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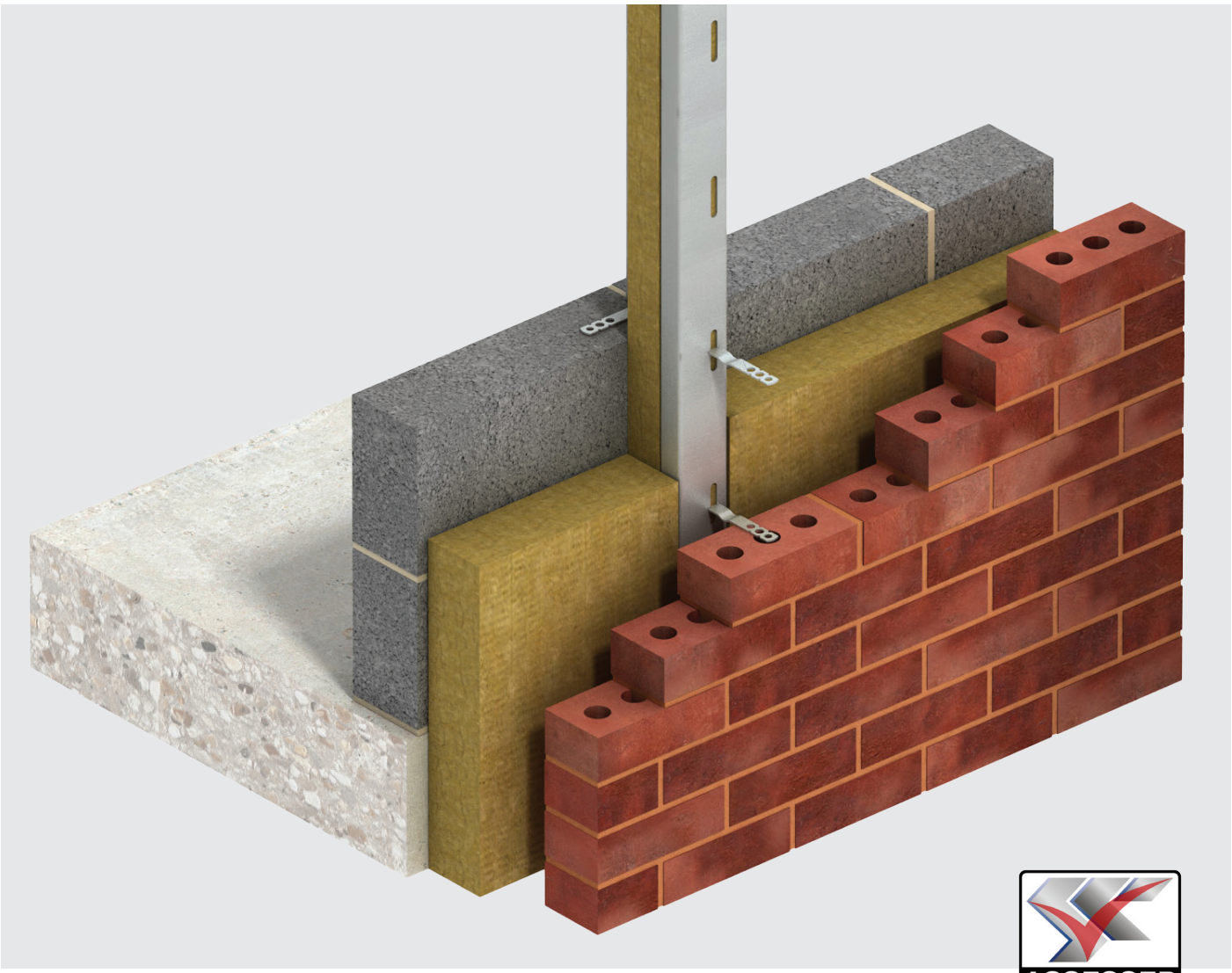
A CRH COMPANY

Ancon®

Thermal Windposts (TWP2)

Thermal Efficiency: the new revolution in windposts



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Thermal Windposts (TWP2)

The patented Ancon Thermal Windpost (TWP2) is designed to span vertically between floors, to provide additional lateral support for panels of masonry. It has been engineered after extensive research and testing, with a variety of features to improve the thermal performance and repeatability of the junction.

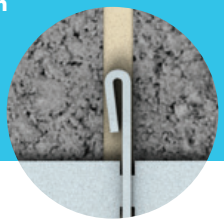
Why is the Ancon Thermal Windpost revolutionary?

The first of its kind, and beneficial for both contractors and designers alike, the Ancon Thermal Windpost has been designed unlike any other windpost seen on the market.

Thanks to its robust integral non-combustible mineral fibre insulation in combination with a thermal slot array, using the Ancon Thermal Windpost in place of a traditional windpost results in up to a **70% reduction** in thermal transmission through the span of the section, as well as improving the consistency and repeatability of fitting insulation in and around the post, ensuring that the intended thermal design is met.

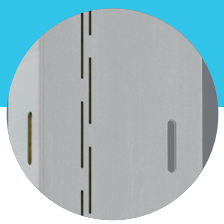
Although it holds the same strong performance, the Ancon Thermal Windpost is engineered to be up to **35% lighter** than traditional windposts, making it much easier to handle on site. With sharp edges eliminated, safety on site is also improved.

A **teardrop hem** increases the strength of the post and **eliminates sharp edges.**

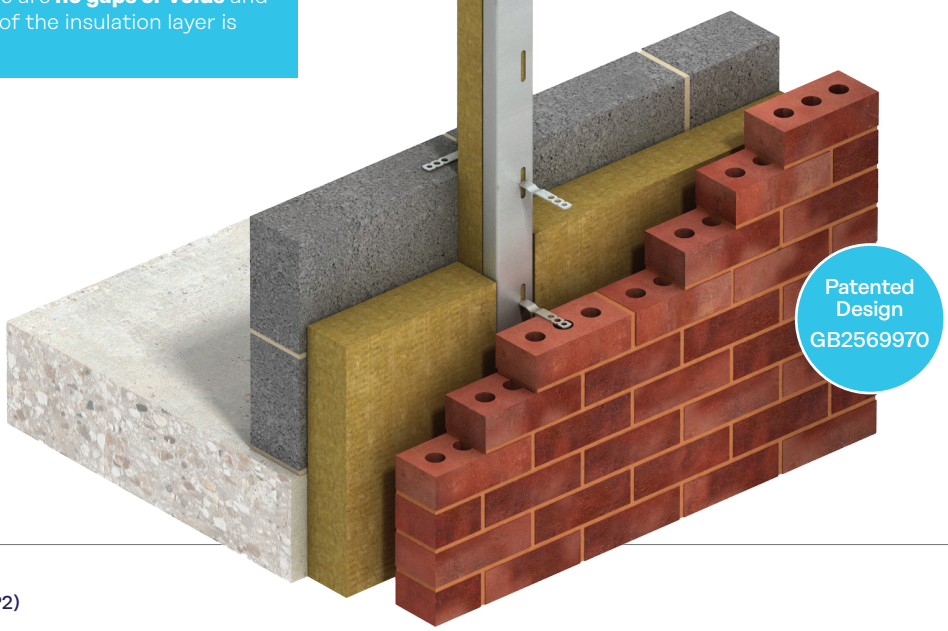


An **additional flange** means insulation can be installed directly up to the windpost with ease. The outer face of the post has been designed to sit flush with the face of partial fill insulation, providing a **continuous insulation line** and improving airtightness.

The **perforated long leg** means the overall path for thermal energy to travel is longer, thus increasing its effective resistance.



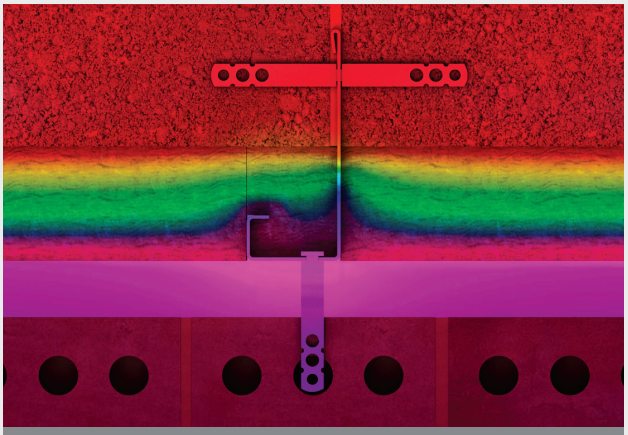
Supplied with robust **integral non-combustible mineral fibre insulation** packed behind the flange, ensuring there are **no gaps or voids** and complete continuity of the insulation layer is achieved.



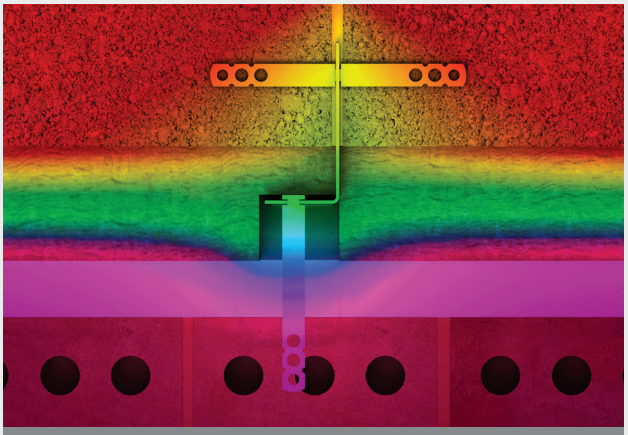
Patented Design GB2569970

Minimising thermal transmission

The use of thinner gauge stainless steel reduces the amount of highly conductive material penetrating the insulation layer. The additional inclusion of a thermal slot array within the insulation zone slows the rate of thermal flux locally and in turn further reduces transmission through that part of the web. This is particularly efficient when fully surrounded by insulation.



Ancon Thermal Windpost (TWP2)



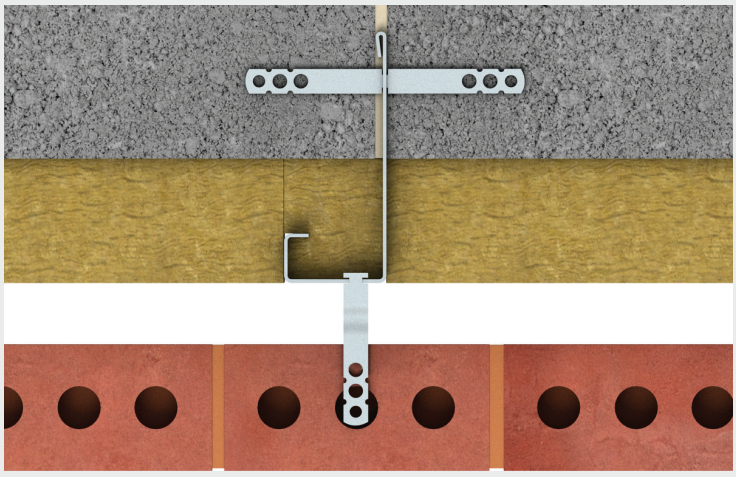
Standard angle section windpost

Ensuring repeatability

Gaps between the cavity insulation panels and the post have a detrimental effect on the thermal performance of the junction.The inclusion of a folded return on the flange ensures that there is a perpendicular face on both sides of the post to butt insulation up to. Integrated mineral wool insulation within the flange is held in place by this fold, eliminating the need to push insulation into tight spaces and preventing omission of this crucial, yet tricky to install, insulation on-site. This repeatability helps ensure that the thermal performance of the post is maximised and consistently meets expectations.

Innovative detailing

Alignment of the flange with the outer face of the insulation layer promotes a clean insulation line without protrusions or recesses local to the post, and in the case of foil-backed insulation, provides a face to tape the insulation to. Specifying the depth of the post in this way also means that different structural needs can in many cases be met with the same depth of post, simply increasing the gauge of material to the level necessary to meet structural requirements. This ensures that the detailing of insulation surrounding the post is standardised as far as possible across the project, in turn reducing the potential for on-site variations.



Thermal Windposts (TWP2)

The importance of thermal specification

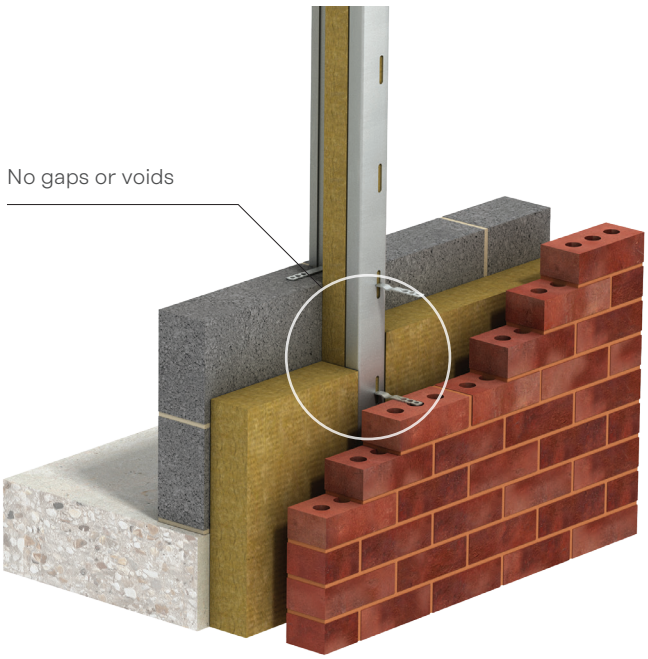
An increasing focus on thermal bridging and energy efficiency means that components now have to go above and beyond in order to achieve the often tight thermal specification requirements. Windposts are structural members which inevitably create a discontinuity in the insulation layer; angle sections almost fully penetrate the inner leaf of the wall and part of the insulation, and channel sections can sometimes bridge the insulation layer. The small voids that are created within and around the post as a result of this can be difficult and time consuming to appropriately deal with on-site, and ultimately can have a detrimental impact on the overall thermal performance of the masonry wall.

The focus on development of the Ancon Thermal Windpost was to address this thermal performance issue, as well as offering a solution which simplifies installation, ensuring that a consistent and correct install can be achieved.

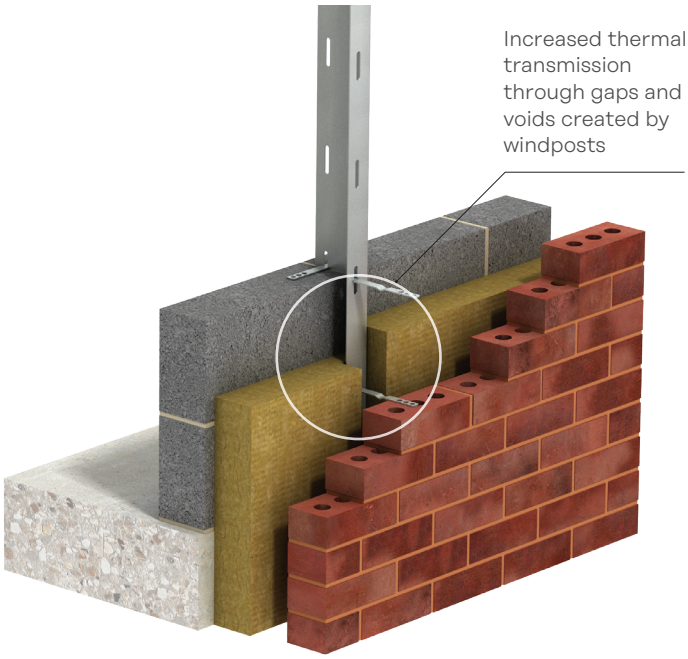
Ancon Thermal Windposts offer up to a 70% reduction in thermal transmission through the span of the post as compared to equivalent traditional angle section windposts. Ψ-values for the Ancon Thermal Windpost section range between 0.04-0.06W/mK, compared to 0.13-0.19W/mK for traditional WP2 posts*. This means that they can help satisfy more demanding thermal requirements, or be used in builds where stringent thermal specifications are required.

Please contact Leviat for further details.

Ancon Thermal Windpost (TWP2)



Standard angle section windpost



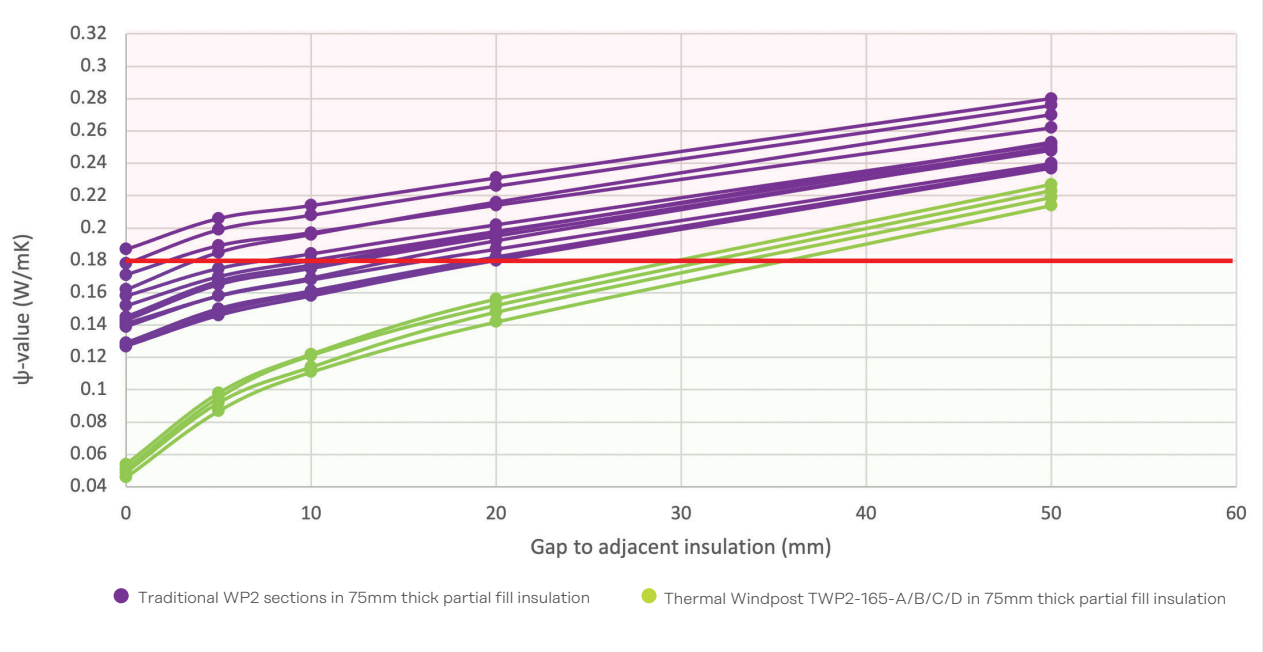
Achieving the default Ψ-value

The default Ψ-value for windposts provided in BR 443 is 0.18W/mK. Analysis by Leviat* has shown that in some cases this can be exceeded with traditional angle section windposts, particularly if small gaps are present between insulation panels and the post, or if insulation behind the flange is omitted. In typical windpost installations, small gaps and voids created by the windpost are easy to overlook in terms of both detailing and installation and can lead to increased thermal transmission which may not be accounted for in the thermal design, contributing to the widely accepted "performance gap" in thermal specification. The Ancon Thermal Windpost (TWP2) eliminates this risk by ensuring a very low Ψ-value through the section as a baseline, providing integral insulation within the flange, and providing consistent detailing for surrounding insulation. This ensures the default value is always met as a minimum, and provides opportunities for improved thermal performance to be realised.

*Analysis based upon a wall build-up comprising 75mm phenolic partial-fill insulation in a 125mm cavity, with insulation hard up to each side of the post. For further details contact Leviat.

Comparison between TWP2 and WP2 in sensitivity to gaps and variations in installation of insulation adjacent to the post

(Assumes 75mm partial fill insulation and insulation installed behind the flange)



The Ancon Thermal Windpost (TWP2) is much less sensitive to variations, maintaining performance better than the default value of 0.18W/mK irrespective of minor variations.

Design and Installation

Ancon Thermal Windposts are installed into the inner leaf of blockwork in a similar way to traditional angle sections but with the flange aligned with the outer face of partial fill insulation, and are designed to suit your specific construction and load conditions.

Ancon Thermal windposts are restrained by the blockwork and designed as 'simply supported beams'. Deflection under wind load sometimes limits the maximum loading, however due to the optimised nature of the section many TWP2 sections have a greater reliance on mechanical strength which is an indicator of section efficiency. Connections to the frame are designed to permit adjustment during installation. Serrated surfaces will be provided where adjustment is in the direction of the load. The top connection allows for shrinkage or vertical movement of the frame to take place. The type of fixing will depend on the nature of the frame. Expansion bolts are normally supplied for concrete frames and set screws will be supplied for steel frames.

For further information or advice on specific applications, please contact our Technical Services Team.

Please note, it is the responsibility of the Engineer to design a suitable structure for connecting a windpost. Where windposts are to be connected to a concrete frame, the project Structural Engineer should advise the concrete grade. Windpost connections will be designed for grade C30/37 cracked concrete, unless advised otherwise.

Details for Specification and Ordering

The Ancon Thermal Windpost (TWP2) has been independently assessed by the Steel Construction Institute, and is UKCA and CE marked, designed to BS EN 1993 (EC3) and manufactured to BS EN 1090-1.

Ancon Windposts are designed to suit specific construction and load conditions, and as a result they are manufactured to order therefore sufficient time should be allowed for the design, approval and manufacturing process when placing orders for windposts.

Thermal Windposts (TWP2)

Load Capacity Tables (for posts built in to a solid mortar joint)

Ancon Windposts are designed as 'simply supported beams' with a maximum deflection of span/360. The following tables include examples of the Ancon Thermal Windpost's maximum design loads to BS EN 1993 (Eurocode 3) when built in to a mortar joint. The design resistances shown should be compared to factored loads and are based on ties to both inner and outer masonry leaves at 225mm vertical centres.

Ancon Windposts comply with all UKCA & CE marking requirements of BS EN 1090-1, including designs to EN 1993 (Eurocode 3) and external certification of our factory production controls by an approved body. Design methods have been independently assessed and verified by the Steel Construction Institute.

Instructions for Lookup Table

The tables and charts on the following pages help determine the appropriate Ancon Thermal Windpost and exact product specification for your project.

Identify the relevant cavity size or insulation thickness to determine the Post Depth (h) in the left hand column of the table.

Follow the row across to find your required post length and then use the table to determine the Design Resistance required. This will give you your Windpost Type e.g. Type A, Type B etc.

Ancon Thermal Windpost (TWP2) Product Specification Structure

TWP2-	190-	B
Standard Code	Post Depth (h)	Design Capacity (see table)

Post Depth (h)	Partial fill insulation thickness*	Cavity size or full fill insulation thickness	Windpost Type	2.5m	2.75m	3.0m	3.25m	3.5m	3.75m	4.0m
150	60	110 (partial fill) 100-110 (full fill)	Type A	6.78	6.08	5.42	4.83	4.31	3.86	3.45
			Type B	9.65	8.49	7.47	6.60	5.84	5.19	4.64
			Type C	12.48	10.86	9.48	8.31	7.26	6.48	5.76
			Type D	15.24	13.17	11.43	9.96	8.74	7.73	6.86
155	65	115	Type A	7.13	6.44	5.76	5.16	4.61	4.14	3.72
			Type B	10.25	9.06	8.00	7.07	6.27	5.58	4.98
			Type C	13.29	11.63	10.17	8.93	7.88	6.98	6.21
			Type D	16.29	14.12	12.27	10.73	9.42	8.33	7.41
160	70	120	Type A	7.10	6.81	6.12	5.49	4.92	4.43	3.98
			Type B	10.85	9.63	8.52	7.56	6.72	5.99	5.36
			Type C	14.13	12.39	10.88	9.57	8.45	7.50	6.69
			Type D	17.36	15.09	13.16	11.52	10.14	8.97	7.98
165	75	125	Type A	7.08	7.08	6.48	5.82	5.24	4.71	4.25
			Type B	11.43	10.20	9.06	8.06	7.17	6.41	5.75
			Type C	14.96	13.17	11.60	10.23	9.04	8.04	7.19
			Type D	18.44	16.08	14.06	12.33	10.88	9.63	8.57
170	80	130	Type A	7.07	7.07	6.86	6.18	5.58	5.03	4.55
			Type B	12.06	10.80	9.63	8.58	7.67	6.86	6.15
			Type C	15.84	14.00	12.36	10.92	9.69	8.63	7.71
			Type D	19.58	17.15	15.03	13.20	11.66	10.34	9.21
175	85	135	Type A	7.03	7.03	7.03	6.56	5.93	5.36	4.85
			Type B	12.66	11.42	10.22	9.13	8.18	7.32	6.59
			Type C	16.74	14.85	13.16	11.66	10.37	9.24	8.27
			Type D	20.76	18.24	16.04	14.13	12.50	11.10	9.90
180	90	140	Type A	7.02	7.02	7.02	6.92	6.27	5.69	5.16
			Type B	12.63	12.03	10.82	9.69	8.69	7.80	7.02
			Type C	17.64	15.72	13.97	12.42	11.06	9.87	8.83
			Type D	21.96	19.37	17.07	15.08	13.35	11.87	10.61
185	95	145	Type A	6.99	6.99	6.99	6.99	6.63	6.03	5.48
			Type B	12.62	12.62	11.42	10.26	9.23	8.30	7.48
			Type C	18.56	16.59	14.79	13.19	11.76	10.52	9.44
			Type D	23.16	20.51	18.12	16.04	14.24	12.68	11.34
190	100	150	Type A	6.98	6.98	6.98	6.98	6.98	6.38	5.81
			Type B	12.59	12.59	12.02	10.85	9.77	8.80	7.95
			Type C	19.46	17.48	15.63	13.97	12.48	11.19	10.05
			Type D	24.36	21.65	19.20	17.03	15.14	13.50	12.09
195	105	155	Type A	6.96	6.96	6.96	6.96	6.96	6.72	6.14
			Type B	12.56	12.56	12.56	11.43	10.32	9.32	8.43
			Type C	19.62	18.36	16.49	14.76	13.23	11.87	10.68
			Type D	**24.76**	22.82	20.28	18.05	16.07	14.36	12.87
200	110	160	Type A	6.93	6.93	6.93	6.93	6.93	6.93	6.47
			Type B	12.53	12.53	12.53	12.02	10.88	9.86	8.93
			Type C	19.59	19.25	17.34	15.57	13.98	12.57	11.33
			Type D	**24.76**	23.99	21.39	19.07	17.03	15.23	13.67
205	115	165	Type A	6.92	6.92	6.92	6.92	6.92	6.92	6.81
			Type B	12.50	12.50	12.50	12.50	11.45	10.38	9.42
			Type C	19.56	19.56	18.20	16.40	14.75	13.29	11.99
			Type D	**24.76**	25.16	22.52	20.12	18.00	16.13	14.49
210	120	170	Type A	6.89	6.89	6.89	6.89	6.89	6.89	6.89
			Type B	12.47	12.47	12.47	12.47	12.02	10.92	9.93
			Type C	19.53	19.53	19.07	17.22	15.53	14.01	12.66
			Type D	**24.76**	26.34	23.66	21.20	18.99	17.04	15.33
215	125	175	Type A	6.87	6.87	6.87	6.87	6.87	6.87	6.87
			Type B	12.45	12.45	12.45	12.45	12.45	11.48	10.46
			Type C	19.49	19.49	19.49	18.06	16.32	14.76	13.37
			Type D	**24.76**	**27.02**	24.80	22.28	20.00	17.99	16.20
220	130	180	Type A	6.86	6.86	6.86	6.86	6.86	6.86	6.86
			Type B	12.42	12.42	12.42	12.42	12.42	12.03	10.98
			Type C	19.46	19.46	19.46	18.90	17.13	15.51	14.07
			Type D	**24.76**	**27.02**	25.95	23.37	21.03	18.93	17.09
225	135	185	Type A	6.83	6.83	6.83	6.83	6.83	6.83	6.83
			Type B	12.39	12.39	12.39	12.39	12.39	12.39	11.52
			Type C	19.43	19.43	19.43	19.43	17.94	16.29	14.79
			Type D	**24.76**	**27.02**	27.11	24.48	22.07	19.91	17.99
230	140	190	Type A	6.81	6.81	6.81	6.81	6.81	6.81	6.81
			Type B	12.36	12.36	12.36	12.36	12.36	12.36	12.06
			Type C	19.40	19.40	19.40	19.40	18.77	17.06	15.53
			Type D	**24.76**	**27.02**	27.89	25.59	23.13	20.90	18.92
235	145	195	Type A	6.78	6.78	6.78	6.78	6.78	6.78	6.78
			Type B	12.33	12.33	12.33	12.33	12.33	12.33	12.33
			Type C	19.35	19.35	19.35	19.35	19.35	17.85	16.26
			Type D	**24.76**	**27.02**	27.84	26.72	24.20	21.92	19.86
240	150	200	Type A	6.77	6.77	6.77	6.77	6.77	6.77	6.77
			Type B	12.30	12.30	12.30	12.30	12.30	12.30	12.30
			Type C	19.32	19.32	19.32	19.32	19.32	18.65	17.03
			Type D	**24.76**	**27.02**	27.81	27.81	25.29	22.94	20.82

*Post may be used in full-fill applications, or in thicker partial fill insulation with a 50mm make-up piece of insulation to the front of the post.

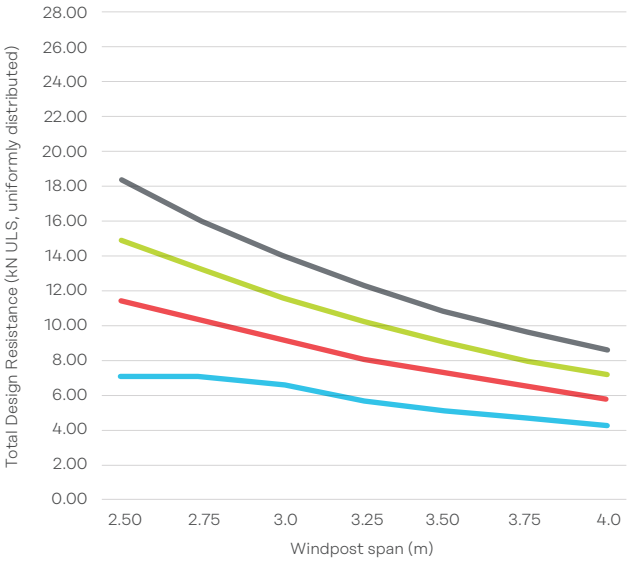
Contact Leviat for further information.
Figures in bold are limited by wall tie capacity. Please contact Leviat for capacities within a movement joint.

Design Charts for the Built in Case

The charts below provide loading information for four popular partial fill insulation thicknesses to aid specification. Leviat can provide custom charts for a given depth on request, please contact our Technical Services Team for more information.

	2.5m	2.75m	3.0m	3.25m	3.5m	3.75m	4.0m
Type A	7.08	7.08	6.48	5.82	5.24	4.71	4.25
Type B	11.43	10.20	9.06	8.06	7.17	6.41	5.75
Type C	14.96	13.17	11.60	10.23	9.04	8.04	7.19
Type D	18.44	16.08	14.06	12.33	10.88	9.63	8.57

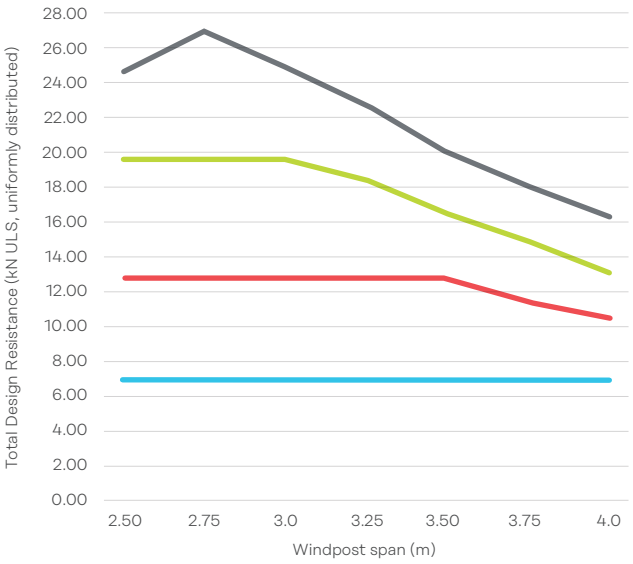
Post Depth = 165mm (Typically 75mm partial fill insulation)



	2.5m	2.75m	3.0m	3.25m	3.5m	3.75m	4.0m
Type A	6.87	6.87	6.87	6.87	6.87	6.87	6.87
Type B	12.45	12.45	12.45	12.45	12.45	11.48	10.46
Type C	19.49	19.49	19.49	18.06	16.32	14.76	13.37
Type D	**24.76**	**27.02**	24.80	22.28	20.00	17.99	16.20

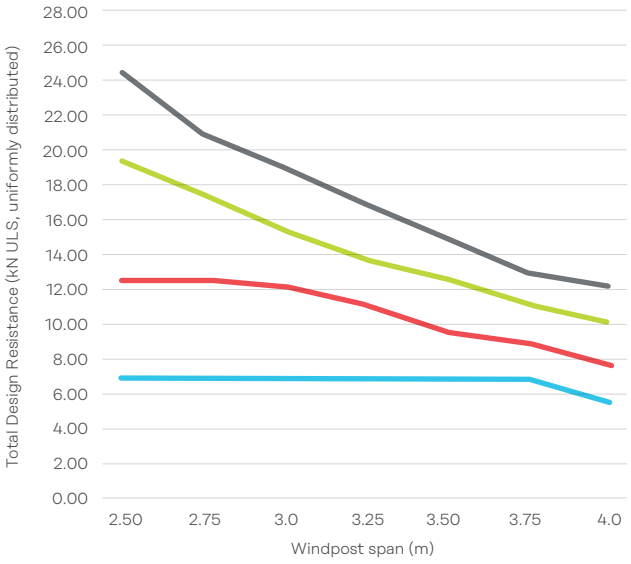
Figures in bold are limited by wall tie capacity.

Post Depth = 215mm (Typically 125mm partial fill insulation)



	2.5m	2.75m	3.0m	3.25m	3.5m	3.75m	4.0m
Type A	6.98	6.98	6.98	6.98	6.98	6.38	5.81
Type B	12.59	12.59	12.02	10.85	9.77	8.80	7.95
Type C	19.46	17.48	15.63	13.97	12.48	11.19	10.05
Type D	24.36	21.65	19.20	17.03	15.14	13.50	12.09

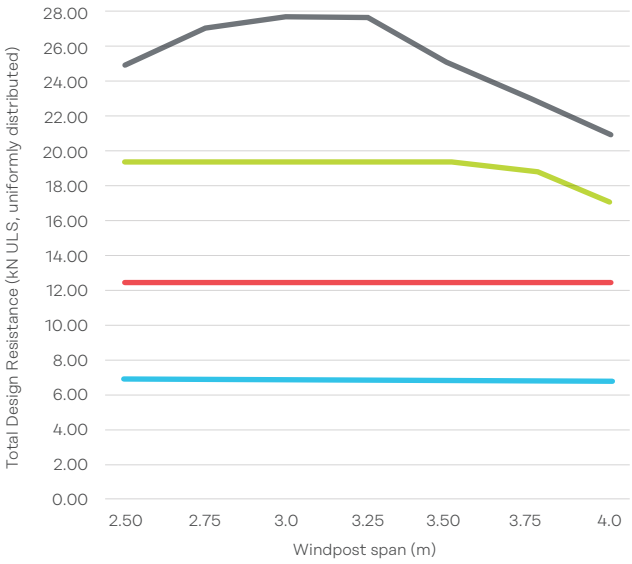
Post Depth = 190mm (Typically 100mm partial fill insulation)



	2.5m	2.75m	3.0m	3.25m	3.5m	3.75m	4.0m
Type A	6.77	6.77	6.77	6.77	6.77	6.77	6.77
Type B	12.30	12.30	12.30	12.30	12.30	12.30	12.30
Type C	19.32	19.32	19.32	19.32	19.32	18.65	17.03
Type D	**24.76**	**27.02**	27.81	27.81	25.29	22.94	20.82

Figures in bold are limited by wall tie capacity.

Post Depth = 240mm (Typically 150mm partial fill insulation)



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