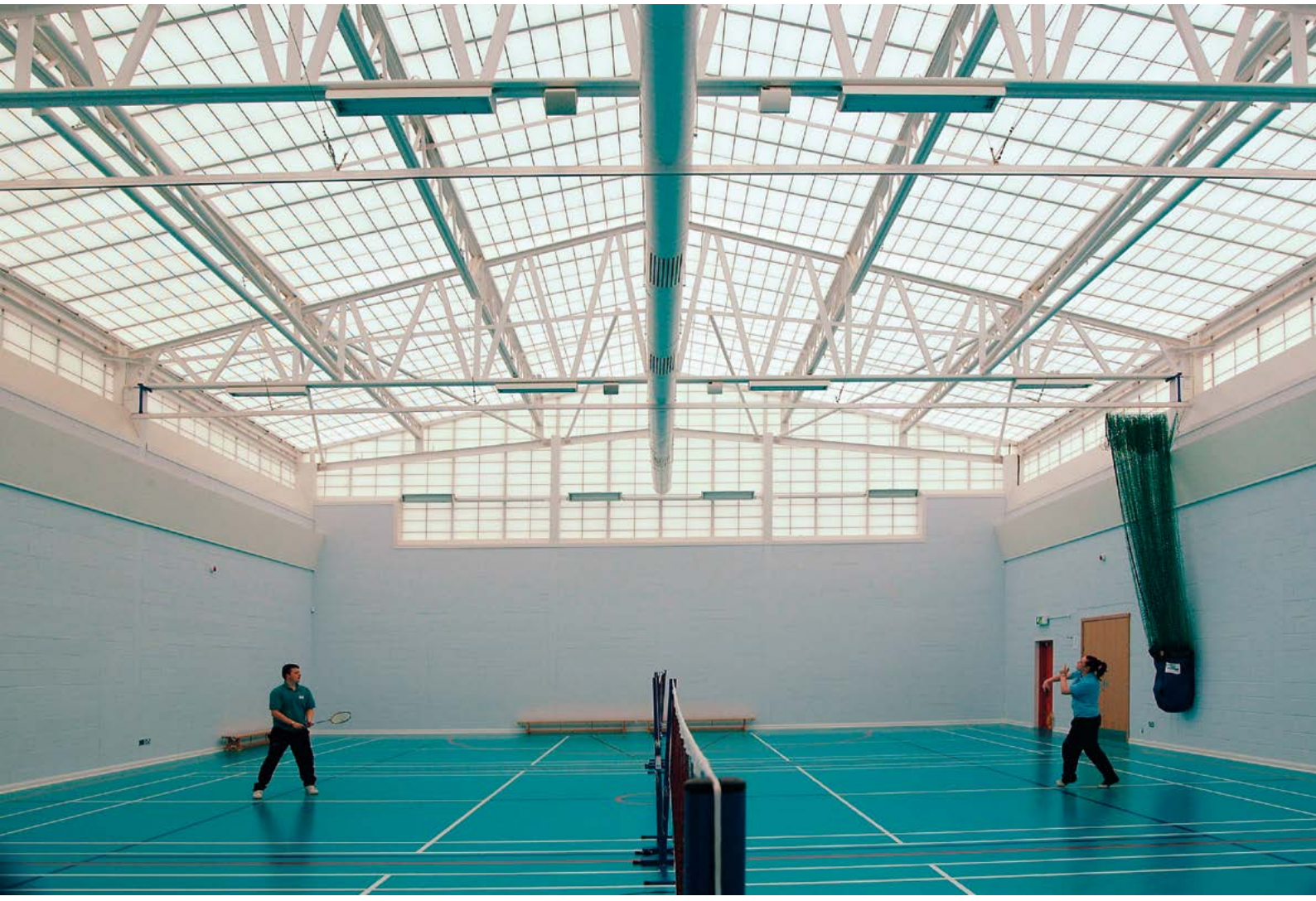
STRUCTURA
CURTAINWALL ENGINEERING

KALWALL®
high performance translucent building systems

Kalwall and Thermal Performance



Kalwall® and Insulation Values

Kalwall®, by its very nature, is an insulating product and can help architects, specifiers and designers comply with Part L and other energy efficient requirements.

Kalwall is unique in its ability to diffuse large quantities of usable daylight into an interior with relatively low levels of light transmission and without shadows or glare. Panels can be selected to transmit different percentages of light according to individual project requirements.

The standard panel is normally 70mm thick and by providing various densities of insulation the thermal resistance and therefore the 'U' values can be varied. With the addition of an aerogel within the panel a remarkable 'U' value of 0.28 W/m2K can be achieved. This means that architects and designers can now specify a translucent wall or roof which is as energy efficient as a normal cavity wall and four times better than insulating glass units. Effectively, this means that it is possible to introduce energy-saving daylight through surfaces which would normally be opaque. All this has important ramifications for Part L.

The product of nanotechnology, aerogel is a tangle of glass nanostrands which creates a navigational dilemma for air moving through it, impeding its flow and, consequently, stemming heat loss or solar gain. In fact, it is such a good insulator that it will even maintain its structure when subjected to heat from a blowtorch in excess of 1,300degC. Aerogel is a remarkable material because it can significantly reduce - and in some cases virtually eliminate - the thermal disconnect associated with fenestration, translucent cladding and rooflighting making it possible to manufacture insulating energy-saving daylighting systems with the very highest performance.

Kalwall Insulation Properties:

Wall specification		Panel Thickness 70mm (Panel 'U' Value W/m2K)										Panel Thickness 100mm (Panel 'U' Value W/m2K)					
Thermally Broken		2.57		1.25		0.78		0.56		0.28*		2.85		0.83		0.45	
Standard		2.74		1.56		1.20		0.99		0.72*		N/A		N/A		N/A	
Exterior	Interior	Light Trans	Solar Factor	Light Trans	Solar Factor	Light Trans	Solar Factor	Light Trans	Solar Factor	Light Trans	Solar Factor	Light Trans	Solar Factor	Light Trans	Solar Factor	Light Trans	Solar Factor
White SW-E	White B-3C	20	0.31	14	0.16	8	0.10	5	0.07	12	0.13	20	0.31	12	0.13	5	0.06
Crystal SW-E	White B-3C	30	0.38	20	0.19	9	0.12	6	0.07	15	0.18	30	0.38	13	0.15	5	0.07
Roof specification		Panel Thickness 70mm										Panel Thickness 100mm					
Thermally Broken		2.86		1.31		0.80		0.57		0.28*		3.22		0.86		0.46	
Standard		3.08		1.67		1.26		1.03		0.74*		N/A		N/A		N/A	
Exterior	Interior	Light Trans	Solar Factor	Light Trans	Solar Factor	Light Trans	Solar Factor	Light Trans	Solar Factor	Light Trans	Solar Factor	Light Trans	Solar Factor	Light Trans	Solar Factor	Light Trans	Solar Factor
White SW-E	White B-3C	20	0.28	14	0.15	8	0.09	5	0.06	12	0.13	20	0.28	12	0.12	5	0.05
Crystal SW-E	White B-3C	30	0.35	20	0.18	9	0.11	6	0.07	15	0.18	30	0.35	13	0.14	5	0.06

Notes:-

1. *Solar Factor is total Solar Heat Transmittance.*
2. *'U' values are calculated according to CIBSE Guide Volume A Chapter 3. (The difference between wall and roof values is because surface heat transfer is different for horizontal and the more severe vertical upward heat transfer. This is fully explained in the reference).*
3. *Light transmissions are expressed in percentages.*
4. *Light transmissions over 30% are not recommended for normal use.*
5. *All performance figures are based on 600mm by 300mm internal panel grid.*
6. *Fire performance is in accordance with BS EN 13501-1.*
7. *Other face sheet combinations are available on request.*

**Kalwall + Aerogel*

Kalwall + Aerogel

As the above table shows, the introduction of an aerogel between the Kalwall panels has a dramatic effect on its insulation properties.

Aerogels are a translucent granular form of silica aerogel. Comprising 95% air, they are the world's lightest and best insulating solid material. For many years, it has been used in the science and aerospace industries and when used with Kalwall can achieve insulation four times better than insulating glass units.

Insulation in Practice

LIGHT AND WARMTH FOR THE ELDERLY

Brookside, the retirement village located close to Ormskirk town centre, is a specialist community for the elderly.

In addition to its individual apartments, it includes a residents' lounge, fitness suite, bistro, hairdressing salon and landscaped gardens. There is also a health and well-being service on site for residents and for people in the village and local community.

The Community Health Centre, designed by Pozzoni Architects, uses Kalwall with a highly insulating aerogel.

The result is a calming and attractive interior which, even on cloudy days, is flooded with natural daylight. The introduction of aerogel makes the Kalwall highly insulating, creating 'U' values as low as 0.28W/m²K, equivalent to an insulated cavity wall.

THE PERFECT LEARNING AMBIENCE

Blackburn College is one of the latest local authority sixth form schools to showcase Kalwall translucent cladding. The building was designed by DLA Architecture.

The Kalwall system was specified because of its unique ability to distribute diffused daylight while also offering highly insulating properties.

This natural light creates the ideal ambience for working, learning, using computers and for improving personal well-being.

Unlike other systems, Kalwall eliminates shadows and glare and the stark contrasts of light and shade. Even on cloudy days, the interior is flooded with natural daylight, which means less artificial lighting and also, because it is highly insulating, energy costs are reduced. At night, the building emits a very attractive ethereal glow.

Highly insulating Kalwall is widely used for schools because its unique 'museum-quality daylighting'™ is proved to be very beneficial for learning, study and play.

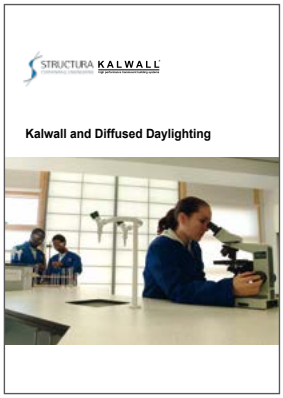
It is also popular for sports halls and pools where elimination of shadow and glare creates conditions ideal for playing and for safe swimming.

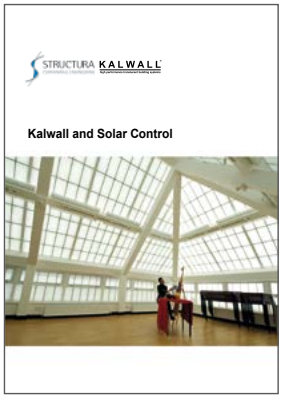
What is Kalwall?

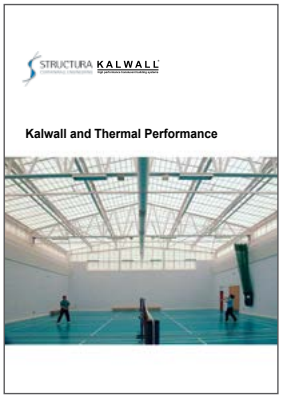
Kalwall®, developed and manufactured in the USA for over 50 years, is a highly insulating, diffuse light transmitting building panel system for walls and roofs. The primary component is a translucent structural composite sandwich panel formed by permanently bonding specially formulated fibreglass sheets to a grid core constructed of interlocking thermally broken extruded aluminium 'I-beams'.

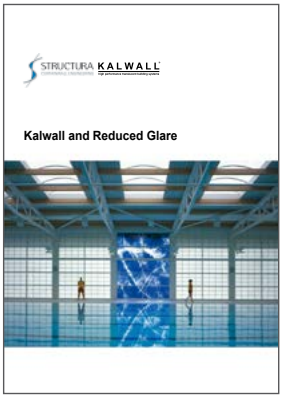
Panels are factory prefabricated to the exact size and configuration for each project. Panels can be flat or curved while opening or fixed glazed window units can be incorporated using the integral Clamp-tite installation system.

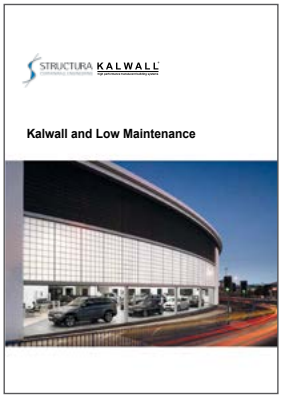
Kalwall's unique composition combines to reduce solar gain while at the same time maximising thermal insulation. Kalwall diffuses light so efficiently that even direct sunlight is converted into even illumination with reduced glare. Kalwall is able to transmit large amounts of usable daylight into a space with relatively low levels of light transmission. Panels can be selected to transmit various percentages of light according to individual project requirements. Kalwall has achieved European Technical Approval, ETA-07/0244. Kalwall has been tested according to the procedures of EN13830:2003 – Curtain Walling Product Standard for CE Marking.

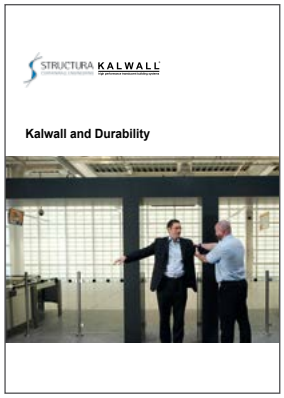


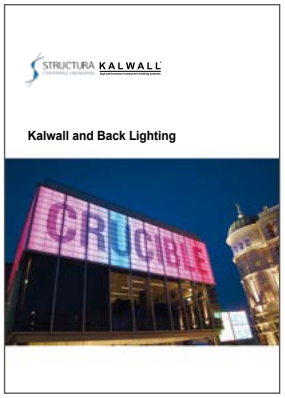


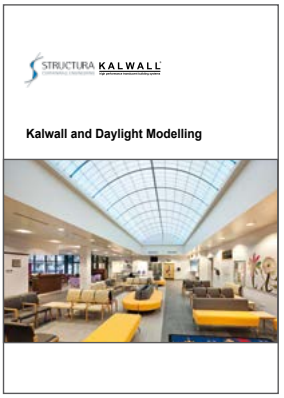












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Structura UK is the leading supplier, fabricator and installer of glass curtain walling, rainscreens, glass atria, windows and other architectural glass building products. The company is also the exclusive distributor for Kalwall translucent daylight building systems in England, Wales and Northern Ireland.