



Insulation of liquid gas tanks with Basotect®

Case Study

Low temperature properties of BASF foam for the insulation of liquid gas tanks

BASF researchers have discovered an interesting application which makes use of the low temperature stability of Basotect®, the melamine resin foam, which has not been previously investigated. Initial tests have shown that steel tanks filled with liquefied natural gas (LNG) at a temperature of approximately -160 °C can be effectively insulated with Basotect® for prolonged periods. Experts agree that the need for LNG transport systems will increase steadily over the next few years, and as the technology currently in use for transporting liquid gas is outdated, this material could be of tremendous advantage. The high degree of stability of the foam at low temperatures has not yet been technically exploited.

Useful combination: Elasticity and stability at low temperatures

In laboratory tests Basotect® retains its properties even at temperatures of around -200 °C. For this reason using the foam with its combined characteristics to insulate LNG tanks has a number of advantages: The high degree of elasticity and the thermal insulation capacity of the foam remain unaffected by very low temperatures, in contrast to conventional foam insulation, which becomes brittle when exposed to such cold conditions. "A combination of Basotect® and other foams is also conceivable. If conventional foam with its specific thermal insulation and processability is protected against the effects of the low temperatures of the liquid gas by a layer of Basotect®, brittleness can be prevented," commented Dr. Christof Möck, who is in charge of Global Basotect® Business.

LNG: Liquefied natural gas transport by ship

LNG is natural gas which is liquefied at very low temperatures. The gas is normally transported from the storage sites to consumers through pipelines, some of which can extend over distances of up to 2,500 km. If the gas has to be transported over longer

routes, it is often more economical to liquefy the gas and transport it by ship. The critical link in the complex LNG supply chain is the LNG tanker. As the temperature of ebullition of LNG is -162 °C, the liquefied gas is stored at very low temperatures, and has to be transported in vessels with extremely efficient insulation.



Development of the LNG market

Renowned shipyards regard the transport of liquefied gas as an area with a high growth potential due to the fact that technological standards in this field are lagging behind, especially in Germany. Special products such as Basotect® open up new horizons for the design of more inexpensive tanker systems with an eye to the future. The natural gas market is destined to register high growth over the next few years, especially in the United States. Experts estimate that the share of natural gas in the global energy market will rise to 25 % by 2030. This increase in the demand for natural gas means that transport of LNG, the liquefied form of natural gas, will also gain in importance. Current forecasts assume that the number of LNG tankers will rise from around 120 in 2000 to more than 300 in 2010. The transported quantities of LNG will then exceed 270 million metric tons.