

# FOAMGLAS® Cellular Glass Insulation

## Architecture and Sustainability for Embassies and Government Buildings

[www.foamglas.ae](http://www.foamglas.ae)

**FOAMGLAS®**  
Building



**Ambassador of Confidence**

## **FOAMGLAS® Business Card – embassies and diplomatic missions, worldwide**

Capitals of the world have more than hundred embassies, diplomatic missions and ambassadors' residences, many of which are ultra-modern or modernized historical buildings. They represent an unofficial, but impressive international building exhibition.

The demands for quality, safety and service life in such buildings are extremely high. FOAMGLAS® cellular glass is therefore chosen as the leading thermal insulation material in many of them, because of stringent requirements met regarding building physics, indoor air quality and fire safety.

FOAMGLAS® has unique advantages over "conventional insulation" materials as it is made of millions of hermetically sealed glass cells, hence making it completely waterproof and vapour-tight. The cell structure provides high compressive strength and since it is made of pure glass, it is non-combustible, rot-proof, resistant to acids and resistant to attacks from insects, termites and rodents. Although being such a tough material, cellular glass is actually easy to cut, allowing FOAMGLAS® insulation to be customized to any shape of roof or building.

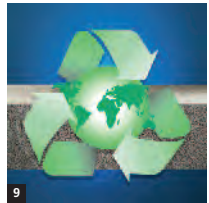
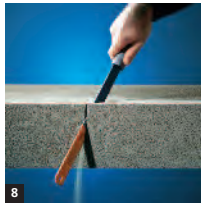
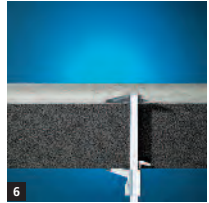
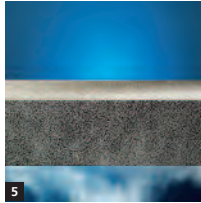
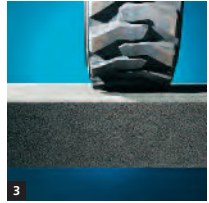
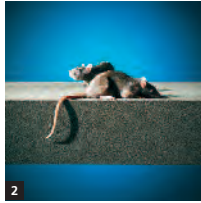
### **Environmental stewardship – a guiding principle**

Ecology is a top priority during the manufacturing of FOAMGLAS®, using over 60 % recycled glass and energy sourced from renewable supplies.

As thermal ageing does not affect the product, the principles of sustainability are followed right from the start. From this perspective, FOAMGLAS® insulation can withstand the test of time. FOAMGLAS® insulation meets the most stringent health and environmental criteria during its lifetime. It does not contain any blowing agents or flame retardants, which may emit air pollutants or generate toxic smoke when involved in a fire. That is why FOAMGLAS® insulation has been certified by all the major ECO-labels and institutions around the world, including natureplus®, considered label of excellence as a green building product. This quality mark is only awarded to products that meet the highest standards of health and environmental stewardship.

FOAMGLAS® offers Building and HVAC solutions for the climate zones of all continents.

# FOAMGLAS® Performance Properties



- 1 Waterproof** FOAMGLAS® is waterproof because it consists of pure glass.
- 2 Pest-proof** FOAMGLAS® cannot rot and is pest-proof because it is inorganic.
- 3 Compression-proof** FOAMGLAS® has an extraordinarily high compressive strength without deformation under load due to its unique cell geometry.
- 4 Non-combustible** FOAMGLAS® will not burn because it consists of pure glass. Fire behaviour: Classification according to EN 13501: A1.
- 5 Vapour-tight** FOAMGLAS® is air- and vapour-tight because it consists of hermetically sealed glass cells.
- 6 Dimensionally stable** FOAMGLAS® is dimensionally stable because glass neither shrinks nor swells.
- 7 Acid-resistant** FOAMGLAS® is resistant to organic solvents and acids because it consists of pure glass.
- 8 Easy to cut** FOAMGLAS® is easy to work with because it consists of thin-walled glass cells.
- 9 Ecological** FOAMGLAS® is free of environmentally damaging flame retardants and blowing agents, no relevant eco-toxic components. FOAMGLAS® can help meet your LEED and Living Building Challenge™ projects.

# FOAMGLAS® – the durable solution for transnational relations

## **Berlaymont, European Commission, Brussels, Belgium**

Lucien de Vattel, Jean Gilson, André and Jean Polak

Construction 1963-67; refurbishment 2000-2004

Roofs, FOAMGLAS® blocks



The Berlaymont building in Brussels is one of the central buildings of the European Union and is home to the European Commission, the legal department. It was designed by the architects Lucien de Vattel, Jean Gilson, André and Jean Polak. The cruciform building has four wings, the roofs of which were thermally insulated with FOAMGLAS® since the beginning. The Berlaymont had to be closed for several years due to extensive renovation works; as part of the works the roofs became thermally upgraded, using again FOAMGLAS® insulation. In 2004, the modernized building was reopened.

## UNO-City, Vienna, Austria

D.I. Johann Staber

Construction 1971-1979

FOAMGLAS® Compact Roofs, 30,000 m<sup>2</sup>



The United Nations Office in Vienna (UNOV) is one of the four major UN office sites where several different UN agencies have a joint presence. It is part of the Vienna International Centre, a cluster of several major international organizations. The building management is unanimous on the numerous advantages provided by a long-term reliable roof system:

"Strict quality requirements applied to every part of the construction. That is why the FOAMGLAS® Compact Roof system was chosen. The concept was total safety, including moisture safety, fire safety and wind load resistance. The roofs still give full satisfaction."

The owners are sure to have reached optimal cost-effectiveness, based on the three factors: safety, low maintenance cost and a long service life.

## **Capitol Visitor Center, Washington DC, U.S.A.**

Engineering Design and Specification:

James Posey Associates Inc., Baltimore, Md.

Construction 2002-2008

Underground HVAC service system



The Capitol Visitor Center (CVC) features 3 floors and is located underground beneath the east plaza of the Capitol to preserve its original appearance and the tree-lined grounds originally designed by F.L. Olmstead in 1874. The CVC provides a welcoming and educational environment and can accommodate about 4,000 people at one time. Steel piping – running in tunnels from the Capitol Power Plant to the CVC – carries steam and chilled water to provide heating and cooling for the new facility. The designers specified FOAMGLAS® insulation for the chilled water and the steam lines. FOAMGLAS® was installed in sections, joints butted together and covered with jacketing. The insulation was also used for fittings, elbows and sleeves for through-wall fire stops. FOAMGLAS® ensures protection against corrosion on pipes, equipment and other failures.

## **Embassy of Sweden, Washington DC, U.S.A.**

Gert Wingård, Sweden

2006

Terraces, FOAMGLAS® T4+ insulation



The Swedish embassy in Washington has aroused a great deal of international interest. The embassy is on the waterfront of the Potomac River in Washington Harbour and was designed by Gert Wingård. It houses 16 apartments, as well as public areas for holding exhibitions and seminars. This creative environment is where the ambassador and approximately 50 employees work and live.

The materials used include light-colored wood, glass and stone that reflect the roots and traditions of Sweden. FOAMGLAS® thermal insulation was used for all terraces.

**Government of the Russian Federation,  
Moscow, Russia**

Dmitri Nikolaevich Chechulin and P.P. Shteller, 1965-1981  
2008 refurbishment, architect Vladimir Ilyin  
Roofs, FOAMGLAS® T4+, finish paving slabs



The building for the Russian government, also known as the Russian White House, was designed by the architects D.N. Chechulin & P.P. Shteller and built from 1965 to 1981. This 119 meter skyscraper is situated on the banks of the Moskva River. The building was involved in the 1993 constitutional crisis and as a result, the upper floors became damaged by heavy artillery. The Government of Moscow decided to refurbish the flat roof of this building with cellular glass insulation.

FOAMGLAS® Compact Roof is a future-proof solution. The insulation blocks are fully bonded to the structural deck using hot bitumen. A two-ply bitumen waterproofing and paving slabs are then applied on top. This roofing solution protects the building's structure in the long-term and is a valuable contribution to thermal efficiency and overall cost-efficiency.



## Embassy of the Kingdom of Saudi Arabia, Berlin, Germany

Gerhard Bartels, Berlin and Nabil Fanous, London  
2005-2009

Roofs and below grade, FOAMGLAS® insulation



The new embassy building offers a lot of convenience for employees. On four floors, a floor space of 4,600 m<sup>2</sup> is available. The two parts of the building: a trapezoidal main building and a protruding half rotunda are linked by a glazed, 15 meter-high atrium, which opens up to the individual floors of the two wings. The explicit aim of this design was to achieve a synthesis of modern and Islamic architecture and culture.

The embassy building fulfills high technical and energy efficiency requirements. FOAMGLAS® thermal insulation is used for roofs and below grade slab and walls. Between the building and street, the architects have designed a pool of water, running along the building. The water expanse reflects in the stainless steel elements of the façade with filigree openwork ornaments.

## **Embassy of the Republic of South Africa, Berlin, Germany**

mma architects (Mphethi Moroje, Luyanda Mpahlwa, Alun Samuels, Gandhi Maseko, Johannesburg/Kapstadt/Berlin 2001-2003)

Roofs and thermal breaks, FOAMGLAS® insulation



The new building towers 16m high, which corresponds to the maximum height prescribed by local building regulations. This building is divided into basement, ground and three upper floors.

The design of the façade is subdivided: the base is covered with black granite from Zimbabwe, the upper floors have partly a glass façade and partly a "Golden Dawn" sandstone cladding from the Limpopo province. The sandstone surfaces are divided by salient, horizontal aluminum strips, which also serve as shading.

Plastered surfaces inside and outside the embassy are designed with the traditional Litema technology.

FOAMGLAS® block insulation is used for the flat roofs and for thermal breaks.

## British Embassy, Berlin, Germany

M. Wilford & Partners +

Wilford Schupp Architekten GmbH, Stuttgart

1998-2000

Below grade: slab, walls; FOAMGLAS® blocks, FLOOR BOARD



The renowned architects transposed the need for representation, functionality, security and safety into contemporary design. The geometric regularity of former city palaces – with plinth, Belle Étage, upper floors and mansard roof – is broken by two prominent metallic elements, an irregular blue prism and a pink cylinder. Structural functionality becomes obvious in the use of compression-proof FOAMGLAS® insulation for below grade load-bearing slab and wall insulation (perimeter). Surface and ground water conditions required the use of tanking concrete for the below grade levels. For tanking concrete structures FOAMGLAS® provides solutions improving the overall sealing and dampproofing functions. The below grade floors are fully insulated and proofed against diffusion, heat loss and capillary moisture to ensure a top quality usage.

## Embassy of Italy, Berlin, Germany

Friedrich Hetzelt, construction 1939-1941

Reconstruction 1999-2003, architect Vittorio de Feo

Roofs, FOAMGLAS® T4+



With the move of the German capital to Berlin, the Italian government – still owner of the territory on Tiergarten – decided to reconstruct the historical embassy building in its entirety between 1999-2003. Today the building is grade-II listed. All flat roofs – including the spacious terraces – are built as FOAMGLAS® compact roofs, using blocks or FOAMGLAS® TAPERED insulation. FOAMGLAS® roofs are resilient constructions that ensure thermal and moisture protection, and can be designed for high point and surface loading. The system is conceived as a safe barrier to infiltrations and the insulation forms a stable subconstruction, free from deformation. The concept of the FOAMGLAS® Compact Roof extends the service life of waterproofing membranes, due to the perfect dimensional stability of the insulation.

## **Austrian Embassy, Nairobi, Kenya**

Re-roofing 2013

Roofs, FOAMGLAS® READY BOARD T4+



For this re-roofing project, quality of construction includes the use of FOAMGLAS® READY BOARD insulation with the consideration of concepts for tropical climates (hot and extremely humid). The aim was to improve the energy efficiency for heating and cooling of the Austrian Embassy. For Austrian buildings abroad, environmental stewardship is of great importance. The FOAMGLAS® roof system is an assembly with a long service life, where thermal ageing will not occur. All layers are homogeneously bonded to one another, making for a vapour-impermeable, waterproof, resilient roof assembly with high compressive strength and dimensional stability. Roofing membranes are directly applied to the insulation. The rigid system is accessible for inspection and maintenance and provides excellent resistance to wind uplift.

## **Pan Nordic Building, 5 embassies, Berlin, Germany**

Alfred Berger and Tiina Parkkinen, Vienna

for the overall concept and the Fellehus (community home)  
1997-1999

Roofs, FOAMGLAS® insulation



The diplomatic missions of the Nordic countries to Germany are located in a common building complex, the Pan Nordic Building. The estate comprises six individual buildings enveloped by a green, copper clad, snaking wall. Of the six buildings five are the embassies of *Denmark*: Architect 3XN (Nielsen); *Iceland*: Architect PK Hönun; *Norway*: Architect Snøhetta; *Sweden*: Architect Gert Wingårdh and *Finland*: Viiva Arkkitehtuuri Oy. The remaining building is a communal building called the Fellehuset. For the construction of the individual embassies, materials were used which are typical and widespread to the respective home countries. In addition to FOAMGLAS® insulation, there are: larch wood slats for the Finland, a glass façade for the Denmark, a glass façade and Gotland limestone for the Sweden, red rhyolite for the Iceland and a 900 mio. year old granite slab for the Norway embassy.

## Project References

**EUROPE, Germany** Bundeskanzleramt (Chancellery), Berlin, architect: Axel Schultes | Deutscher Bundestag (German Parliament, former Reichstagsgebäude), Berlin, architect: Sir Norman Foster | Jakob Kaiser Haus (House of representatives), Berlin, architects: Busmann u. Haberer GmbH; De Architekten Cie; GMP von Gerkan, Marg & Partner; Architekten Schweger + Partner; Thomas van den Valentyn | Marie-Elisabeth-Lüders Haus (Governmental Library and other services), Berlin, architect: Stephan Braunfels Architekten, Munich | Paul Löbe Haus (Administrative building of German Parliament), Berlin, architect: Stephan Braunfels Architekten, Munich. | Embassy of the United Kingdom, Berlin, architect: Wilford Architekten, Stuttgart | Apostolic Nunciature, Berlin, architect: Baumewerd, Münster | Embassy of the Kingdom of Saudi Arabia, Berlin, architect: Gerhard Bartels, Berlin and Nabil Fanoos, London | Embassy of Israel, Berlin, new building, architects: Orit Willenberg-Giladi, Israel and Wolfgang Keilholz, Berlin | Embassy of Switzerland, Berlin, extension, architect: Architekturbüro Diener & Diener | Embassy Nordic Countries, Pan Nordic Building, Berlin, architects: Alfred Berger and Tiina Parkkinen, Vienna; Architect 3XN; PK Hönnun; Snøhetta; Gert Wingårdh; Viiva Arkkitehtuuri Oy | Embassy of Kuwait, Berlin, extension, architect: Kroos & Zittlau-Kroos | Embassy of France, Berlin, architect: Christian de Portzamparc, Paris; Steffen Lehmann, Berlin | Embassy of South Africa, Berlin, architects: mma architects (Mphethi Moroje, Luyanda Mpahlwa, Alun Samuels, Gandhi Maseko, Johannesburg/Kapstadt/Berlin | Embassy of Australia, Berlin, transformation, architect: Bates Smart, Melbourne | Embassy of Egypt, Berlin, architects: Samir Rabie, Cairo and Kendel Architekten, Berlin | Embassy of Canada, Berlin, architects: Office Kuwabara Payne McKenna Blumberg (KPMB), Toronto; Gagnon LeTellier Cyr, Québec; Smith Carter, Winnipeg | Embassy of Spain, Berlin, transformation, architects: Jesús Velasco Ruiz and José de Onzono y Angulo. | Embassy of Italy, Berlin, reconstruction, architect: Vittorio de Feo. | Embassy of Oman, Berlin, architect: Architekturbüro Hierholzer, Berlin. | Embassy of The Netherlands, Berlin, architect: OMA, Office for Metropolitan Architecture (Rem Koolhaas, Ellen van Loon), Rotterdam. | Embassy of Greece, Berlin, architect: Obermeyer and Doxiadis Associates. | Embassy of Belgium, Berlin, extension, architect: Rüttnick Architekten Ingenieure, Berlin. | **France** Embassy of Australia, Paris. | European Parliament, Strasburg, architect: AS Architecture Studio, Paris and Associated Architect C. Valente, Bas-Rhin. | **Belgium** Berlaymont, European Commission Headquarters, Brussels, architect: Lucien de Vattel. | Embassy of Singapore, Brussels. | **The Netherlands** Ministry of Foreign Affairs, The Hague. | **Spain** German Embassy, Madrid, architect: Baumewerd Architekten, Münster. | **Romania** Residence of the German ambassador, Bukarest, transformation, architect: Krekeler Architekten. | **USA** Embassy of Sweden, Washington DC. | Embassy of Germany, Washington DC. | U.S. General Service Administration, Industry application. | Capitol Visitor Center, Washington DC, Industry application. | U.S. Department of Veterans Affairs, Industry application. | **CIS, Russia** Government of the Russian Federation, Moscow. | British Ambassador's Residence, Moscow. | **Ukraine** Multifunction public building, Kiev. | **ASIA, Thailand** Swiss Embassy, Bangkok, transformation, architect: De Luca Isolationen AG. | **Japan** German Embassy, Tokyo, architect: KBK Architekten, Stuttgart. | **China** German Embassy, Peking, architect: KBK Architekten, Stuttgart. | **AFRICA, Kenya** Austrian Embassy, Off Limuru Road, Nairobi. | **MIDDLE EAST, Saudi Arabia** Ministry of Foreign Affairs, Riyadh, architect: Henning Larsen Tegnestue A/S, Copenhagen. | ...

[www.foamglas.com](http://www.foamglas.com)

**FOAMGLAS<sup>®</sup>**  
Building

**Pittsburgh Corning Europe**

Rep. Office Middle East  
Arenco Tower, Media City  
P.O. Box 213345  
Dubai, U.A.E.  
Phone + 971 4 434 7140  
Fax + 971 4 432 7109  
[info@foamglas.ae](mailto:info@foamglas.ae)  
[www.foamglas.ae](http://www.foamglas.ae)

**Pittsburgh Corning Europe NV**

Headquarters  
Albertkade 1  
B-3980 Tessenderlo / Belgium  
[www.foamglas.com](http://www.foamglas.com)