

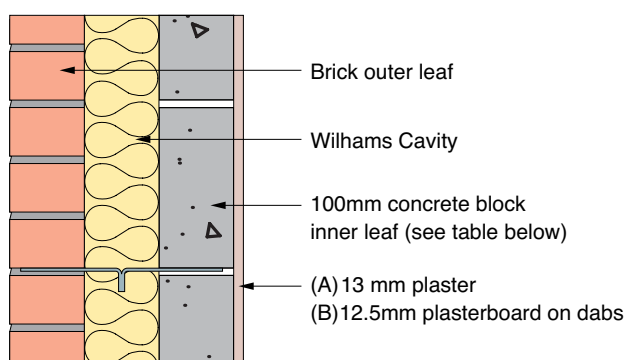
U Values

External walls

Standards

Wilhams Cavity, HP Partial Fill, RockShield and Wil-Kool can be used towards compliance of the Malaysian Standard STREET, DRAINAGE AND BUILDING ACT 1974, UNIFORM BUILDING (AMENDMENT) TO BY-LAWS 2021, New by-law 38A "Energy efficiency in buildings" (1) where new or renovated non-residential building with air-conditioned space of exceeding 4,000 square metres — (a) shall be designed to meet the requirements of MS 1525 with regards to the Overall Thermal Transfer Value (OTTV).

Wilhams Cavity (full fill)



Optimising the use of the cavity space with Wilhams Cavity will meet or exceed the new U value requirements using traditional construction.

Construction

102mm facing brick, outer leaf, cavity filled with Wilhams Cavity, 100mm concrete block internally (of varying thermal conductivity). Internal finish 13mm plaster or 12.5mm plasterboard on dabs.

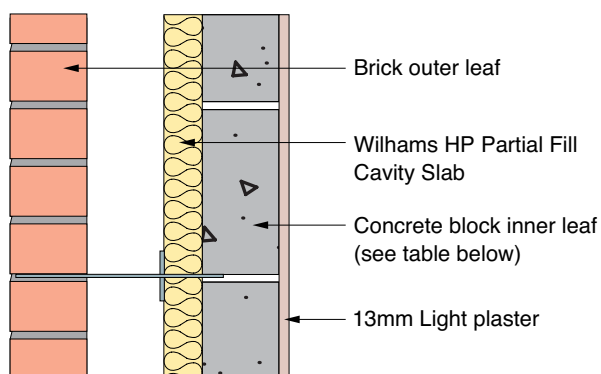
Block density (kg/m ³) Block type Block λ	1900-2250 Dense 1.130 W/mK		1400-1450 Med/Light 0.510 W/mK		750 Aircrete 7N 0.190 W/mK		600 Aircrete 0.160 W/mK		470 Aircrete 0.110 W/mK	
Internal finishes	a	b	a	b	a	b	a	b	a	b
Insulation thickness	U value		U value		U value		U value		U value	
Uninsulated	1.55	1.31	1.33	1.15	0.92	0.83	0.84	0.77	0.68	0.63
50mm	0.57	0.51	0.54	0.49	0.46	0.42	0.44	0.40	0.39	0.36
75mm	0.42	0.38	0.40	0.37	0.35	0.33	0.34	0.32	0.31	0.29
100mm	0.33	0.31	0.32	0.30	0.29	0.27	0.28	0.26	0.26	0.25
125mm	0.27	0.26	0.26	0.25	0.24	0.23	0.24	0.23	0.22	0.21
150mm	0.23	0.22	0.23	0.22	0.21	0.20	0.21	0.20	0.19	0.19
175mm	0.20	0.19	0.20	0.19	0.19	0.18	0.18	0.18	0.17	0.17
200mm	0.18	0.17	0.18	0.17	0.17	0.16	0.16	0.16	0.16	0.15

U values calculations are based on BS EN ISO 6946 (the combined method) using stainless steel ties with cross sectional area of 11mm².

Column **a** quotes U values for internal plastered wall finish.

Column **b** quotes U values for internal wall finish using 12.5mm plasterboard on dabs.

Wilhams HP Partial Fill



Construction

102 brick/50mm clear cavity/HP Partial Fill slabs/internal concrete block (varying thickness) with 13mm light plaster finish.

(Note: BBA certificate for Wilhams HP Partial Fill cavity slabs, permits their use with a minimum 25mm residual cavity up to a maximum building height of 12m).

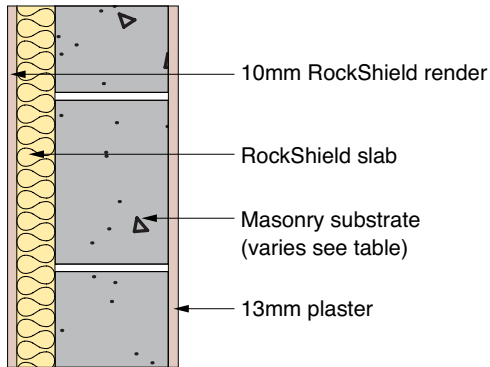
The U value tables below show various standard internal block thicknesses, together with their respective thermal conductivities, W/mK, with light plaster finish.

Block type Block conductivity Block thickness	Aircrete 7N $\lambda = 0.190 \text{ W/mK}$			Aircrete 4N $\lambda = 0.160 \text{ W/mK}$			Aircrete 2.8 - 3.5N $\lambda = 0.110 \text{ W/mK}$			Medium dense $\lambda = 0.510 \text{ W/mK}$ 100mm
	100mm	125mm	150mm	100mm	125mm	150mm	100mm	125mm	150mm	
HP partial fill										
Uninsulated	0.92	0.50	0.48	0.51	0.49	0.46	0.46	0.44	0.43	1.33
50mm	0.39	0.37	0.35	0.38	0.36	0.34	0.34	0.32	0.29	0.45
75mm	0.30	0.29	0.28	0.30	0.28	0.27	0.27	0.26	0.24	0.34
100mm	0.25	0.25	0.24	0.25	0.24	0.23	0.23	0.22	0.21	0.28
125mm	0.21	0.21	0.20	0.21	0.20	0.20	0.20	0.19	0.18	0.23
150mm	0.19	0.18	0.18	0.18	0.18	0.17	0.17	0.17	0.16	0.20
175mm	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.15	0.14	0.17
200mm	0.15	0.14	0.14	0.14	0.14	0.14	0.14	0.13	0.13	0.15

Notes: Calculations include the use of stainless steel ties with 11mm² cross sectional area and 50mm² where total cavity exceeds 100mm.

U values calculations are based on BS EN ISO 6946 (the Combined method).

RockShield insulated Render System



RockShield insulated render system offers a high degree of thermal performance and weather protection to the external walls of the buildings. This method of construction not only minimises warm bridging, but will also provide an effective barrier against external noise pollution.

Construction

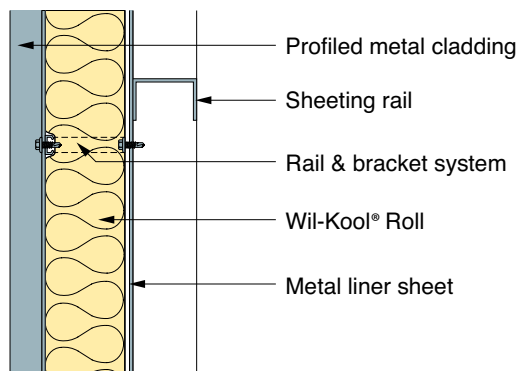
10mm RockShield render applied to RockShield slabs (of varying thickness) mechanically fastened and bonded to protected brick or block structures. 13mm dense plaster finish internally.

Table below shows typical U values with standard single leaf and cavity constructions.

Block type Block conductivity RockShield Slab Thickness (mm)	Dense $\lambda = 1.13 \text{ W/mK}$ Thickness		Med dense $\lambda = 0.51 \text{ W/mK}$ Thickness		Lightweight $\lambda = 0.19 \text{ W/mK}$ Thickness		Brick Solid Thickness	Brick/Block 50mm Cavity Thickness
	140mm	215mm	140mm	215mm	140mm	215mm	225mm	Brick 102mm Block 100mm
Uninsulated	3.14	2.60	2.13	1.62	1.07	0.75	2.05	1.55
50mm	0.60	0.58	0.55	0.51	0.44	0.37	0.54	0.50
75mm	0.43	0.41	0.40	0.38	0.34	0.30	0.40	0.37
100mm	0.33	0.32	0.32	0.30	0.28	0.25	0.31	0.30
125mm	0.27	0.27	0.26	0.25	0.23	0.21	0.26	0.25
150mm	0.23	0.23	0.22	0.21	0.20	0.19	0.22	0.21
175mm	0.20	0.20	0.19	0.19	0.18	0.17	0.19	0.19
200mm	0.17	0.17	0.17	0.17	0.16	0.15	0.17	0.17

U values calculations are based on BS EN ISO 6946 (the combined method).

Twin Skin Metal Cladding Wall System



Construction

For twin skin metal clad wall applications, Wilhams recommend the use of our Wil-Kool® Roll products.

Profiled external metal sheeting and sealed metal liner separated by a rail and bracket spacer system with Wil-Kool® Roll between.

Wil-Kool® Roll thickness (mm)	Uninsulated	50	75	100	125	150	175	200
U value W/m²K	5.66	0.93	0.72	0.61	0.54	0.49	0.46	0.43

Notes: Metal liner should be sealed in order to provide an air tight construction.

The U values and construction shown in the tables above are based on those covered in BRE IP 5/98. The insulation thicknesses quoted can only ever be indicative, since actual thickness will depend on the specific system design.

It should be noted however, that IP 5/98 is currently under review, hence the thicknesses shown may be subject to revision once the replacement IP is made available by the BRE.

For other cladding systems, a more complex calculation method must be adopted using a 3 dimensional computer model program. Confirmation for such U values should therefore be obtained from the individual cladding manufacturer.

Calculations for individual constructions can be requested from the Wilhams Technical Services Department at +603-78466728.

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