

STRUCTURA UK

KALWALL & SOLAR CONTROL



Most architects love big windows. Over the past decades, fenestration has increasingly got bigger not only because manufacturing technology has developed but also because plentiful daylight is often considered to be an essential 'building product' for contemporary design. At the same time, there is a growing desire to merge the living and working environment with that of the landscape. However, this can bring problems.

One of the obvious problems is insulation and the preservation of expensive energy while at the same time 'comes the difficulty of how to control the sun. In other words, designers also need to work out how to maximise the benefits of sunlight while controlling unwanted solar heat gain and the disadvantages of shadows and glare. This can be managed with Solar Control or by using expensive external louvres and shutters.

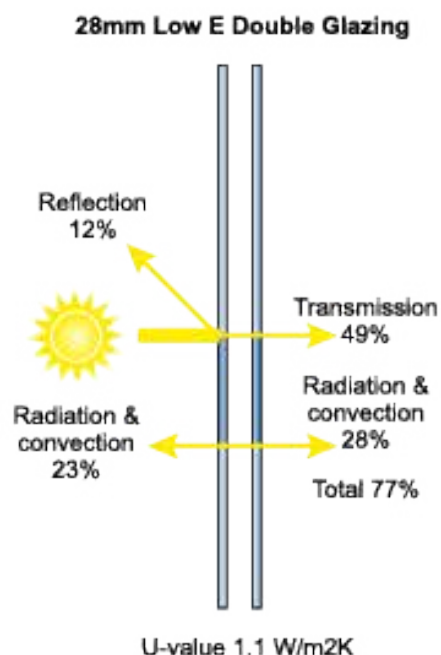
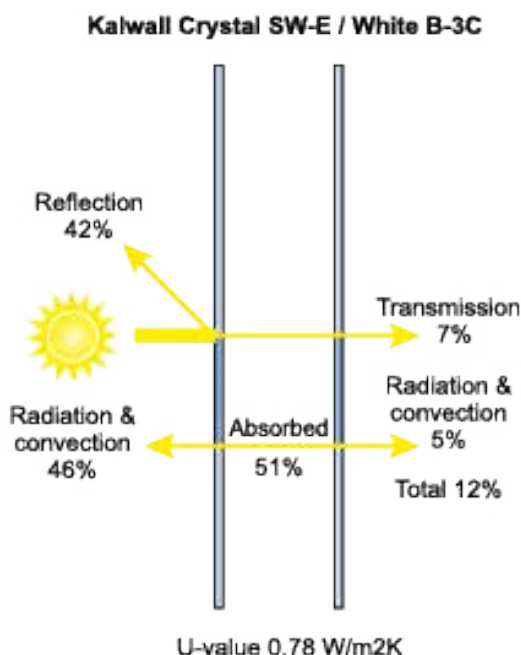
'One of the most important benefits of the Kalwall® panel is its inherent ability to control heat transfer and solar gain.

This is achieved by its unique composition which combines to reduce solar gain while at the same time maximising thermal insulation. The system is unique because it diffuses daylight so efficiently that even direct sunlight is converted into evenly diffused light while glare and shadows are eliminated. The standard panel is generally 70mm thick and by providing various densities of insulation the thermal resistance and therefore U-values can be varied. 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's ability to control heat transfer and solar gain is, to do with the transmittance, reflectance and absorption in combination with the thermal resistance as shown by the graphics below.

KALWALL SOLAR PROPERTIES:

Insulation	U-value W/m ² K (U-value @ 10 psi)	Thermal Resistance M ² K/W	Face sheets		Solar Transmittance	Solar Reflectance	Solar Factor (g-value)	Absorbed	Shading Coefficients		Radiation & Convection	
			Exterior	Interior					Roof	Wall	Exterior	Interior
Air	2.74/2.57	0.19	White SW E	White B-3C	0.18	0.29	0.31	0.53	0.32	0.36	0.40	0.13
			Crystal SW E	White B-3C	0.26	0.29	0.38	0.45	0.40	0.43	0.33	0.12
Light glass fibre	1.56/1.25	0.46/0.82	White SW E	White B-3C	0.08	0.35	0.16	0.57	0.17	0.18	0.46	0.08
			Crystal SW E	White B-3C	0.11	0.42	0.19	0.47	0.21	0.22	0.39	0.08
Medium glass fibre	1.20/0.78	0.85/1.11	White SW E	White B-3C	0.05	0.36	0.10	0.59	0.11	0.12	0.54	0.05
			Crystal SW E	White B-3C	0.07	0.42	0.12	0.51	0.13	0.14	0.46	0.05
Dance glass Fibre	0.99/0.56	0.83/1.6	White SW E	White B-3C	0.03	0.37	0.07	0.60	0.07	0.08	0.56	0.04
			Crystal SW E	White B-3C	0.04	0.45	0.07	0.51	0.08	0.09	0.48	0.03
Aerogel	0.72/0.28	1.21/3.37	White SW E	White B-3C	0.07	0.29	0.13	0.66	0.15	0.15	0.58	0.06
			Crystal SW E	White B-3C	0.10	0.26	0.18	0.67	0.21	0.21	0.53	0.06



SOLAR CONTROL IN PRACTICE

LIGHTING UP ART

The new rooftop studio at London's Putney School of Art is a translucent conservatory entirely clad and roofed with Kalwall. The dramatic structure was designed by the Kenneth Mark Practice to create a private and perfect ambience for study, learning and leisure.



Kalwall is the unique system of diffusing natural daylight through walls or roofs. The "Museum-Quality Daylighting" is particularly suitable for art galleries, museums and libraries where the elimination of stark contrasts of light and shadow is essential to view paintings and exhibits without the colour distortion of artificial Lighting. In addition, Kalwall's inherent ability to control Solar Gain means that the room needs no artificial air conditioning - even in the height of summer.

The calming and attractive interior, even on cloudy days, is flooded with natural daylight. Importantly, because it is highly insulating, energy costs are reduced. U-values as low as 0.28Win*, equivalent to a solid wall or roof, 'can be achieved by including translucent silica aerogel within the panels.

Kalwall roof systems can be bespoke (with structure by others) or are available in self-supporting barrel and low profile vaults, self-supporting ridge roofs. The lightness of the panels means installation is less costly and far less cumbersome than glass. The panels have inherent rigidity and impact resistance, are largely self-cleaning and, because dirt is less obvious than on glass, frequency of maintenance is reduced,

NO SKATING ON THIN ICE

The Spanish Itaroa Artic Ice Rink in Huarle near Pamplona is a perfect example of Kalwall's solar control in action.

With large expanses of window, the Ice Rink owners needed to find a glazing solution which solved the twin problems of interior



glare while controlling the interior temperature - particularly during summer in a geographic area which is predominately bright, cloudless and with high ambient temperatures.

The Kalwall panels proved to be the perfect answer. Not only do they provide skaters with aesthetically pleasing, diffused light free from glare and hotspots but the panels, reduce the interior radiation and convection to a mere 5%, ensuring the ice stays cool and the skating surface firm

Furthermore, Kalwall's inherent insulation properties reduce the cold leak through the 'external envelope and reduce energy costs associated with having to keep the building cool.

Kalwall is a popular choice for applications like these and for large leisure centres, sports halls, gyms and retail warehouses. For example, Salisbury's, Morrison's and Asda supermarkets have all used Kalwall to control the solar gain in areas where the interior temperature has soared in Summer and needed to be moderated without having to work the air conditioners to full capacity.

WHAT IS KALWALL?

Kalwall, developed and manufactured in the USA for over 60 years, is a highly insulating, diffuse light transmitting building panel system for walls and roofs and can be used for daylighting spaces from small units to large areas of up to 30 metres. 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 been tested according to the procedures of EN13830:2003 – Curtain Walling Product Standard for CE Marking.

STRUCTURA & KALWALL

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.



WHO ARE STRUCTURA?

\$STRUCTURA

For over 35 years we've specialised in the delivery of commercial glazing renovation projects throughout the UK and Ireland. In partnership with leading European curtain wall system manufacturers and glass producers, we undertake bespoke, ambitious and out-of-the-ordinary projects, drawing on our collective experience to solve problems before they arise.

Our Founding Directors remain influential in our day-to-day business, representing an important constant from our initial start-up days to the present. Today, we are a team of over 100 members from more than 15 nationalities, working from multiple locations (and remotely, in light of our new, progressive hybrid working practices).

Through our own exacting standards of excellence and accreditation, we've been trusted with the refurbishment of some of the highest profile landmarks in the UK including Grade II listed properties such as The Post Office and Devonshire Square in London, Eastbourne's Congress Theatre and more recently, Sir Nicholas Grimshaw's Herman Miller Factory in Bath.

Our family values remain at the heart of what makes us tick – ensuring we act with integrity and sincerity in every project we put our names to. In short, we're every bit as invested in the success of our work as you.

CONTACT:

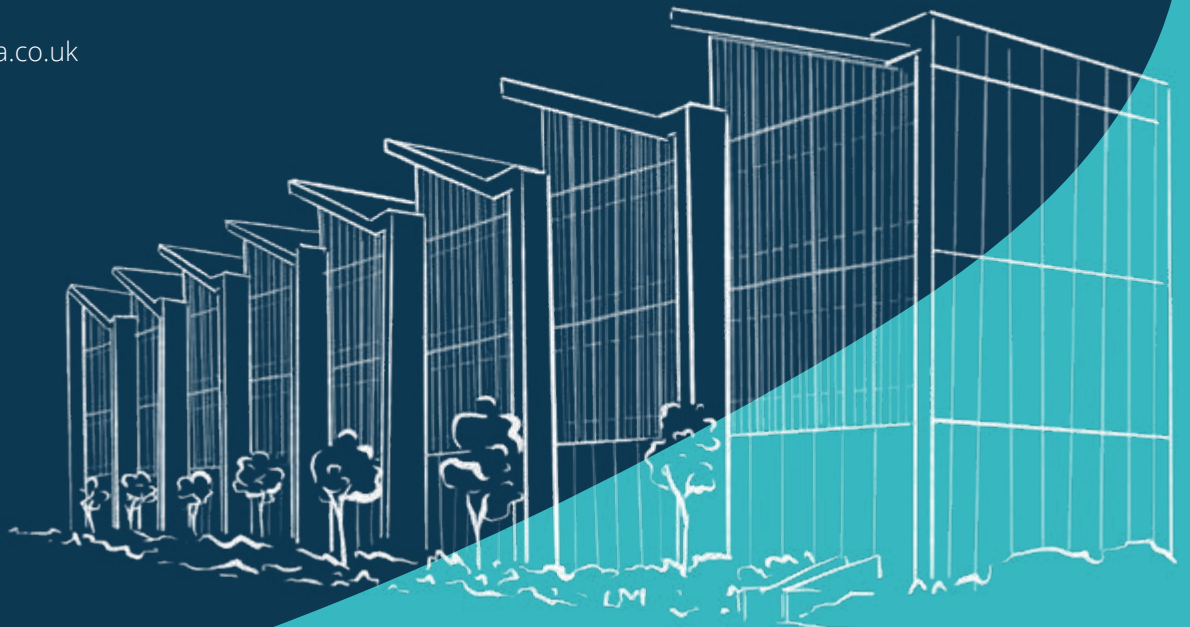
For more information, contact Structura UK:

Phone: 020 8397 4361

Email: kalwall@structura.co.uk

Address: Head Office:

Unit 1,
Oakcroft Road,
Chessington,
Surrey
KT9 1RH



www.structura-uk.com