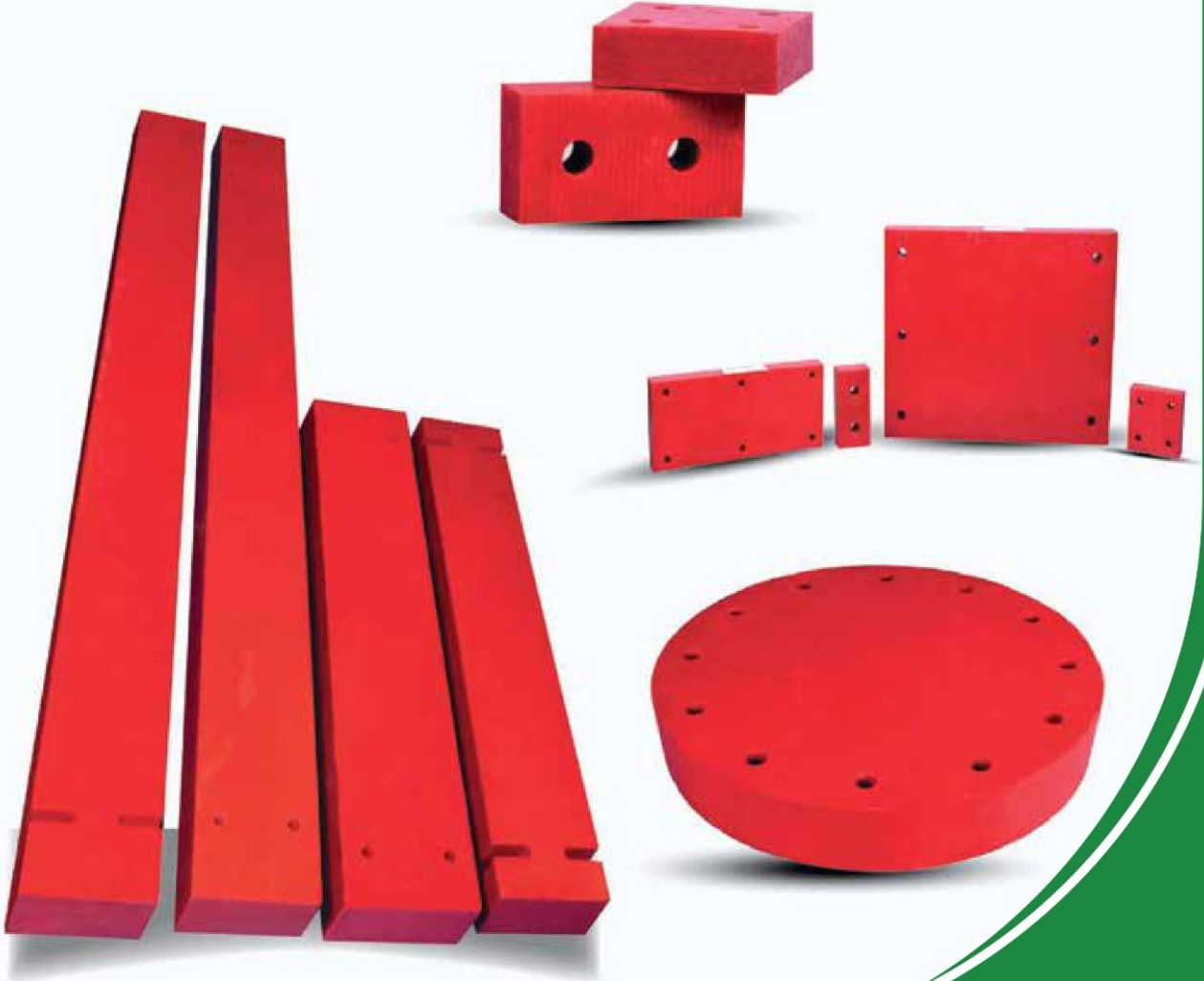




شركة مصنع الطاقة الكامنة ذ.م.م.
KINETIC ENERGY FACTORY CO. W.L.L.

Bergatherm Composite Load Bearing Insulation Products



شركة مصنع الطاقة الكامنة ذ.م.م.
KINETIC ENERGY FACTORY CO. W.L.L.

Section N, Block 9, Lot No 10,
Road No 267
Support Industries Area 3
31951 Jubail
Kingdom of Saudi Arabia

☎ +966(13)3418899
☎ +966(13)3417799
✉ sales@keksa.com

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2030
المملكة العربية السعودية
KINGDOM OF SAUDI ARABIA

Bergatherm® Composite Load Bearing Insulation

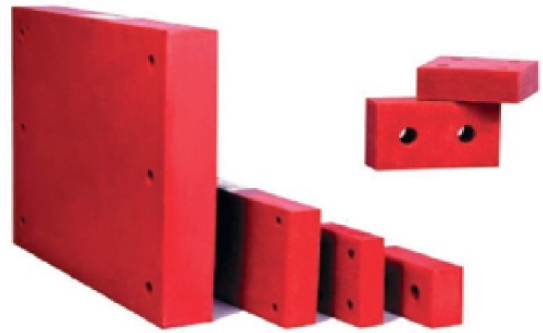
Introduction

Bergatherm is a composite material that uses high-strength glass fabrics held in a matrix of a specially formulated synthetic resin to produce a high-load bearing product, suitable for use in cryogenic and similar demanding applications.

Bergatherm has been developed to meet a significant market demand for this type of product. It follows in our tried and tested philosophy of horizontal integration, with which we aim to bring to our Customers the most advanced engineering solution for such applications with significantly reduced delivery lead times. These formulations have been carefully engineered and incorporated into our designs to provide solutions for our Customer's requirements.

With this key product development and combined with our already well-developed range of High-Density Polyurethane Foam supports and our Comlin range of products, Bergen Pipe Supports is now in a position to offer a complete product range for various applications in LNG, Refineries and Petrochemical sectors. A well-developed capability to manufacture our own specialist variants allows us to engineer products for specific applications, thereby optimising the costs for our Customers.

This product development comes with a strong backing of focussed Research and Development efforts initiated by Engineers at Bergen Pipe Supports over a period of years. As a result of these initiatives, Bergatherm has already started to emerge as a product of choice for various Customers and is being used extensively on major LNG projects across the world.



Applications

Bergatherm has been developed as an environmentally friendly replacement for hardwoods such as Oak, Iroko, Sapele, Cedar, Ash, Maple and Beech. These woods have been commonly used as supports for cold and cryogenic pipe work in refineries, gas handling and chemical plant where the operational parameters require both high strength and good insulation properties.

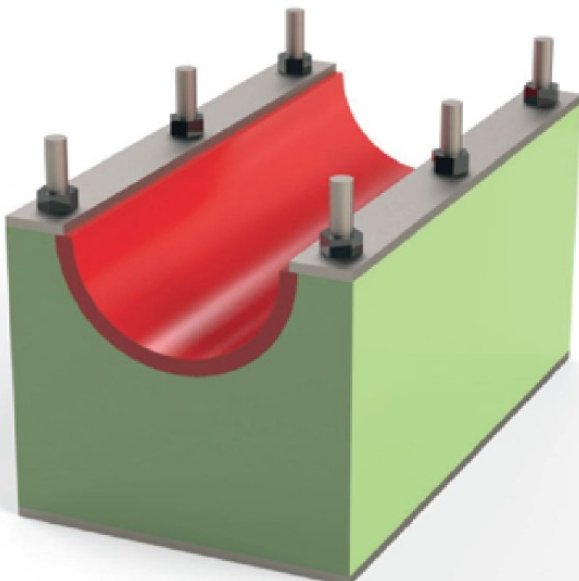
Over time wooden supports deteriorate, can leach acid leading to corrosion of the pipe, moisture absorption into the local insulation, degradation of the support and inefficiency in the process.

Other similar products such as laminated, resin impregnated woods are costly, have very long lead times and can be uneconomic to produce in some of the shapes that are required for supporting pipes. There are also significant physical limitations in which the use of wood and laminated wood products become constrained, especially at higher temperatures and in very wet conditions.

Bergatherm is used as a high-load capacity, cold isolation block typically found in situations where the cold temperature of the fluid within the pipe would cause potential embrittlement or damage to the surrounding structure. Such blocks are used as a thermal barrier between support structures and vessels or beneath trunnions or at line stops and anchors.

Bergatherm can be used to completely isolate a pipe, supplied in cylindrical form, moulded to shape to avoid waste and give increased strength over similar machined composites. Such product is used on flare lines where dual temperatures are often a feature.

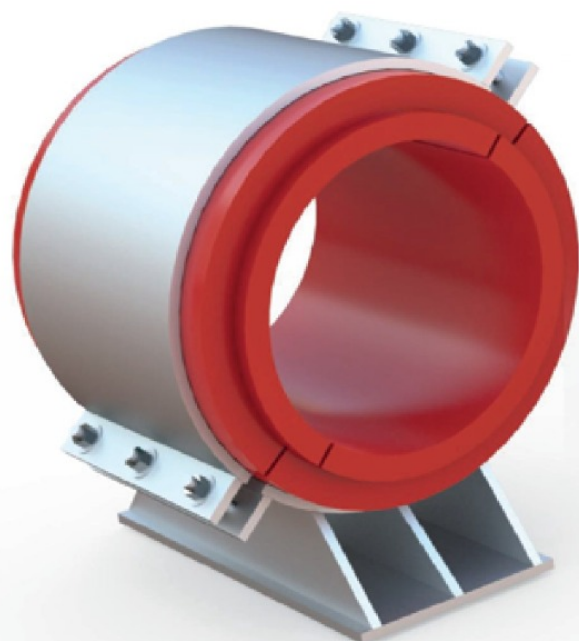
Bergatherm not only possesses excellent low temperature properties but can also be used at temperatures far exceeding the limitations of wood, laminated wood and other commercial composite blocks while still retaining its mechanical properties.



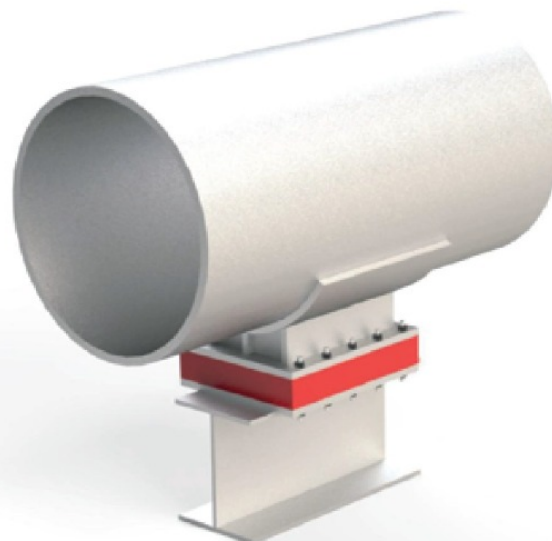
Key mechanical and physical properties of Bergatherm

Property	Unit of Measurement	Applicable Standard	Specifications
Specific Gravity	gm/cm ³	ISO 1183	1.80
Water Absorption	%	ISO 62	< 0.40
Glass Content	% by Weight	ISO 11358	60 ~ 70
Tensile Strength	N/mm ²	ISO 527 - 4/5	> 100
Compressive Strength (Perpendicular to Fibre Direction) @ 23°C	N/mm ²	ISO 14126	> 250
Compressive Strength (Perpendicular to Fibre Direction) @ 225°C	N/mm ²	IS 1998	>180
Impact Strength Un-Notched	KJ / m ²	ISO 179	> 80
Thermal Conductivity 23°C	W/mK	ASTM E 1530/ASTM C 518	< 0.30
Flammability	Seconds	UL-94	V0/ <50
Thermal Classification (Contact Surface Temperature)	°C	-	-196 to +225

*The above table lists the general properties of this material and are for reference purpose only. These have been achieved under controlled laboratory conditions and are subject to revision without notice. The user should obtain latest applicable information about the product prior to ordering and check, evaluate and ensure the suitability of the material for use in specific environment and conditions.



An insulated pipe shoe using moulded, 180° segments of Bergatherm



A Bergatherm isolation block, used to prevent heat transfer between pipe & primary support structure

Bergatherm can be used in combination with high-density polyurethane foam to provide a composite material with the insulation properties of polyurethane foam but the flexural strength and/or temperature resistance of Bergatherm. This combination is offered as BergaliteR because of the significant reduction in overall weight of the material.

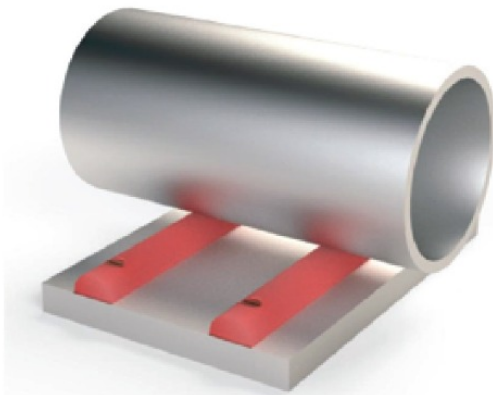
Bergen Pipe Supports has successfully extended their technological capabilities developed in advanced composites to create additional Bergatherm variants, which are suitable for many other critical applications:



"Bergatherm Pipe Wrap", is one such product range manufactured from specially formulated synthetic resins and supplied in thin cylindrical sections, moulded to the precise outer diameter specification of the pipe and can be simply bonded to the pipe surface at site.

These are typically supplied in arc lengths of 120, 180 and 240 Degrees in thickness varying from 4 to 8 mm. However, these can be further custom made and manufactured to the exact requirements of our Customers to achieve very specific requirements.

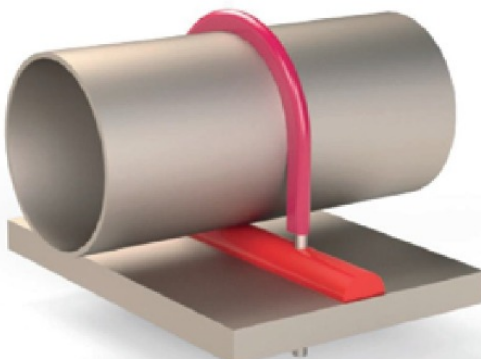
Bergatherm Wraps are used for electrical isolation, protection against abrasion and wear causing damage to protective coatings, which if damaged, can ultimately lead to galvanic corrosion. Such isolation wraps are used where the pipe needs to rest on either steel or concrete sleepers or beams.



"Bergatherm Half-Round" is an additional product offered by Bergen Pipe Supports to meet critical applications in industry. Advanced composite formulations ensure high strength with excellent capabilities for demanding exterior applications. The combination of material properties and cylindrical surface ensures a low coefficient of friction with most of the application surfaces.

With Precision machining processes, precise countersunk holes are provided as per assembly requirements to ensure quick installation at site. Used in conjunction with pipes and lined U bolts, this product prevents moisture accumulation between the pipe and the resting surface, which is a leading cause of corrosion.

Product can be typically supplied in diameters up to 40mm in varying lengths, which again can be customised to meet Customer specifications and requirements.



Unique capability to provide insulation and isolation solutions in a variety of shapes and sizes

Bergen Pipe Supports has successfully delivered products with linear dimension ranging from 25mm to as large as 6000 mm, diameters up to 600 mm, and thickness up to 250 mm. Some of these products have individual weight going up to 350 Kg. This provides a good overview of the manufacturing flexibility which we provide to our customers.

We encourage you to get in touch with us with your requirements and we will be very happy to provide the most optimum solution for your needs.

6000 mm



1800 mm



Our manufacturing know-how enables us to achieve product sizes which will be very difficult to meet using commercial timber sizes. Above product was designed for Gasification Plant.



Typical illustration of Bergatherm applications in Piping Design



BERGEN PIPE SUPPORTS

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Section N, Block 9, Lot No 10, Road No 267
Support Industries Area 3
31951 Jubail
Kingdom of Saudi Arabia

☎ +966 (13) 341 8899

☎ +966 (13) 341 7799

✉ sales@kekسا.com

KINETIC ENERGY FACTORY CO. W.L.L.

Office 31, Building 602, Road 2018
Block 320, Exhibition Avenue
Hoorā, Manama
Kingdom of Bahrain

☎ +973 172 30389

✉ sales@kekسا.com

Bergen Pipe Supports India
Bergen Pipe Supports (India) Private Ltd.
No. 720, Belerica Road
Sector 22, Sri City DTZ
Varadaiahpalem Taluk (Mandal)
Chittoor District - 517541
Andhra Pradesh,
India

☎ +91 8576 305666

☎ quotationdesk@pipesupports.com

✉ technical@pipesupports.com

Bergen Pipe Supports USA
Bergen Pipe Supports, Inc.
225 Merrimac Street
Woburn, MA 01801
USA

☎ +1 (0)781 935 9550

☎ +1 (0)781 938 0026

✉ bpw@pipesupports.com



www.KEKSA.com

