

## Twiga Insul Overview



Twiga Insul is a lightweight, compressible insulation material, consisting of fine, long, inorganic glass fibers bonded together by a high

temperature binder. The product is light gold in colour and its superior tensile strength, handleability and resilience offer significant advantages during transport and installation. These unique characteristics of glass wool, combined with its fire safe properties, make it especially suitable for a wide variety of thermal and acoustic insulation applications, ranging from duct and metal roof insulation to applications in solar collectors and generator acoustic enclosures.

Twiga Insul is available in rolls, slabs and boards - in various densities and thicknesses and with a wide range of



factory applied facings. The product is recommended for use in both hot and cold applications ranging in temperature from minus 195° to plus 450°C. Factory applied facings include reinforced aluminium foil, fiberglass tissue, black glass tissue and a wide range of imported premium facings, which are widely used in metal building applications.

Our technical sales staff will be pleased to recommend the appropriate density, thickness and facing combination for your specific application.



## Applications

Twiga Insul is manufactured in various densities and thicknesses for different applications. Recommended product specifications for selected market segments and applications are as follows:

Segment	Application	Recommended Products	Benefits
HVAC	Duct Thermal	16 kg/m <sup>3</sup> to 32 kg/m <sup>3</sup> Rolls 48 kg/m <sup>3</sup> Boards Facing: FSK, Black FSK Double sided FSK	<ul style="list-style-type: none"> <li>• Temperature control</li> <li>• Fire safety</li> <li>• Energy conservation</li> </ul>
	Duct Acoustic	48 kg/m <sup>3</sup> Boards 32 kg/m <sup>3</sup> Rolls Facing: BGT, FGT	<ul style="list-style-type: none"> <li>• Sound absorption</li> </ul>
	AHU Room	32 kg/m <sup>3</sup> Rolls Facing: FGT, BGT	<ul style="list-style-type: none"> <li>• Sound absorption</li> <li>• Temperature control</li> </ul>
Textile	Duct Thermal	16 kg/m <sup>3</sup> to 24 kg/m <sup>3</sup> Rolls Facing: FSK	<ul style="list-style-type: none"> <li>• Temperature control</li> <li>• Prevents condensation</li> <li>• Fire Safety</li> </ul>
	Over False Ceiling	16 kg/m <sup>3</sup> to 24 kg/m <sup>3</sup> Rolls	<ul style="list-style-type: none"> <li>• Temperature control</li> <li>• Reduces heat load</li> <li>• Energy conservation</li> <li>• Easy to apply</li> </ul>
	Metal Roof Insulation	As per pre-engineered metal buildings	As per pre-engineered metal buildings
Pre-Engineered Metal Buildings	Metal Roof Insulation	12 kg/m <sup>3</sup> to 24 kg/m <sup>3</sup> Rolls Facing: FSK, WMP-VR, HSMFAF	<ul style="list-style-type: none"> <li>• Thermal comfort</li> <li>• Sound absorption (eg. rain noise)</li> <li>• Eliminates requirement for 2nd skin</li> <li>• Lowest cost insulated solution</li> <li>• Fire safety</li> <li>• Easy to install</li> <li>• Non corrosive to metal</li> <li>• Aesthetically appealing</li> </ul>
	Wall Cladding	16 kg/m <sup>3</sup> to 24 kg/m <sup>3</sup> Rolls Facing: FSK, WMP-VR	<ul style="list-style-type: none"> <li>• Thermal comfort</li> <li>• Sound absorption</li> </ul>
Multiplex, Theatre, Studio and Other Sound Spaces	Acoustic	16 kg/m <sup>3</sup> to 32 kg/m <sup>3</sup> Rolls 40 kg/m <sup>3</sup> to 64 kg/m <sup>3</sup> Boards Facing: BGT, FGT, Black Glass Cloth Ceiling Tiles - 100 kg/m <sup>3</sup> Boards/Tiles	<ul style="list-style-type: none"> <li>• Improves acoustics</li> <li>• Fire safety</li> <li>• Easy to handle and install</li> </ul>
Commercial and Public Buildings	Underdeck	24 kg/m <sup>3</sup> to 32 kg/m <sup>3</sup> Rolls/Slabs Facing: FSK	<ul style="list-style-type: none"> <li>• Energy Conservation</li> <li>• Reduces heating/cooling load</li> <li>• Fire safety</li> </ul>
	Partitions	16 kg/m <sup>3</sup> to 32 kg/m <sup>3</sup> Rolls Facing: BGT/FGT	<ul style="list-style-type: none"> <li>• Noise control</li> </ul>
	Cavity Wall	32 kg/m <sup>3</sup> Rolls 48 kg/m <sup>3</sup> Boards	<ul style="list-style-type: none"> <li>• Energy Conservation</li> <li>• Reduces heating/cooling load</li> <li>• Noise control</li> </ul>

Segment	Application	Recommended Products	Benefits
Transport	AC Buses, Railway Coaches (walls and ceilings)	16 kg/m <sup>3</sup> to 24 kg/m <sup>3</sup> Rolls Facing: FSK	<ul style="list-style-type: none"> <li>• Dimensional stability</li> <li>• Resists jolting and vibrations</li> <li>• Noise control</li> <li>• Fire safety</li> <li>• Thermal comfort</li> </ul>
Spandrel / Structural Glazing	Walls	24 kg/m <sup>3</sup> to 64 kg/m <sup>3</sup> Boards Facing: BGT	<ul style="list-style-type: none"> <li>• Easy to apply</li> <li>• Non-corrosive</li> <li>• Fire safety</li> </ul>
Cold Storage	Walls & Ceiling	22 kg/m <sup>3</sup> to 27 kg/m <sup>3</sup> Slabs	<ul style="list-style-type: none"> <li>• Energy conservation</li> <li>• Reduces heat load</li> <li>• Fire safety</li> </ul>
Acoustic Enclosures	Gensets	24 kg/m <sup>3</sup> to 32 kg/m <sup>3</sup> Rolls Facing: BGT	<ul style="list-style-type: none"> <li>• Sound absorption</li> <li>• Fire safety</li> <li>• Non-corrosive</li> <li>• Resists vibration and jolting</li> <li>• Durable/long life</li> </ul>
Solar Collectors	Collector Plate	16 kg/m <sup>3</sup> to 20 kg/m <sup>3</sup> Rolls	<ul style="list-style-type: none"> <li>• Minimizes heat loss</li> <li>• Non corrosive</li> </ul>
Thermal Power Stations	ESP	24 kg/m <sup>3</sup> to 32 kg/m <sup>3</sup> Rolls	<ul style="list-style-type: none"> <li>• Heat conservation</li> <li>• Noise control</li> <li>• Non corrosive</li> <li>• Durable/long life</li> <li>• Resists vibration</li> </ul>
	Chimney (Single Flue & Multi Flue)	32 kg/m <sup>3</sup> Rolls, 48 kg/m <sup>3</sup> & 64 kg/m <sup>3</sup> Boards	<ul style="list-style-type: none"> <li>• Keeps gases hot</li> <li>• Minimizes heat loss</li> <li>• Non corrosive</li> <li>• Durable/long life</li> </ul>
	Pipes and Vessels	24 kg/m <sup>3</sup> to 32 kg/m <sup>3</sup> Rolls 52 kg/m <sup>3</sup> to 64 kg/m <sup>3</sup> Boards	<ul style="list-style-type: none"> <li>• Temperature control for process control</li> <li>• Energy conservation</li> <li>• Personnel protection</li> <li>• Non corrosive</li> </ul>
Refineries, Petro Chemical Units & Process Industries	Pipes and Vessels	24 kg/m <sup>3</sup> to 32 kg/m <sup>3</sup> Rolls 52 kg/m <sup>3</sup> to 64 kg/m <sup>3</sup> Boards	<ul style="list-style-type: none"> <li>• Temperature control for process control</li> <li>• Energy conservation</li> <li>• Personnel protection</li> <li>• Non corrosive</li> <li>• Durable /Long life</li> </ul>
LNG Storage Tanks	Suspended Deck	12 kg/m <sup>3</sup> to 20 kg/m <sup>3</sup> Rolls	<ul style="list-style-type: none"> <li>• Easy to apply</li> <li>• Energy conservation</li> <li>• Temperature maintenance</li> <li>• Excellent resilience</li> <li>• Withstands expansion and contraction</li> </ul>

FSK = Foil Scrim Kraft; FGT = Fiberglass Tissue; BGT = Black Glass Tissue; WMP-VR = Premium White Facing  
HSMFAF = High Strength Meshless Aluminium Foil

## Twiga Insul Characteristics

Temperature Range	Twiga Insul is suitable for applications ranging from minus 195°C to 230°C. For special applications upto 450°C, high temperature binder is available. Aluminium foil facing is suitable upto 120°C.
Chemical Stability	Twiga Insul is chemically inert. Application does not cause or accelerate corrosion. Twiga insul is rot proof and odourless.
Fire Safety	<p>Twiga Insul is non-combustible in accordance with BS 476 Part 4, ISO 1182, IS 3808 and IMO (FTP).</p> <ul style="list-style-type: none"> <li>✓ conforms to National Building Code (2016) for fire and life safety requirement on Building &amp; HVAC (Non-combustible)</li> <li>✓ conforms to EN 45545 (2): 2013 as per international norms for transport segment</li> <li>✓ conforms to Class 'O' as per BS 476 Part 6 &amp; 7</li> <li>✓ conforms to Class 1 as per BS 476 Part 7</li> <li>✓ non emission of dense smoke and toxic gases (Toxicity index 0.65 as per BS 6853)</li> <li>✓ non depletion of oxygen (high oxygen index of 70)</li> </ul>
Biological	Twiga Insul is inorganic. Does not encourage growth of fungi and vermin.
Dimensional	Twiga Insul is stable under varying conditions of temperature and humidity when applied correctly. Excellent tear strength and not prone to sagging or settling. Rigid slabs have inherently high compression resistance.
Vibration and Jolting Resistance	Conforms to IS 3144/BS 2972.
Moisture Content	Less than 2% in accordance with IS 3144 / BS 2972.
Water Absorption	Less than 2% in accordance with IS 3144/BS 2972.
Shot Content	Nil, exceeding requirements of IS 3144/BS 2972.
Odourless	Conforms to IS 3144.
No Mould Growth	Conforms to IS 3144.
Recovery After Compression	More than 95% in accordance with IS 8183/BS 3958 Part 5.

Density ranges from 10 kg/m<sup>3</sup> to 130 kg/m<sup>3</sup>.

Thickness ranges from 12mm to 100 mm.

Other densities and thicknesses available upon request.

## Thermal Conductivity (K-values) & Thermal Resistance (R-values) of Twiga Insul

### Thermal Conductivity in W/MK

Mean Temp.in DegC	Density in kg/m <sup>3</sup>				
	12	16	24	32	48
10	0.038	0.035	0.031	0.030	0.027
25	0.041	0.039	0.033	0.032	0.030
50	0.048	0.043	0.039	0.035	0.033
100	0.065	0.057	0.047	0.043	0.040

Tolerance : +/-5%

### Thermal Resistance in sq.m.K/W, Thickness 25 mm

Mean Temp.in DegC	Density in kg/m <sup>3</sup>				
	12	16	24	32	48
10	0.66	0.71	0.81	0.83	0.93
25	0.61	0.64	0.76	0.78	0.83
50	0.52	0.58	0.64	0.71	0.76
100	0.38	0.44	0.53	0.58	0.63

Tolerance : +/-5%

### Thermal Resistance in sq.m.K/W, Thickness 50 mm

Mean Temp.in DegC	Density in kg/m <sup>3</sup>				
	12	16	24	32	48
10	1.32	1.43	1.61	1.67	1.85
25	1.22	1.28	1.52	1.56	1.67
50	1.04	1.16	1.28	1.43	1.52
100	0.77	0.88	1.06	1.16	1.25

Tolerance : +/-5%

### Acoustic Insulation Values

Specification Density x Thickness	Average NRC Frequency Range 100Hz-8000Hz
16 kg/m <sup>3</sup> x 50 mm	0.92
24 kg/m <sup>3</sup> x 50 mm	1.00
32 kg/m <sup>3</sup> x 50 mm	1.05
48 kg/m <sup>3</sup> x 50 mm	1.20

Tolerance : +/-5%