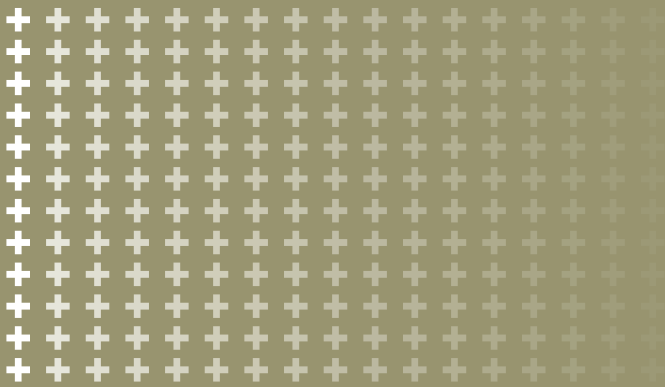


E 2 INTRODUCTION  
E 5 OUTRWALL®  
E 9 BRICK VENEER WALLS  
E 10 FIRECLAD®



# EXTERNAL WALLS



## INTRODUCTION

The following USG Boral external wall systems are outlined in this manual:

- OutRwall®
- Brick Veneer
- Fireclad®.

## OUTRWALL®

### DESCRIPTION

USG Boral OutRwall is a lightweight fire rated external wall system for buildings requiring fire protection from outside due to their proximity to the boundary. OutRwall systems are also available in configurations fire rated from both sides as may be required in multi-residential buildings (refer to Multi-Residential section).

USG Boral OutRwall external wall systems utilise lightweight external cladding and plasterboard linings direct fixed to one or both sides of wall framing.

This manual outlines OutRwall systems with timber framing. Refer USG Boral for OutRwall systems with steel framing.

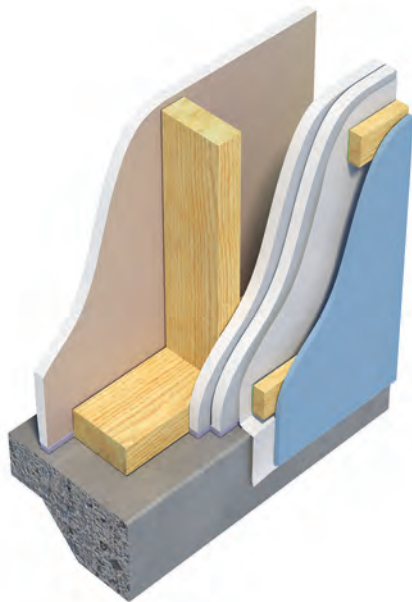


Figure E1: OutRwall®

### DESIGN OPTIONS

USG Boral OutRwall comprises a range of lightweight external wall systems utilising fire resistant or non-fire resistant internal linings and, if required, water- and fire-resistant plasterboard linings between lightweight external cladding and wall frame.

Timber framed OutRwall systems that are outlined in this manual are available in fire ratings up to FRL 90/90/90 from one or both sides.

#### NOTE:

Stated R-values and acoustic ratings are based on R2.5 glasswool wall batts cavity insulation as required to achieve minimum BCA thermal resistance ratings for external walls. Higher R-values and acoustic ratings can be achieved by upgrading cavity insulation.

OutRwall systems can be used with any type of approved lightweight external cladding.

### MATERIALS

#### PLASTERBOARD LININGS

- 10mm SHEETROCK Brand Wall Board
- 10mm Regular plasterboard
- 10mm Fiberock
- 13mm Firestop plasterboard
- 16mm Firestop plasterboard
- 13mm Wet Area Firestop plasterboard
- 16mm Wet Area Firestop plasterboard.

#### EXTERNAL CLADDING

Any type of approved external cladding fixed on battens.

#### MOISTURE BARRIER

Tyvek® HomeWrap membrane.

#### INSULATION

R2.5 Pink Wall Batt® glasswool by Fletcher Insulation.

#### SCREWS

Refer to General Information – Materials section for plasterboard screw types.

#### CAULKING

H.B. Fuller Firesound sealant.

## » INTRODUCTION

### DESIGN CONSIDERATIONS

- Refer to BCA Fire Resistance requirements for external walls.
- Refer to Timber Stud Walls section for load bearing capacities of fire rated timber framed walls.
- Beware of flanking sound effects on acoustic performance (refer to General Information – Design).
- Water resistant linings must be used in wet areas
- Water and fire-resistant plasterboard must be used on the outer side of timber framing where required.
- Plasterboard linings on the outer side of timber framing must be protected by an approved moisture barrier.
- Refer to General Information – Design for notes on Condensation and Ventilation.
- External wall systems must satisfy BCA thermal resistance requirements. Cavity insulation must be selected accordingly. Refer to Multi-Residential section for thermal resistance requirements for external walls in Class 1, 2 and 3 buildings.
- External cladding must be installed on battens.

### INSTALLATION

#### GENERAL

- Fire rated and acoustic systems must be installed strictly in accordance with USG Boral specifications in order to achieve stated Fire Resistance Levels and acoustic ratings.
- Refer to Timber Stud Walls and Junctions and Penetrations for installation specifications for fire rated timber framed walls.
- Refer to OutRwall brochure for detailed system specifications.
- Timber framing must comply with AS 1684 *Timber framed construction*.

#### JOINTING AND FINISHING

- Stop and finish face layers of internal linings with the appropriate USG Boral jointing system (refer to USG Boral Plasterboard Installation Manual). Joints and junctions in inner layers of multiple layer systems are not required to be stopped.
- Paper tape must be used in fire rated and wet area systems.

#### CAULKING

Perimeter gaps and penetrations in fire rated and acoustic systems must be caulked with an approved sealant (refer to Junctions and Penetrations).

## BRICK VENEER WALLS

### DESCRIPTION

USG Boral Brick Veneer wall systems utilise fire rated or non-fire rated brick veneer and USG Boral internal linings direct fixed to steel or timber framing.

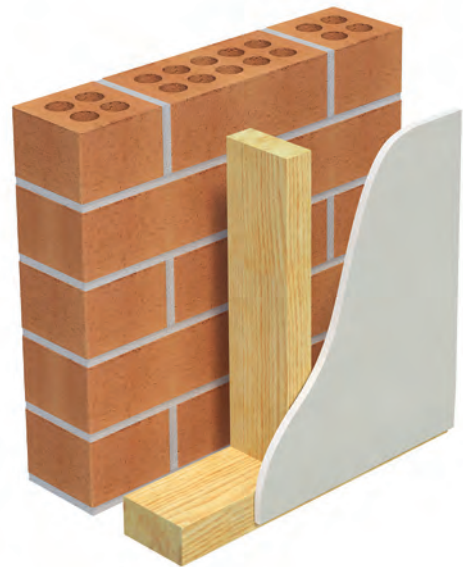


Figure E2: **Brick Veneer Wall**

### DESIGN OPTIONS

USG Boral Brick Veneer wall systems are available in non-fire rated or fire rated configurations up to FRL 120/120/120 from one or both sides.

Acoustic ratings have been provided for systems with 70mm and 90mm studs. All acoustic ratings are based on 110mm clay brick 170kg/m<sup>2</sup> and 50mm gap between brick veneer and internal framing.

### MATERIALS

#### PLASTERBOARD LININGS

- 10mm SHEETROCK Brand Wall Board
- 10mm Regular plasterboard
- 13mm Firestop plasterboard
- 16mm Firestop plasterboard.

#### BRICK VENEER

- Non-fire rated Brick Veneer (min 110mm clay brick 170kg/m<sup>2</sup>)
- FRL 60/60/60 Brick Veneer
- FRL 90/90/90 Brick Veneer
- FRL 120/120/120 Brick Veneer.

## » INTRODUCTION

### INSULATION

R2.5 Pink Wall Batts® glasswool by Fletcher Insulation.

### SCREWS

Refer to General Information – Materials section for plasterboard screw types.

### CAULKING

H.B. Fuller Firesound sealant.

## DESIGN CONSIDERATIONS

See OutRwall notes.

## INSTALLATION

- Brick veneer must be constructed in accordance with BCA and AS 3700 *Masonry Structures*.
- See OutRwall for other Installation notes.

## FIRECLAD®

### DESCRIPTION

USG Boral Fireclad is a lightweight fire rated external wall system for portal framed industrial buildings that require fire protection from outside.

Fireclad consists of multiple layers of Firestop plasterboard attached to steel girts behind external steel cladding.

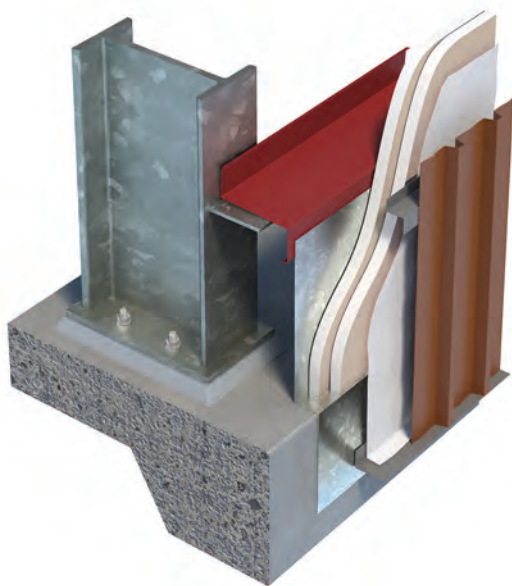


Figure E3: Fireclad

## DESIGN OPTIONS

USG Boral Fireclad systems are available in Fire Resistance Levels up to 120/120/120 from outside only.

## MATERIALS

### Plasterboard Linings

- 13mm Firestop plasterboard
- 16mm Firestop plasterboard.

### External Cladding

Approved external steel cladding on battens

### Moisture Barrier

Tyvek® HomeWrap membrane

### Screws

Refer to General Information – Materials section for plasterboard screw types

### Caulking

Firesound sealant

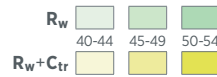
## DESIGN CONSIDERATIONS

- Refer to BCA Fire Resistance requirements for external walls.
- The weight of the Fireclad system should be supported by the steel frame or reacted through to the floor slab using girt bridging or sag rods.
- Plasterboard linings must be protected by an approved moisture barrier.
- Fire rated details are available where the Fireclad system is penetrated by pipes, cables, ducts and windows, for various treatments at gutters and base of walls, and where control joints or transitions to non fire rated areas are required.

## INSTALLATION

Refer to USG Boral Fireclad brochure for installation instructions and details.

OUTRWALL



**OWT.1**

**NON-FIRE RATED**



**SYSTEM DESCRIPTION**

**Internal Lining:** 1x10mm non fire resistant lining  
**Framing:** Timber Studs  
**Insulation:** Refer to table  
**External Lining:** Nil  
**External Cladding:** Lightweight External Cladding on battens over Tyvek® HomeWrap membrane.

**ACOUSTIC RATINGS** BASIS: RT&A TE405-05F11

SYSTEM	INTERNAL LINING	EXTERNAL LINING	WALL WIDTH mm	80 + CLADDING SYSTEM		100 + CLADDING SYSTEM		MIN TOTAL R-VALUE m <sup>2</sup> K/W
			STUD SIZE mm	70		90		
			INSULATION*	R <sub>w</sub>	R <sub>w</sub> +C <sub>tr</sub>	R <sub>w</sub>	R <sub>w</sub> +C <sub>tr</sub>	
<b>OWT.1A</b>	1x10mm SHEETROCK BRAND WALL BOARD	Nil	R2.5 GW Wall Batts	26	23	26	23	2.9
<b>OWT.1B</b>	1x10mm REGULAR	Nil	R2.5 GW Wall Batts	27	24	27	24	2.9
<b>OWT.1C</b>	1x10mm WET AREA	Nil	R2.5 GW Wall Batts	28	24	28	24	2.9
<b>OWT.1D</b>	1x10mm FIBEROCK	Nil	R2.5 GW Wall Batts	30	26	30	26	2.9

\* R2.5 GW Wall Batts - R2.5 Pink Wall Batts® glasswool by Fletcher Insulation.

**OWT30.1**

**FIRE RESISTANCE LEVEL**  
**LB 30/30/30**  
 FROM BOTH SIDES

**FRL Basis:** FCO-2393, WFRA 460081, WFRA C91550



**SYSTEM DESCRIPTION**

**Internal Lining:** 1x13mm fire resistant pbd  
**Framing:** Timber Studs  
**Insulation:** Refer to table  
**External Lining:** 1x13mm fire/water resistant pbd  
**External Cladding:** Lightweight External Cladding on battens over Tyvek® HomeWrap membrane.

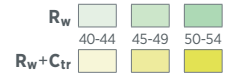
**ACOUSTIC RATINGS** BASIS: RT&A TE405-05F11

SYSTEM	INTERNAL LINING	EXTERNAL LINING	WALL WIDTH mm	96 + CLADDING SYSTEM		116 + CLADDING SYSTEM		MIN TOTAL R-VALUE m <sup>2</sup> K/W
			STUD SIZE mm	70		90		
			INSULATION*	R <sub>w</sub>	R <sub>w</sub> +C <sub>tr</sub>	R <sub>w</sub>	R <sub>w</sub> +C <sub>tr</sub>	
<b>OWT30.1A</b>	1x13mm FIRESTOP	1x13mm WET AREA FIRESTOP	R2.5 GW Wall Batts	41	33	41	34	3.2
<b>OWT30.1B</b>	1x13mm WET AREA FIRESTOP	1x13mm WET AREA FIRESTOP	R2.5 GW Wall Batts	41	33	41	34	3.2

\* R2.5 GW Wall Batts - R2.5 Pink Wall Batts® glasswool by Fletcher Insulation.

For the full range of USG Boral systems refer to [usgboral.com/eselector](http://usgboral.com/eselector)

## OUTRWALL



### OWT60.1

**FIRE RESISTANCE LEVEL**  
**LB 60/60/60**  
 FROM OUTSIDE ONLY

FRL Basis: C91580  
 LOAD BEARING SYSTEM TYPE 1†



#### SYSTEM DESCRIPTION

##### Internal Lining:

1x10mm non fire resistant lining

**Framing:** Timber Studs  
**Insulation:** Refer to table

##### External Lining:

1x16mm fire/water resistant pbd

##### External Cladding:

Lightweight External Cladding on battens over Tyvek® HomeWrap membrane.

#### ACOUSTIC RATINGS BASIS: RT&A TE405-05F11

SYSTEM	INTERNAL LINING	EXTERNAL LINING	WALL WIDTH mm	96 + CLADDING SYSTEM		116 + CLADDING SYSTEM		MIN TOTAL R-VALUE m²K/W
				70		90		
				STUD SIZE mm	INSULATION*	R <sub>w</sub>	R <sub>w</sub> +C <sub>tr</sub>	
<b>OWT60.1A</b>	1x10mm SHEETROCK BRAND WALL BOARD	1x16mm WET AREA FIRESTOP	R2.5 GW Wall Batts	39	30	40	33	3.2
<b>OWT60.1B</b>	1x10mm REGULAR	1x16mm WET AREA FIRESTOP	R2.5 GW Wall Batts	41	33	41	34	3.2
<b>OWT60.1C</b>	1x10mm WET AREA BOARD	1x16mm WET AREA FIRESTOP	R2.5 GW Wall Batts	41	33	41	34	3.2
<b>OWT60.1D</b>	1x10mm FIBEROCK	1x16mm WET AREA FIRESTOP	R2.5 GW Wall Batts	42	34	42	35	3.2

\* R2.5 GW Wall Batts - R2.5 Pink Wall Batts\* glasswool by Fletcher Insulation.

† Refer to Timber Stud Walls section Table D1 for maximum vertical loads on load bearing fire rated walls.

### OWT60.2

**FIRE RESISTANCE LEVEL**  
**LB 60/60/60**  
 FROM BOTH SIDES

FRL Basis: FCO-0619, FCO-0626  
 LOAD BEARING SYSTEM TYPE 1†



#### SYSTEM DESCRIPTION

##### Internal Lining:

1x16mm fire resistant pbd

**Framing:** Timber Studs  
**Insulation:** Refer to table

##### External Lining:

1x16mm fire/water resistant pbd

##### External Cladding:

Lightweight External Cladding on battens over Tyvek® HomeWrap membrane.

#### ACOUSTIC RATINGS BASIS: RT&A TE405-05F11

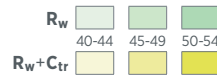
SYSTEM	INTERNAL LINING	EXTERNAL LINING	WALL WIDTH mm	102 + CLADDING SYSTEM		122 + CLADDING SYSTEM		MIN TOTAL R-VALUE m²K/W
				70		90		
				STUD SIZE mm	INSULATION*	R <sub>w</sub>	R <sub>w</sub> +C <sub>tr</sub>	
<b>OWT60.2A</b>	1x16mm FIRESTOP	1x16mm WET AREA FIRESTOP	R2.5 GW Wall Batts	42	36	42	38	3.2
<b>OWT60.2B</b>	1x16mm WET AREA FIRESTOP	1x16mm WET AREA FIRESTOP	R2.5 GW Wall Batts	42	36	42	38	3.2

\* R2.5 GW Wall Batts - R2.5 Pink Wall Batts\* glasswool by Fletcher Insulation.

† Refer to Timber Stud Walls section Table D1 for maximum vertical loads on load bearing fire rated walls.

For the full range of USG Boral systems refer to [usgboral.com/eselector](http://usgboral.com/eselector)

OUTRWALL



**OWT90.1**

**FIRE RESISTANCE LEVEL**  
**LB 90/90/90**  
 FROM OUTSIDE ONLY

FRL Basis: C91580



**SYSTEM DESCRIPTION**

- Internal Lining:** 1x10mm non fire resistant lining
- Framing:** Timber Studs
- Insulation:** Refer to table
- External Lining:** 2x16mm fire/water resistant pbd
- External Cladding:** Lightweight External Cladding on battens over Tyvek® HomeWrap membrane.

**ACOUSTIC RATINGS** BASIS: RT&A TE405-05F11

SYSTEM	LINING SIDE 1	LINING SIDE 2	WALL WIDTH mm	112 + CLADDING SYSTEM		132 + CLADDING SYSTEM		MIN TOTAL R-VALUE m <sup>2</sup> K/W
				70		90		
				STUD SIZE mm	INSULATION*	R <sub>w</sub>	R <sub>w</sub> +C <sub>tr</sub>	
<b>OWT90.1A</b>	1x10mm SHEETROCK BRAND WALL BOARD	2x16mm WET AREA FIRESTOP	R2.5 GW Wall Batts	41	36	42	38	3.2
<b>OWT90.1B</b>	1x10mm REGULAR	2x16mm WET AREA FIRESTOP	R2.5 GW Wall Batts	43	39	43	40	3.2
<b>OWT90.1C</b>	1x10mm WET AREA	2x16mm WET AREA FIRESTOP	R2.5 GW Wall Batts	43	39	43	40	3.2
<b>OWT90.1D</b>	1x10mm FIBEROCK	2x16mm WET AREA FIRESTOP	R2.5 GW Wall Batts	44	39	44	40	3.2

\* R2.5 GW Wall Batts - R2.5 Pink Wall Batts® glasswool by Fletcher Insulation.

**OWT90.2**

**FIRE RESISTANCE LEVEL**  
**LB 90/90/90**  
 FROM OUTSIDE  
**LB 60/60/60**  
 FROM INSIDE

FRL Basis: C91580  
 LOAD BEARING SYSTEM TYPE 1<sup>†</sup>



**SYSTEM DESCRIPTION**

- Internal Lining:** 1x16mm fire resistant pbd
- Framing:** Timber Studs
- Insulation:** Refer to table
- Internal Lining:** 2x16mm fire/water resistant pbd
- External Cladding:** Lightweight External Cladding on battens over Tyvek® HomeWrap membrane.

**ACOUSTIC RATINGS** BASIS: RT&A TE405-05F11

SYSTEM	LINING SIDE 1	LINING SIDE 2	WALL WIDTH mm	118 + CLADDING SYSTEM		138 + CLADDING SYSTEM		MIN TOTAL R-VALUE m <sup>2</sup> K/W
				70		90		
				STUD SIZE mm	INSULATION*	R <sub>w</sub>	R <sub>w</sub> +C <sub>tr</sub>	
<b>OWT90.2A</b>	1x16mm FIRESTOP	2x16mm WET AREA FIRESTOP	R2.5 GW Wall Batts	45	41	45	42	3.3
<b>OWT90.2B</b>	1x16mm WET AREA FIRESTOP	2x16mm WET AREA FIRESTOP	R2.5 GW Wall Batts	45	41	45	42	3.3

\* R2.5 GW Wall Batts - R2.5 Pink Wall Batts® glasswool by Fletcher Insulation.

† Refer to Timber Stud Walls section Table D1 for maximum vertical loads on load bearing fire rated walls.

For the full range of USG Boral systems refer to [usgboral.com/eselector](http://usgboral.com/eselector)

## OUTRWALL

$R_w$	40-44	45-49	50-54
$R_w + C_{tr}$			

### OWT90.3

**FIRE RESISTANCE LEVEL**  
**LB 90/90/90**  
 FROM BOTH SIDES

**FRL Basis:** FCO-2564, C91/103  
**LOAD BEARING SYSTEM TYPE 1†**



#### SYSTEM DESCRIPTION

**Internal Lining:**

2x13mm fire resistant pbd

**Framing:** Timber Studs

**Insulation:** Refer to table

**External Lining:**

2x13mm fire/water resistant pbd

**External Cladding:**

Lightweight External Cladding on battens over Tyvek® HomeWrap membrane.

#### ACOUSTIC RATINGS BASIS: RT&A TE405-05F11

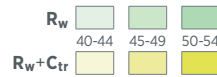
SYSTEM	LINING SIDE 1	LINING SIDE 2	WALL WIDTH mm	122 + CLADDING SYSTEM		142 + CLADDING SYSTEM		MIN TOTAL R-VALUE m <sup>2</sup> K/W
			STUD SIZE mm	70		90		
			INSULATION*	$R_w$	$R_w + C_{tr}$	$R_w$	$R_w + C_{tr}$	
<b>OWT90.3A</b>	2x13mm FIRESTOP	2x13mm WET AREA FIRESTOP	R2.5 GW Wall Batts	48	44	48	45	3.3
<b>OWT90.3B</b>	2x13mm WET AREA FIRESTOP	2x13mm WET AREA FIRESTOP	R2.5 GW Wall Batts	48	44	48	45	3.3

\* R2.5 GW Wall Batts - R2.5 Pink Wall Batts® glasswool by Fletcher Insulation.

† Refer to Timber Stud Walls section Table D1 for maximum vertical loads on load bearing fire rated walls.



BRICK VENEER WALLS



**BVT**

**FIRE RESISTANCE LEVEL**  
(refer to table)

FRL Basis: FCO-0626, FCO-0021, FCO-0966



**SYSTEM DESCRIPTION**

- Brick Veneer:** 110 clay brick, min 170kg/m<sup>2</sup>
- Framing:** Timber
- Gap:** 50mm
- Insulation:** Refer to table
- Internal Lining:** Refer to table.

**ACOUSTIC RATINGS** BASIS: RT&A TE405-05F12

SYSTEM	FIRE RESISTANCE LEVEL		INTERNAL LINING	WALL WIDTH mm	230 + LINING		250 + LINING		TOTAL R-VALUE m <sup>2</sup> K/W
	FROM INSIDE	FROM OUTSIDE		STUD SIZE mm	70		90		
				INSULATION*	R <sub>w</sub>	R <sub>w</sub> +C <sub>tr</sub>	R <sub>w</sub>	R <sub>w</sub> +C <sub>tr</sub>	
<b>BVT.1A</b>	-/-	BRICK VENEER FRL	1x10mm SHEETROCK BRAND WALL BOARD	R2.5 GW Wall Batts	59	49	59	50	3.3
<b>BVT.1B</b>	-/-	BRICK VENEER FRL	1x10mm REGULAR	R2.5 GW Wall Batts	60	51	61	52	3.3
<b>BVT30.1A</b>	LB 30/30/30	MIN 30/30/30 BRICK VENEER FRL	1x13mm FIRESTOP	R2.5 GW Wall Batts	64	55	65	56	3.3
<b>BVT60.1A</b> LOAD BEARING SYSTEM TYPE 1†	LB 60/60/60	MIN 60/60/60 BRICK VENEER FRL	1x16mm FIRESTOP	R2.5 GW Wall Batts	66	56	67	58	3.3
<b>BVT90.1A</b> LOAD BEARING SYSTEM TYPE 1†	LB 90/90/90	MIN 90/90/90 BRICK VENEER FRL	2x13mm FIRESTOP	R2.5 GW Wall Batts	70	61	71	62	3.3

\* R2.5 GW Wall Batts – R2.5 Pink Wall Batts\* glasswool by Fletcher Insulation.  
† Refer to Timber Stud Walls section Table D1 for maximum vertical loads on load bearing fire rated walls.

**BVS**

**FIRE RESISTANCE LEVEL**  
(refer to table)

FRL Basis: FAR-4356



**SYSTEM DESCRIPTION**

- Brick Veneer:** 110 clay brick, min 170kg/m<sup>2</sup>
- Framing:** Steel stud
- Gap:** 50mm
- Insulation:** Refer to table
- Internal Lining:** Refer to table.

**ACOUSTIC RATINGS** BASIS: RT&A TE405-05F12

SYSTEM	FIRE RESISTANCE LEVEL		INTERNAL LINING	WALL WIDTH mm	236 + LINING		252 + LINING		TOTAL R-VALUE m <sup>2</sup> K/W
	FROM INSIDE	FROM OUTSIDE		STUD SIZE mm	76		92		
				INSULATION*	R <sub>w</sub>	R <sub>w</sub> +C <sub>tr</sub>	R <sub>w</sub>	R <sub>w</sub> +C <sub>tr</sub>	
<b>BVS.1A</b>	-/-	BRICK VENEER FRL	1x10mm SHEETROCK BRAND WALL BOARD	R2.5 GW Wall Batts	59	49	59	50	3.3
<b>BVS.1B</b>	-/-	BRICK VENEER FRL	1x10mm REGULAR	R2.5 GW Wall Batts	60	51	61	52	3.3
<b>BVS60.1A</b>	NLB -/60/60	MIN 60/60/60 BRICK VENEER FRL	1x13mm FIRESTOP	R2.5 GW Wall Batts	64	55	65	56	3.3
<b>BVS90.1A</b>	NLB -/90/90 LB 60/60/60	MIN 90/90/90 BRICK VENEER FRL	1x16mm FIRESTOP	R2.5 GW Wall Batts	66	56	67	58	3.3
<b>BVS90.2A</b>	LB 90/90/90	MIN 90/90/90 BRICK VENEER FRL	2x13mm FIRESTOP	R2.5 GW Wall Batts	70	61	71	62	3.3

\* R2.5 GW Wall Batts – R2.5 Pink Wall Batts\* glasswool by Fletcher Insulation.

For the full range of USG Boral systems refer to [usgboral.com/eselector](http://usgboral.com/eselector)

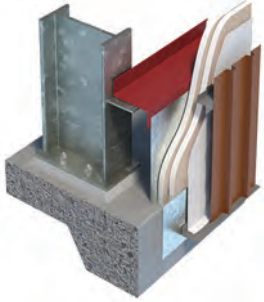
## FIRECLAD

$R_w$      
 40-44    45-49    50-54  
 $R_w + C_{tr}$

### FC

#### FIRE RESISTANCE LEVEL (refer to table)

FRL Basis: FCO-1419, FCO-1555, FCO-1890



#### SYSTEM DESCRIPTION

##### External Lining:

- Steel cladding on battens
- Tyvek Housewrap waterproofing membrane
- Two or more layers of fire resistant pbd fixed to girts.

#### ACOUSTIC RATINGS

SYSTEM	FRL	LINING	NOM WALL WIDTH mm	INSULATION	$R_w$	R VALUE m <sup>2</sup> K/W
<b>FC60.1A</b>	60/60/60 from outside only	2x16mm FIRESTOP	Adds 54mm	NA	34	0.5
<b>FC90.1A</b>	90/90/90 from outside only	3x13mm FIRESTOP	Adds 61mm	NA	37	0.5
<b>FC120.1A</b>	120/120/120 from outside only	3x16mm FIRESTOP	Adds 70mm	NA	38	0.5