how it accommodates dimensional changes caused by temperature and moisture. They can occur throughout the wood's life, from sourcing to drying, processing, manufacture, storage and end-use. Good quality procedures help to keep splits controlled, but small ones are difficult to avoid on a product designed specifically for use outside.

In deck boards, splits are not a defect, do not compromise the strength grading of the board, and only serve to show that the timber is behaving naturally.

As the wood undergoes these normal seasonal fluctuations and matures over several years, the preservative treatment applied during product manufacture needs no further treatment or staining. The most important thing is to make sure products are pressure treated to the correct use class in the first instance so as to get the best out of them through their lifespan. Default anticipated service life is usually around 15 years but some specialist suppliers will provide a 30 years desired service life.

Beyond that, there are only a few simple ongoing maintenance recommendations:

- ▲ Regularly brush decks with a good stiff broom.
- ▲ Clean decks once a year using a gentle pressure spray, or a purpose-made deck cleaning product formulated to remove grease and discolouration, to keep them clear of slippery surface algae. Consideration may be given to using a professional deck cleaning company.
- ▲ Use blocks to raise planters, tubs or plant pots. This allows air circulation underneath and avoid mould growth. When watering plants, metal or plastic trays are recommended to catch and retain excess water.





Summary

Timber is the natural choice - quite literally - for commercial decking applications. Other decking options such as wood plastic composite products have their plus points but can be more expensive and lack the 'organic' feel and appearance of timber deck boards. A quality timber decking product is no less durable and matures with the rest of the external landscaping scheme, to the benefit of the site and its users.

The specification options are available to suit a range of applications, from small areas of recreational decking to the largest public spaces like the Olympic Park.

Grooved or castellated decking gives the rustic look desired to blend in with nature or provide a traditional appearance. Smooth deck boards are ideal for public areas, giving a comfortable user experience for people of all ages and abilities in areas of intensive traffic.

Beyond that, the level of slip resistance can be selected to keep external hard landscaping areas safe for users, even in the most demanding or exposed conditions.

Marley has a variety of options in its range of timber decking products, to suit all types of application.

CitiDeck® was developed specially for the 2012 London Olympics with inclusivity in mind and has become a fixture of the Marley range. It continues to be used in urban planning designs, including schools, hospitals, housing developments and restaurants.

AntiSlip Plus® provides high levels of slip resistance even in adverse weather conditions and wet environments.

Standard deck boards, meanwhile, are used for areas where high slip resistance values may not be as critical and can be matched in with areas of CitiDeck® or AntiSlip Plus® boards. They can be supplied in either smooth or grooved profiles.

All Marley decking products offer the following benefits:

- ▲ Manufactured from high quality, sustainably sourced European Redwood
- ▲ FSC® & PEFC™ certification (and complies with the EU Timber Regulation)
- ▲ Visually assessed to BS 4978 in line with the grading requirements of BS EN 1408, graded to either European Strength Class C16 or C24
- ▲ UKCA Marked
- ▲ Pressure treated to Use Class 3 to achieve a 30 year desired service life
- ▲ Use Class 4 treatment and Fire Retardant treatment to Euroclass B are also available

Additionally at Marley we manage all of the processes involved with our decking products, from bringing in the timber, machining and grading, all the way through to product treatment. This ensures our experts in each of the processes can manage the quality of our products from start to finish.



Get in touch

Marley can offer a range of support services to help you specify the most appropriate solution for your landscaping project.

For design inspiration, product information, to request a sample or join our online CPD visit: **marley.co.uk**

If you have a specific enquiry and would like to get in touch, you can email or call on the following details:



Call **01283 722588**
Email **info@marley.co.uk**



The mark of responsible forestry



Glossary

Anti-slip measures

Enhancement of a timber deck board, whether smooth or grooved, to improve the product's slip resistance. Typically achieved through the use of two or three anti-slip inserts, without making the deck too 'grippy' - which can exacerbate trip hazards.

Building regulations

Legislation, and accompanying guidance to aid compliance, that make buildings safe for the people in and around them. The regulations most relevant to commercial timber decking relate to access and safety.

C16 / C24

Typical strength classes for softwood timber used in construction. The higher the grade the stronger the board.

Castellated deck boards

See 'Grooved deck boards'.

Splits

Small cracks on the surface of timber. Usually appear due to moisture content fluctuation. Good quality procedures help to keep checks controlled, but small ones are difficult to avoid on a product designed specifically for use outside. In deck boards, checks are not a defect, do not compromise the strength grading of the however, and only serve to show that the timber is behaving naturally.

DeckMark® / DeckMark® Plus

Quality assurance schemes developed by the TDCA. DeckMark® demonstrates compliance with good manufacturing practices. DeckMark® Plus shows that decking products exceed recognised standards.

Deflection

'Sag' in deck boards, usually caused by them spanning a greater distance than intended for their strength. A maximum deflection of 3mm is usually the aim to avoid creating a trip hazard.

Durability

BS EN 350 defines five classes, with class 1 being most durable; BS EN 355 defines 'use classes' relating to the durability of timber (only use class 3 and 4 are relevant to outdoor timber).

Embodied carbon

The equivalent in carbon dioxide of greenhouse gases emitted as part of the sourcing, manufacture, transport and use of a material. Timber absorbs carbon from the atmosphere and has low embodied carbon; negative emissions are even possible with some timber and other plant-based materials.

FSC®

Forest Stewardship Council®. Promotes sustainable forest management and is "helping to ensure that our forests are alive for generations to come".

Grooved deck boards

A style of timber decking virtually unique to the UK. Contrary to popular belief, grooved deck boards offer no inherent benefit in terms of slip resistance compared to smooth deck boards.

Weathering

The term 'weathering' is used to describe the natural process that occurs when uncoated timber is exposed to the elements. Typically, the process starts with the deck boards fading to a honey-like colour, then progressively changing over time to a silvery grey.

Wood Plastic Composite

Wood plastic composite decking is made of wood fibre/wood flour and thermoplastics such as polyethylene or polypropylene.

Moisture content

The percentage of a timber product that is water. Fluctuates during the year, from as low as 8% in summer to 22% or above in winter.

PEFC™

Programme for the Endorsement of Forest Certification. The world's leading forest certification organisation, operating schemes for forest certification, chain of custody certification and project certification, as well as labelling.

Pendulum Test Value (PTV)

See 'Slip resistance'.

Slip resistance

A measurable quality of any surface, including decking, determined by the pendulum test. Expressed as a pendulum test value (PTV), also known as a slip resistance value (SRV). A PTV / SRV of 36 or more means low slip potential.

Slip Resistance Value (SRV)

See 'Slip resistance'.

Smooth deck boards

Timber decking boards with a smooth profile, ideal for large urban, commercial and public spaces.

Strength grading

A means of grouping or classifying materials that have similar properties. Can be done by visual assessment (visual strength grading, VSG) or machine testing. Softwoods are graded in classes denoted with a 'C', and hardwoods with a 'D'.

TDCA

Timber Decking and Cladding Association.

UKCA Mark

Applied by a manufacturer to their own products as a declaration of conformity to relevant standards.





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