Skamol A/S
Østergade 58-60
DK-7900 Nykøbing Mors
Denmark
Tel: +45 9772 1533
Fax: +45 9772 4975

www.skamol.com

SKAMOL VIP-12 HS

Structural Insulation - specially developed for the Steel Industry

Description

The VIP-12 HS is a vermiculite-based insulating board for tough environments. The board has a maximum service temperature of 1150°C (2102°F) and has very good thermal conductivity characteristics. This combined with the good thermal shock and wear resistance makes the boards very applicable in steel ladles as back-up insulation and as hot-face application in furnaces of mild condition, i.e. flue gases containing only few particles of low wear-resisting characteristics. The extremely high physical strength of VIP-12 HS combined with good thermal resistance makes the board ideal as back-up insulation in continuous caster tundishes.

Standard sizes

Skamol VIP-12 HS boards are available in the following standard sizes:

Metric:	
Length x width	Thickness
300 x 115 mm	12.7 – 15 mm
Max. 480 x 300 mm Max. 610 x 305 mm	10 mm 12.7 – 15 – 20 – 25 mm
US/British:	
11.8” x 4.5”	0.5” – 0.6”
Max. 18.9” x 11.8” Max. 24” x 12”	0.4” 0.5” – 0.6” – 0.8” – 1.0”

Customer specific sizes are available on request.

Dimensional tolerances

Length and width ..... ± 2.5 mm (0.10”)
Thickness ..... ± 1.0 mm (0.04”)

Applications

- Ladles
- Tundishes
- Torpedo cars

Key Advantages

- High energy savings as the board is very insulating
- Provides improved safety for applications
- Reduced CO_2 emission due to low heat flow
- Lower shell temperatures
- Longer wear of refractories due to high service tempeature
- Fewer relinings as lifetime of ladles are increased
- Reduced consumption of refractories
- High compressive strength makes lining safer and stronger

High max. service temperature

combined with low thermal conductivity values enables the steel to wear 40-100 mm more of refractories than conventional insulating boards. Also, it makes the handling of ladles far safer.

Longer lifetime of wear lining

means less overall consumption of refractories and insulating material. This results in improved production economy and reduces production costs per ton steel.

High compressive strength

- increasing to working temperature level.

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Maximum service temperature (PrEN 14306:2002)		
	°C	1150
	°F	2102
Bulk density, dry		
	kg/m^3	1225
	lbs/cu.ft.	77
Compressive strength (EN 1094-5: 1995)		
@ room temperature	MPa	18.5
	lbs/sq.in.	2683
Modulus of rupture (EN 993-7:1998)		
	MPa	5.0
	lbs/sq.in.	725
Total porosity (EN 1094-4: 1995)		
	%	55
Specific heat		
	kJ/(kg×K)	1.0
	BTU/(lb×°F)	0.24
Coefficient of reversible thermal expansion (BS 1902: section 5.3: 1990)		
@ 20°C-750°C (68°F-1382°F)	K^{-1}	10x10^{-6}
	°F^{-1}	5.6x10^{-6}
Linear reheat shrinkage (EN 1094-6: 1999)		
12 h at 1100°C (2012°F)	%	0.9
Pyrometric cone equivalent (ASTM C24-89 ORTON cones)		
	°C	1330
	°F	2426
Thermal conductivity (EN 993-15:1998) Hot wire		
mean temp. @ 200°C	W/(m×K)	0.27
@ 400°C		0.29
@ 600°C		0.30
@ 800°C		0.32
@ 1000°C		0.33
@ 392°F	BTU/(sq.ft.×h×°F/in)	1.87
@ 752°F		1.98
@ 1112°F		2.08
@ 1472°F		2.22
@ 1832°F		2.29
Chemical analysis, typical	%	
Silica	SiO_2	48
Titanium dioxide	TiO_2	1.1
Ferric oxide	Fe_2O_3	3.5
Alumina	Al_2O_3	27
Magnesium oxide	MgO	7.4
Calcium oxide	CaO	4.7
Sodium oxide	Na_2O	0.3
Potassium oxide	K_2O	6.2
Loss on ignition 1025°C (1877°F)	LOI	2.4
Colour		SAND
HS Tariff number		
(Harmonized Commodity Description and Coding System)		6806.90.00

Note: The TC value for Skamol VIP-12 HS at 1000°C (1832°F) is estimated.

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