Evaluating wood plastic composite decking

Whether timber lovers like the material or not, suppliers of wood plastic composite decking are predicting a year of growth in 2016. Janet Sycamore weighs up the pros and cons of this novel material.

Trex Transcend, a solid form WPC being fitted onto a timber substructure. Joists generally need to be closer together than with a real solid timber deck board.

Photo: Arbor Forest Products Ltd (TDCA member)
The price point for wood plastic composite (WPC) decking is relatively high, placing it at the upper end of the decking market alongside hardwoods. The appeal is ease of maintenance.

However, a number of cases of poor performance have been reported to the Timber Decking and Cladding Association (TDCA), although these appear to be limited to a particular type of ‘cheaper’ hollow form board. Installation errors were a feature in many cases, although product quality issues remain under question. Concern has also arisen about new deck boards being fitted over existing substructures which are often unsuitable for wood plastic composite.

The TDCA therefore recommends that specifiers and users of wood plastic composite deck boards do their research before committing to a product to avoid potential issues. There are certain questions you might want to ask in order to assess product credentials, but let’s begin with the obvious one: what is WPC decking?

**What is wood plastic composite decking?**

Wood plastic composite decking (also known as wood polymer composite, WPC or simply just composite) is a relatively new material in the UK. It is usually composed of wood from sawdust mixed with virgin or waste plastics – typically high density polyethylene, polyvinyl chloride or polypropylene. The powder or fibres are mixed to a dough-like consistency and then extruded or moulded to the desired shape. Extrusion is the technique used for decking and fencing and related products. Additives – such as colourants, coupling agents, stabilizers, blowing agents, reinforcing agents, foaming agents and lubricants – help to tailor the end product to the target area of application.

The overriding principle is to fully encapsulate the wood fibre particles with melted plastic to form a homogenous material so that the plastic encases the wood fibre and protects it from moisture ingress. However, plastic and wood cannot easily be mixed. Manufacture is a complex process, which
requires careful handling of the materials in a series of stages – each with critical aspects to get right, such as particle size and distribution and removal of moisture. Any short cuts can lead to disastrous results.

There may also be a finishing stage because newly extruded materials may have an unappealing, shiny surface. If steel brushing is used then this actually breaks the surface and exposes unprotected wood fibre.

In addition, embossing can be used to create a wood grain effect; while capping adds an extra protective layer. Capping, however, should not be used to compensate for inferior quality boards.

Are there any WPC decking products accredited under TDCA’s DeckMark® scheme?

The short answer is no, because TDCA doesn’t currently cover WPC in membership but there are members who do have reputable WPC decking products as part of their range. However, TDCA acknowledges that WPC boards are often fitted onto a solid timber substructure and this aspect is very much within the domain of the association. And the TDCA therefore recognises a need to educate people to ensure this critical part of the deck is built correctly with the capability to support the loads placed upon it.

What advice should I follow?

With WPC decking it is critical to review product credibility prior to selection and to install it in strict compliance with supplier guidance. Then if any issues do arise, the installation techniques cannot be held responsible.

In terms of product credibility, key questions to ask include:

- What is the wood fibre component?
- Is it responsibly sourced?
- What polymer is used?
- Is the wood fibre distributed evenly throughout the product?
- Is moisture removed to a sufficient extent in the process?
- Is the plastic component virgin plastic or recycled?
- If recycled, how is quality controlled?
- Can it be recycled and if so where and how?

Then when it comes to installation, TDCA has issued guidance on how to build a timber substructure to support WPC boards.1

The guidance outlines critical differences between natural solid wood and WPC in relation to deck building. In brief:

- WPC does not have the same inherent strength as timber, so joists will need to be positioned closer together. This should be taken into account when comparing costs of a wholly timber deck against one with WPC boards.
- Unlike timber, WPC expands along its length. Therefore pay particular attention to the advice given regarding gaps between abutting boards. Be aware also that gapping advice can vary according to temperature/time of year.

Safe installation

The TDCA has been made aware of some projects where WPC deck boards have been retrofitted to existing timber substructures. This is fraught with potential pitfalls; in particular the joist spans are unlikely to be suitable to sufficiently support what is a very different material with different properties.

In addition, the substructure will have used up some of its serviceable lifespan, which will limit the service life of the ‘remodelled’ structure.
It comes with a warranty so I don’t have to worry; or do I?

TDCA advice is to review in detail any warranties given to find out exactly what they cover and how they operate. Also who is providing the back-up for the warranty if things go wrong, and what support is available? When reviewing a warranty, note the exceptions; for example, some anti-stain warranties will only apply if you clean the stain as instructed within a specified time. Keep warranty documentation in a safe place for future reference.

Keeping members informed

The TDCA aims to ensure that all decking and cladding structures are designed and installed properly so as to provide reliable performance. Reports of poor performance are a major concern to the organisation and its members because they have the capacity to impact on the market in general. At the TDCA 2015 annual meeting, an independent consultant with extensive experience in the wood polymer field addressed attendees, giving them an insight into how products are manufactured and a toolkit to help evaluate product. A comprehensive guide on composite decking, its manufacture and potential pitfalls supported the presentation and is available to TDCA members.

About the author

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References

1. TDCA, *Building a timber substructure to support wood plastic composite deck boards* Timber Decking and Cladding Association, 2015, is available free to download from www.tda.org.uk/publications


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