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Acoustic Opinion

Dincel 110 mm Wall Systems

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Prepared For:
Dincel Construction Systems
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1.0 CONSULTING BRIEF

Day Design Pty Ltd was engaged by Dincel Construction System to provide Acoustic Opinions on the R_w and $R_w + C_{tr}$ ratings for a range of walls constructed using their DCS 110 wall system. The objective is to provide acoustical data useful to building designers for inclusion in technical publications.

Scope of Work:

- Review the results of systems incorporating the DCS110 wall tested at CSIRO, Highett provided by Dincel.
- Model basic wall systems using acoustic modelling software.
- Compare the R_w and $R_w + C_{tr}$ predictions with test results.
- Provide Acoustic Opinions on the R_w and $R_w + C_{tr}$ ratings for a range of DCS 110 systems to meet the Deemed-to-Satisfy Provisions in the BCA.
- Prepare an Acoustical Opinion Report.

2.0 PREDICTION OF R_W AND C_{TR}

R_w (weighted sound reduction index) provides an acoustic rating of the sound insulation of walls and partitions due to airborne sound of the human voice. Sound insulation varies with frequency and is dependent on the type of wall construction, however, the R_w provides a convenient method of rating sound insulation using a single number. The higher the R_w rating the better the sound insulation provided by the partition.

C_{tr} is a correction factor to account for the sound insulation performance in the lower frequencies. The C_{tr} factor is added to the R_w rating to get an overall $R_w + C_{tr}$ airborne rating. For masonry walls, the C_{tr} factor is typically between –5 and –3 while for plasterboard walls the factor may often be as low as –12, depending on the construction type.

The Acoustic Opinions expressed in this report are based firstly on calculations made using the Marshall Day Acoustics Acousti-Max software and secondly by comparison with Sound Transmission Loss tests for similar plasterboard constructions. Acoustic opinions are then provided in the light of our general acoustic experience. Factors taken into account in our calculations include: the surface mass of the plasterboard, Young's Modulus, the critical frequency and speed of sound in plasterboard, the effect of air cavities and acoustic insulation between studs.

We are of the opinion that using the Acousti-Max software and making corrections based on comparison with test results that our prediction accuracy is in the order of ± 2 dB.

Because of the complexity of such calculations, approved laboratory test results (in accordance with Australian Standard AS1191:2002 and AS/NZS1276.1:1999) are always preferred.

3.0 MATERIALS USED FOR SOUND REDUCTION

3.1 Dincel Wall Systems

The Dincel wall systems in this report have specifications as detailed in Table 1 below:

Table 1 Dincel Wall

Product Name	Thickness (mm)	Finished Bulk Density (kg/m³)
DCS 110	110 mm	2,350

3.2 Plasterboard

In compiling this schedule of acoustic ratings for various plasterboard constructions Dincel has worked closely with Knauf Plasterboard. The density of the plasterboard provided by Knauf and used in this report is shown in Table 2 below.

Table 2 Knauf Plasterboard Densities

Product Name	Thickness (mm)	Bulk Density (kg/m³)
MastaShield*	10	640
	13	623
FireShield*	16	766

* Similar or higher density plasterboard may also be used.

3.3 Insulation

Acoustic insulation specified have bulk densities as follows:

Table 3 Knauf's Insulation Densities

Product Name	Thickness (mm)	Approx Bulk Density (kg/m³)
Glasswool	25	24
Earthwool	50	11

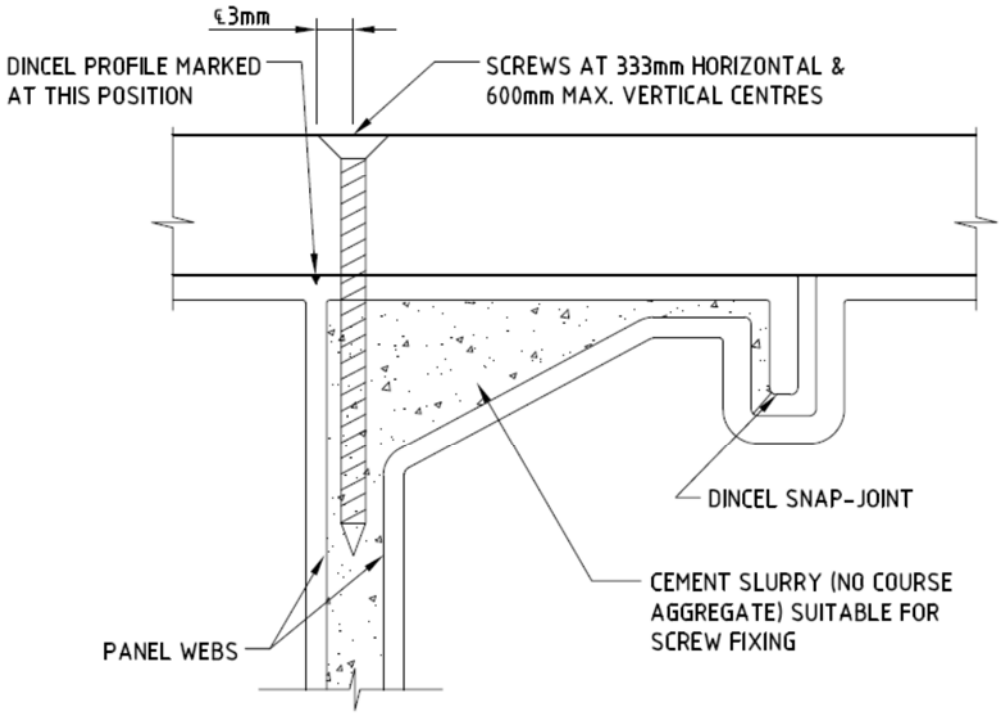
Thicker or higher density of the same bulk insulation may be substituted for wall systems in this report.

3.4 Studs

All systems with a separate steel stud leaf include an option for 51 mm or 64 mm steel studs.

3.5 Direct Fixing to Dincel

Plasterboard can be direct fixed to Dincel either by screwing or a combination of gluing and screwing. The following diagram indicates how conventional screwing can be used with Dincel wall.



DIRECT FIXING DETAIL OF PLASTERBOARD AT EACH FACE OF DINCEL

4.0 BUILDING CODE OF AUSTRALIA – ACOUSTIC REQUIREMENTS

The information in this section is extracted from the Building Code of Australia (BCA), which is now part of the National Construction Code (NCC), Part F5 "Sound Transmission and Insulation". The acoustic requirements and the building solutions in this report are based on the Deemed-to-Satisfy Provisions of the BCA.

The *Objective* of this Part is to safeguard occupants from illness or loss of amenity as a result of undue sound being transmitted -

(a) between adjoining *sole-occupancy units*; and

(b) from common spaces to *sole-occupancy units;* and

(c) from parts of different classifications to sole-occupancy units.

The Objective only applies to a Class 2 or 3 building or a Class 9c *aged care building.*

4.1 F5.5 Sound insulation rating of walls – Class 2 and 3

A wall in a Class 2 or 3 building must -

(i) have an $R_w + C_{tr}$ (airborne) not less than 50, if it separates *sole-occupancy units*; and

(ii) have an R_w (airborne) not less than 50, if it separates *sole-occupancy unit* from a plant room, lift *shaft*, stairway, *public corridor*, public lobby or the like, or parts of a different classification; and

(iii) be of discontinuous construction if it separates -

(A) a bathroom, *sanitary* compartment, laundry or kitchen in one *sole-occupancy unit* from a *habitable room* (other than a kitchen) in an adjoining unit; or

(B) a *sole-occupancy unit* from a plant room or lift *shaft*.

Discontinuous construction means a wall having a minimum 20 mm cavity between 2 separate leaves, and

(i) for masonry, where wall ties are required to connect leaves, the ties are of the resilient type; and

(ii) for other than masonry, there is no mechanical linkage between leaves except at the periphery.

A door may be incorporated in a wall in a Class 2 building that separates a *sole-occupancy unit* from a stairway, *public corridor*, public lobby or the like, provided the door assembly has an R_w not less 30.

Where a wall *required* to have sound insulation has a floor above, the wall must continue to -

(i) the underside of the floor above; or

(ii) a ceiling that provides the sound insulation *required* for the wall.

Where a wall *required* to have sound insulation has a roof above, the wall must continue to -

(i) the underside of the roof above; or

(ii) a ceiling that provides the sound insulation *required* for the wall.

4.2 F5.5 Sound insulation rating of walls – Class 9(c)

(c) A wall in a Class 9c *aged care building* must have an Rw not less than 45 if it separates -

(i) *sole-occupancy units*; or

(ii) A *sole-occupancy unit* from a kitchen, bathroom, *sanitary compartment* (not being an associated ensuite), laundry, plant room or utilities room.

(d) In addition to (c), a wall separating a *sole-occupancy unit* in a Class 9c *aged care building* from a kitchen or laundry, plant must comply with F5.3(b).

(e) Where a wall *required* to have sound insulation has a floor above, the wall must continue to -

(i) the underside of the floor above; or

(ii) a ceiling that provides the sound insulation *required* for the wall.

(f) Where a wall *required* to have sound insulation has a roof above, the wall must continue to -

(i) the underside of the roof above; or

(ii) a ceiling that provides the sound insulation *required* for the wall.

4.3 F5.6 Sound insulation rating of services

(a) If a duct, soil, waste or water supply pipe, including a duct or pipe that is located in a wall or floor cavity, serves or passes through more than one *sole-occupancy unit*, the duct or pipe must be separated from the rooms of any *sole-occupancy unit* by construction with an $R_w + C_{tr}$ (airborne) not less than -

(i) 40 if the adjacent room is a *habitable room* (other than a kitchen); or

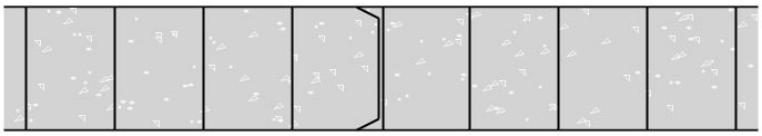
(ii) 25 if the adjacent room is a kitchen or non-*habitable room*.

(b) If a storm water pipe passes through a *sole-occupancy unit* it must be separated in accordance with (a)(i) and (ii).

5.0 DINCEL WALL SYSTEMS – LABORATORY TESTED

Several systems incorporating the Dincel Construction System 110 mm wall have been tested at the CSIRO acoustic laboratory in Highett, VIC.

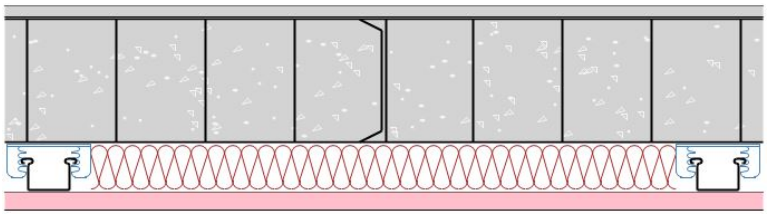
5.1 DCS 110-1



Laboratory Tested System
110 mm Dincel Wall

Wall Width (mm)	Laboratory Tested R_w (R_w + C_{tr})
110	48 (43)

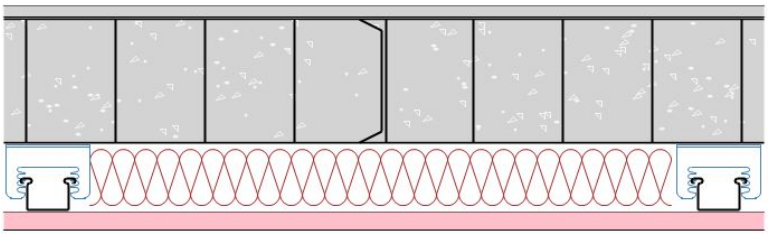
5.2 DCS 110-2



Laboratory Tested System
10 mm Knauf MastaShield plasterboard, screw fixed
110 mm Dincel Wall
28 mm furring channel @ 600 mm centres, 41 mm cavity
50 mm Knauf Earthwool insulation in the cavity
16 mm Knauf FireShield plasterboard, screw fixed to furring channel

Wall Width (mm)	Laboratory Tested R_w (R_w + C_{tr})
177	54 (48)

5.3 DCS 110-3

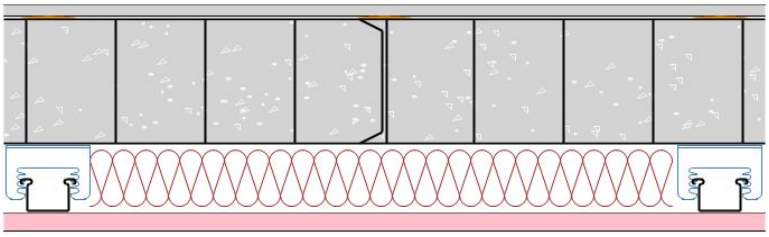


Laboratory Tested System

10 mm Knauf MastaShield plasterboard, screw fixed
110 mm Dincel Wall
28 mm furring channel @ 600 mm centres, 58 mm cavity
50 mm Knauf Earthwool insulation in the cavity
16 mm Knauf FireShield plasterboard, screw fixed to furring channel

Wall Width (mm)	Laboratory Tested R_w (R_w + C_{tr})
194	57 (51)

5.4 DCS 110-4

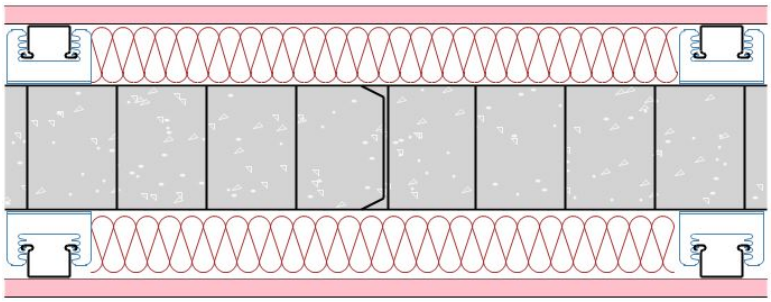


Laboratory Tested System

10 mm Knauf MastaShield plasterboard, screw and glue fixed
110 mm Dincel Wall
28 mm furring channel @ 600 mm centres, 58 mm cavity
50 mm Knauf Earthwool insulation in the cavity
16 mm Knauf FireShield plasterboard, screw fixed to furring channel

Wall Width (mm)	Laboratory Tested R_w (R_w + C_{tr})
196	57 (51)

5.5 DCS 110-5

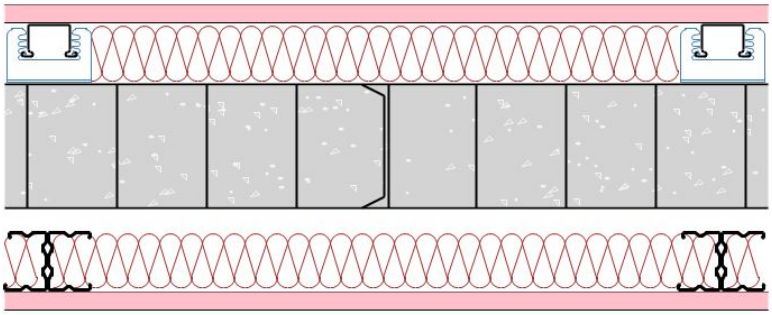


Laboratory Tested System

16 mm Knauf FireShield plasterboard, screw fixed to furring channel
28 mm furring channel @ 600 mm centres, overall 51 mm cavity
50 mm Knauf Earthwool insulation in the cavity
110 mm Dincel Wall
28 mm furring channel @ 600 mm centres, overall 58 mm cavity
50 mm Knauf Earthwool insulation in the cavity
16 mm Knauf FireShield plasterboard, screw fixed to furring channel

Wall Width (mm)	Laboratory Tested R_w (R_w + C_{tr})
251	64 (52)

5.6 DCS 110-6

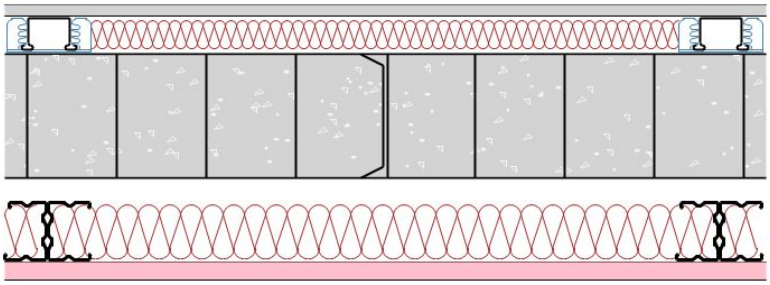


Laboratory Tested System

16 mm Knauf FireShield plasterboard, screw fixed to furring channel
28 mm furring channel @ 600 mm centres, 51 mm cavity
50 mm Knauf Earthwool insulation in the cavity
110 mm Dincel Wall
20 mm air gap
51 mm back to back steel studs @ 600 mm centres, overall 71 mm cavity
50 mm Knauf Earthwool insulation in the cavity
16 mm Knauf FireShield plasterboard, screw fixed to studs

Wall Width (mm)	Laboratory Tested R_w (R_w + C_{tr})
264	65 (54)

5.7 DCS 110-7

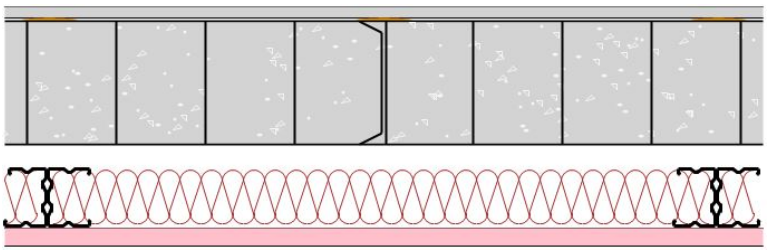


Laboratory Tested System

10 mm Knauf MastaShield plasterboard, screw fixed to furring channel
28 mm furring channel @ 600 mm centres, 30 mm cavity
25 mm glasswool insulation in the cavity
110 mm Dincel Wall
20 mm air gap
51 mm back to back steel studs @ 600 mm centres, overall 71 mm cavity
50 mm Knauf Earthwool insulation in the cavity
16 mm Knauf FireShield plasterboard, screw fixed to studs

Wall Width (mm)	Laboratory Tested R_w ($R_w + C_{tr}$)
237	64 (53)

5.8 DCS 110-8

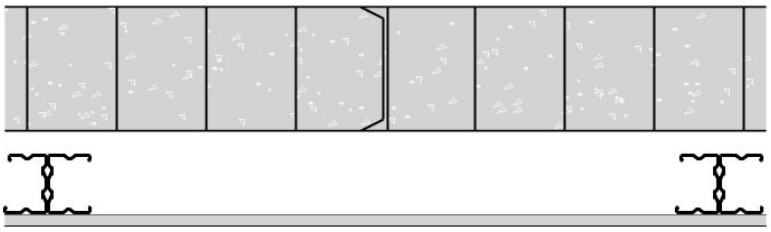


Laboratory Tested System

10 mm Knauf MastaShield plasterboard, glue and screw fixed
110 mm Dincel Wall
20 mm air gap
51 mm back to back steel studs @ 600 mm centres, overall 71 mm cavity
50 mm Knauf Earthwool insulation in the cavity
16 mm Knauf FireShield plasterboard, screw fixed to studs

Wall Width (mm)	Laboratory Tested R_w ($R_w + C_{tr}$)
209	56 (51)

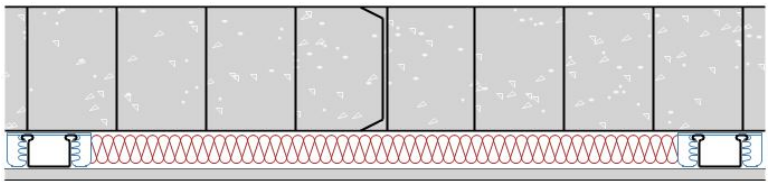
5.9 DCS 110-9



Laboratory Tested System
110 mm Dincel Wall
20 mm air gap
51 mm back to back steel studs @ 600 mm centres, overall 71 mm cavity
10 mm Knauf MastaShield plasterboard, screw fixed to studs

Wall Width (mm)	Laboratory Tested R_w (R_w + C_{tr})
191	51 (43)

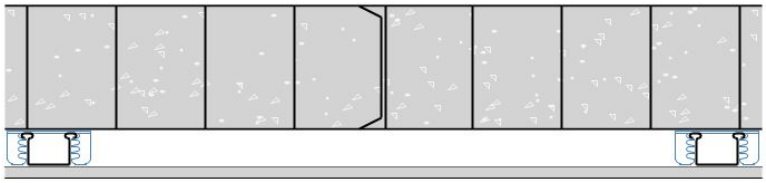
5.10 DCS 110-10



Laboratory Tested System
110 mm Dincel Wall
28 mm furring channel @ 600 mm centres, 30 mm cavity
25 mm glasswool insulation in the cavity
10 mm Knauf MastaShield plasterboard, screw fixed to furring channel

Wall Width (mm)	Laboratory Tested R_w (R_w + C_{tr})
150	55 (44)

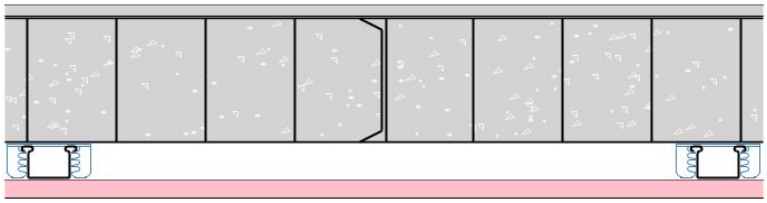
5.11 DCS 110-11



Laboratory Tested System
110 mm Dincel Wall
28 mm furring channel @ 600 mm centres, 30 mm cavity
No insulation
10 mm Knauf MastaShield plasterboard, screw fixed to furring channel

Wall Width (mm)	Laboratory Tested R_w (R_w + C_{tr})
150	48 (41)

5.12 DCS 110-12



Laboratory Tested System
10 mm Knauf MastaShield plasterboard, direct fixed
110 mm Dincel Wall
28 mm furring channel @ 600 mm centres, 30 mm cavity
No insulation
16 mm Knauf FireShield plasterboard, screw fixed to furring channel

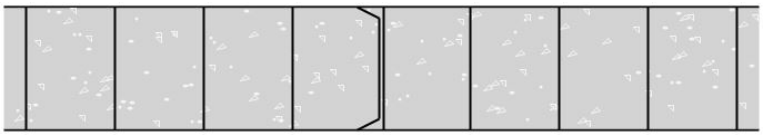
Wall Width (mm)	Laboratory Tested R_w (R_w + C_{tr})
166	46 (41)

6.0 110 DINCEL WALL – RECOMMENDED WALL SYSTEMS

The acoustic opinions below are based on the comparable tests, Marshall Day Acoustics Acousti-Max software as well as our own experience.

A one page summary sheet has been attached to this report.

6.1 R_w+C_{tr} 40 - Services Wall

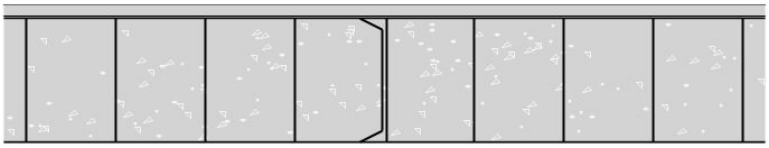


Laboratory Tested System
110 mm Dincel Wall

Wall Width (mm)	Laboratory Tested R_w ($R_w + C_{tr}$)
110	48 (43)

6.2 R_w+C_{tr} 40 - Services Wall

No services on the wall

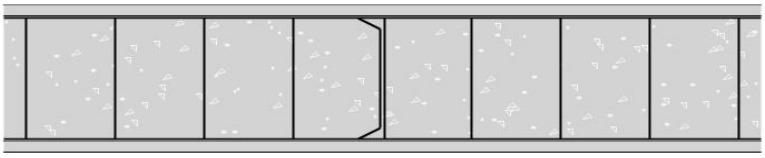


Acoustic Opinion
10 mm Knauf MastaShield plasterboard, direct fix
110 mm Dincel Wall

Wall Width (mm)	R_w ($R_w + C_{tr}$)
120	45 (41)

6.3 R_w 45 - Class 9(c) Wall

No services on the wall

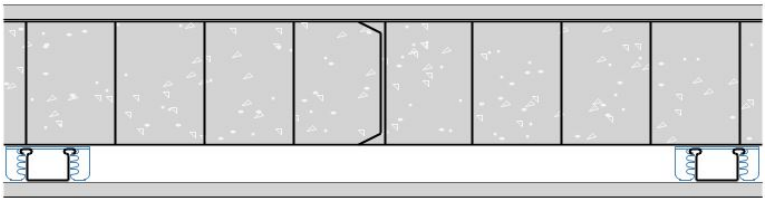


Acoustic Opinion
10 mm Knauf MastaShield plasterboard, direct fix
110 mm Dincel Wall
10 mm Knauf MastaShield plasterboard, direct fix

Wall Width (mm)	R_w ($R_w + C_{tr}$)
130	45 (41)

6.4 R_W 45 – Class 9(c) Wall

Electrical services on one side



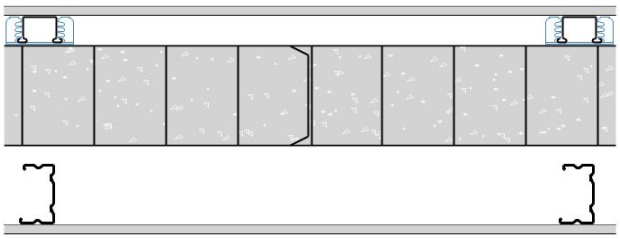
Acoustic Opinion

13 mm Knauf MastaShield plasterboard, direct fix
110 mm Dincel Wall
28 mm furring channel @ 600 mm centres, 30 mm cavity
No insulation
13 mm Knauf MastaShield plasterboard, screw fixed to furring channel

Wall Width (mm)	R_w (R_w + C_{tr})
166	45 (42)

6.5 R_W 45 – Class 9(c) Wall - Discontinuous

Services on both sides



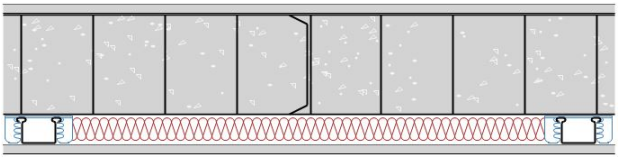
Acoustic Opinion

10 mm Knauf MastaShield plasterboard, screw fixed
28 mm furring channel @ 600 mm centres, 30 mm cavity
No insulation
110 mm Dincel Wall
20 mm air gap
51/64 mm steel studs @ 600 mm centres, overall 71/84 mm cavity
No insulation
10 mm Knauf MastaShield plasterboard, screw fixed to studs

Wall Width (mm)	R_w (R_w + C_{tr})
231 with 51 mm steel studs	47 (41)
244 with 64 mm steel studs	49 (42)

6.6 R_W 50 – Corridor Wall

Electrical services on one side

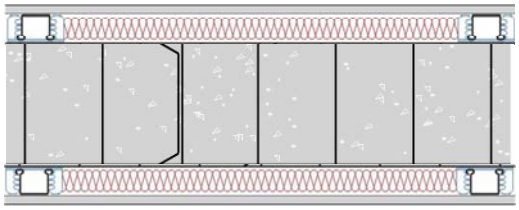


Acoustic Opinion
10 mm Knauf MastaShield plasterboard, direct fix
110 mm Dincel Wall
28 mm furring channel @ 600 mm centres, 30 mm cavity
25 mm glasswool insulation in cavity
10 mm Knauf MastaShield plasterboard, screw fixed to furring channel

Wall Width (mm)	R_W (R_W + C_{tr})
160	53(46)

6.7 R_W 50 - Corridor Wall

Electrical services on both sides



Acoustic Opinion
10 mm Knauf MastaShield plasterboard screw fixed to furring channel
25 mm glasswool insulation in cavity
28 mm furring channel @ 600 mm centres, 30 mm cavity
110 mm Dincel wall
28 mm furring channel @ 600 mm centres, 30 mm cavity
25 mm glasswool insulation in cavity
10 mm Knauf MastaShield plasterboard screw fixed to furring channel

Wall Width (mm)	R_W (R_W + C_{tr})
190	54 (39)

6.8 R_w 50 - Lift Shaft or Plant Room Wall (Discontinuous)

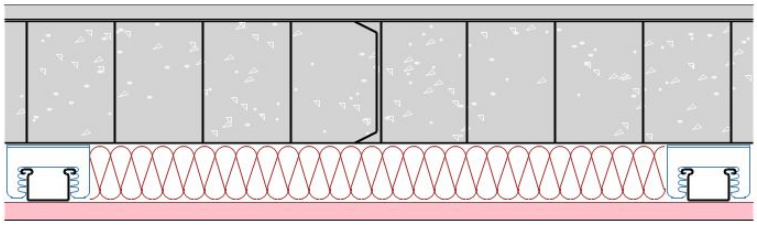
Discontinuous wall
Services on one side

Acoustic Opinion
110 mm Dincel Wall
20 mm air gap
51/64 mm steel studs @ 600 mm centres, overall 71/84 mm cavity
10 mm Knauf MastaShield plasterboard fixed to studs

Wall Width (mm)	R_w (R_w + C_{tr})
191 with 51 mm steel studs	51 (43)
204 with 64 mm steel studs	52 (44)

6.9 R_w + C_{tr} - 50 – Intertenancy Wall

Electrical services on one side

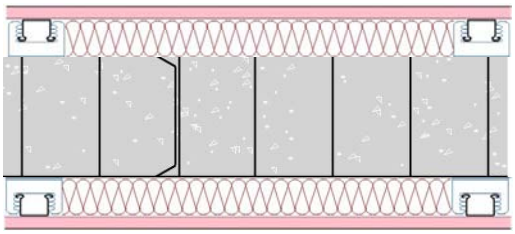


Acoustic Opinion
13 mm Knauf MastaShield plasterboard, direct fix
110 mm Dincel Wall
28 mm furring channel @ 600 mm centres, 50 mm cavity
50 mm Knauf Earthwool insulation in cavity
16 mm Knauf FireShield plasterboard, screw fixed to furring channel

Wall Width (mm)	R_w (R_w + C_{tr})
189	55 (50)

6.10 $R_W + C_{tr}$ - 50 – Intertenancy Wall

Electrical services on both sides



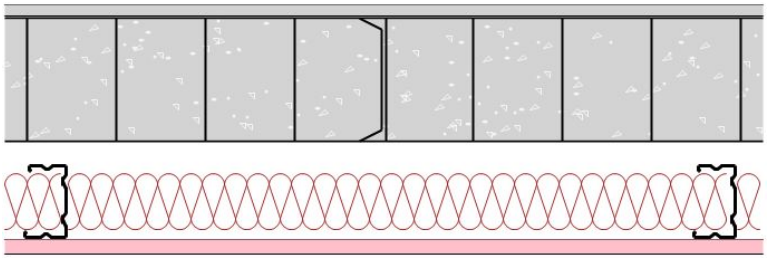
Acoustic Opinion

16 mm Knauf FireShield plasterboard screw fixed to furring channel
25 mm glasswool insulation in cavity
28 mm furring channel @ 600 mm centres, 45 mm cavity
110 mm Dincel wall
28 mm furring channel @ 600 mm centres, 45 mm cavity
25 mm glasswool insulation in cavity
16 mm Knauf FireShield plasterboard screw fixed to furring channel

Wall Width (mm)	R_w ($R_w + C_{tr}$)
232	63 (50)

6.11 $R_W + C_{tr}$ - 50 – Intertenancy Wall (Discontinuous)

Discontinuous wall
Services on one side



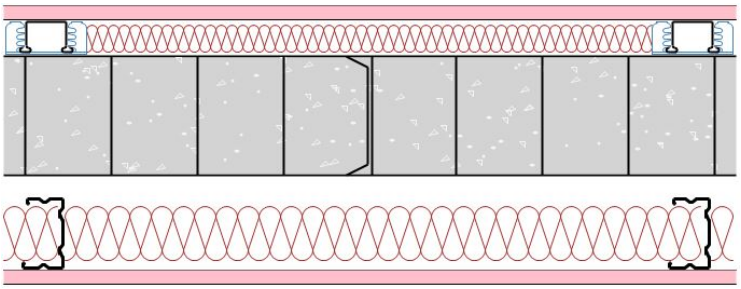
Acoustic Opinion

10 mm Knauf MastaShield plasterboard, direct fix
110 mm Dincel Wall
20 mm air gap
51/64 mm steel studs @ 600 mm centres, overall 71/84 mm cavity
50 mm Knauf Earthwool insulation in cavity
13 mm Knauf FireShield plasterboard, screw fixed to studs

Wall Width (mm)	R_w ($R_w + C_{tr}$)
204 with 51 mm steel studs	57 (50)
217 with 64 mm steel studs	57 (51)

6.12 $R_W + C_{tr}$ - 50 – Intertenancy Wall (Discontinuous)

Discontinuous wall
Services on both sides



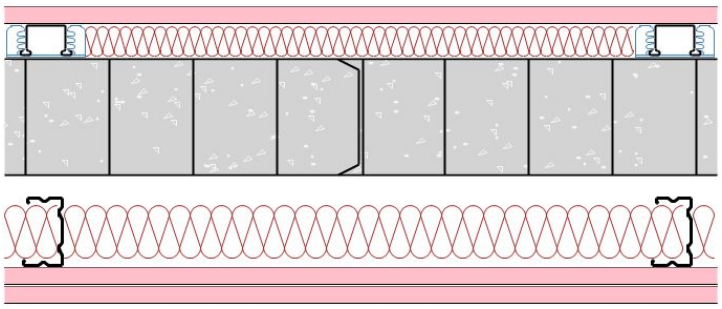
Acoustic Opinion

13 mm Knauf FireShield plasterboard, screw fixed to furring channel
28 mm furring channel @ 600 mm centres, 30 mm cavity
25 mm glasswool insulation in the cavity
110 mm Dincel Wall
20 mm air gap
51/64 mm steel studs @ 600 mm centres, overall 71/84 mm cavity
50 mm Knauf Earthwool insulation in the cavity
13 mm Knauf FireShield plasterboard, screw fixed to studs

Wall Width (mm)	R_w ($R_w + C_{tr}$)
237 with 51 mm steel studs	62 (50)
250 with 64 mm steel studs	63 (52)

6.13 $R_W + C_{tr}$ - 55

Superior acoustic performance
Discontinuous wall
Services on both sides



Acoustic Opinion

16 mm Knauf FireShield plasterboard, screw fixed to furring channel
28 mm furring channel @ 600 mm centres, 30 mm cavity
25 mm glasswool insulation in the cavity
110 mm Dincel Wall
20 mm air gap
51/64 mm steel studs @ 600 mm centres, overall 71/84 mm cavity
50 mm Knauf Earthwool insulation in cavity
2 layers 16 mm Knauf FireShield screw fixed to stud

Wall Width (mm)	R_w ($R_w + C_{tr}$)
259 with 51 mm steel studs	66 (55)
272 with 64 mm steel studs	67 (57)

7.0 STATEMENT OF EFFECT

We are confident that provided the walls are built of the materials specified in a workmanlike manner in accordance with the manufacturer's instructions (taking due care to seal all joints and use constructions that will avoid flanking transmission problems), they will provide the sound insulation ratings listed in the Acoustic Opinions section of this report.

Stephen Gauld, BE (Mech), MEngSc (Noise and Vibration), MIEAust, MAAS

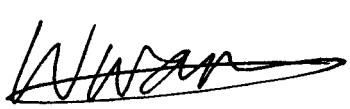
Principal Acoustical Engineer

for and on behalf of Day Design Pty Ltd

Attachments:

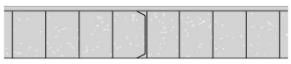
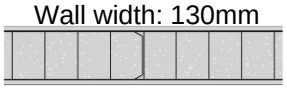
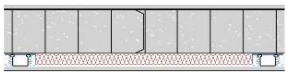
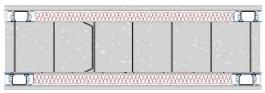
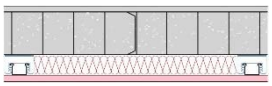
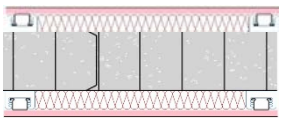
- Summary of DCS110 Dincel Wall Systems

The undersigned hereby certifies that this Report has been checked and approved in accordance with our Quality Management System.

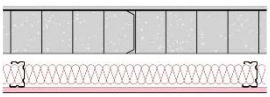
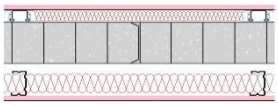
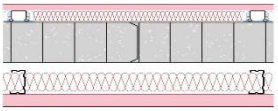


Date: 12/2/18

Acoustic System Summary – 110mm Dincel Wall

System No R_w/R_w+C_{tr}	WALL LINING SIDE 1	110mm DINCEL WALL CONCRETE DENSITY 2,350 kg/m^3	WALL LINING SIDE 2
110-6.1 48 / 43	Nil, painted or rendered	Wall width: 110mm 	Nil, painted or rendered
110-6.2 45 / 41	10mm Knauf MastaShield plasterboard, direct fix	Wall width: 120mm 	Nil, painted or rendered
110-6.3 45 / 41	10mm Knauf MastaShield plasterboard, direct fix	Wall width: 130mm 	10mm Knauf MastaShield plasterboard, direct fix
110-6.4 45 / 42	13mm Knauf MastaShield plasterboard, direct fix	Wall width: 166mm 	13mm Knauf MastaShield plasterboard, screw fixed to 28mm furring channel (30mm cavity)
110-6.5 47 / 41 [1] 49 / 42 [2]	10mm Knauf MastaShield plasterboard, screw fixed to 28mm furring channel (30mm cavity)	Wall width: 231mm [1] 244mm [2] 	10mm Knauf MastaShield plasterboard, screw fixed to studs at 600mm cts 20mm air gap (71[1]/84[2]mm cavity)
110-6.6 53 / 46	10mm Knauf MastaShield plasterboard, direct fix	Wall width: 160mm 	10mm Knauf MastaShield plasterboard, screw fixed to 28mm furring channel (30mm cavity) 25mm glasswool insulation in cavity
110-6.7 54 / 39	10mm Knauf MastaShield plasterboard, screw fixed to 28mm furring channel at 600mm cts (30mm cavity) 25mm glasswool in cavity	Wall width: 190mm 	10mm Knauf MastaShield plasterboard, screw fixed to 28mm furring channel at 600mm cts (30mm cavity) 25mm glasswool in cavity
110-6.8 51 / 43 [1] 52 / 44 [2]	Nil, painted or rendered	Wall width: 191mm [1] 204mm [2] 	10mm Knauf MastaShield plasterboard, fixed to studs at 600mm cts 20mm air gap (71[1]/84[2]mm cavity)
110-6.9 55 / 50	13mm Knauf MastaShield plasterboard, direct fix	Wall width: 189mm 	16mm Knauf FireShield plasterboard, screw fixed to 28mm furring channel (50mm cavity) 50mm Knauf Earthwool in cavity
110-6.10 63 / 50	16mm Knauf FireShield plasterboard, screw fixed to 28mm furring channel at 600mm cts (45mm cavity) 25mm glasswool in cavity	Wall width: 232mm 	16mm Knauf FireShield plasterboard, screw fixed to 28mm furring channel at 600mm cts (45mm cavity) 25mm glasswool in cavity

Acoustic System Summary – 110mm Dincel Wall

System N^{O} R_w/R_w+C_{tr}	WALL LINING SIDE 1	110mm DINCEL WALL CONCRETE DENSITY 2,350 kg/m^3	WALL LINING SIDE 2
110-6.11 57 / 50 [1] 57 / 51 [2]	10mm Knauf MastaShield plasterboard, direct fix	Wall width: 204mm [1] 217mm [2] 	13mm Knauf FireShield plasterboard, screw fixed to studs at 600mm cts 20mm air gap (71[1]/84[2]mm cavity) 50mm Knauf Earthwool in cavity
10-6.12 62 / 50 [1] 63 / 52 [2]	13mm Knauf FireShield plasterboard, screw fixed to 28mm furring channel (30mm cavity) 25mm glasswool insulation in cavity	Wall width: 237mm [1] 250mm [2] 	13mm Knauf FireShield plasterboard, screw fixed to studs at 600mm cts 20mm air gap (71[1]/84[2]mm cavity) 50mm Knauf Earthwool in cavity
10-6.13 66 / 55 [1] 67 / 57 [2]	16mm Knauf FireShield plasterboard, screw fixed to furring channel 28mm furring channel at 600mm cts (30mm cavity) 25mm glasswool insulation in cavity	Wall width: 259mm [1] 272mm [2] 	2 layers 16mm Knauf FireShield plasterboard, screw fixed to studs at 600mm cts 20mm air gap (71[1]/84[2]mm cavity) 50mm Knauf Earthwool in cavity

[1] 51 mm steel studs [2] 64 steel studs

The acoustic ratings provided are opinions based on test data of comparable laboratory tests and acoustic modelling carried out by Day Design Pty Ltd.