

SAP Compliance - Guidance

16x New Dwellings at Little Acres, Longfield Avenue, New Barn,
Longfield, DA3 7LA

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Low
Carbon Energy
Assessor



Company No. 07833780 VAT Reg.126036639

What is a SAP Specification?

The SAP specification in the table attached summarises the key elements of your design.

As we have based your SAP Assessment and reporting around these inputs, it is incredibly important that these are agreed and followed during construction.

Please read these points on the attached document carefully and let us know of any errors, concerns or questions straight away.

1. Design Stage Assessments

- The **SAP Specification Document** attached shows the design specification you must follow during your build. It will be checked and audited on completion.
- Please note that any deviations from this specification may result in the SAP assessment no longer meeting Building Regulations requirements, and may entail additional assessment fees being incurred to maintain compliance.
- Please check any changes with the assessor as soon as possible, even if they appear to be improvements.
- **Items highlighted yellow refer to unconfirmed elements that will need to be confirmed to ensure compliance prior to construction.**

2. What We Need on Completion of Your Build

- Please provide the following evidence:
 - **U-value calculations for each type of heat loss floor, wall and roof**
 - **Air test certificate (if we are not completing the air permeability test for you)**
 - **MCS certificate or installer evidence for any renewable technologies**
 - **Signed thermal bridging checklists for any applied thermal bridging scheme**
- Once all items highlighted yellow are confirmed, **please tick to confirm each section, then sign and return to Build Energy.**
- Any re-lodgement of EPCs due to inaccurate information may incur additional fees. Please allow up to ten working days between providing this information and receiving your final documents.

U-Values

- U-value calculations for all heat-loss elements must be produced to issue As-Built reports and EPCs.
- We would strongly encourage designers to secure calculations confirming these values at an early stage, before work begins, and advise your assessor of any difficulties in meeting these values.
- We can carry out U-value calculations based on detailed construction and insulation details, or you can usually obtain these from the insulation manufacturer.
- To run a U-value calculation, we will need detailed build-ups of the external element. This would include the manufacture and insulation product name with the specified thickness and the location of the insulation within the element. (e.g. roof build up is 100mm insulation between rafters, 50mm insulation under rafters with plasterboard to finish.)
- A U-value is the sum of the thermal resistances of the layers that make up an entire building element (walls, roofs and floors) including insulation and materials. Adjustments for fixings and air gaps are accounted for within the calculation.
- U-values are shown in units of $W/m^2.K$. This is the ability of an element to transmit heat from a warm area to a cold area and vice versa.
- The lower the better – a lower U-value indicates better insulating performance.
- Thermal conductivity is the material's ability to conduct heat. Similar products have varying conductivity values, even if they are the same material. Therefore, specifying materials with a low thermal conductivity will benefit the overall U-value.
- It is essential that changes within these build-ups, between design and as-built stage, are checked by the assessor. Even if the insulation is the same thickness, a different brand/product can influence the overall result.

Air Permeability Testing

It is incredibly important to build 'air-tight'. Reducing uncontrolled air leakage means that less energy is wasted heating air which is then lost. **Practically all new buildings require air tightness testing** on completion and this result can **pass or fail** your building.

What are we testing for?

Air permeability testing measures *uncontrolled* air leakage. It is not concerned with trickle vents, extract fans or ventilation systems – these controlled ventilation sources will be taped up or sealed prior to testing. **The test is looking for gaps and cracks in the fabric of the building.**

- Your SAP assessment includes an air permeability target. For example:
5m³/hm² at 50Pa
This means we need to achieve a '5' In laymans terms.
- The lower the number, the more airtight the building
- The figure above demonstrates how much air is being sucked into the building through 'leakage' when the fan is operating at 50 Pascals.

How do we set the target?

- All new buildings must achieve a minimum air permeability of '10' according to the Building Regulations. This has led to some design teams assuming that anything less than a '10' is therefore a pass, **however;**
The Building Regulations also include targets for carbon emissions and heat loss. The air tightness score has a huge impact on each of these. In reality, the air permeability typically needs to be much lower than '10' to ensure that the carbon and heat loss targets are also met.
- **Your assessor has chosen a target air permeability which is low enough to meet these targets,** but likely to be achievable on the day with the right preparation and care.

Tips for getting airtight

1. Get some early [advice or consultancy](#). We can help to review drawings and construction detail before a brick is laid. We can also carry out early onsite advice visits to check progress.
2. See our guidance on [getting airtight](#)
3. If you think you are ready for testing, call us on 0330 055 34 05 and we can help you to prepare.

Thermal Bridging

Thermal Bridges are junctions between abutting elements of the construction. This is commonly where two pieces of insulation, or two construction types meet and create a gap where heat can escape.

For example, where a ground floor meets an exposed wall and the continuity of insulation is lost. These junctions can be designed to minimise heat loss.

The number of junctions will be different for each property depending on its shape. There are a total of 42 possible junction types across three types of construction: those to an external wall, those to a party wall or those to a roof. Each of these has a variety of existing designs which can be followed.

Designing to address thermal bridging is required to gain a pass in compliance to Building Regulations.

A psi value is a measure of heat that escapes through such a junction. This is calculated based on the design of a junction and how well it avoids heat loss. By matching your buildings design to junction designs from an existing scheme, an existing psi value can be used in the SAP assessment to improve the result. Your assessor has noted which schemes have been used on the accompanying specification document. Please pay close attention to this.

In addition, it is possible for psi values to be calculated for your development based on a bespoke design. If this is applicable, please advise us at the earliest opportunity.

Important Notes on Thermal Bridging

- Thermal bridging must be checked and confirmed to enable us to issue As Built reports and EPCs. Please ensure your building accurately follows the recommended designs.
- The attached SAP Specification Document will advise the selected thermal junctions, the applicable psi value and the scheme details used to calculate thermal bridging within the construction.