Assessment of Environmental Benefits of Reducing Plasterboard Requirements for Acoustic Separation

PE North West Europe has completed an initial study related to the environmental benefits of Pliteq's unique solution to the provision of acoustic separation between spaces.

Pliteq's clip solution can be used in buildings including hotels, schools and multi-residential units such as apartments and flats and results in a reduced requirement for plasterboard compared to conventional stud walls. Our understanding is that Pliteq's clip system of construction can be used in solutions for Separating Walls and Floors that will satisfy Part E of the Building Regulations for England and Wales, and for classroom walls which satisfy the acoustic requirements of the UK Department for Education and Skills publication, "Building Bulletin 93, Acoustic Design of Schools"[i].

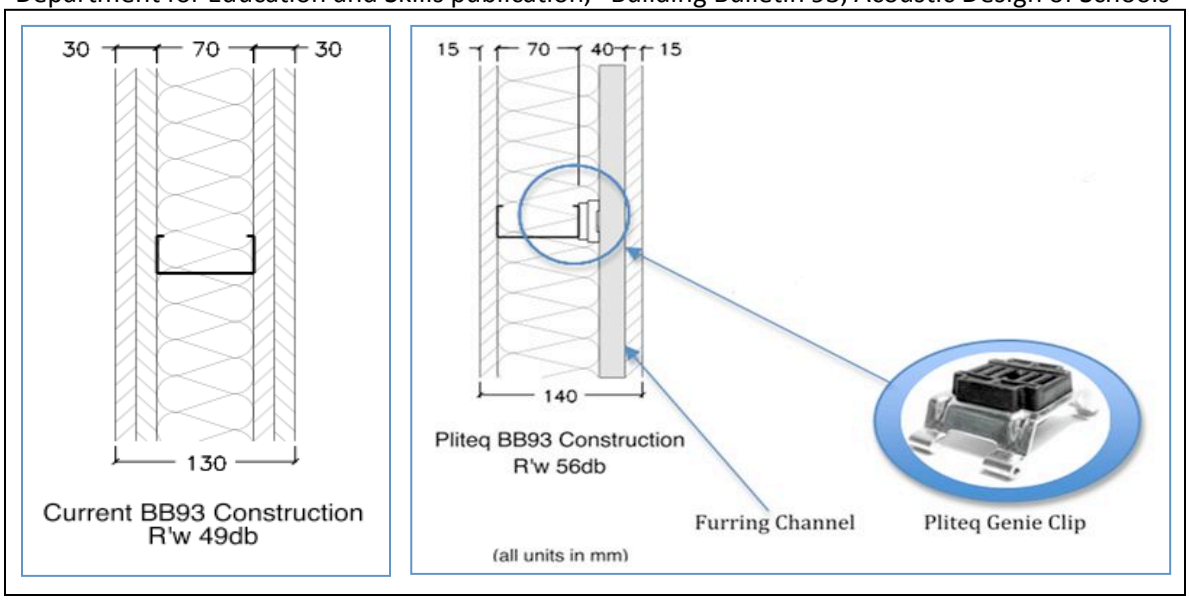

Figure 1: Typical metal stud solutions to meet BB93: Solution without Pliteq Genie Clip requiring 2 sheets of 15mm plasterboard to each side; Solution with Pliteq Genie Clip requiring only 1 sheet 15mm plasterboard to each side, plus Pliteq Genie Clips and Furring Channels

This assessment is focused on determining, from a life cycle perspective, the environmental savings relating to this reduced requirement for plasterboard. The avoided life cycle impacts of primary energy (from non-renewable sources such as fossil fuels and nuclear power) and greenhouse gas emissions associated with the manufacture of plasterboard in the UK are reported. Clearly a more extensive LCA, compliant with all ISO 14040 standards would be required to have a complete and publishable outcome, verified by a third party, and including the assessment of the materials used to manufacture the Pliteq clips and furring channels. However, this study is intended to inform Pliteq's management as to the potential business value of a more extensive study. The current evaluation

focuses only on the environmental aspects of the production of plasterboard, not including impacts from the transport to site, installation and associated wastage, the use phase or disposal at the end of life. It is based on data gathered from UK sources[ii].

The WRAP LCA of UK produced plasterboard shows that the greenhouse gas impacts associated with a typical sheet of plasterboard is about 12 kg carbon dioxide equivalent, measured over 100 years[iii] from the time of emission. The non-renewable energy embodied in a typical sheet of plasterboard is around 150 MJ.

The typical sheet modelled in the WRAP study is based on the most common type of plasterboard currently in production in the UK; 12.5 mm thick, 1200 x 2400 mm in size with a square edge profile. The Pliteq metal clip solution only requires 1 sheet of 15mm plasterboard each side of the partition, rather than 2 sheets of 15mm plasterboard for the conventional solution. 100 m^2 of the Pliteq solution would therefore result in a reduction of 200 m^2 of 15 mm plasterboard, which is roughly equivalent to 240 m^2 of 12.5 mm plasterboard.

100 m^2 of the Pliteq solution could therefore be expected to reduce the impacts arising from plasterboard production (cradle to gate only) by 1 tonne carbon dioxide equivalent[iii], the same amount that a typical car[iv] would produce in driving nearly 3000 miles, and by 12500 MJ non-renewable primary energy use – the same amount of energy required to light a 60 watt incandescent bulb continuously for just over 2 years. As a further illustration, in a secondary school with 50 classrooms[v], the use of Pliteq could give a saving of 30 tonnes carbon dioxide equivalent[iii], comparable with driving a typical car[iv] round the world 3.3 times, or use of a 60 watt incandescent light bulb continuously for 62 years.

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[i] Available from www.teachernet.gov.uk/acoustics
[ii] Life Cycle Assessment of Plasterboard, WRAP, 2008 (www.wrap.org.uk/construction)
[iii] The effect of greenhouse gases such as methane varies relative to carbon dioxide over time – the time period over which the greenhouse gas emissions are measured is therefore relevant. 100 years is the common period used in most life cycle assessment studies and in this report.
[iv] Emissions for a medium petrol car, 1.4 - 2.0 litres, from '2009 Guidelines to Defra / DECC's GHG Conversion Factors for Company Reporting', Version 2.0 30.9.2009.
[v] Assuming per classroom (10x10x3m), 1 sheet 15mm plasterboard saved on 2x30m^2 walls between classrooms, and 2 sheets 15mm plasterboard saved on 30m^2 wall between classroom and corridor.