

Case study - Barratt Homes

A STUDY OF THE INSTALLATION OF ECO PROTECT P5 UV COATED FLOORING

A SUSTAINABLE ALTERNATIVE TO PLASTIC COATED P5 WEATHER PROTECTION SYSTEMS

Trial location Barratt Homes site Centurion Park Leyland

Installation process began 1ST JULY 2023

BACKGROUND

In the UK it is common practice to construct the upper floors of typical domestic dwellings from timber derived components. These components generally consist of a grid of structurally approved timber joists or I beams, which are mechanically fixed to the supporting walls then braced and sheathed in a layer of engineered timber panels which are then fixed into place by a combination of mechanical fixings and adhesive. During the construction process it is desirable to utilize this structural floor as a working platform to aid in the construction of the upper floors. Utilizing the structural floor as a working platform during the construction process both reduces the amount (specification) of scaffold required to accommodate the loading weight of the masonry installation and also negates the need for a temporary working/safety platform to be erected inside the structure.

Due to the nature of the engineered timber panels (particle board) generally used to construct the structural floors it is desirable to coat these panels with a protective coating in order to protect the panel from weather intrusion during the construction process, this protection will reduce the risk of swelling and warping between board joints and should be robust enough to take the heavy foot traffic and general wear and tear of the construction process.

Over the last 25 years it has been common practice to protect these boards with a temporary layer of peel off plastic or alternatively a double sided coating of melamine.



Eco Protect working platform



A peel off plastic working platform



Robust finish

The purpose of this case study is to determine if a sustainable UV coated product can be :

- A credible cost-effective alternative to plastic coatings
- Equal in weather protection
- Equal in robust detail
- Equal in slip resistance
- Contributes to a reduction in Co2 emissions
- Reduces the amount of time on site
- Reduces the amount of waste removal associated with temporary peel off plastic coatings

INSTALLATION

The panel installation began 1st July 2023 by a competent trades person in accordance with the manufacturer's installation guide, there was no discernible difference noted by the installers during the installation process. No special tools or health and safety precautions were needed by the installation team and the installation was completed in an orderly manner with no complications.



Weather tight

WEATHERING REQUIREMENTS

Once the structural floor/working platform installation was completed the process of building the upper floors began. This took a further 8 weeks to complete leaving the structural floor exposed to the elements for this period, again no special preference was given to the Eco Protect installation and work continued under normal circumstances.

- Note... While the completion of the building shell was completed the UK experienced the wettest period on record and it was noted by the on-site project management team that the Eco Platform installation remained weather tight, and no water leaks were detected from the underside of the installation whereas the adjacent properties constructed from plastic peel of product showed definite signs of water ingress.



Anti-slip

ROBUST DETAIL

Once the building was made weather tight and the roof fitted the floor was swept clean from any debris and the excess PU adhesive removed from between the panel joints, the finished floor was then inspected for signs of damage. The floor showed no sign of degradation or failure to the surface or between the panel joints of the particle board.



Typical waste from peel off



- Note... During the cleaning process before the internal partition walling is installed it is usual practice to remove the weatherproof plastic paper, this process takes a labourer around 4 to 5 hours to complete. Due to Eco Protect being a permanent coating this removal process is eliminated and the clean-up time was around 1/2 an hour giving a time saving of 4 to 4 1/2 hours associated with the removal of peel off plastic. It was also noted that once the peel off was removed and the waste was collected in a builders bulk bag the volume of waste was around 1 M3 in volume.

INTERNAL FIT AND DECORATION

During the construction of the partition walls, first fix plumbing and electrics, the floor was given no additional protection and was treated identically to that of a peel off plastic installation. The dry liners fitted out the stud walls with plaster board and the floor was given a layer of protection before the plasterers finished the walls. When the plasterers had finished the protection was removed before decoration.

- Note... Although it is a standard procedure to add a second layer of plastic protection before the plasterers enter the property it is assumed that this process can also be eliminated. It was noted that any staining and mortar spillages gained during the build process were easily removed from the Eco Protect surface due to the fully cured cross linked nature of UV coatings rather than the semi cured tacky surface left behind from hot melt adhesives used to attach the peel off product.



Fast clean up time

CONCLUSION

On the 30th of October 2023 a number of senior personnel from all parties involved in the trial attended a site meeting at the Centurion Park site to discuss and view the trial installation at close quarters.

The attendees viewed several plots completed in Eco Protect and several plots completed in peel off product. It was noted that all the structural floors that used Eco Protect coating were flat and true there was no warping of panels and the floors were presentable and ready to take final floor finishes direct with no extra cleaning or preparation. The floors completed in plastic peel off materials did show signs of water penetration and some swelling between board joints due to water ingress.

Throughout the build process Eco Protect was treated in an identical manner to the existing peel off plastic system available, it needed no staff training or specialist storage treatment and it was installed with exactly the same methodology and tools and needed no extra health and safety procedures. Eco Protect performed as an equivalent to the incumbent product in all aspects of installation. It showed that weather resistance, anti slip and robust details were all equal or improved.

Eco Protect did not create any issues during the installation process but did deliver advantages in way of sustainability and cost of installation. Single use plastic was eliminated from the process and a 90% reduction in Co2 emissions associated with single use plastic was achieved. Significant cost savings were achieved by way of reducing the time to clean the unit before the internal fit out and again by way of eliminating single use plastic which has to be disposed of in waste skips.

- Note... When collecting the single use plastic removed from the peel off coating its volume in size was equivalent to around 1 M3 of space per house and it is estimated that this would compress down to around 50% of that volume when mixed and weighted down with other waste materials in a waste skip. A standard 16 yard skip has a capacity of around 12.5 m3 of space so could hold the waste created from around 25 houses. Based on Barratts 2023 build programme (17,206 units) this amount of waste plastic would need 690 skip movements to remove the waste from site. The extra time incurred to remove the peel off plastic equated to 4 hrs per unit or 68,824 man hours per annum. The estimated amount of Co2 emissions saved would be around 290,000 Kg each year.