

TBD SAP Geometry Export Tool


The SAP Geometry Export uses the room geometry from the TBD file (the geometry that is seen in the TBD visualisation). It removes the internal elements, merges together the remaining surfaces, and then looks for bridges between the surfaces. If the tool fails to find bridges for any surface edges, this will be reported in a log file.

Surface areas and thermal bridges are calculated according to SAP 2012 guidelines. Each dwelling specified in the wizard will have its geometry detailed on a separate sheet of the Excel output. Cold areas (used for unheated corridors, attics, garages, etc) will not be included in the output but surfaces which link to a cold area will be listed as such in the output, and the user can specify a thermal resistance for them.

Suitable Geometry for Export

- Suspended ceilings should not be modelled, adjust building element thicknesses if required.
- Place an internal floor where there are stairs, rather than using a null floor.
- Only place the same zone on two separate stories if it is a double-height space. Place a different zone for each level of a stairwell.
- The tool does not support sloping walls or floors.
- The tool does not currently support secondary elements, which will be ignored.
- Doors and windows in internal surfaces will be ignored during the export, but may be left in the model.
- Balconies and parapets will not be identified by the tool, but they may be left in the model.
- Try to avoid short walls, small overhangs, etc., which could lead to a surface with a width less than 0.2m.

Using the Tool

- On the first panel, zones are dragged to the right-hand side to form dwellings. External zones are not included in the list of available zones. You may create as many dwellings as you like. Create a “Cold Area” rather than a “Dwelling” to model unheated areas such as loft spaces, garages, unheated corridors in blocks of flats, etc.
- On the second panel, select the correct building element types from the dropdown lists. The choices made here will affect how the building elements appear in the Excel output. Only use “Roof” for exposed roof elements. Use “Floor” for all internal and external floors. Selecting “Window (no sill)” for a window means no sill thermal bridge will be considered for this type – you might use this to mark a full-height window. “Ignore Element” can be used to mark any element which you do not want to include - for example you could use this to disregard ventilation louvres. You can ignore any element but should use this option with caution as it may lead to unexpected behaviour with elements other than windows.
- On the third panel you can mark which zones are living areas. There is a button to automatically detect living areas based on the zone names (zones names containing “living”, “sitting”, “lounge”, or abbreviations thereof will be detected), and there are also buttons to manually mark and unmark living area zones.
- On the fourth panel you can ensure that zones are grouped together correctly by storey, and rename storeys if you choose. Zones can be dragged and dropped between storeys.
- The fifth panel provides options for bridging information in the Excel output. Press the large button with the  symbol to run the tool.

When the tool is run, all of these settings will be written to a notepad file (with a name in the format “BUILDING_NAME_sageomtool.txt”). As long as this file is located in the same folder as the TBD file, the settings will be read from this file when you launch the tool, meaning the setup does not have to be repeated if you wish to run the tool again. If you have problems with the tool that require you to send a TBD file to EDSL Support then you should also send this settings file.

Excel Output

The geometry output is displayed separately for each dwelling – each dwelling has its own sheet. If you choose to output wireframe images then each of these will also have a separate sheet.

Any cells containing red text indicate that your attention is required. This could mean:

- Data is missing from the TBD file. For example a building element has no construction and so the U-value and thermal mass are missing.
- User input is required to set the U-value of a party wall, or the thermal resistance of a surface linking to a cold area such as an unheated loft or garage.

Note that window U-values in the Excel and XML outputs include an adjustment for curtains. Note that where internal walls and floors are contained entirely within a dwelling (i.e. the surface is connected to the same dwelling on both sides, rather than forming a link between two different dwellings), then the surface area of BOTH SIDES of the wall or floor will be included in the output for that dwelling.

Troubleshooting

Error messages:

Read the text of the message for an indication of the problem. Likely causes are:

- Inappropriate building element type chosen, e.g. a ground floor marked as “window”.
- Are all zones assigned to the correct storey?
- Check in pre-simulation checks - are any zones split between two areas of the model?

Missing bridges:

- Wall thicknesses greater than 0.6m may result in missing bridges. This is most likely with thick internal walls, and with external walls when the dwelling footprint changes between floors. Internal wall thicknesses can be safely reduced without affecting the end results.
- Using different wall alignments when drawing walls in the 3D modeller may lead to inconsistent surface areas in the Excel output, particularly when walls are thick. On occasion it may cause missing bridges.
- Are all zones assigned to the correct storey?
- Check in pre-simulation checks - are any zones split between two areas of the model?
- Are there any null element internal floors in the model (maybe in stairwell zones)? These should be replaced with solid elements.