



ANGEL STEP® ACOUSTIC UNDERLAY

Treatment of Impact and Airborne Noise transfer through Floors

Angel Step® is an acoustic underlay for carpet and solid timber or laminate floating floors. Angel Step's construction combines a highly effective support and cushion for floating floors. It provides maximum performance for minimum thickness combining an impact and vibration damping and sound absorber with a decoupled noise barrier.

Angel Step® comprises an 8 mm layer of double needle punched polyester matting sandwiched between 4 kg/m² 'visco-elastic' polymer flexible noise barriers.

When laid over timber floors the first barrier in contact with the floor seals and damps the flooring substrate (T&G, ply, chipboard, marine ply). For concrete floors Angel Step® can be ordered without the bottom noise barrier.



The resilient polyester middle core layer absorbs impact energy and residual airborne noise from above and below, transforming wave vibrations into heat energy.

The 'decoupled flexible floating' top noise barrier greatly reduces airborne sound waves - noise above or below the floor - and complies with the Building Code of Australia in respect to separating floors between adjoining dwellings.

SUPPLY DETAILS

Angel Step®	Barriers	Thickness	Size	Weight	Use Over
484P	2	12 mm	1150 x 1150mm	9 kg/m ²	Timber/Ply/MDF
48P	1	10 mm	1150 x 1150mm	5 kg/m ²	Concrete Floors

Angel Step® is fire-rated to international and Australian standards. Tested to AS 1530.3, Angel Step® has the following results:

	Flammability	= 0
	Spread of Flame	= 0
	Heat Evolved	= 0
	Smoke Developed	= 0-1

Angel Step® is moisture resistant. Exposure to an atmosphere of 50°C and 95% relative humidity for four days showed that Angel Step® has a moisture absorption rate of less than 2% by volume.

Test by Marshall Day Acoustics Report No: 002 2007125 – 10 December 2007

14mm "Uniclick" floating timber flooring laid on top of AngelStep® 48 acoustic underlay over the concrete base floor.

Tests were conducted with the noise barrier facing upwards.

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In the photo below you can see the 'Tapping Machine' undertaking the impact test



Test results – overall ratings (Sample)

	$L'_{nT,w}$	$L'_{nT,w+C_i}$
Base floor	59	47
Tiles on 6mm CTU on AngelStep 484-12mm	38	40
Tiles on 6mm CTU on AngelStep 48-10mm (noise barrier on top)	35	37
Tiles on 6mm CTU on AngelStep 48-10mm (noise barrier on bottom)	36	37
Tiles on 15mm CFC on AngelStep 484-12mm	40	41
Tiles on 15mm CFC on AngelStep 48-10mm (noise barrier on top)	35	36
Tiles on 15mm CFC on AngelStep 48-10mm (noise barrier on bottom)	36	37
Timber on AngelStep 484-12mm	40	41
Timber on AngelStep 48-10mm (noise barrier on top)	40	41
Timber on AngelStep 48-10mm (noise barrier on bottom)	39	40
Carpet and underlay on AngelStep 484-12mm	17	16

Observations and Trends

Upon review of the floor impact noise ratings in conjunction with the detailed results across the frequency range, the following observations and trends are noted:

- ✓ The AngelStep® acoustic underlay provides excellent reduction of floor impact noise when installed on a concrete floor with a rigid tile underlay
- ✓ When compared to a bare concrete floor, improvements of up to 24 points in $L'_{nT,w}$ ratings were measured
- ✓ When installed as detailed above, the AngelStep® 48-10mm underlay provides better impact noise ratings than the AngelStep® 484-12mm
- ✓ The AngelStep® 48-10mm provides better impact sound ratings when the noise barrier is installed faced up
- ✓ There is no measurable benefit in using 15mm CFC under the tiles instead of 6mm CTU

Note that the construction of the base floor must be taken into consideration when assessing the actual floor impact noise performance that the AngelStep® acoustic underlay might achieve when installed in a different floor/ceiling construction.

Figure 3. shows a comparison plot of the standardised floor impact sound pressure. Level across the frequency range for the AngelStep® 48-10mm with noise barrier installed face up, compared against the base floor.

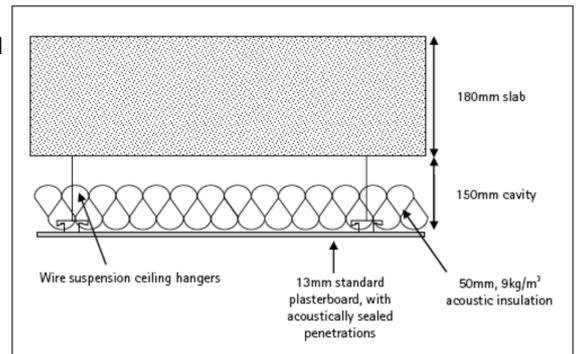


Figure 2: Schematic of base floor system

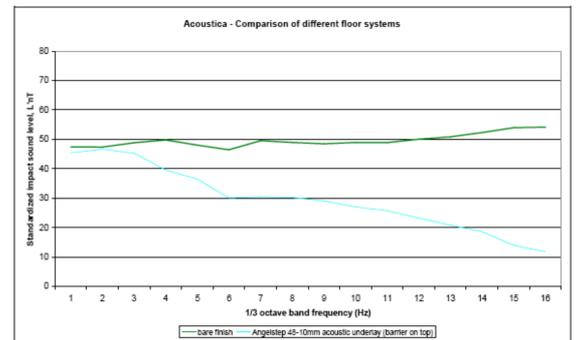
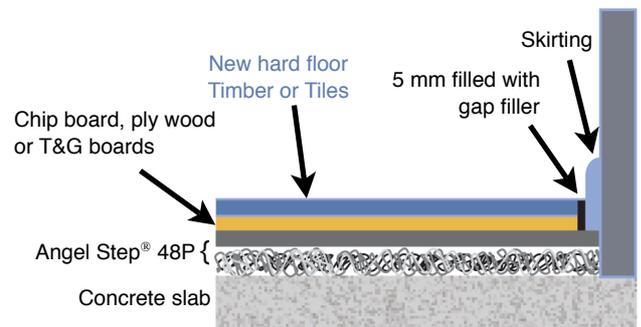
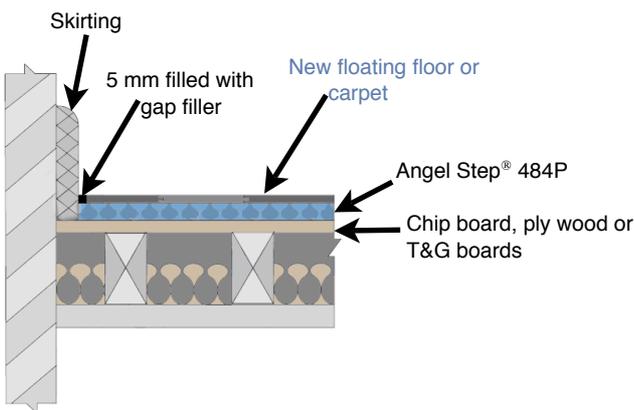


Figure 3: AngelStep 48-10mm beneath tiles on 6mm CTU, compared to the base floor



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