

MODERN POLYURETHANE INSULATION SYSTEMS SAVE NEW BUILD CONSTRUCTION FROM SAP FAILURE ...



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FROM SAP FAIL.....

Property

4/5 bedroom, 4 bathroom detached dwelling with rooms in roof.
Brick and Block cavity construction with plasterboard dry lining.
SAP pass required for Building Regulations and Premier Guarantee.

Problem

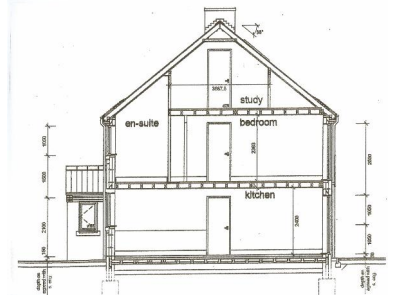
Failed to meet the TER (Target CO₂ Emission Rate) based on the Architects' design and specification.

Due to combination of:

- Large north-facing windows and patio doors
- Large baths and hot water storage tank
- Limited space for roof insulation
- Traditional insulation materials specified

Masonry construction method with 10mm joints and dry lined typically provides poor air tightness results.

Air permeability estimated at 10 m³/h/m². Good practice would achieve 7 m³/h/m².



Investigation

SAP Consultant, WSP examined measures for improving the SAP result and introduced **Insubond** who specialise in on site engineered foam insulation using **Isothane** products....

FUNDAMENTAL IMPROVEMENTS TO THE FABRIC OF THE BUILDING VIA ITS INSULATION SYSTEMS ARE THE ANSWER

.....TO SAP PASS

Recommendations

Insubond, as part of its customer support:

- Reviewed plans;
- Worked closely with other members of the design team;
- Produced U Value calculations;
- Assessed condensation risk; and
- Agreed their proposals with Local Authority Building Control and Premier Guarantee.

Recommended polyurethane foam insulation sprayed into roof and injected into cavity

Results

Sprayed Insubond Insulation foam:

- From eaves to ridge between 150mm rafters;
- Additional foam to the eaves and above small ceiling giving average depth 175mm;
- Averaging approved by Building Inspectors guaranteed internal room height for third storey;
- Allowed for features— vaulted ceilings, exposed beams and more useable cupboard space at eaves;
- U-Value 0.16 W/m²K.

Injected Isothane Technitherm cavity insulation foam:

- From equipment on 3.5 tonne van;
- Via internal blockwork holes;
- 100mm cavity;
- Barrier to water ingress;
- Sealed join to roof insulation;
- U-Value 0.19 W/m²K

An Air Permeability result of 3 m³/h/m² was in line with Best Practice and resulted in a 10% improvement in the SAP rating.

“Insubond Foam insulated the most awkward areas giving a complete seal. Its flexibility allowed for additional features”



“Isothane Technitherm provided a complete water resistant inner seal to the cavity with no need for Cavity Trays or Weep Holes”



NEW BUILD RESCUED FROM SAP FAILURE

Build

Concrete strip foundation; Brick and insulated block wall with 100mm cavity. Beam & insulated block ground floor. Posi joist first & second floor with cut roof.

Architect Specified

Rafter depth 150mm & steel purlins.
 Roof: 120mm Kingspan Kool Therm K7, U-Value 0.2 W/m²K.
 External walls: 50mm Kingspan Thermawall TW50 zero ODP partial fill batts, U-Value 0.35 W/m²K.



Injected Foam Isothane Technitherm

A non settling water resistant closed cell cavity insulant which is also recommended as an effective flood protection measure or wall stabilisation system.

Engineered on site to provide a structural rigid Polyurethane Foam which adheres to both the inner and outer leaves to create the most effective full fill cavity insulation available.

Insubond Insulation

Spray Applied Insubond Foam is a Polyurethane Foam with superior insulation values and flexibility. Engineered on site to perform the most awkward of tasks. Depths can be easily varied to accommodate specialist design and details whilst fully complying with Building Regulations.

A full design and technical advisory service is provide free of charge.



Used

Roof: Insubond insulation at various depths averaging 175mm, U- Value 0.16 W/m²K.

BBA Certificate 08/4567

External walls: 100mm Isothane Technitherm Cavity Foam (installed by Insubond Ltd), U-Value 0.19 W/m²K.

BBA Certificate 97/3426

Insubond insulation also applied at 25mm below under-floor heating for thermal and acoustic improvements.

Unbeatable Air-tightness guaranteed



Comparison Cavity Insulation	U-Value (W/m²K)
Partially filled (Kingspan, Celotex,Xtratherm)	0.27
Mineral Wool	0.25
Thermabead	0.23
Isothane Technitherm	0.19

