

10 March 2020

640.01901 REF23 Ritek XL RevA 20200310.docx

## ACOUSTIC OPINION - REF023 Ritek XL and X-Plus Wall Systems

James Hardie Pty Ltd retained SLR Consulting Australia Pty Ltd to provide acoustical rating for the Ritek XL and X-Plus Wall Systems.

The Ritek wall panels comprise of 6 mm cement sheet each side of a poured concrete core (minimum density 2200 kg/m<sup>3</sup>), which comes in six different thicknesses; 115 mm, 135 mm, 150 mm, 165 mm, 200 mm and 265 mm.

Four combinations of acoustic systems have been provided for each panel thickness, as described below.

System	Description
A	Plain wall, no plasterboard facings
B	<u>Resiliently mounted furring channel and insulation to one side of wall:</u> 28 mm furring channel resiliently mounted to create nominal 40 mm cavity. 13 mm standard core plasterboard screw-fixed to channels. Acoustic insulation 40-50 mm thick to cavity, 11 kg/m <sup>3</sup> glass fibre or 14 kg/m <sup>3</sup> polyester fibre insulation.
C	<u>Separate stud and insulation to one side of wall:</u> 20 mm gap between wall and 64 mm steel studs to create 84 mm total cavity. 13 mm standard core plasterboard, screw-fixed to studs. Acoustic insulation 70-75 mm thick to cavity, 11 kg/m <sup>3</sup> glass fibre or 14 kg/m <sup>3</sup> polyester fibre insulation.
D	<u>Furring channel and insulation to one side of wall:</u> 28 mm furring channels on Beta-Fix bracket to create nominal 50 mm cavity. 10 mm plasterboard min. density 5.7 kg/m <sup>2</sup> screw fixed to channels. Acoustic insulation 50 mm thick min. 32 kg/m <sup>3</sup> R1.5 glass fibre to cavity

The acoustic performance of each system with the various facing configurations is provided in the table below. Note the XL and X-Plus wall systems are acoustically equivalent, with the only variation being different spacer materials within the core (plastic for XL, steel and aluminium for X-Plus). This has a negligible effect on the acoustic ratings.

Ritek XL & X-Plus Wall Type	Total Wall Thickness, mm	Sound Insulation Rating, Rw, dB	Sound Insulation Rating, Rw + Ctr, dB
115XL-A	115	48	43
115XL-B	168	54	44
115XL-C	212	62	54
115XL-D	175	53	43
135XL-A	135	50	45
135XL-B	188	54	47
135XL-C	232	62	56
135XL-D	195	53	47
150XL-A	150	51	47
150XL-B	203	55	48
150XL-C	247	63	57
150XL-D	200	54	47
165XL-A	165	50* Equivalent to NCC Deemed to Satisfy 150mm concrete wall panel	50* Equivalent to NCC Deemed to Satisfy 150mm concrete wall panel
165XL-B	218	56	49
165XL-C	262	64	57
165XL-D	225	55	48
200XL-A	200	54	50
200XL-B	253	57	51
200XL-C	297	66	59
200XL-D	260	56	50
265XL-A	265	57	52
265XL-B	318	59	52
265XL-C	362	67	60
265XL-D	325	58	51

\*Rating not determined, system is considered equivalent to NCC Deemed to Satisfy concrete panel

## NOTES

1. The acoustic ratings determined above are based on consideration of laboratory tests of similar systems undertaken by James Hardie and other manufacturers, and from theoretical prediction.
2. The Rw (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 ISO 717.1 "Acoustics - Rating of Sound

*Insulation Buildings and of Building Elements – Airborne Sound Insulation*". The rating obtained on a building site, called the Weighted Apparent Sound Reduction Index (R'w) or the Weighted Normalised Level Difference (DnTw) may differ from the laboratory results.

3. C and Ctr are adaptation terms which when applied to the R<sub>w</sub> 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<sub>w</sub> combined with the C<sub>tr</sub> value gives a more reliable indicator of the ability of the partition to isolate against traffic noise, or noise containing low frequency components. Refer also to AS/NZS ISO 717.1 *"Acoustics - Rating of Sound Insulation Buildings and of Building Elements – Airborne Sound Insulation"*.
4. The expected tolerance is ±2dB for R<sub>w</sub> and ±3dB for R<sub>w</sub> + C<sub>tr</sub>. This allows for variations in the test method, the difference between laboratories and the accuracy of the estimating techniques.
5. The opinions are based on the wall being of good construction and assume the face joints finished, the perimeters acoustically caulked and that there are no acoustical weaknesses in the wall etc.

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