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**Flexible Cryogenic Insulation For Low Temperature System**  
Efficient Energy Saving Environmental Protection



## ABOUT KINGFLEX

Hebei Kingflex Insulation Co., Ltd. is founded by Kingway Group which is established in 1979. And Kingway Group company is a R & D, production, and selling in an Energy saving and environmental protection of one manufacturer.

With 5 large automatic assembly lines, more than 600,000 cubic meters of annual production capacity, Kingway Group is specified as the designated production enterprise of thermal insulation materials for the National energy department, Ministry of electric power and Ministry of chemical industry.

Growth in the construction industry and many other industrial segments, combined with concerns over rising energy costs and noise pollution, is fueling market demand for thermal insulation. With more than four decades of dedicated experience in manufacturing and applications, Kingflex Insulation Company is riding on top of the wave.

Over four decades, Kingflex Insulation Company has grown from a single manufacturing plant in China to a global organization with product installation in over 50 countries. From the National Stadium in Beijing, to the high rises in New York, Singapore and Dubai, people around the world are enjoying the quality products from Kingflex.





## HISTORY OF THE COMPANY

"Wuhehao" independently research and developed the "wet rock cotton shell" process, which is approved by the relevant State departments and had been fill the gap in China's building materials field at that time.

Hebei Jinwei New Building Material Co., Ltd. was established.

Hebei Kingflex Insulation Co., Ltd. is formally established.

The new factory of Kingflex is put into operation, which was covering an area of more than 100 acres.

Successfully developed SA sound absorption and noise reduction and ULT ultra-low temperature series products.

The tallest office building sprang up in the township of Chinese insulation material.

Awarded "Research and Development Center of Industrial Enterprise R&D Institutions in Hebei Province"

1982



1996



2005



2010



2014



2016



2018



1979

The current Chairman of Kingflex, Mr. Gao Tongyuan, founded the predecessor of Kingflex named "Wuhehao Insulation Material Factory".



1989

The Chairman Mr. Gao Tongyuan brought in the new technology for rock wool and aluminum silicate, which greatly promoted the local economic development.



2004

Jinwei became Jinwei Group. And meanwhile adopted international management concepts and marketing models to successfully expand overseas markets.



2006

Jinwei Group Successfully acquisition of Chengde Tongda Metallurgical Industry.



2013

Kingflex fully implements the ISO9001:2008 quality management system.



2015

Key account department was established to expand the high-end market



2017

Successfully selected as the qualified suppliers of CNPC, Datang and Wanda.



## MAIN ADVANTAGE

### Brief Description

Kingflex ULT is a flexible, high density and mechanically robust, closed cell cryogenic thermal insulation material based on extruded elastomeric foam. The product has been specially developed for use on the import/export pipelines and process areas of (liquefied natural gas(LNG) facilities. It is part of Kingflex Cryogenic multi-layer configuration, providing low temperature flexibility to the system.

- Insulation that maintains its flexibility at very low temperatures down to -200 °C to +125 °C
- Reduces the risk of crack development and propagation
- Reduces the risk of corrosion under insulation
- Protects against mechanical impact and shock
- Low thermal conductivity
- Low glass transition temperature
- Easy installation even for complex shapes
- Less Joint ensure the air tightness of the system and make the installation efficient
- Comprehensive cost is competitive
- Built-in moisture proof, no need to install the extra moisture barrier
- Without fiber, dust, CFC, HCFC
- No expansion joint is required

## Application



Coal chemical MOT

Low temperature storage tank

FPSO floating production storage oil unloading device

Industrial gas and agricultural chemical production plants

Platform pipe

Gas station

Ethylene pipe

LNG

Nitrogen plant

More





## MULTI-LAYER COMPOSITE STRUCTURE

Kingflex flexible ultra-low temperature insulation system belongs to the multi-layer composite structure, is the most economical and reliable cooling system. The system according to the left side of the icon, can be directly installed under the temperature as low as  $-110^{\circ}\text{C}$  on all piping equipment. When the surface temperature of the pipe is lower than  $-100^{\circ}\text{C}$  and the pipeline usually has obvious repeated movement or vibration, it is necessary to a layer of wear-resistant film is laid on the inner surface to further strengthen the inner wall strength of the material to ensure the long-term adiabatic effect of frequent movement and vibration of the process pipeline under deep cooling.

When the operating temperature of the pipeline is lower than  $-180^{\circ}\text{C}$ , consideration should be given to laying the vapor layer on the ULT of the ultra-low temperature adiabatic system to prevent liquid oxygen from forming on the metal pipe wall.

This solution system overcomes stress at low temperatures and provides maximum mechanical performance,



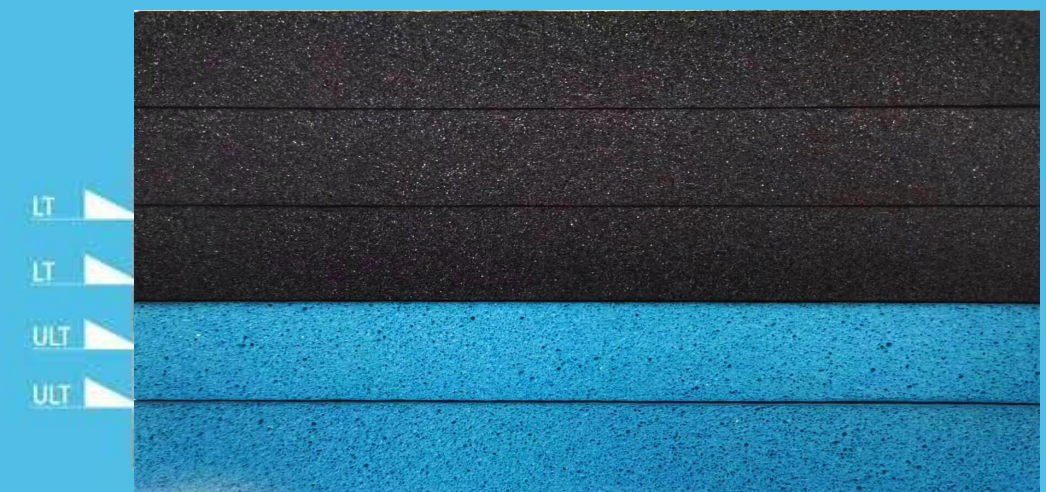
## STRUCTURAL INTEGRITY

Kingflex flexible ultra-low temperature adiabatic system has the inherent characteristics of impact resistance, and its cryogenic elastomer material can absorb the impact and vibration energy caused by the external machine to protect the system structure.

The impact from any part can be widely dispersed and attenuated by elastomer materials, thus avoiding the risk of cracking due to stress concentration. And also reducing the temperature change stress is that the cooling system is superior to the traditional material such as foam glass, polyurethane PIR and PUR.

These traditional hard materials are not elastic at normal and low temperatures. So there is

the deterioration of adiabatic performance caused by material extrusion and cracking under temperature-changing stress





# TECHNICAL INFORMATION

## Elastomeric Cryogenic insulation

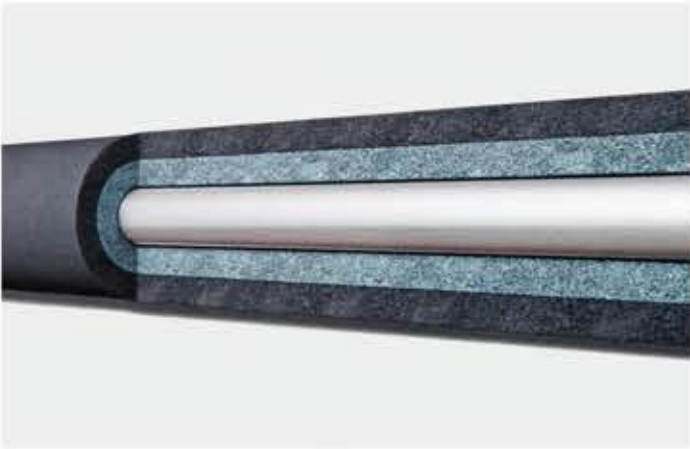
Performance	Base Material		Standard
	Kingflex ULT	Kingflex LT	
Thermal Conductivity	-100℃, 0.028 -165℃, 0.021	0℃, 0.033 -50℃, 0.028	ASTM C177 EN 12667
Density	60-80 kg/m3	40-60 kg/m3	ASTM D 1622
Recommend Operating Temperature	(-200℃ +125℃)	(-50℃ +105℃)	NA
Percentage of Closed Area	> 95%	>95%	ASTM D 2856
Moisture Permeance Factor	NA	< 1.96 × 10g (m.s.Pa)	ASTM E96
Wet Resistance Factor μ	NA	>10000	EN 12086 EN 13469
Water Vapor Permeability Coefficient	NA	0.0039g/h.m2 (25mm thickness)	ASTM E96
PH	≥ 8.0	≥ 8.0	ASTM C871
Tensile Strength MPa	-100℃, 0.30 -165℃, 0.25	0℃, 0.15 -40℃, 0.218	ASTM D 1623
Compressive Strength MPa	(-100℃, ≤0.37)	(-40℃, ≤0.16)	ASTM D 1621

# BUILT-IN FEATURES

## Built-in vapor barrier

Kingflex flexible ULT insulation system does not need to install moisture barrier. Due to the unique closed cell structure and polymer blend formulation, LT low temperature elastomeric materials have been highly resistant to water vapor permeation. This foamed material provides continuous resistance to moisture penetration throughout the thickness of the product.

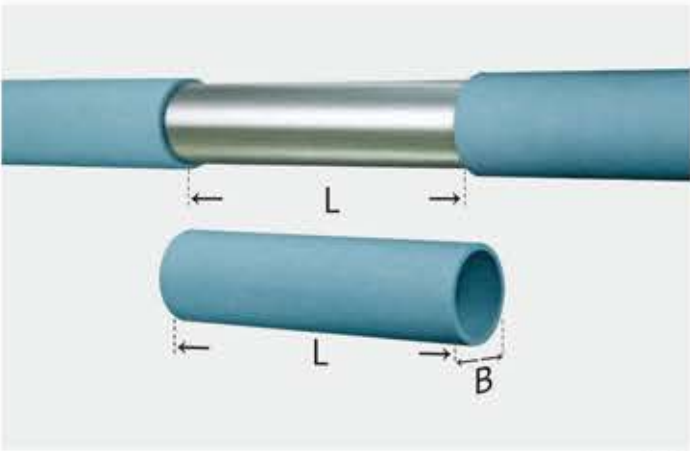
This feature of the product greatly extends the life of the entire cold insulation system and significantly reduces the risk of corrosion of the pipes under the insulation.



## Built-in expansion joint

Kingflex flexible ULT insulation system does not require the use of fiber materials as expansion and expansion fillers. (This type of construction method is typical on rigid foam LNG pipes.)

On the contrary, it is only necessary to install the low-temperature elastomeric material in each layer according to the recommended reserved length to solve the expansion joint problem required by the conventional system. The elasticity at low temperatures gives the material the characteristics of expansion and shrinkage in the longitudinal direction.





MODEL  
SIZE

TUBES

Length 2m



Steel Pipes			25mm INSULATION THICKNESS			
Nominal pipe size (")	Nominal Ø	Outside Ø (mm)	Pipe max outside Ø (mm)	Inner Ø min/max (mm)	Code	m/carton
3/8	10	17.2	18	19.5-21	KF-ULT 25x018	40
1/2	15	21.3	22	23.5-25	KF-ULT 25x022	40
3/4	20	26.9	28	29.5-31.5	KF-ULT 25x028	36
1	25	33.7	35	36.5-38.5	KF-ULT 25x035	30
1 1/4	32	42.4	42.4	44-46	KF-ULT 25x042	24
1 1/2	40	48.3	48.3	50-52	KF-ULT 25x048	20
2	50	60.3	60.3	62-64	KF-ULT 25x060	18
2 1/2	65	76.1	76.1	78-80	KF-ULT 25x076	12
3	80	88.9	89	91-94	KF-ULT 25x089	12

SHEET



Code	Thickness(mm)	Roll length(m)	m²/bag
KF-ULT-25	25	8	8

CONSTRUCTION  
AND INSTALLATION





CLASSIC  
CASE



LNG PROJECT OF SHANXI XIANGKUANG GROUP CO., LTD.



SHANXI JIN MING METHANOL PROJECT



TIANJIN PETROBEST ENERGY EQUIPMENT CO., LTD.



GLYCOL PROJECT OF LIHUAYI GROUP CO., LTD.



INTEGRATED EQUIPMENT SYSTEM OF AIR CHINA



NINGXIA BAOFENG ENERGY CO.,LTD.



SHANXI YANGQUAN COAL INDUSTRY(GROUP)CO.,LTD



MAT PROJECT OF SHANDONG JIN MING COAL WATER  
CHEMICAL GROUP CO.,LTD.



LNG NATURAL GAS STATION OF ENN ENERGY HOLDINGS LIMITED.



QINGDAO SINOPEC