

Wall assemblies

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Brick veneer wall, timber frame		Brick veneer construction with 110mm extruded bricks, unventilated 40mm airspace. Reflective insulation attached to outside of frame. Bright side of foil faces stud cavity. 90mm timber stud frame with fibreglass insulation installed in cavity with painted 10mm plasterboard lining.			
Materials	Description	Unit	Quantity	EE (MJ/unit)	EE (MJ/m ²)
ceramic brick, 230x110x76	external cladding	m ²	0.89	920	819
mortar, 230x110x76	external cladding	m ³	0.012	7248	88
steel, wall ties	wall ties	t	0.00011	51680	5.8
aluminium reflective foil	reflective foil	m ²	1.0	25	25
timber softwood, framing 90x45 450C	90 x 45 softwood framing 450C	m ³	0.012	12160	148
fibreglass insulation	insulation, 90mm thick, R2.7	m ³	0.078	1438	112
plasterboard	internal lining	m ³	0.01	8608	86
water-based paint	internal finish	m ²	1.0	8.7	8.7

1292

Brick veneer wall, steel frame		Brick veneer construction with 110mm extruded bricks, unventilated 40mm airspace. Reflective insulation attached to outside of frame. Bright side of foil faces stud cavity. 90mm steel stud frame with fibreglass insulation installed in cavity with painted 10mm plasterboard lining.			
Materials	Description	Unit	Quantity	EE (MJ/unit)	EE (MJ/m ²)
ceramic brick, 230x110x76	external cladding	m ²	0.89	920	819
mortar, 230x110x76	external cladding	m ³	0.012	7248	88
steel, wall ties	wall ties	t	0.00011	51680	5.8
aluminium reflective foil	reflective foil	m ²	1.0	25	25
steel, framing 90x45 450C	90 x 45 C studs	t	0.0047	51680	243
fibreglass insulation	insulation, 90mm thick, R2.7	m ³	0.078	1438	112
plasterboard	internal lining	m ³	0.01	8608	86
water-based paint	internal finish	m ²	1.0	8.7	8.7

1387

Reverse brick veneer wall, timber frame		Reverse brick veneer construction with 8mm fibre cement sheet external cladding fixed to stud. Reflective insulation attached to outside of stud frame, bright side of foil facing stud cavity. 90mm timber stud frame with fibreglass insulation installed in cavity. Reflective insulation attached to inside of stud frame, bright side of foil facing 40mm airspace. 110mm extruded bricks and painted 10mm plasterboard internal lining.			
Materials	Description	Unit	Quantity	EE (MJ/unit)	EE (MJ/m ²)
water-based paint	external finish	m ²	1.0	8.7	8.7
fibre cement sheet	external cladding 8mm FC sheet	m ³	0.008	32849	263
aluminium reflective foil	reflective foil	m ²	1.0	25	25
timber softwood, framing 90x45 450C	90 x 45 softwood framing 450C	m ³	0.012	12160	148
fibreglass insulation	insulation, 90mm thick	m ³	0.078	1438	112
aluminium reflective foil	reflective foil	m ²	1.0	25	25
steel, wall ties	wall ties	t	0.00011	51680	5.8
ceramic brick, 230x110x76	internal cladding	m ²	0.89	920	819
mortar, 230x110x76	internal cladding	t	0.012	7248	88
plasterboard	internal lining	m ³	0.01	8608	86
water-based paint	internal finish	m ²	1.0	8.7	8.7

1588

Hardwood weatherboard wall, timber frame		Hardwood timber cladding fixed over 35mm timber battens with reflective foil insulation. Bright side of foil facing stud cavity. 90mm timber stud frame with fibreglass insulation installed in cavity and painted 10mm plasterboard lining.			
Materials	Description	Unit	Quantity	EE (MJ/unit)	EE (MJ/m ²)
water-based paint	external finish	m ²	1.0	8.7	8.7
timber hardwood, external cladding	weatherboards 25mm thick	m ³	0.025	36130	903
timber softwood, battens 20x35	35mm battens	m ³	0.0028	12160	34
aluminium reflective foil	reflective foil	m ²	1.0	25	25
timber softwood, framing 90x45 450C	90 x 45 softwood framing 450C	m ³	0.012	12160	148
fibreglass insulation	insulation, 90mm thick	m ³	0.078	1438	112
plasterboard	internal lining	m ³	0.01	8608	86
water-based paint	internal finish	m ²	1	8.7	8.7

1325

Hardwood weatherboard wall, steel frame		Hardwood timber cladding fixed over 35mm timber battens with reflective foil insulation. Bright side of foil facing stud cavity. 90mm steel stud frame with fibreglass insulation installed in cavity and painted 10mm plasterboard lining.			
Materials	Description	Unit	Quantity	EE (MJ/unit)	EE (MJ/m ²)
water-based paint	external finish	m ²	1.0	8.7	8.7
timber hardwood, external cladding	weatherboards 25mm thick	m ³	0.025	36130	903
timber softwood, battens 20x35	35mm battens	m ³	0.0028	12160	34
aluminium reflective foil	reflective foil	m ²	1.0	25	25
steel, framing 90x45 450C	90 x 45 C studs	t	0.0047	51680	243
fibreglass insulation	insulation, 90mm thick	m ³	0.078	1438	112
plasterboard	internal lining	m ³	0.01	8608	86
water-based paint	internal finish	m ²	1.0	8.7	8.7

1421

Corrugated steel wall, timber frame		Corrugated steel cladding fixed over 35mm timber battens with reflective foil insulation. Bright side of foil facing stud cavity. 90mm timber stud frame with fibreglass insulation installed in cavity and painted 10mm plasterboard lining.			
Materials	Description		Quantity	EE (MJ/unit)	EE (MJ/m ²)
water-based paint	external finish	m ²	1.0	8.7	8.7
steel, corrugated sheet	external cladding	m ²	1.0	293	293
timber softwood, battens 20x35	35mm battens	m ³	0.0028	12160	34
aluminium reflective foil	foil	m ²	1.0	25	25
timber softwood, framing 90x45 450C	90 x 45 softwood framing 450C	m ³	0.012	12160	148
fibreglass insulation	insulation, 90mm thick	m ³	0.078	1438	112
plasterboard	internal lining	m ³	0.01	8608	86
water-based paint	internal finish	m ²	1.0	8.7	8.7

715

Cavity clay brick wall		Double brick wall of 110mm extruded bricks, unventilated 40mm airspace. Reflective foil insulation mid-point of cavity (by use of spacers). Bright side of foil facing inwards. Painted 10mm plasterboard lining.			
Materials	Description	Unit	Quantity	EE (MJ/unit)	EE (MJ/m ²)
ceramic brick, 230x110x76	external cladding	m ²	0.89	920	819
mortar, 230x110x76	external cladding	m ³	0.012	7248	88
steel, wall ties	wall ties	t	0.00011	51680	5.8
timber softwood, battens 20x35	spacers	m ³	0.0028	12160	34
aluminium reflective foil	foil	m ²	1.0	25	25
ceramic brick, 230x110x76	internal cladding	m ²	0.89	920	819
mortar, 230x110x76	internal cladding	m ³	0.012	7248	88
plasterboard	internal lining	m ³	0.01	8608	86
water-based paint	internal finish	m ²	1.0	8.7	8.7

1973

Cavity concrete block wall		Double concrete block wall of 200mm hollow concrete blocks, unventilated 40mm airspace. Reflective foil insulation mid-point of cavity (by use of spacers). Bright side of foil facing inwards. Painted 10mm plasterboard lining.				
Materials	Description	Unit	Quantity	EE (MJ/unit)	EE (MJ/m ²)	
water-based paint	external finish	m ²	1.0	8.7	8.7	
cement render	external finish	m ²	1.0	29	29	
concrete block, 390x190x190	external cladding (190/390/190)	m ²	0.94	474	446	
mortar, 390x190x190	external cladding	m ³	0.013	7248	96	
timber softwood, battens 20x35	spacers	m ³	0.0028	12160	34	
aluminium reflective foil	foil	m ²	1.0	25	25	
concrete block, 390x190x190	external cladding (190/390/190)	m ²	0.94	474	446	
mortar, 390x190x190		m ³	0.013	7248	96	
plasterboard	internal lining	m ³	0.01	8608	86	
water-based paint	internal finish	m ²	1.0	8.7	8.7	

1276

Concrete block veneer wall, timber frame		Concrete block construction with 200mm hollow concrete blocks, unventilated 40mm airspace. Reflective insulation attached to outside of frame. Bright side of foil faces stud cavity. 90mm timber stud frame with fibreglass insulation installed in cavity with painted 10mm plasterboard lining.				
Materials	Description	Unit	Quantity	EE (MJ/unit)	EE (MJ/m ²)	
water-based paint	external finish	m ²	1.0	8.7	8.7	
cement render	external finish	m ²	1.0	29	29	
concrete block, 390x190x190	external cladding (190/390/190)	m ²	0.94	474	446	
mortar, 390x190x190	external cladding	m ³	0.013	7248	96	
steel, wall ties	wall ties	t	0.00011	51680	5.8	
aluminium reflective foil	reflective foil	m ²	1.0	25	25	
timber softwood, framing 90x45 450C	90 x 45 softwood framing 450C	m ³	0.012	12160	148	
fibreglass insulation	insulation, 90mm thick	m ³	0.078	1438	112	
plasterboard	internal lining	m ³	0.01	8608	86	
water-based paint	internal finish	m ²	1.0	8.7	8.7	

965

Single skin AAC block wall, plasterboard lining		Autoclaved aerated concrete (AAC) construction with 250mm thick AAC blocks with 4mm cement render, steel battens and painted 10mm plasterboard lining.				
Materials	Description	Unit	Quantity	EE (MJ/unit)	EE (MJ/m ²)	
water-based paint	external finish	m ²	1.0	8.7	8.7	
cement render	external finish	m ²	1.0	29	29	
AAC block, 600x250x200	AAC CSR Hebel® blocks	m ²	0.99	1453	1435	
adhesive, 600x250x200	CSR adhesive	m ³	0.0031	126246	395	
steel, battens 16x32	steel battens, 16mm deep	t	0.0023	51680	117	
plasterboard	internal lining	m ³	0.01	8608	86	
water-based paint	internal finish	m ²	1.0	8.7	8.7	

2079

Polystyrene wall, timber frame		50mm polystyrene cladding fixed directly to stud over reflective insulation. Bright side of foil facing stud cavity. 90mm timber stud frame with fibreglass insulation installed in cavity and painted 10mm plasterboard lining.				
Materials	Description	Unit	Quantity	EE (MJ/unit)	EE (MJ/m ²)	
water-based paint	external finish	m ²	1.0	8.7	8.7	
cement render	cement render, 4mm thick	m ²	1.0	29	29	
polystyrene	polystyrene panel	m ³	0.05	3485	174	
aluminium reflective foil	reflective foil	m ²	1.0	25	25	
timber softwood, framing 90x45 450C	90 x 45 softwood framing 450C	m ³	0.012	12160	148	
fibreglass insulation	insulation, 90mm thick	m ³	0.078	1438	112	
plasterboard	internal lining	m ³	0.01	8608	86	
water-based paint	internal finish	m ²	1.0	8.7	8.7	

591