



Technical Supplement

Internal Fire and
Acoustic Rated Floor Solution

INTERIORS

Australia June 2017

Make sure your information is up to date.

When specifying or installing James Hardie™ products, ensure you have the current manual. If in doubt, or you need more information, visit www.jameshardie.com.au or Ask James Hardie™ on 13 11 03.

FOREWORD

- This technical supplement must be read in conjunction with the relevant current product literature.
- James Hardie™ building products must be installed in accordance with the applicable technical product literature.
- All components and accessories must be installed in accordance with the respective manufacturer's specifications.
- For product warranty terms and conditions, refer to www.jameshardie.com.au

FIRE AND ACOUSTIC RATED INTERNAL FLOORING SOLUTION

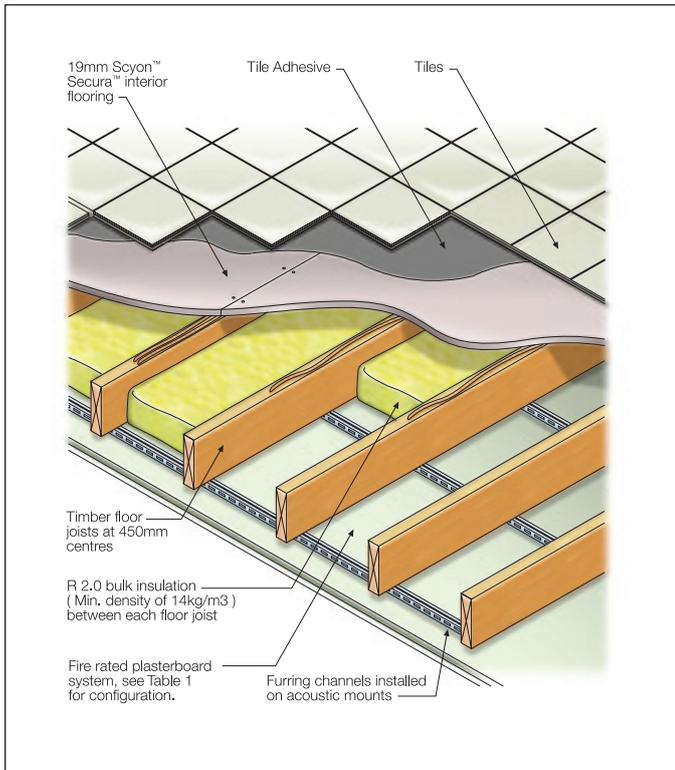


FIGURE 1: SYSTEM OVERVIEW

James Hardie's lightweight floor solution is a robust and acoustic rated system featuring Scyon™ Secura™ interior flooring; a non-combustible floor substrate that can be directly tiled onto without the need for an underlay sheet. Additionally, Scyon™ Secura™ interior flooring is supplied fully sealed on all six sides and requires no additional trimmers.

This lightweight floor solution:

- Delivers cost savings of up to 20% compared to traditional concrete slab construction*;
- Eliminates the time required for upper storey concrete curing; which provides up to two weeks time saving;
- Requires no internal floor scaffolding as compared to concrete slab construction;
- Delivers up to 120/120/120 Fire Resistance Level (FRL) from the underside (see Table 1);
- Allows for immediate commencement of upper floor and roof construction;
- Delivers a thermal and acoustic rated floor solution; and
- Reduces ground floor footing requirements thus minimising building costs.

Note: Always refer to relevant third party experts including Fire and Acoustic Engineers to determine suitability of this solution for your intended application.

STRUCTURAL

Scyon™ Secura™ interior flooring is structurally designed to withstand the domestic and residential activities for self-contained dwellings (Category A1) of Table 3.1 of AS/NZS 1170.1 'Structural Design Actions – Permanent, Imposed and Other Actions' of 1.8kN concentrated load and a Uniformly Distributed Load (UDL) capacity of 2kPa at 450mm floor joist centres.

*Based on an independent quantity surveyor analysis on a 200mm concrete slab and two storey construction.

TABLE 1: FIRE AND ACOUSTIC PERFORMANCE FOR VARIOUS CONFIGURATIONS

JH SYSTEM	CEILING LINING SYSTEM	FIRE RATED LEVEL (FRL)	Acoustic Data					
			R _w		R _w + C _{tr}		Ln,w + C _i	
			Tile	Carpet	Tile	Carpet	Tile	Carpet
JH-F1	Furred on acoustic mounts + 2 x 13mm Boral FireSTOP plasterboard	60/60/60 from below RISF* 30 min	61	60	55	54	57	36
JH-F2	Furred on acoustic mounts + 13 + 16mm (Boral FireSTOP or Knauf FireShield) plasterboard	60/60/60 from below RISF* 60 min	62	61	56	55	56	35
JH-F3	Furred on acoustic mounts + 2 x 16mm Boral FireSTOP plasterboard	90/90/90 from below RISF* 60 min	61	60	54	53	57	35
JH-F4	Furred on acoustic mounts + 3 x 16mm Boral FireSTOP plasterboard	120/120/120 from below RISF* 90 min	62	61	56	55	55	34

*RISF = Resistance to the Incipient Spread of Fire.
 NOTE: the above fire ratings are applicable to the underside only.

Notes:

1. Floor joists to be a minimum 190 x 45 seasoned timber floor joists at 450mm centres. Floor joists must be designed by a Structural Engineer.
2. Table 1 must be read in conjunction with the ‘Important Notes’ section of this document (see page 6).
3. If steel floor joists are used, only ‘JH-F2’ system with Knauf FireShield plasterboard can be used.
4. Supporting walls must be fire and acoustic rated to suit the floor systems fire and acoustic performance from both sides of the wall.

SUSTAINABILITY

Lightweight construction incorporating fibre cement products results in one of the most energy efficient and environmentally responsible building systems employed in the Australian building industry.

Embodied energy is the energy consumed by all processes associated with the production of a product or system. It is an important indicator used to assess the environmental damage caused by a product or system to the environment. The higher the number, the greater the impact on the environment and future generations. The results shown in Figure 2 were calculated by an independent third party and demonstrate how James Hardie’s Scyon™ Secura™ internal floor solution delivers an embodied energy over three times less than a 200mm thick concrete slab.

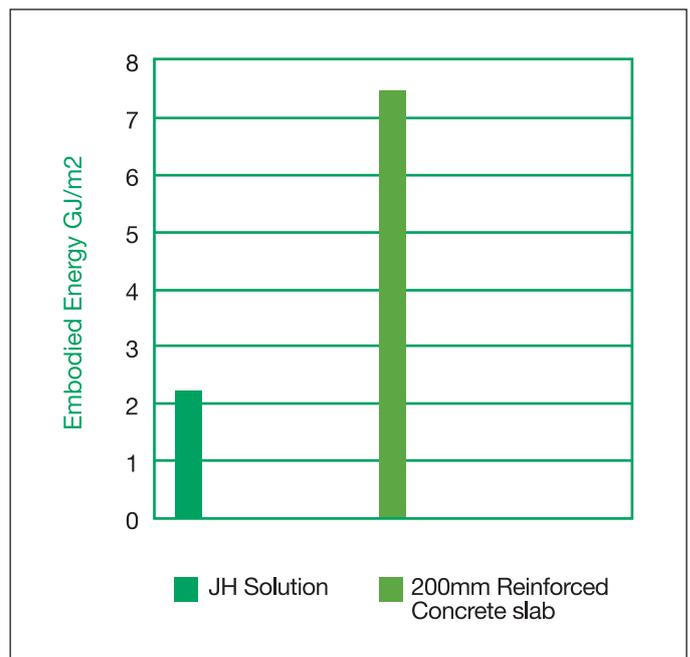


FIGURE 2: EMBODIED ENERGY SOLUTION COMPARISON

Construction Details

Figures 3 to 5 outline floor to wall junction details. For more detailed information refer to the current *James Hardie Fire and Acoustic Rated Walls Technical Specification* in addition to the Timber Development Association in your state.

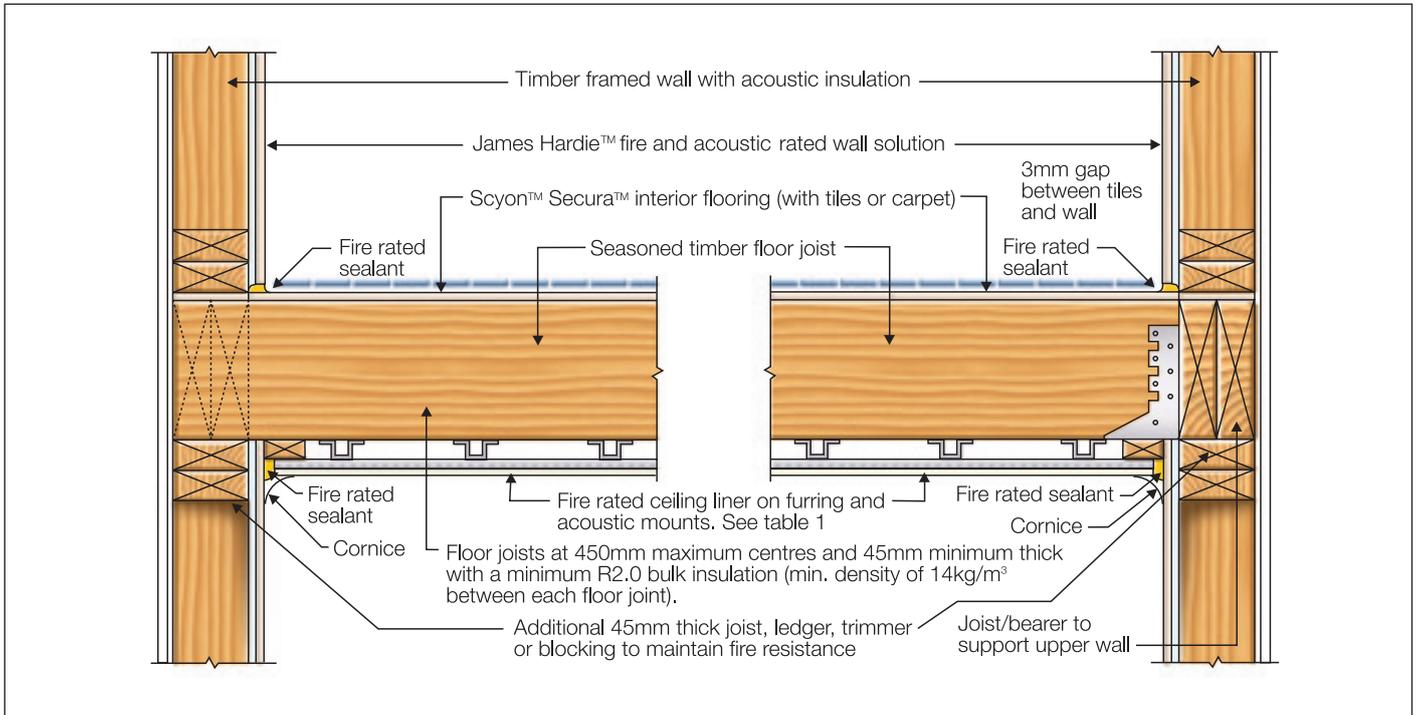


FIGURE 3: FLOOR TO WALL JUNCTION - OPTIONS 1 & 2

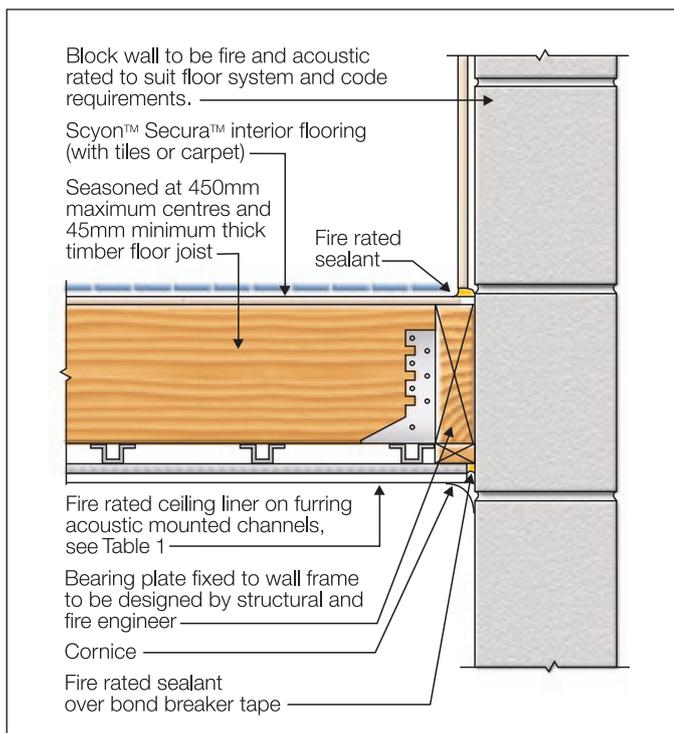


FIGURE 4: FLOOR TO MASONRY WALL JUNCTION - OPTION 3

Note: Ensure supporting walls are fire and acoustic rated to suit the floor and comply with relevant codes and regulations from both sides.

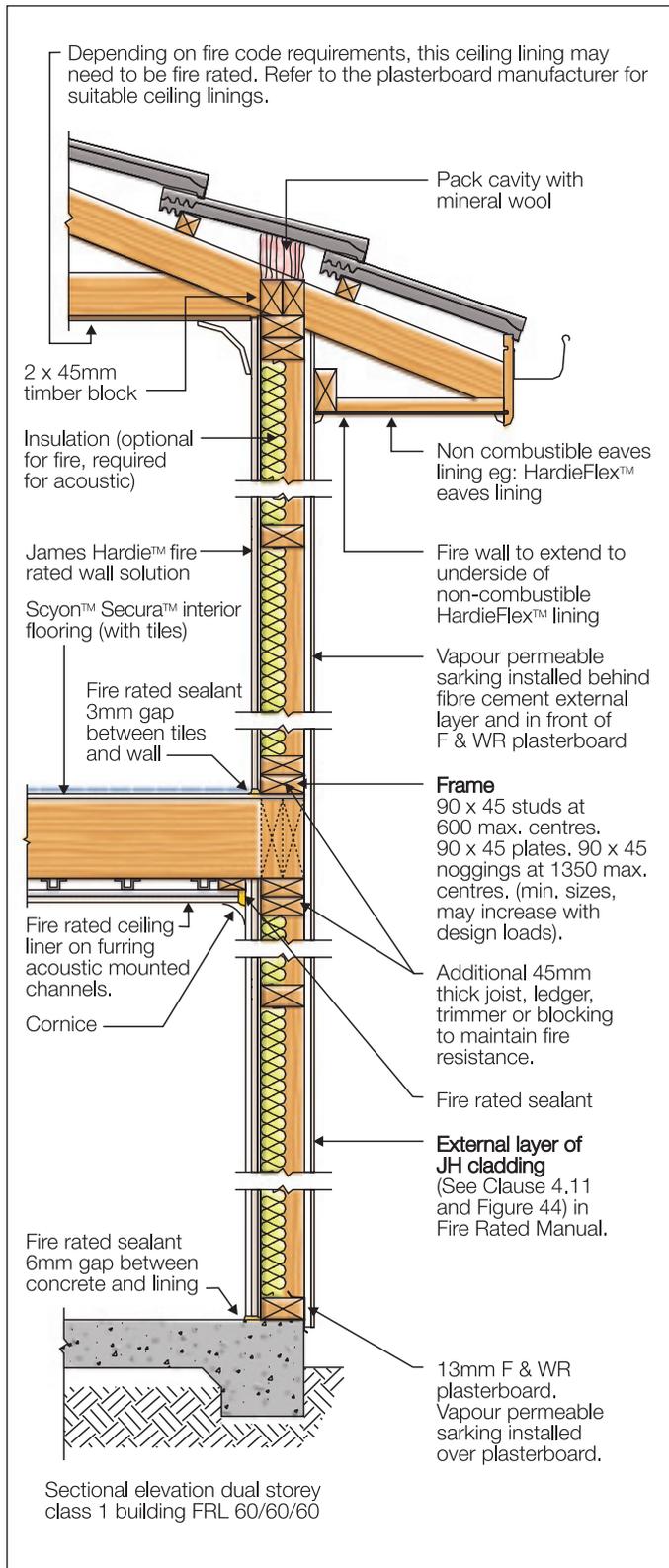


FIGURE 5: FIRE RATED WALL OVERVIEW - 60/60/60

IMPORTANT NOTES:

1. The acoustic values outlined in Table 1 are based on an acoustic opinion produced by Heggies Pty Ltd (AAAC approved). All acoustic values are to be verified on site. The R_w (Weighted Sound Reduction Index) is a single number index used to rate the sound insulation of a partition against noises such as speech which do not have significant low frequency components. The index given is the expected performance in a laboratory which tests to AS1191 "Acoustics – Method for Laboratory Measurement of the Airborne Sound Transmission Loss of Building Partitions", and determined according to the procedure in AS/NZS 1276.1:1999 "Acoustics – Rating of Sound Insulation Buildings and of Building Elements – Part 1: Airborne Sound Insulation". The rating obtained on a building site, called the Weighted Apparent Sound Reduction Index (R_w) may differ from the laboratory results.
2. C and Ctr are adaptation terms which when applied to the R_w value result in a single number index which provides a more reliable indicator of the ability of the partition to isolate against certain types of noise. In particular, the R_w combined with the Ctr value gives a more reliable indicator of the ability of the partition to isolate against traffic noise, or noise containing low frequency components. In several countries, the R_w combined with $C_{tr} = R_w + C_{tr}$. Refer to AS/NZS 1276.1:1999 "Acoustics – Rating of Sound Insulation Buildings and of Building Elements – Part 1: Airborne Sound Insulation".
3. The expected tolerance is $\pm 2\text{dB}$ for R_w and $\pm 3\text{dB}$ for $R_w + C_{tr}$. This allows for variations in the test method, the difference between laboratories and the accuracy of estimating techniques.
4. The $L_{n,w} + C_i$ is a single number index used to rate the sound isolation of a floor/ceiling partition against footfall noise, particularly high-heeled, hard surfaced shoes. The $L_{n,w} + C_i$ value is the expected performance in a laboratory that tests to ISO 10140-3:2010 Acoustics – Laboratory Measurement of Sound Insulation of Buildings Elements – Part 3: Measurement of Sound Impact Sound Insulation and determined according to the procedure outlined in ISO 717-2:1996/Amd 1:2006 Acoustics – Ratings of Sound Insulation in Buildings and Building Elements – Part 2: Impact Sound Insulation.
5. The expected tolerance of opinions is $\pm 3\text{dB}$ for the $L_{n,w} + C_i$. The expected tolerance allows for variations due to the test method, differences between laboratories and accuracy of the estimate. The $L_{n,w} + C_i$ rating does not quantify the amount of low frequency noise to the room below the partition when a person walks on the floor above. This low frequency noise can be significant with lightweight floor/ceiling systems. The field rating may differ significantly from the laboratory result.
6. The opinions are based on the wall being of good construction and assume the face joints finished, the perimeters have been fire and acoustic caulked and that there are no acoustic weaknesses in the building elements, such as but not limited to, the walls, floors and ceilings.



**For information and advice
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