WE ARE LOOKING FORWARD A LONG-TERM
MUTUAL BENEFICIAL COOPERATION WITH YOU

ZHONGHENG NEW MATERIAL SI-TECH CO., LTD.,

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Zhongheng New Material

LEADING PROVIDER OF THERMAL INSULATION MATERIAL

VOKES®,FOR A GREENER AND CLEANER PLANET

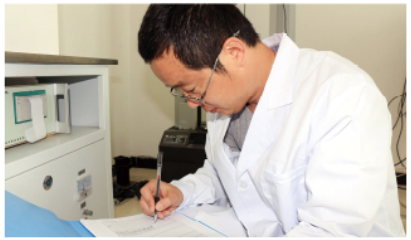
CONTENTS

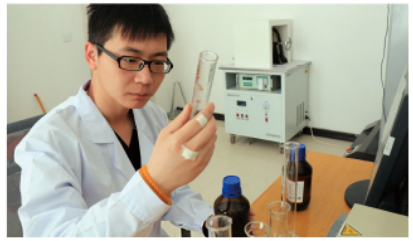
COMPANY PROFILE

Zhongheng New Materials Si-tech Co., Ltd., is located in an ancient city with a long history, Daming, Hebei, China. Zhongheng is a hi-tech company with R&D department and sales office. Since established in 2012, it has been committed to researching and producing high-quality thermal insulation materials.
The factory occupies an area of 65,000m^2, possesses 6 workshops and 15 fully automatic production lines.

ZHONGHENG NEW MATERIAL SI-TECH CO., LTD.,

The products, super nanoporous insulation materials, with the independent intellectual property rights, are energy-saving, noncombustible, eco-friendly, recyclable. They have passed certifications of ISO9001-2000/ISO14001-2004/QMS/EMS/Occupational Health and Safety Management System and CE.
With a green dream, Zhongheng longs to serve excellent products and create a healthy life for people.

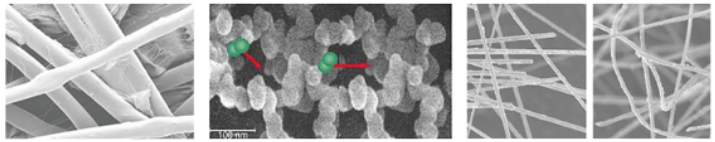




PRODUCT

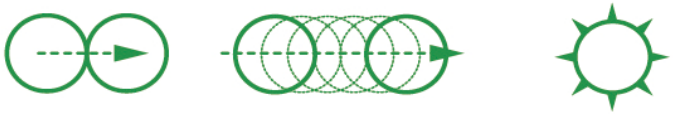
PRODUCT OVERVIEW

Super insulation materials refers to the materials of which thermal conductivity is less than that of the still air(0.026w/(m.k)) in the specific conditions. Usually they are nano porous and achieved by nano technology, so also called nanoporous insulation materials. Vokes® series products, all are super insulation materials. They are advanced with excellent insulating properties, also moisture-proof, fire-proof, sound-proof and shock-absorbing. With steady thermal conductivity, Vokes® widely serves at working temperature range from -120°C to 1000°C, meets various insulation needs in construction and industry.



STRUCTURE DIAGRAM OF CORE MATERIAL AND REINFORCED FIBER

PRINCIPLE OF HEAT INSULATION



HEAT CONDUCTION

The core material is fumed silica. Its nano porous structure highly enhances the heat resistance and reduces heat conductivity.

HEAT CONVECTION

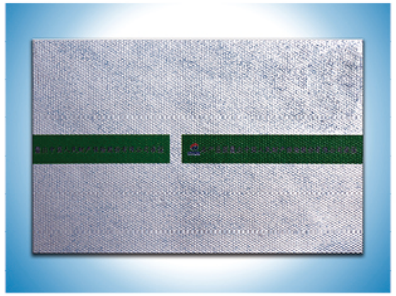
With 90% porosity, nano pore is around 10-20nm, far smaller than molecular average free path in the air, 70nm. In this way, air molecules are locked up, consequently heat convection is basically avoided.

HEAT RADIATION

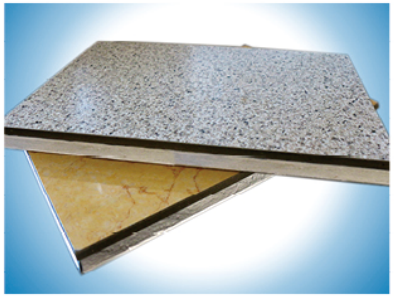
An infrared opacifier is added to minimize thermal transmission by heat radiation.

PRODUCT CATEGORY

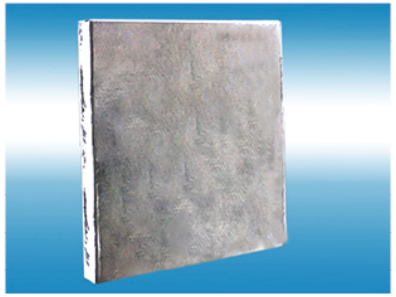
VOKES® HVIP
vacuum insulation panel



VOKES® HVIP DECO
vacuum insulation panel with decoration



VOKES® NPP
nanoporous panel

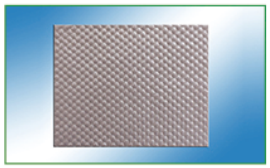
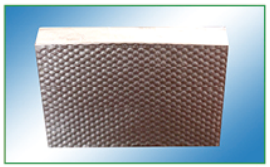
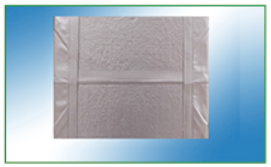


VOKES® NPS
nanoporous sheet

VOKES®HVIP

CHARACTERISTICS

Vokes®HVIP is a micro porous thermal insulating panel with excellent insulating properties. The core material of Vokes® HVIP is fumed Silica. It's sealed with an air barrier film under vacuum. The thermal conductivity < 0.004 W/mK .

Vokes®HVIP, adopts M- sealed at the back. It's easy for workers to install, reduces the thermal channel at utmost.
Vokes®HVIP, adopts advanced forming technology. It keeps the thermal performance as stable as possible. Even when the air enters, the conductivity will not be only 0.018~0.02w/(m.k).
Vokes®HVIP, adopts full automatic line with strict quality policy, it ensures products in high level.

COMPARISON OF DIFFERENT INSULATION MATERIALS

Product	Vokes® HVIP	EPS: Polystyrene Board(EPS)	Extruded Sheet (XPS)	Polyurethane(PU)	Phenolic Formaldehyde(PF)	Rock Wool
Thermal Conductivity W/(m·K)	⩽ 0.006	⩽ 0.040	⩽ 0.032	⩽ 0.024	⩽ 0.030	⩽ 0.048
Tensile Property MPa	⩾ 0.10	⩾ 0.10	⩾ 0.10	⩾ 0.10	——	7.5KPa
Flammability	A	B2	B2	B2	B1	A

PRODUCT DATA

PROPERTY	UNIT	VALUE	STANDARD
Application Temperature	° C	-50-70	----
Density	Kg/m^3	≤250	JG/T159
Thermal Conductivity	W/(m · K)	0.006	GBT10295,DIN52612–16
Compression Strength	M Pa	⩾ 0.15	GB8813，EN8268
Flammability	----	A	GBB624
Size Tolerance	mm	± 2mm	JG/T159
Thickness Tolerance	mm	± 1mm	JG/T159
Internal Gas Pressure	mbar	1	----
Service Life	Years	50	----

STANDARD DIMENSION

Length X Width

100 mm × 400 mm	200 mm × 600 mm	400 mm × 600 mm
600 mm × 1000 mm	600 mm × 1200 mm	

Thickness

10mm	15mm	20mm	25mm	30mm

***OTHER SIZES, SHAPES AND DECORATIONS ARE CUSTOMIZABLE.**

WORKING PROCESS

1 Apply adhesive mortar on Vokes®HVIP

2 Make mortar into stripe pattern

3 Stick to Vokes®HVIP on the wall

4 Tap on Vokes®HVIP neatly

5 Coat Vokes®HVIP with mortar

6 Paste mesh fiber on mortar

7 Mortar again

CAUTIONS

1.Vokes®HVIP must not be mechanically damaged. Sawing, drilling and scratching in particular must be avoided.

2. The underground to which Vokes®HVIP is applied must be smooth, flat and free of edges and burrs.

3. During installation and use of Vokes®HVIP, they must not be subjected to any, or if unavoidable only minor mechanical stresses. Point loads and persistent vibration or tension to the wrapping must be avoided.

4. In constructions with Vokes®HVIP, care must be taken to ensure that they are subjected only to even, full-surface pressure loading.

5. Vokes®HVIP must be protected against tensile and shear forces.

6. This can be achieved for example by ensuring that the structural strength in a construction using Vokes®HVIP is provided by other measures, and Vokes®HVIP carries out only thermal insulation function.

7. It must be ensured that person working with Vokes®HVIP is adequately trained in advance. Fitting and working instructions in particular should be explained with regard to the individual application.

8. The insulation construction must be designed so that the ventilation of individual Vokes®HVIP does not lead to technical problems with the complete system.

9. Vokes®HVIP must be adequately protected against damage during the usage phase, e.g. by fitting of an outer shell.

10. When installing in floor systems, avoid walking on the unprotected Vokes®HVIP.

11. Long-term working temperature must be lower than 80℃ .

ADVANTAGES

Compared to traditional insulation materials, Vokes®HVIP with the extremely low thermal conductivity is outstanding at energy conservation. To achieve the same insulated result, Vokes®HVIP is far much thinner, lighter, and smaller.

For freezer: Vokes®HVIP is able to save power 10%-30%, increase volume 20%-30%.

For storage: Vokes®HVIP keeps 4-5 days thermal period, instead of 1-2 days using traditional insulation materials.

For construction: Vokes®HVIP is easy to install because of its small conductivity and density. It's safe, nonflammable, and recyclable. The working life is up to 50 years.

APPLICATIONS

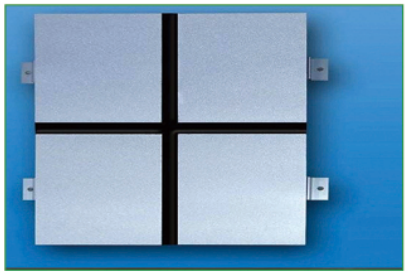
Vokes®HVIP is a successful insulation solution in the following areas:
- Buildings (Roofs, floors, walls, ceilings, etc)
- Refrigeration and freezing (Freezers, medical thermotanks, blood banks, medical kits, refrigerated containers, etc.)
- Automotive (Cars, trains, ships, air planes, etc.)

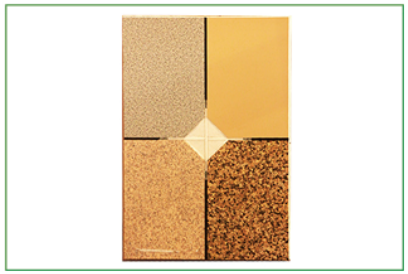
ZHONGHENG NEW MATERIAL SI-TECH CO., LTD.,

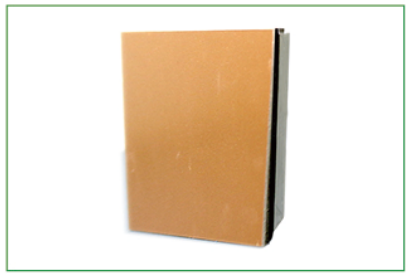
VOKES®HVIP DECO

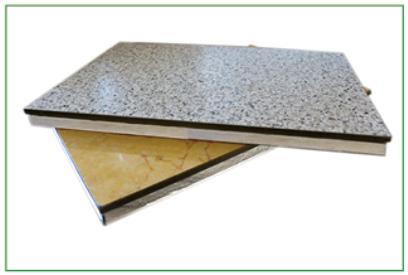
CHARACTERISTICS

Vokes®HVIP DECO is made up of vacuum Insulation panel with decorations. This product integrates thermal insulation, fire prevention, and decorative performance together. High-quality inorganic panel and excellent thermal Insulation properties of Vokes®HVIP, simplify the construction process and improve the quality of the buildings.









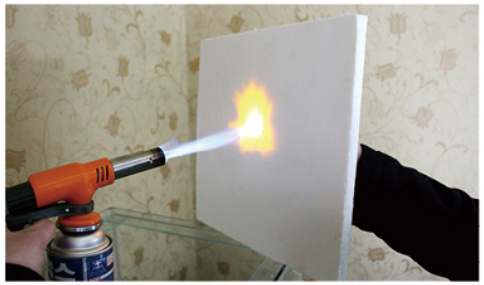
PRODUCT DATA

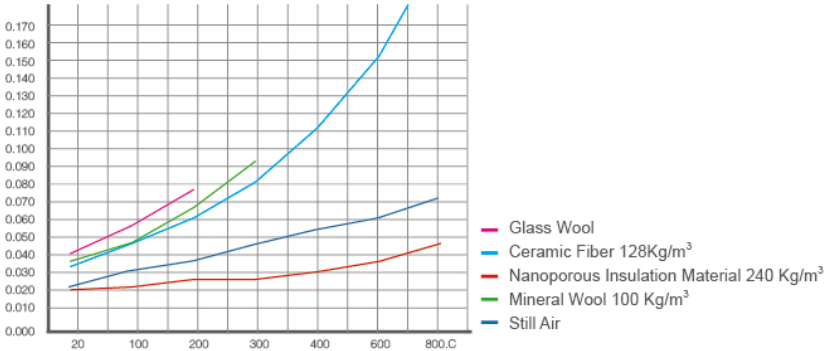
PROPERTY		STANDARD
Application Temperature		-50°C-70°C
Combustion Performance		A1
Panel (Excluding Finishes) Combustion Performance		Not Less Than A2
The Tensile Bond Strength and Thermal Insulation Layer of the Decorative Panel	The Original Strength MPa	≥0.10
	Water 7d MPa	≥0.10
	Resistance To Freezing and Thawing 30 Times 7d MPa	≥0.10
	The Temperature Resistance 70±2°C，7d MPa	≥0.10
Decorative Panel	Surface Coating Adhesion/level	≤1
	Pencil Hardness	≥2H
	Acid Resistance 168H	No Abnormal
	Acid Resistance 168H	No Abnormal
	Stain Resistance %	≤10
	Salt Fog 1000H	No Damage
	Resistance to Artificial Weathering 2500H	Powder≤1 Chromatic Aberration ≤2 The Loss of Light ≤2

VOKES® NPP

CHARACTERISTICS

Vokes®NNP is a micro porous thermal insulating panel with excellent insulating properties. The core material of Vokes® NPP is fumed silica which is made by nano technology. Furthermore an infrared opacifier is added to minimize thermal transmission by heat radiation. It's noncombustible, specializes in the insulation applications where the space is limited but a high thermal resistance is necessary. Long-term application temperature is during -120°C-1000°C, the insulation performance is much better than the traditional materials, especially at high temperature.





COMPARISON OF DIFFERENT INSULATION MATERIALS

PRODUCT DATA

PROPERTY		UNIT	STANDARD VALUE	TEST VALUE	STANDARD
Color		----	White, Grey	----	GB/T7322-2007
Refractoriness		° C	> 1200	1300	GB/T5486-2008
Application Temperature		° C	----	≤1000	----
Density		Kg/m3	≤ 300	214	GB/T5486-2008
Compression Strength (Compression20%)		MPa	≥ 0.40	0.64	GB/T5486-2008
Permanent Linear Change(800°Cx24h)		%	≤1.0	-0.2	GB/T10294-2008
Thermal Conductivity (Hot Surface Temperature:d°C)	50	W/(m · k)	----	0.016	GB/T4130-2007
	200			0.020	
	300			0.023	
	400			0.025	
	500			0.033	
	600			0.040	
	700			0.050	
	800			0.060	
	900			0.064	
	1000			0.073	

STANDARD DIMENSION

LENGTH X WIDTH

250 mm × 600 mm | 500 mm × 600 mm | 600 mm × 1200 mm

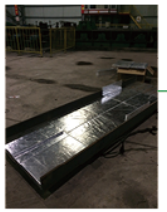
THICKNESS

10mm | 15mm | 20mm | 25mm | 30mm | 40mm | 50mm

***OTHER SIZES, SHAPES AND DECORATIONS ARE CUSTOMIZABLE.**

TEMPERATURES ON SURFACE													
CALCULATION OF THERMAL CONDITIONS:VERTICAL FLAT SURFACE, ENVIRONMENTAL TEMPERATURE(20°C), RADIATION COEFFICIENT OF WIND SPEED (0.9)													
TEMPERATURE ON HOT SURFACE°C (Density240kg/m^3)													
THICKNESS OF INSULATION PANEL mm		200	300	400	500	600	700	800	850	900	950	1000	1000°C HEAT LOSS W/m^2
	3	85	117	146	175	210	239	269	288	308	319	339	9489
	5	68	91	115	138	161	184	215	223	240	257	265	5849
	7	58	77	95	116	136	155	176	190	197	212	227	4394
	10	50	65	79	94	112	128	146	158	164	177	183	2999
	15			64	75	87	103	117	122	132	137	147	2087
	20				65	74	85	96	104	113	117	126	1604
	25					66	75	85	92	95	103	111	1305
	30						68	76	83	86	93	96	1025
	35							70	76	78	85	87	887
	40								70	73	78	81	781
	45									68	73	76	698
	50										69	71	632

WORKING PROCESS



1. Glue standard Vokes®NPP with high-temperature adhesives

2. Trim Vokes®NPP into needed size

3. Seal cutting edge with aluminum tape

4. Load the protective layers after the installation

CAUTIONS

1.Vokes®NPP must be taken carefully and perpendicularly.
2.Vokes®NPP is allowed to cut, trim and bend as needed.
3. Avoid squeezing or breaking Vokes®NPP.
4. Avoid leaving weights on Vokes®NPP.

ADVANTAGES

• Wide insulation range: Long-term working temperature is at the period of -120°C-1000°C.
• Extremely low and stable thermal conductivity: At normal temperature, the insulated performance is at least 3-5 times better than the traditional materials. At temperatures higher than 300°C, the insulated performance is at least 4-8 times better than the traditional materials.
• Space saving: It drastically reduced insulation thickness.
• Easy installation and maintenance: The small density makes installing safely and easily.
• Soundproof/Shockproof: It helps acoustic noise reduction and shock buffer.
• Waterproof: Nano particles of product themselves are super hydrophobic.
• Durable: It has a long working life .

APPLICATIONS

Vokes®NNP is widely used because of the stable thermal performance. According to diverse situations, Vokes®NNP can be protected with appropriate covers.
• Industrial furnace (rotary kiln, shuttle kiln, steel ladle, tundish, oven door etc.)
• Metallurgical industry (steel, aluminum, smelting furnace, holding furnace, etc.)
• Instrument (temperature tracker, heat receiver, date protection system, etc.)
• Oil and energy (piping, reacting furnace, etc.)
• Refrigeration and freezing.
• Automotive (Cars, trains, planes, ships, etc.)

VOKES®NPS

CHARACTERISTICS:

Vokes® NPS, flexible flat insulated felt, is made of fumed silica by nano technology. It is of small density, high compressive strength, waterproof, green environmental protection, with many other superior performance, widely used in all kinds of industrial piping, tanks, and various vessels in regular/irregular shapes.

PRODUCT DATA

PROPERTY		UNIT	STANDARD VALUE	TEST VALUE	STANDARD
Color		----	White, grey	----	GB/T7322-2007
Refractoriness		° C	> 800	850	GB/T5486-2008
Application Temperature		° C	----	≤650°C	----
Density		Kg/m³	≤300	205	GB/T5486-2008
Compression Strength (Compression20%)		MPa	⩾ 0.40	0.64	GB/T5486-2008
Permanent Linear Change(600°Cx24h)		%	≤1.0	-0.2	GB/T10294-2008
Thermal Conductivity (Hot Surface Temperature:d°C)	50	W/(m · k)	----	0.016	GB/T4130-2007
	200			0.020	
	300			0.023	
	400			0.025	
	500			0.033	
	600			0.040	

STANDARD DIMENSION

LENGTH X WIDTH

1200x600 | 600x400

THICKNESS

3mm | 5mm | 7mm | 10mm

***OTHER SIZES, SHAPES AND DECORATIONS ARE CUSTOMIZABLE.**

ADVANTAGES:

• Wide insulation range: Long-term working temperature is at the period of -120°C-650°C.
• Extremely low and stable thermal conductivity: At normal temperature, the insulated performance is at least 3-5 times better than the traditional materials. At temperatures higher than 300°C, the insulated performance is at least 4-8 times better than the traditional materials.
• Flexible: It's good for wrapping pipes and equipments.
• Space saving: It drastically reduced insulation thickness.
• Easy installation and maintenance: The small density makes installing safely and easily.
• Soundproof/Shockproof: It helps acoustic noise reduction and shock buffer.
• Waterproof: Nano particles of product themselves are super hydrophobic.
• Durable: It has a long working life.

APPLICATIONS

• Metallurgical and Mechanical Industry .
• Oil and Energy (piping, boiler, etc.).
• Glass furnace.
• Aerospace and Military.

Generally speaking, temperature on smelting is above 400°C in the convertors, approx 300 °C in the ladles or tundishs and approx 350°C in the rotary kilns or lime kilns. By using nanoporous insulation materials, the temperature is able to decline to 250 °C, even lower. This is a stupendously energy-saving solution. For instance, if a sintering furnace with an area of 200m^2 is insulated by nanoporous insulation materials, it will save 878 tons coals, reduce emissions of 2300 tons CO2, 8 tons SO2 and 7 tons Nitride a year, 300 days a year.

CASE STUDIES

IN CONSTRUCTION

Institute of Architecture&.Technology, Hebei

The National Grid, Handan

Unverstiy of North China Electric Power,Beijing

Jindi, Handan

The People's Hospiital, Karamay

ZHONGHENG NEW MATERIAL SI-TECH CO., LTD.,

The Manders,Wenzhou

Public Security Building,Daming

Health Service, Daming

Public Security Building, Daming

Lanchou, Beijing

IN INDUSTRY


Electrical Power Plant

Project: Steam Pipe Insulation
Owner: Electrical Power Plant, Fengkuang
Location: Hebei, China
Challenges: Prevent from moisture and decay. Extend insulation's working life,.
Solutions: Replace rock wool with10mm Vokes® NPS.
Benefits: Slowed temperature.changes down. Made installation and maintenance much easier and more economical.

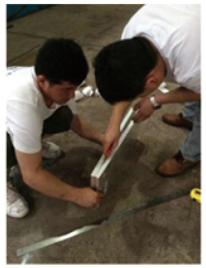
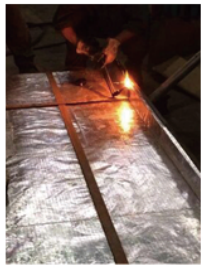
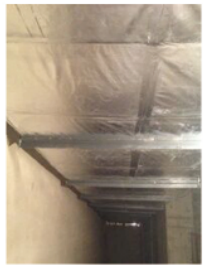





Table Roller Insulation

Project: Ladle and Roller Insulation
Owner: Yongyang Steel Plant
Location: Handan, China
Challenges: Slow down steel's Temperature Drop Speed.Decrease the outer temperature of steel mantle and improve steel quality.Increase the working life of refractory materials and ladles.
Solutions: Reform every-saving system by using 10mm Vokes®NPP.
Benefits: Outer temperature of steel mantle declined to 40~60°C.Temperature Drop Speed declined to 0.2°C/min. Saved RMB1.81/ton than before.



Flue Pipe Insulation

Project: Flue Pipe Insulation
Owner: Phoenix Building
Location: Shenyang, China
Challenges: The inner temperature is 260°C. The owner requested to make it down to 45°C.
Solutions: Add 15mm Vokes® NPP above the stainless steel layer in the flue pipes.
Benefits: Average surface temperature is under42°C as expected.