

## Appendix D: Specification for a home built with a heat pump

- D1** This appendix provides a good practice specification for a dwelling built with a heat pump.
- D2** By using this specification, the dwelling should pass the target primary energy rate and target emission rate. However, this should be checked through energy calculations.

**Table D1 Summary of notional dwelling specification for new dwellings**

Element or system	Reference value for target setting <sup>(1)</sup>
Opening areas (windows, roof windows, rooflights and doors)	Same as for actual dwelling not exceeding a total area of openings of 25% of total floor area <sup>(2)</sup>
External walls including semi-exposed walls	$U = 0.18 \text{ W}/(\text{m}^2\cdot\text{K})$
Party walls	$U = 0$
Floors	$U = 0.13 \text{ W}/(\text{m}^2\cdot\text{K})$
Roofs	$U = 0.11 \text{ W}/(\text{m}^2\cdot\text{K})$
Opaque door (less than 30% glazed area)	$U = 1.0 \text{ W}/(\text{m}^2\cdot\text{K})$
Semi-glazed door (30–60% glazed area)	$U = 1.0 \text{ W}/(\text{m}^2\cdot\text{K})$
Windows and glazed doors with greater than 60% glazed area	$U = 1.2 \text{ W}/(\text{m}^2\cdot\text{K})$ Frame factor = 0.7
Roof windows	$U = 1.2 \text{ W}/(\text{m}^2\cdot\text{K})$ , when in vertical position (for correction due to angle, see specification in SAP 10 Appendix R)
Rooflights	$U = 1.7 \text{ W}/(\text{m}^2\cdot\text{K})$ , when in horizontal position (for correction due to angle, see specification in SAP 10 Appendix R)
Ventilation system	Natural ventilation with intermittent extract fans
Air permeability	$5 \text{ m}^3/(\text{h}\cdot\text{m}^2)$ at 50 Pa
Main heating fuel (space and water)	<b>Mains electricity</b>
Heating system	<b>Air source heat pump</b> and radiators Design flow temperature = 45°C
<b>Heat pump</b> <sup>(3)</sup>	Space heating efficiency = 250% Water heating efficiency = 250%
Heating system controls	<b>Weather compensation</b> Either: <ul style="list-style-type: none"> <li>– single storey dwelling in which the living area is greater than 70% of total floor area: programmer and room thermostat</li> <li>– any other dwelling: time and temperature zone control, thermostatic radiator valves</li> </ul>