Kalwall®, developed and manufactured in the USA for over 55 years, is a highly insulating, diffuse light transmitting building panel system for use on walls and roofs. The primary component is a translucent structural composite sandwich panel formed by permanently bonding specially formulated fiberglass sheets to a grid core constructed of interlocking thermally broken composite 'I-beams'.

The panels are factory pre-fabricated to the exact size and configuration for each project. Panels can be flat or curved, and 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, and Kalwall diffuses light so efficiently that even direct sunlight is converted into even illumination with reduced glare. The panel is generally 70mm thick (100mm is also available) 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.

Since being introduced to the UK in 1997, Kalwall has been successfully specified by architects on a huge variety of projects. Some recent applications are illustrated in this brochure, demonstrating the versatility of application and the unique properties of this widely acclaimed system.

CE Marking
Kalwall has been awarded a CE Mark, confirmation that it meets EU safety, health and environmental requirements. This is backed up by strict Factory Production Control procedures and testing to meet stringent air and water performance criteria. 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.
The following standard systems are available

**Wall panel systems**
Vertically or horizontally laid out panels, either flat or curved.
Panel Unit Walls incorporating fixed or opening windows.
Explosion Venting Panel Systems.
Anti-Terrorism Approved Systems.

**Custom skyroof systems**
Monopitch or Ridge Roof Designs. Manufactured to individual requirements and fixed to supporting structure by others, to a minimum pitch of 10°.

**Pre-engineered skylights**
Self Supporting Ridge Roofs to standard slopes of 20°, 27°, 33° and 45° with clear span up to 6m, dependent on local requirements.
Kalcurve™ Low Profile Curved Vaults, self-supporting up to 7.4m span, dependent on local requirements.
180° Barrel Vaults. Self-supporting up to maximum span of 7.4m

**Standard skylights**
Pre-assembled flat skylights up to maximum size of 1500mm x 6000mm.
Pyramids, standard four sided pyramids available from 1220mm to 6100mm.
Geo Domes, Geo Roof® segmented domes from 2440mm to 8540mm.

**Large clear span skylights**
For spans up to 5m, large skylights complete with supporting structure.

**Performance**
Various facesheets, panel thicknesses and insulation densities can be used to produce different levels of light transmission, thermal insulation and solar transmission through the Kalwall panel.

'U' values are available from 1.25W/m²K to 0.28W/m²K, light transmissions from 20% to 5% and solar factors from 0.19 to 0.05.
Performance tables are available from Stoakes Systems, or at www.stoakes.co.uk.

**Kalwall product manual**
Full technical and performance information is available in the Kalwall product manual which is available from Stoakes Systems Limited in either hard copy or electronic versions.

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**Panel dimensions**
All panels are manufactured on a project by project basis. Best value occurs by using the maximum number of 1200mm and 1500mm module widths.
Panel lengths up to 6000mm, depending on windload and span.
Maximum length for aerogel filled panels is 3660mm.
Other limitations may apply, depending on type of application.

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**Nominal internal grid sizes**
Shoji, 200mm x 500mm, 300mm x 500mm, 300mm x 600mm.
(Shoji panels can also be laid on edge to give a horizontal emphasis)
Reverse Shoji, 500mm x 200mm, 500mm x 300mm, 6000mm x 3000mm.
Tuckerman, 200mm x 200mm, 300mm x 300mm.
Verti-Kal™ 150mm to 300mm.
(normally used in vertical format, but can be laid on edge)
What Kalwall does

**Controls light**
Kalwall diffuses light so efficiently that even direct sunlight is converted to even, glare-free illumination. It gives a soft restful light in work areas, free from sharp shadows and contrast. This lighting environment helps to prevent eyestrain, increases efficiency and saves energy.

Even on cloudy overcast days Kalwall will enhance natural light and transmit it into the building in surprisingly large volumes. Panels can be selected to transmit various percentages of light according to individual requirements.

Kalwall has the ability to transmit large amounts of usable light with a relatively low level of light transmission. Less radiant energy, coupled with diffusion, does away with the sharp contrasts of light and shadow which are so common to other light transmitting materials.

The broad diffusion of light over a large area reduces the need for sunblinds, shades and louvres. When the building is lit at night, diffused light from within ensures that light pollution is reduced and the Kalwall will glow softly presenting a striking external appearance.

**Maximises thermal insulation**
As Kalwall is light transmitting it is required to meet the insulation provisions for windows or rooflights, and therefore considerable flexibility is possible because the product can offer much lower 'U' Values than those prescribed, with very good solar performance.

'U' Values from 1.25W/m²K to 0.28W/m²K are available. These are lower than can be achieved with any other light transmitting material.

**Controls solar heat**
Kalwall’s low level of solar heat transmission and re-radiation results in a comfortable environment and will reduce air conditioning costs.

**Life expectancy**
Durability tests carried out for European Technical Approval resulted in a predicted life of 25 years.

**Weatherability**
Kalwall’s proprietary technology will maintain colour, erosion resistance and light transmission.

**UV protection** is built into the full thickness of the face sheets with colour stable resins. It does not rely on gel-coats or other superficial, sacrificial coatings. Fibre exposure and fibre bloom are prevented by the inclusion of a glass veil laminate embedded in the outer sheet.

**Impact resistance**
Kalwall is highly resistant to impact - excellent for use in schools, gymnasia, offices, public buildings and others subject to high traffic or vandalism.

**Fire**
Kalwall has excellent fire retardant properties. It is a thermoset material, which, unlike thermoplastics or glass, will not drip, melt or shatter in a fire. Kalwall can achieve an internal Reaction to Fire rating of H32-d0 when tested to EN13501 and EXTSA-A for roofs (BS 476 part 3) and Broof (16) when tested to EN 13501 part 5.

Kalwall panels can be specified as Factory Mutual (FM) approved, Class 1 walls and roofs.

**Buildability**
Kalwall is light in weight, usually between 12 and 16 Kg/m², minimising the need for supportive structure. Large panels can be installed very quickly with a minimum number of junctions.

**Kalwall and the Environment**
Gifford, one of the UK’s leading environmental and engineering consultancies, was appointed to undertake a performance appraisal of Kalwall. A range of performance areas have been considered within Gifford’s independent Sustainability Appraisal Process (GSAP), which covers wider reaching aspects than the BREEAM Assessment. It is intended this appraisal can be used by specifiers to justify the credentials of this building material.

**Maintenance**
Kalwall is virtually maintenance free in normal environments. Rainfall is usually sufficient to keep Kalwall free from dust and dirt. A periodic soapy water wash and clear water rinse is all that is needed both externally and internally. For most roof applications, additional external cleaning apparatus is usually unnecessary.

**Quality assurance and testing**
Kalwall is manufactured to a stringent quality assurance programme in accordance with the Factory Production Control protocol specified in the European Technical Approval.
Benhams BMW, Wolverhampton.
Architect: MDG Architects

Kalwall brings natural daylight to this car showroom while making an outstanding advertisement at night.
Advanced Manufacturing Research Centre, Rotherham: Architect: Bond Bryan Architects

Kalwall naturally daylights Sheffield University’s state of the art research centre for aerospace and other advanced manufacturing industries, where quality light is essential for precision engineering.

Below: Dereham Leisure Centre, Norfolk. Architect: LA Architects Limited


In swimming pools, Kalwall enhances the ambiance, provides privacy and improves swimmer safety through reduced veiling glare on the surface of the water.
Left: Surgery Garatea, Pamplona (Navarra).
Architect: Lana & Vidaurre Studio
Installer: Litwall S.L. Pamplona

Above: Jersey General Hospital.
Architect: BDK Architects, Jersey

Right: Pearse Street Medical Centre, Dublin
Architect: A&D Wejchert & Partners Architects

Kalwall brings a peaceful and reassuring natural daylight to these medical facilities while at the same time ensuring privacy. The Kalwall panels on all three projects are filled with aerogel insulation, giving a ‘U’ value equivalent to an opaque wall, at the same time enhancing light transmission and sound attenuation.


Ideal for bringing quality daylight into industrial spaces, Kalwall can also be specified as an explosion venting system designed to release the panels from the building, thus dissipating the force of an internal explosion, as used at the Janssen building, above.
Above: Loxford Polyclinic, Ilford
Architect: Devereux Architects

Kalwall’s half circle 180° degree barrel vaults and low profile vaults can span unsupported up to 7.4m, thus saving the cost of providing any secondary supporting steelwork.
Left: Christ the King Centre for Learning, Huyton, Merseyside. Architects: Aedas Architects.


Central atria and learning spaces feature Kalwall in seven centres for Learning commissioned by Knowsley Metropolitan Borough Council and all designed by Aedas. Six are topped by lightweight Kalwall roofs, with Verti-Kal™ being used on the walls in circulation area at Prescot.
As well as providing diffused, quality daylight, Kalwall roofs are light-weight - reducing or eliminating the need for secondary support. The external panel surface is engineered to enhance water run-off, reducing the need for cleaning.
Kalwall’s light qualities are reversed when back-lit at night and can create opportunities to use the wall to advertise the building by backlighting – with minimal light pollution.
Top: Domino’s Pizza Group Limited Commissary, Milton Keynes. Architect: Q2 Architects


Right: ASDA Store, Bootle, Merseyside. Architect: Aedas Architects

Versatile Kalwall systems can be used on walls, roofs and canopies. Its high resistance to impact and mechanical damage is especially suited for use in schools. Integral windows can be incorporated into wall panels.

Pudsey Waterloo Primary School, West Yorkshire. Architect: Aedas Architects


Village Primary School, Derby. Architect: Derbyshire County Council

Above: The Village Primary School, Derby. Architect: Derbyshire County Council
Some examples of several car showrooms and workshops for the Audi Group.
The Skyhub at Glasgow International Airport.
Architect: 3DReid
Installer: SD Systems, Glasgow

Kalwall has been used to bring glare-free daylight and privacy to the new state of the art security area.
X2 Warehouse Complex, Hatton Cross
Architect: Cornish Architects

Kalwall’s Verti-Kal™ internal grid layout has been extensively used to emphasise the stair towers in this large two-storey cargo warehouse complex adjacent to London’s Heathrow Airport.
Liverpool South Parkway Interchange.
Architect: Jefferson Sheard EGS
Darwen Academy, Lancashire.
Architect: Aedas Architects
Kalwall customized triangular skylights on a sedum roof.
In sports halls, playing, exercising and recreational conditions are dramatically improved with the natural glare and shadow free daylight that Kalwall provides. In addition there can be considerable cost benefits by reducing the need for artificial light compared to the traditional windowless ‘black box’ design.
Unlike conventional glazing materials, the light from Kalwall is free from sharp contrasts and shadows and can create the ideal environment for sport.
Right: Clinique Urbamin Canopy, Navarra, Spain.
Architect: Txema Errea Studio
Installer: Litwall S.L. Pamplona.

Below: Ice Palace Itaroa, Navarra, Spain.
Architect: Aguinaga & Associates Architects
Installer: Litwall S.L. Pamplona.

Two very different applications of Kalwall in Spain: A large lightweight canopy and a highly insulated light diffusing wall to an ice rink.
Research has shown that improved daylighting helps students to work more efficiently, learn more, be healthier and reduce absenteeism. Kalwall’s glare free light reduces the need for blinds and creates an ideal environment for study and computer use.
Kalwall brings daylight, insulation, and privacy to this 140m long link bridge that connects the main hospital to the Oncology unit. As the bridge is at high level, Kalwall’s self-cleaning properties are important.
Left: Oasis Academy, Immingham. Architect: Capita Percy Thomas

Below left: Crestwood College, Eastleigh. Architect: Hampshire County Council

Kalwall® is manufactured and patented by the Kalwall Corporation

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