

HUSH FR ROOFING MEMBRANE



Airborne and impact noise should be considered when designing all flat roof constructions. The aim of this document is to show that Hush Acoustics are able to design lightweight flat roof constructions which meet a variety of airborne and impact noise requirements.

When creating a flat roof solution, airborne and rain impact noise are two considerations that should be placed high on the agenda. This is especially true when designing for education and health sector buildings where indoor acoustic comfort is of particular importance. (More details of performance standards for school buildings are detailed in Building Bulletin 93, and for healthcare buildings in Health Technical Memorandum 08-01: Acoustics.)

This document demonstrates that a Hush Acoustics lightweight flat roofing solution can accommodate both airborne and rain impact noise performance requirements, while still delivering significant benefits in terms of thermal insulation, outstanding performance and project costs.



The data contained in this document was drawn from tests carried out by the UKAS accredited Sound Research Laboratories (SRL) based in Sudbury.

Their aim was to identify:

- The airborne acoustic performance of various roof constructions in accordance with BS EN ISO 140-3:1995
- The impact acoustic performance of various flat roof constructions generated by rainfall in accordance with BS EN ISO 140-18:2006

Further predictions of the change in airborne sound insulation and rain noise intensity level have been undertaken by engineering and design consultants WSP Group based on the incorporation of the following ceiling systems:

1. Metal framed ceiling comprising metal or mineral fibre lay-in-grid tiles of surface mass 4kg/m^2 , suspended beneath the roof systems creating 300mm deep cavity
2. Metal framed ceiling comprising metal or mineral fibre lay-in-grid tiles of surface mass 4kg/m^2 , suspended beneath the roof systems creating 300mm deep cavity, with 50mm thick mineral wool insulation of density 10kg/m^3

3. Metal framed suspended ceiling comprising two layers 15mm thick plasterboard of total surface mass 20kg/m^2 , suspended beneath the roof systems creating 300mm deep cavity
4. Metal framed suspended ceiling comprising two layers 15mm thick plasterboard of total surface mass 20kg/m^2 , suspended beneath the roof systems creating 300mm deep cavity, with 50mm thick mineral wool insulation of density 10kg/m^3

The Marshall Day Acoustics computer modelling software Insul (v6.4) has been used to predict the likely resultant sound reduction indices and rain noise intensity levels through incorporation of the various ceiling systems.

SUMMARY OF RESULTS

The SRL tests clearly indicate that the use of different materials within a flat roof construction can benefit a building's acoustic performance. The Hush FR Roofing Membrane used in the tests was shown to significantly improve both airborne and rain impact acoustic performance.

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