THERMAFLEECE TF35 ACOUSTIC APPLICATIONS
TIMBER FRAME INTERNAL PARTITION WALLS

This application note gives examples of timber frame internal wall constructions which, when built correctly, will meet or exceed the performance standards set out in Approved Document E, 'Resistance to the passage of sound'.

BUILDING REGULATIONS PART E

Since July 2003 it has been a requirement, under Part E of The Building Regulations 2000, that houses, flats, and rooms for residential purposes are designed and constructed to provide reasonable resistance to sound from other parts of the same building and from adjoining buildings.

EXCEEDING APPROVED DOCUMENT E WITH THERMAFLEECE TF35 & RECYCLED GYPSUM BOARD

The minimum value for airborne sound insulation of an internal wall (i.e. a wall between two rooms within the same dwelling) is R_w = 40dB. R_w is the weighted sound reduction index and is the degree to which the wall reduces noise from one side were the sound is generated, to the other side were the sound is received.

A sound reduction index of up to R_w 54dB can be achieved by using THERMAFLEECE TF35 high density wool insulation in conjunction with single or multiple layers of recycled gypsum board or plasterboard. The wall specification varies depending on the target sound reduction index.

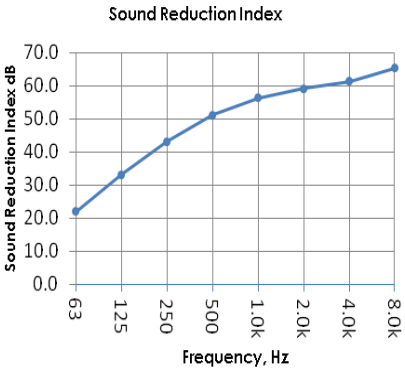
THERMAFLEECE TF35 System – R_w 54 dB

Specification

- 70mm Softwood timber studs @ 600mm centres
- One layer 12.5 mm & one layer 10mm recycled gypsum board (25 kg/m^2) each side
- 70 mm THERMAFLEECE TF35 between studs.
- Nominal thickness = 115 mm

Weighted Sound Reduction Index (R_wdB) = 54 dB

Report No. *C/21913/R02*



Frequency, Hz	Sound Reduction Index (dB)
63	21.9
125	33.1
250	43.1
500	51.2
1.0k	56.4
2.0k	59.2
4.0k	61.4
8.0k	65.3

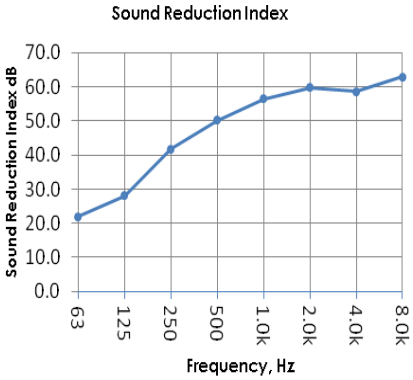
THERMAFLEECE TF35 System - R_w 52 dB

Specification

- 70mm Softwood timber studs @ 600mm centres
- One layer 12.5 mm & one layer 10 mm recycled gypsum board (25 kg/m^2) one side one layer 10mm recycled gypsum board (11 kg/m^2) on other side
- 70 mm THERMAFLEECE TF35 between studs.
- Nominal thickness = 103 mm

Weighted Sound Reduction Index (R_wdB) = 52 dB

Report No. *C/21913/R02*



Frequency, Hz	Sound Reduction Index (dB)
63	21.9
125	28.0
250	41.7
500	50.2
1.0k	56.5
2.0k	59.7
4.0k	58.6
8.0k	63.0

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THERMAFLEECE TF35 System - R_w 48 dB

Specification

- 70mm Softwood timber studs @ 600mm centres
- One layer 12.5mm recycled gypsum board (14 kg/m^2) each side
- 70 mm THERMAFLEECE TF35 between studs.
- Nominal thickness = 95 mm

Weighted Sound Reduction Index (R_wdB) = 48 dB

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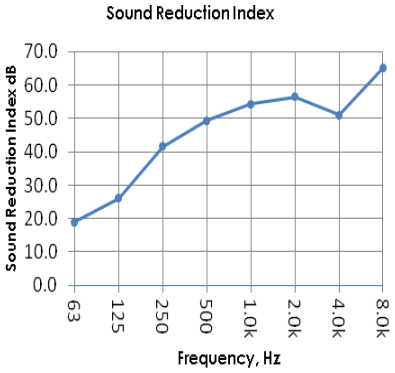

Frequency, Hz	Sound Reduction Index (dB)
63	18.9
125	26.0
250	41.6
500	49.4
1.0k	54.4
2.0k	56.4
4.0k	51.1
8.0k	65.0

THERMAFLEECE TF35 System - R_w 47 dB

Specification

- 70mm Softwood timber studs @ 600mm centres
- One layer 10mm recycled gypsum board (11kg/m^2) each side.
- 70 mm THERMAFLEECE TF35 between studs.
- Nominal thickness = 90 mm.

Weighted Sound Reduction Index (R_wdB) = 48 dB

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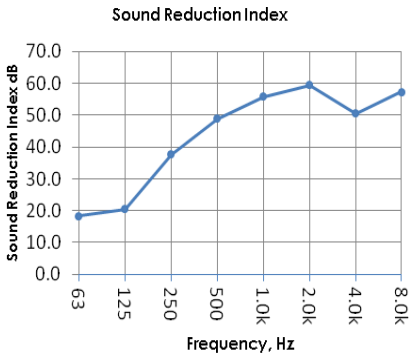


Frequency, Hz	Sound Reduction Index (dB)
63	18.3
125	20.5
250	37.7
500	48.8
1.0k	55.8
2.0k	59.5
4.0k	50.5
8.0k	57.3

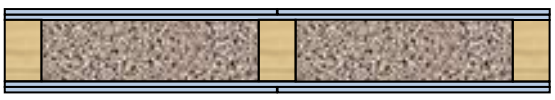
EXCEEDING APPROVED DOCUMENT E WITH THERMAFLEECE TF35 & STANDARD PLASTERBOARD

The minimum sound reduction index of up to R_w 48dB can be achieved by using THERMAFLEECE TF35 high density wool insulation in conjunction with single or multiple layers of standard plasterboard. The wall specification varies depending on the target sound reduction index.

THERMAFLEECE TF35 System - R_w 48 dB

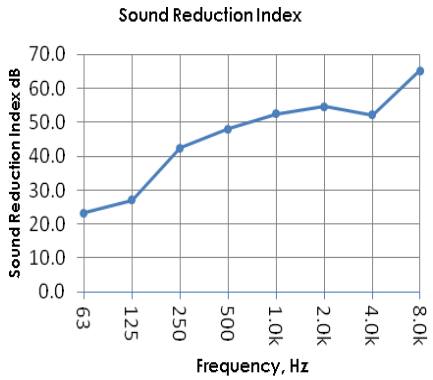
Specification

- 70mm Softwood timber studs @ 600mm centres
- Two layers of 12.5mm plasterboard (16kg/m^2) each side
- 70 mm THERMAFLEECE TF35 between studs.
- Nominal thickness = 120 mm.



Weighted Sound Reduction Index (R_wdB) = 48 dB

Report No. *C/21913/R02*



Frequency, Hz	Sound Reduction Index (dB)
63	23.2
125	27.0
250	42.4
500	48.0
1.0k	52.5
2.0k	54.6
4.0k	52.1
8.0k	65.2

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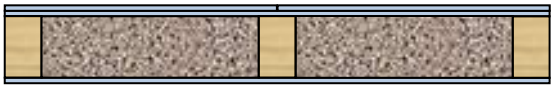
THERMAFLEECE TF35 System - R_w 45 dB

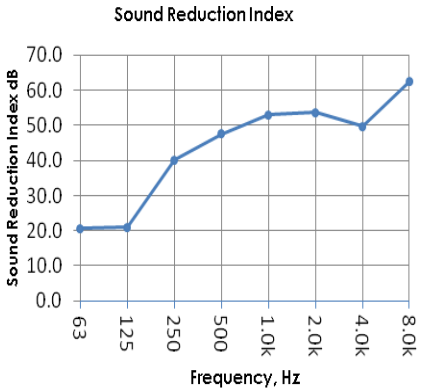
Specification

- 70mm Softwood timber studs @ 600mm centres
- Two layers of 12.5mm plasterboard (16 kg/m^3) one side & one layer 12.5 mm (8 kg/m^3) on other side.
- 70 mm THERMAFLEECE TF35 between studs.
- Nominal thickness = 108 mm.



Weighted Sound Reduction Index (R_wdB) = 45 dB

Report No. *C/21913/R02*



Frequency, Hz	Sound Reduction Index (dB)
63	20.7
125	20.9
250	40.1
500	47.5
1.0k	53.0
2.0k	53.7
4.0k	49.7
8.0k	62.5

Construction Guidance

- The minimum distance between inside lining faces should be no less than 70mm.
- Each additional layer of lining board should be staggered to overlap the joints of the under layer.
- THERMAFLEECE can be friction fit between timbers.
- All joints should be well sealed.

Practical Absorption Co-efficients

Frequency, Hz	PRACTICAL ABSORBTION COEFFICIENT		
	50mm	70mm	90mm
125	0.20	0.45	0.50
250	0.55	0.75	1.00
500	0.85	0.95	1.00
1.0k	0.90	1.00	1.00
2.0k	1.00	1.00	1.00
4.0k	1.00	1.00	1.00
EN ISO 11654:1997	Class B	Class A	Class A
NRC to ASTM C 423-01	0.85	0.95	1.00

For help and guidance please call our Technical Help Line on 0844 8009953 or email us at info@thermafleece.com.

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