

SAP 2009 calculation check by:

SAP Data Verification and Completion Checklist (v.1)

Date:



Co	mple	etion inspection by:		Date:				
Notes: SAP 2005 is used to demonstrate compliance from 1 May 2007 until 30 September 2010 and to produce EPCs prior to 17 April 2011. SAP 2009 is used to demonstrate compliance from October 2010 and to produce EPCs from 17 April 2011. The SAP procedure is applicable to self-contained dwellings. Under the 'Where' column, for example, [1a] refers to the box number in the SAP calculation.								
		SAP 200	9 Data Verification Checklist		Where	Yes	No	Notes
1	Is s	oftware on list for 'Approve			Input			- 10000
		e see link at http://www.projects.bi			sheets			
2			and TER calculations, provided? ary of Compliance/Input sheets detail data for SAP se	ections 1-10.				
3		DER less than TER?						
4	Is le	Is location shown as Scotland?		Input sheets	П	$\overline{\Box}$		
5	Is d	dwelling type and detachment correct?			$\overline{\Box}$	ī		
6			h plan drawings for ground, first, second, ot	her and	[la to			
		Il floor area (TFA)?	in plan drawings for ground, first, second, or	ner una	ln			
		` '	faces of the elements bounding the dwelling.		and 4]			
7		storey height dimensions m						
			etween the ceiling surface of a storey and the ceiling		[2a	П	П	
			aries (e.g. room-in-roof), the storey height is an avera		to 2n]		_	
8		iving area fraction correct?	ernal floor area (plus thickness of floor, if appropriat	e).				
0			or area of the living area (the room marked on a plan	as the				
	loun	ge or living room, or the largest p	public room, together with any rooms not separated fr		[91]			
			area does not extend over more than one storey.					
		ical values: 0.05 – 0.2			Input			
9	Is d	welling orientation correct a	and matches location/site plans and elevatio	ns?	sheets			
10		olar access (overshading) fa			Input		_	
			extent to which radiation is prevented from entering	the	sheets	ш	Ш	
11			values: 20%-60%, less than 20% is not appropriate.	*****				
11		rect?	on of openings (doors, windows and roofligh	us)	Input			
			ast/west. For DER, east/west orientation of glazing m	av he	sheets			
			t known (typically for the 'worst case' design SAP ca		& [26 to 32]			
			ion, where the dwelling has been constructed).		10 32]			
12		_	ation, the U-value calculations and the SAP					
		culation correspond for:						
			neltering (for example, elements adjacent to unheated					
	stairwells and access corridors in flats) and the effective window U-value may take into account the assumed use of curtains (see 3.3 in SAP 2009).			ount the				
	a)	Floor(s) U-value(s)?	,			П	П	
	b)	Wall(s) U-value(s)?					〒	
	c)	Roof(s) U-value(s)?			[26 to	片	+	
	d)	Glazing and doors U-value	e?		32]			
	<i>u)</i>		s : azing/doors with U-values less than Package value (s	ee 6.1.2).				
	e)		nservatory included in the design?		I			
	ĺ ´	Note for a conservatory that is th	ermally separated, the SAP calculation should be und	lertaken as	Input sheets			
		if it were not present.			5			
13			dging breakdown calculation provided and	correct?				
			ermal bridging at junctions (see 6.2.3) are: l heat loss due to thermal bridging at junctions) of 0 .1	15 is used	[36]			
		conservative dejauti y-value (total can be checked by dividing box .		is useu				
		, ,						•

loss due to thermal bridging at each juscicion is colculated using: systatus typic value, the beat facts due to thermal bridging at junction 1) multiplied by length (of the thermal bridging element of juncion 1) = y, x k; The calculation is repeated for all the junctions (y, x k), (y, x k) etc. These individual totals are then added up to get a total for all the junctions (y, x k), 1 (y, x k) etc. Show that accredited of depaits y-values are unaisolated in Appendax K in SAP 2009. Requesting a broadshown of the calculation in box 36 may help clock which you who have been been used. Si act vightness calculation in box 36 may help clock which you who have been used. Si act vightness calculation in box 36 may help clock which you who have been used. Si act vightness calculation in box 36 may help clock which you who have been been used. Solid for DER, there is no act reference and the control of the contr		2) for	construction in accordance 'Accredited Construction Details' or 'Default values', the total heat				
thermal bridging element of junction 1) = v, x 1, 1 (v, x 1, z) etc. These individual totals are then added up to get a total for all the junctions = (v, x 1, z) (v, x 1, z) etc. Note but accredited or fedjual vewlates are available in Appendix K in SAP 2009. Requesting a breakdown of the calculation in box 36 may help check which yevolutes have been used. 3) use a vyvalue derived from numerical modelling of individual vyvolutes. 41 Is all-rightness (air permeability) correct? Note for DER there is no air righness becknow, but 10m3/m2.h@ 50Pa or better (i.e. less) is recommended. Designing and constructing in accordance with the principles set out in Accredited Construction Details (Scandial) 2010 will assist in limiting air inflication but the totaliting and workmanship, it is difficult to achieve a specified air hightration rate with any degree of accuracy (6.2.4). Under 6.2.3, where an irreflamess of 15me/m1. (8.03Pa is stand, testing need not be carried out. Air-dighness values < 5min he 90Pa oney give rise to problems, and so a nechonical vocalitation system detailed correctly? 15 Is ventiliation system detailed correctly? 15 Is ventiliation system detailed correctly? 16 Is the number of Sheltered sides correct? 17 Note of open flues correct? 18 No of open flues correct? 18 No of passive vents? 18 Is the number of sheltered sides correct? 19 No a side of a building is sheltered fithere are adjacent buildings or hedges which effectively obstruct the wind on that side of the building. Typical values for new dwellings: 2 sides sheltered. Shelter factor = 1 - (0.075 x no of sheltered sides) = 1 - 0.15 - 0.85 for 2 side sheltered. Shelter factor = 1 - (0.075 x no of sheltered sides) = 1 - 0.15 - 0.85 for 2 side sheltered. Shelter factor = 1 - (0.075 x no of sheltered sides) = 1 - 0.15 - 0.85 for 2 side sheltered. Shelter factor = 1 - (0.075 x no of sheltered sides) = 1 - 0.15 - 0.85 for 2 side sheltered. Shelter factor = 1 - (0.075 x no of sheltered sides) = 1 - 0.15 - 0.85 for 2 side sheltered. Shel		loss a	lue to thermal bridging at each junction is calculated using:				
The calculation is repeated for all the junctions (y, x, b), (y, x, b) etc. These individual totals are then added up of get a total for all the junctions = (y, x, b) etc., x, y, x, b) etc., x, b) etc., x, y, x, x, y, x, x, y, x,		ψ -value 1(psi value, the heat loss due to thermal bridging at junction 1) multiplied by length (of the					
added up to get a tonal for all the junctions = (y, x, l) + (y, x, l) + (y, x, l) + (y, x, l) + c. Note that accreditate of reful weatures are unallable in Appendix R in SAP 2009. Requesting a breakdown of the calculation in box 36 may help check which yevalues have been used.							
Note that accordited or default w-vulues are available in Appendix K in SAP 2009. Requesting a breakdown of the calculation to hos 36 may high check which wy veulues have been used.							
breakdown of the calculation in hox 36 may helps check which weathers been used. 3) use a y-walue derived from unmerical modeling of individual by vealues.							
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14 Sai-rightness (air permeability) correct? Note for DER, there is no air-fighmess backsop, but 10m3/m2 h@ 50Pu or better (i.e. less) is recommended. Designing and constructing in accordance with the principles set on in Nacredited Construction Details (Scoholand) 2010 will assist in limiting air infiltration, but also to detailing and workmanship, it is difficult to achieve a specified air infiltration rate with any degree of accuracy (0.2.4). Under 6.2.5, where an air-fighmess of 15mm/m3 h@ 50Pa is stated, testing need not be carried out. Air-rightness values < 5m/m3 h@ 50Pa is stated, testing need not be carried out. Air-rightness values < 5m/m3 h@ 50Pa is stated, testing need not be carried out. Air-rightness values < 5m/m3 h@ 50Pa is stated, testing need not be carried out as vertical duct of diameter less than 10 per more. 15							
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d) No of passive vents?				[7a]	П	П	
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18 Is thermal mass parameter (TMP) breakdown calculation provided and correct? Note Thermal Mass Parameter (TMP) is the sum of (individual area x individual heat capacity) for all elements (including internal walls) divided by total floor area. Heat capacities for different elements are in Table 1e of SAP 2009. Indicative TMP values: Low 100, Med 250, High 450. 18 Under TER, is the correct 'Main Space Heating system fuel' Package selected? Note see 6.1.2. For gas and oil, boilers, efficiency values detailed are SEDBUK (2005). Equivalent values for SEDBUK (2009) are: Natural gas and LPG - 89%, Oil - 90% Additionally, the notional boiler efficiency copies the adjustments applied to the DER boiler efficiency (see 22 b) below). 19 Under data input for Main (Space) Heating and the specification: a) Are the heating type, heat emitter, main heating fuel, boiler type, brand name, model, type, flue type, burner control, keep-hot facility and keep-hot control detailed and matching the specification? Note as an example for mains gas: wet system with radiators, radiators, mains gas (1), combi, Brand Name, Model, 2 combi, room-sealed fan assisted, variable, unknown, none (see Sections 6.3 to 6.6, and Domestic Building Services Compliance Guide for further guidance). b) Are the mains heating controls, boiler interlock, space heating zones, water heating zones (not required for a combi), time controls for space and water heating, and temperature controls detailed and matching the specification? Note controls include room thermostat, time switch, programmer, programmable room thermostat, flow switch, interlock, bypass, energy manager, time and temperature zone controls, weather compensator, load compensator, An interlock (for oil and gas boilers) is not a physical device, but are system controls. A boiler system with no cylinder thermostat has no interlock. Additionally, a boiler system with no room thermostat has no interlock. Additionally and the provided by a holler system with no room thermostat has no in				20]			
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THE STATE OF THE S			Note see Table 11 in SAP 2009.	[201]			

	b)	Is the % efficiency plus adjustment of the Main Space Heating system correct? Note for an oil or gas boiler, the boiler efficiency may be obtained from the Product Characteristics Database (see www.boilers.org.uk). If a new boiler is not in the database, certified manufacturer's data consisting of a winter and a summer seasonal efficiency should be used (see Appendix D of SAP 2009 for details). If there is no database entry or manufacturer's data, an indicative seasonal efficiency should be taken from Table 4b for SAP 2009. The efficiency is the winter seasonal efficiency from the database or Table 4b, increased if appropriate by an increment from Table 4c. For other boiler types, see Section 9 of SAP 2009.	[206]			
	c)	Is the efficiency for the secondary heating system correct? Note the secondary heating system is based upon a room heater (see Table 4a in SAP 2009). Examples include a gas fire, a chimney and hearth for an open fire, and a wall-mounted electric fire. Portable heaters are not counted.	[208]			
23	Un	der Section 9 Energy Requirements of the DER and in the specification:				
	a)	Is a minimum of 75% low energy light fittings detailed? Note under 6.5.1, a minimum of 75% of the fixed light fittings and lamps installed within a dwelling should be low energy type, for example tubular fluorescent and compact fluorescent fittings (CFL's). Fixed light fittings include only the main light sources to a room and not display or feature lighting such as picture lights, kitchen wall cupboard lights, or over mirror lights. A light fitting may contain one or more lamps operated by the same switch can be counted as one fitting. Note that lighting provision (and associated carbon emissions) is calculated in SAP 2009 directly from the total floor area (TFA).	Input sheets			
	b)	Is the percentage of low energy light fittings detailed greater than 75%? Note if the percentage of low energy lights is greater than 75%, this will significantly affect the SAP calculation and therefore the lighting must be inspected at the time of completion.				
24	Note Whe whe burn cons	e the emission factors correct? e see Table 12 in SAP 2009. en a stove is used as the primary or secondary form of heating, to ensure the correct EI rating on 0.008 is used as the emission factor, the stove must be manufactured to operate solely for the ning of wood logs. If the stove is capable of burning multifuels, the emissions factors will be siderably higher (for example, the emission factor house coal = 0.301, which is 37 times higher for wood logs). A log store should also be provided.	[261 to 264 & 385]			
Not	es:					
		SAP 2009 Completion checklist		Yes	No	Notes
1	Do	SAP 2009 Completion checklist es the completion SAP pass the check detailed above?		Yes	No 🔲	Notes
1 2		•		_	No 🔲	Notes
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