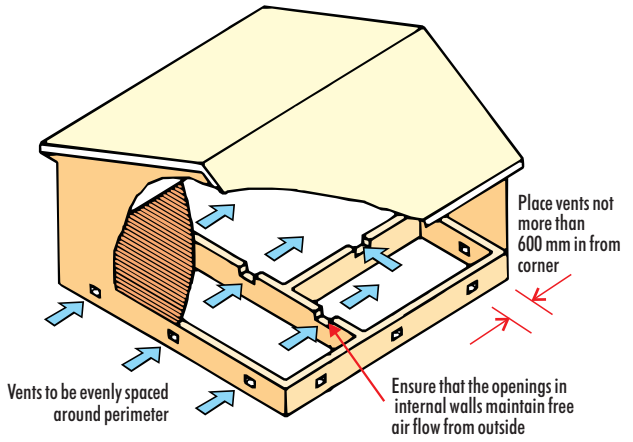
Building Principles EXPLAINED

Ventilation and Ground Clearance for Suspended Timber Floors



While most designers and builders realise that suspended timber floors must be ventilated at ground level, there is still some confusion about how much ventilation to provide and what the ground clearance should be.

The National Timber Framing Code simply states that "unventilated spaces shall not be permitted beneath floors constructed from or supported by timber". No guidance is given on the level of ventilation required, or the clearance from the ground.

The 1990 edition of the Building Code of Australia (BCA) was similarly vague, calling only for an "adequately cross-ventilated space" underneath suspended floors.

The 1996 edition of the BCA, which has only recently been adopted in some States, now spells out exactly how to satisfy the performance requirement that "moisture from the ground must be prevented from causing.....undue dampness or deterioration of building elements".

Volume 2 of the BCA, for Class 1 and Class 10 Buildings, titled "Housing Provisions", states that the clearance between the ground surface and the underside of the lowest framing member must be not less than 150 mm. The ground clearance must also comply with the requirements, if any, for the flooring material used.

If termite barriers are installed which need to be inspected, then ground clearance must be 400 mm, in accordance with Australian Standard 3660.1, Protection of buildings from subterranean termites.

Sub-floor ventilation is to be provided at a rate of not less than 7300mm^2/m length of wall.

Calculation of Ventilation Rate

The specified ventilation area means the nett area, that is, the amount of free air space provided by each vent. To calculate the number of vents required, follow these steps:

1. Calculate nett ventilation area of one vent:
   = number of holes or spaces x area of each hole (answer in mm2)

2. Calculate vent spacing
   = (nett area of one vent ÷ 7300) x 1000 (answer in mm)

3. Calculate number of vents
   = length of wall (mm) ÷ vent spacing (mm)

Since the BCA is a performance document, different levels of sub-floor ventilation and ground clearance may be proposed for consideration by regulatory authorities. However, it would need to be clearly demonstrated that any alternative system provided an acceptable level of protection, taking into account all the circumstances.

Further guidance on this subject can be obtained from the Building Code of Australia (1996), or from the State timber advisory organisations.

VENTILATION PROVIDED BY COMMERCIALLY AVAILABLE VENTS

Vent Type and Specifications				Aprox. Nett Ventilation Area Provided per Vent (mm^2)	Vent Spacing in Accordance with AS 3660.1 (mm)	Number of Bricks/Blocks Between Vents
Material	**Diagram**	**Vent Size**	**Vent Pattern**			
Clay (standard off the shelf items)		160 x 230	8 slots each 75 mm x 8 mm	4800	658	2
Clay (standard off the shelf items)		160 x 230	15 holes each 16 mm x 16 mm	3840	526	1.5
Metal (suit blockwork construction)		200 x 400	8 slots 10 slots each 100 mm x 8 mm	5900 7400	808 1014	1 1.5
Metal (suit blockwork construction)		200 x 400	8 slots 10 slots each 175 mm x 8 mm	10700 13360	1466 1830	2.5 3.5
Gradwell Cast Aluminium Air Vent		9" x 6" (230 x 160)	4 slots each 195 mm x 10 mm	7800	1068	3.5
Pryda Vent Pryda Vent		230 x 75 230 x 165	52 holes 117 holes each 11 mm x 11 mm	6292 14157	862 1939	2.5 7
Pryda Slim Vent (GVS90) Pryda Slim Vent (GVS90H)		250 x 90 130 x 90	12 slots 6 slots each 110 mm x 8 mm	10560 5280	1447 723	5 2