

# FOAMGLAS<sup>®</sup> INSULATION



# FOAMGLAS<sup>®</sup>

High load bearing  
tank base applications





# FOAMGLAS® High Load Bearing Insulation

FOAMGLAS® High Load Bearing Cellular Glass Insulation is specially designed for high load bearing industrial applications and are specifically manufactured to meet the needs of the tank base industry worldwide. Its unique combination of high compressive strength and low thermal conductivity makes it ideal for a wide range of tank base construction and other industrial load bearing applications.

FOAMGLAS® HLB insulation offers superior insulation properties with a stable and a non-deteriorating insulation efficiency which ensures a constant thermal performance that remains unchanged over time.



Type	Compressive Strength	
<b>HLB 800</b>	800 kPa	116 psi
<b>HLB 1000</b>	1000 kPa	145 psi
<b>HLB 1200</b>	1200 kPa	174 psi
<b>HLB 1400</b>	1400 kPa	203 psi
<b>HLB 1600</b>	1600 kPa	232 psi
<b>HLB 2400</b>	2400 kPa	348 psi

## Applications:

- Cold & cryogenic tanks bases
- Hot & high temperature tank bases
- Load bearing pipe supports
- Secondary containment corner protection
- Special loading bearing applications

## Attributes:

- Constant insulating efficiency
- Noncombustible
- Non-absorbent
- Impermeable to water and water vapor
- Corrosion/chemical resistant
- Long term dimensional stability
- Vermin resistance
- High compressive strength
- Ecologically friendly, sustainable



# FOAMGLAS® HLB insulation for hot storage tank base applications

## Unique properties and qualities

The base of a storage tank requires special consideration when it comes to the materials used to support them. FOAMGLAS® HLB provides all of the physical properties necessary for supporting and insulating a tank base, making it the preferred choice in the industry. From its superior compressive strength, to its dimensional stability and thermal properties, FOAMGLAS® HLB performs like no other material on the market.

### Load Bearing Strength:

FOAMGLAS® HLB Insulation has superior compressive strength, dimensional stability and flex strength with load bearing grades up to 2400 N/mm<sup>2</sup>. These qualities make FOAMGLAS® HLB the ideal solution for tank base applications.

### Thermal qualities:

FOAMGLAS® HLB Insulation offers properties and qualities with the lowest thermal conductivity of any load bearing insulation at any temperatures.

### Impermeability:

FOAMGLAS HLB insulation is made from glass and is impermeable to water or water vapor. The material is also resistant to mold and will not promote corrosion.

### Temperature Range:

FOAMGLAS® HLB insulation can operate in a temperature range of -450°F to 900°F (-286°C to 482°C). This unique property along with its high compressive strength makes FOAMGLAS® HLB insulation the preferred choice for tank base applications.



## FOAMGLAS® HLB Insulation for Tank Base Applications around the World



### **The Atlantic LNG Company of Trinidad and Tobago –**

Is one of the largest LNG producers in the world and the first facilities to operate in the Atlantic basin. Like many other LNG facilities worldwide, Atlantic LNG relies on FOAMGLAS® HLB insulation for the best in long-term performance. FOAMGLAS® HLB insulation was used for the tank bases for its superior compressive strength and pipe and equipment using FOAMGLAS® ONE™ for performance in critical cryogenic service temperatures.

### **The Snovhit LNG export terminal –**

Is located on a remote island in the Arctic Circle. When the decision was made to develop the terminal, engineers had to contend with several environmental and logistical challenges prior to construction. Because of the terminal's location, it required a unique design and construction process in order to thrive under the extreme climate conditions. The owner's first concern was to construct a safe, environmentally sound terminal to protect all personnel and equipment involved in day-to-day operations with annual exports of 5 billion cubic meters of LNG. Based on these criteria, FOAMGLAS® HLB was selected as the plant's insulation material for the tank base application and FOAMGLAS® ONE™ for pipe and equipment.



### **Adriatic LNG terminal –**

Is located offshore at the southern end of the Gulf of Venice, in the northern Adriatic. The Terminal is the world's first offshore Gravity Based Structure for unloading, storing and re-gasifying LNG, with an 8 billion cubic meter capacity. Construction of the tanks started in October 2003 and finished in August 2008. Overall, the offshore Terminal is designed around a large concrete structure, which houses two LNG tanks, and includes a re-gasification plant and facilities for mooring and unloading LNG vessels. The heart of the terminal consists of two enormous tanks, each holding 250,000 m<sup>3</sup> of LNG and sitting on a base FOAMGLAS® HLB insulation.



### **RUBIS Terminal –**

Is a French bulk-storage and blending facility specializing in petrochemical storage and distribution for petroleum products, chemicals and foodstuffs. RUBIS Terminal is the market leader in France for the storage of liquid products. The terminal, at the port of Strasbourg, has a total capacity of 36,000 cubic meters. FOAMGLAS® HLB insulation was used on the base of the tanks for its compressive strength and as a barrier against water ingress and temperature fluctuations. The end user in this case was familiar with the advantages of Pittsburgh Corning FOAMGLAS® HLB insulation. They soon recognized the benefits of a significant reduction of heat loss via the tank base, elimination of water ingress, superior compressive strength that allows for the tank to rest on a stable base and support from the technical service staff at Pittsburgh Corning FOAMGLAS® insulation.

## LNG Cryogenic Tank Base Projects with FOAMGLAS® HLB insulation

Insulation and support for a storage tank base presents unique challenges when considering the appropriate material. Because the base of the tank is continuously exposed to its contents, the insulation material must be able to support and maintain its integrity under high weight loads, but do so at extreme operating temperatures. FOAMGLAS® HLB Insulation provides both load bearing and flex strength while providing permeability and thermal protection for the tanks foundation. FOAMGLAS® HLB insulation is renowned worldwide as the benchmark for tank base insulation. Since 1963, hundreds of LNG tank bases have been insulated with Pittsburgh Corning High Load Bearing FOAMGLAS® insulation. The unique property of this material is the superior compressive strength of 2.400 N/mm<sup>2</sup> - making FOAMGLAS® HLB the preferred choice for LNG tank base applications.

**A selection of LNG tank base projects, relying on the qualities of FOAMGLAS® HLB insulation:**

Project	City, country	Owner	Year
Fujian LNG	Xiuyu, China	CNOOC	2005/2009
Sempra LNG	Costa Azul, Mexico	Cameron	2008
Bilbao LNG	Bilbao, Spain	Bahia de Bizkaia	2008
Sakaide LNG	Sakaide, Japan	Shikoku Electric	2008
Lanzhou LNG	Lanzhou, China		2008
Pluto LNG	Australia	Woodside	2008/2009
Gate LNG	The Netherlands	Entrepose contracting	2009
Skikda LNG	Skikda, Algeria	Entrepose contracting	2009
Jianbi Xilian LNG	China		2009
PTT LNG	Thailand	PTT	2009
Sines LNG	Sines, Portugal	REN Atlântico	2010
Polski LNG	Świnoujście, Poland		2012
Lysekill LNG	Lysekill, Sweden	Skangass	2013
Dunkerque LNG	Dunkerque, France	Entrepose contracting	2014
Yamal LNG	Sabetta, Russia	Entrepose contracting	2015
Manga LNG	Tornio, Finland		2016



### **DON'T FORGET THE PITTCOURSE™**

Enhance the application with PITTCOURSE™ 100, a product developed and tested by Pittsburgh Corning for tank base applications.

PITTCOURSE™ 100 is a bituminous damp proof course membrane for use as an interleaving material for high load bearing insulation such as FOAMGLAS® HLB insulation in cold and Cryogenic service. It is available by itself or if needed, with its PITTCOURSE™ Primer, which assists with adhesion to prepared or porous substrates.

# LNG Tank Builders/Designers, Relying on the Qualities of FOAMGLAS® HLB insulation

A selection of LNG tank builders/designers, relying on the qualities of FOAMGLAS® HLB insulation:

- CBI
- CMP
- SAIPEM
- TKK
- PDM
- Hyundai (HHI)
- Samsuns
- Whessoe
- Kellogg, Brown + Root
- Bechtel
- Technigaz
- Uhde
- IHI
- Entreprpose
- TGE
- Daewoo
- HQCEC



Pittsburgh Corning FOAMGLAS® HLB insulation is subjected to the most rigorous testing under application conditions, to ensure that the material meets the highest possible standards for thermal and physical properties. In addition, our Internal Quality Assurance program is based on internationally accepted sampling procedures and is benchmarked as the worldwide industry standard by our tank builder and EPC clientele.



**Pittsburgh Corning LLC**  
**One Owens Corning Parkway**  
**Toldeo, OH 43659 USA**  
 +1 724 327 6100  
 Toll Free + 1 800 327 6126  
 For web-based Sales and  
 Technical Service inquiries,  
 please visit [www.foamglas.com](http://www.foamglas.com)

**To contact by phone or email:**  
**Industrial & Commercial Sales**  
**Americas**  
 +1 800 327 6126

**Asia-Pacific**  
 Singapore: +65 9635 9184  
 China: +86 (0) 21 6101 7179  
 Japan: +81 3 6365 4307

**Europe, Middle East & Africa**  
 +32 13 661 721

**Technical Services**  
**Americas & Asia Pacific**  
 +1 800 327 6126  
[Foamglastechnical@owenscorning.com](mailto:Foamglastechnical@owenscorning.com)

**Europe, Middle East & Africa**  
 +32 13 611 468  
[Industrytechnical@foamglas.com](mailto:Industrytechnical@foamglas.com)

### European Industry contacts:

Country	Phone	Email
Belux	+32 478 532 075	<a href="mailto:industry@foamglas.be">industry@foamglas.be</a>
Central Europe & Africa	+32 13 355 925	<a href="mailto:pce.industry@foamglas.com">pce.industry@foamglas.com</a>
Czech Republic	+420 731 138 978	<a href="mailto:industry@foamglas.cz">industry@foamglas.cz</a>
France	+33 673 191 766	<a href="mailto:industry@foamglas.fr">industry@foamglas.fr</a>
Germany, Switzerland, Austria Central hotline	+49 2103 24957 21 0800 52 02 028	<a href="mailto:industry@foamglas.de">industry@foamglas.de</a>
Italy	+39 345 3298 822	<a href="mailto:industry@foamglas.it">industry@foamglas.it</a>
Middle East	+971 50 6528474	<a href="mailto:industry@foamglas.ae">industry@foamglas.ae</a>
Scandinavia / Nordic	+47 22 556 644	<a href="mailto:industry@foamglas.no">industry@foamglas.no</a>
Spain - Portugal	+ 351 965 80 24 31	<a href="mailto:industry@foamglas.es">industry@foamglas.es</a>
The Netherlands	+31 622 540 623	<a href="mailto:industry@foamglas.nl">industry@foamglas.nl</a>
United Kingdom - Ireland	+44 7789 507 094	<a href="mailto:industry@foamglas.co.uk">industry@foamglas.co.uk</a>