

For Better Insulation a Quality Solution



Represented By



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Pakistan Insulations (Pvt) Ltd.

Manufacturer of **Termolan** Rockwool in Pakistan
under Technical collaboration with **Termolan**...Italy



LOOSE WOOL

T/SO



Rockwool is the name given to the fibrous Insulation material produced from various minerals. In the first phase of its production the raw material is melted in the furnace at about 1400°C to 1500°C. The molten material is then fiberized by a high speed spinner. The second phase involves formation of felt from these fibres in the felt forming chamber. The felt thus formed is then stitched to different facing materials depending on the specific end use of the product.

The process of Rockwool formation is purely physical and the fibres are chemically inert with pH neutral (pH7) to slightly alkaline. It is a completely inorganic material with no corrosive properties. Rockwool has excellent thermal insulation properties along with fire prevention ability. It also has very good acoustic insulation properties. Though the thermal insulation properties of Rockwool make it unrivalled in the higher temperature insulation category, its range of application is from -200°C to + 750°C. The melting temperature of the fibres itself is much over 1000°C.

Termolan s.p.a. Italy have been in the business of Rockwool production for over 20 years. In addition they are one of the largest companies in Italy dealing in all types of Insulation materials. The accurate selection of raw material and total dedication towards quality in all the stages of manufacturing has given the Termolan name its present reputation. Termolan products are produced in Pakistan by Pakistan insulations (Pvt.) Ltd. under technical collaboration of Termolan s.p.a. Italy. The Rockwool plant of Pakistan Insulations (Pvt.) Ltd has been provided by the sister concern of Termolan s.p.a. Italy. Termolan products produced in Pakistan represent the same dedication towards total quality.

The usage of Rockwool insulation is essential in reducing the added fuel cost incurred in compensating for the unnecessary energy losses. The usage of Rockwool is recommended in all types of Industries including Cement, Sugar, Power Generation, Petro-Chemical, Chemical, Ship Building, Railway, Air-conditioning, and the Housing Industry.



Loose Wool obtained from melting and then fiberizing of minerals through centrifugal processing reaching diameters of 6 ± 2 microns with a length of 60 ± 10 millimeters.

Weight: Available in Bags of 15 and 20 kgs.
Packaging: In Polyethylene Bags.
Usage: Thermal Insulation of Boilers, Industrial Ovens, for filling double walls, cavities, and Car Mufflers. It can also be used for low temperature insulation.

BLANKETS STITCHED TO:

- _ WIRE MESH T/R20
- _ WIRE MESH ON BOTH SIDES T/R20D



Termolan Blankets stitched with galvanized wire. This Blanket is totally incombustible and can withstand temperatures of over 750°C.

Dimension: Rolls of 10x1, 5x1, 3x1 meters. Also available in widths of .9 and 1.2 meters.
Thickness: 30 to 120 millimeters.
Density: Up to 120 kg/m³.
Packaging: Polyethylene Bags.
Usage: This is the most temperature resistant of the Termolan blanket range. Along with its excellent Thermal Insulation properties it also provides valuable fire protection. Its usage also helps in reducing the noise being emitted from the pipes and vessels it is wrapped around. Termolan T/R20D with wire mesh facing on both sides is also the most vibration resistant of all the Blankets in the above mentioned range. These Blankets are recommended as Industrial Insulation in Chemical industry, Petro-Chemical industry, Cement industry, all types of boilers, and high temperature vessels. This product is manufactured according to ASTM. C592 Class 1 and 2 and BS 3958: Part 3: 1985.





BLANKETS STITCHED TO:

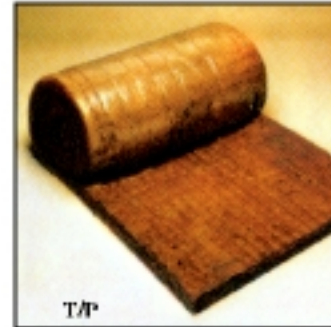
- KRAFT PAPER. T/CK
- POLYETHYLENE T/P
- TAR CPATED PAPER. T/CC
- BITUMIN IMPREGNATED PAPER. T/CB



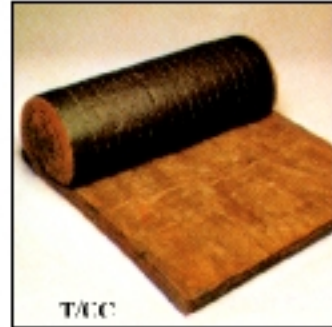
T/CK

All products stitched with either cotton or glass thread

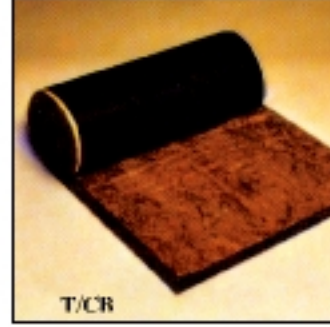
Dimensions: Rolls of 10 x1 or 5 x1 meters.
 Thickness: 30 to 120 millimeters.
 Density: 30 to 90 kg/m³
 Packaging: Polyethylene Bags
 Usage: Thermal insulation of sheds ,Industrial roofs with the insulating material in flat of slightly slanting position. These products are also recommended for the insulation of false ceilings and curtain walls. The Tar coated paper and Bitumin Impregnated paper provide increasing resistance to moisture.



T/P



T/CC



T/CB



BLANKETS STITCHED TO :

GLASS VEIL T/VV



The blankets are stitched to Glass veil which is longitudinally reinforced at every two centimeters.

Dimension: Rolls of 10x1, 5x1 meters.
 Thickness: 30 - 120 millimeters.
 Density: 30 to 90 kg/m³. Also available in densities of up to 120 kg/m³ with double facing material.
 Packaging: Polyethylene Bags.
 Usage: This type of Blanket is specially designed to allow maximum vapour and sound permeability. It is especially recommended for acoustic insulation as in false ceilings. Its thermal insulation properties can also be utilized more economically in Industrial situations where it is used in a two layer insulation with the relatively delicate yet economical Glass faced blankets on the inside with wire mesh faced blankets covering it.



BLANKETS FACING

REINFORCED ALUMINIUM FOIL T/AL

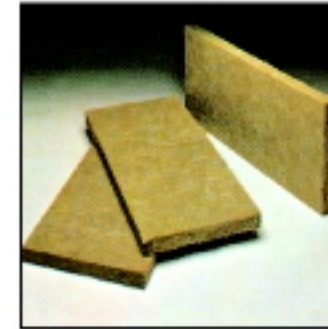


The blankets are stitched to Kraft Paper and then glued to Aluminium Foil simultaneously.

Dimensions: 10x1, 5x1 meters.
 Thickness: 30 to 120 millimeters.
 Density: 30 to 90 Kg/m³
 Packaging: Polyethylene Bags.
 Usage: The Aluminium Foil provides a vapour barrier. This product is especially recommended for use in wrapping around air-conditioning ducts and other situations where condensation is expected.



PANELS



Resinated panels of Rockwool.
 Dimension: 1 x 0.5m.
 Thickness: 20 to 100 millimeters
 Density: 100 to 200 kg/m³
 Usage: Heat Insulation and deadening of floors, partitions, civil and industrial prefabricated walls, general transport field including ship building.



Curtain Wall in Karachi Insulated With Termolan Rockwool T/CK making it the most Energy Efficient Building in the Country





Ideal Choice for Petrochemical and Power Plants





Rockwool Pipe Covers

Rockwool Industrial Pre Formed Pipe Covers Code T/IPS



Temperature: +100°C to + 750°C
 Density: 100Kg/m³ to 140Kg/m³
 Thickness: 25mm, 50mm, 75mm and 100mm
 Pipe Size: From NPS 1/2" to 12"
 Length: 0.9m and 1m
 Packaging: Cartons and Shrinkwrap Polyethylene
 Usage: This product is used on pipes in place of blankets in industries, The Pre Formed Pipe Cover provide better insulation as they fit snugly around the pipe and leave no gaps in between. The advantages offered include ease of application, and increase of productivity during insulation erection thus reducing labour cost. Its use also brings a more superior finish to the Cladding.

CHEMICAL COMPOSITION OF THE FIBRES		
The chemical composition of the Termolan fibres is as follows:		
SILICA	as Si O ₂	43.42 ± 3%
ALUMINIUM	as Al ₂ O ₃	10.38 ± 2%
IRON	as Fe O	12.78 ± 2%
IRON	as Fe ₂ O ₃	14.21 ± 2%
TITINIUM	as Ti O ₂	2.40 ± 2%
MANGANESE	as Mn O	0.20 ± .1%
PHOSPHORUS	as P ₂ O ₅	0.96 ± .1%
CALCIUM	as Ca O	11.60 ± 2%
MAGNESIUM	as Mg O	10.18 ± 2%
SODIUM	as Na O	2.70 ± 1%
POTASHIUM	as K ₂ O	1.06 ± .2%
SULPHUR	as S O ₃	Trace

SOLUBLE CHLORIDE

Less than 6 PPM

pH VALUE

In cold solution 7.05
 In hot solution 7.40

CORROSIVITY

Nil as per A.S.T.M.C. 795 . Not even with Austenitic steel

COMBUSTIBILITY

R.I.N.A. class NON COMBUSTIBLE

DIMENSION OF FIBRES

Diameter 6 ± 2 microns
 Length 60±10 mm

REACTION TO FIRE

Only fibres without facing material, class zero as per DM 26/6/84.

TEMPERATURE RANGE FOR CONTINUOUS USE

Maximum + 750°C
 Minimum - 200°C



Rockwool Pipe Covers

Rockwool Central Air Conditioning Pre Formed Pipe Covers Code T/AC



Temperature: -200°C to +50°C
 Density: 100Kg/m³ to 140Kg/m³
 Thickness: 25mm, 50mm, 75mm and 100mm
 Pipe Size: From NPS 1/2" to 12"
 Length: 0.9m and 1m
 Packaging: Cartons and Shrinkwrap Polyethylene
 Usage: This product is especially designed for use on chilled water pipe lines. The Aluminium Foil covering provides an excellent vapor barrier. The low thermal conductivity of Rockwool is excellent conserving the temperature within the pipe. The ease of application means higher productivity of insulation erection staff. As the Aluminium is pre applied in the factory there is less possibility of Vapor barrier being broken. As this is a totally non combustable product with no fire or fume harazd it is particularly recommended for indoor use.

Density Kg/m		THERMAL CONDUCTIVITY			
		At 50°C	At 100°C	At 200°C	At 300°C
80	Kcal/mh°C	0.036	0.042	0.059	0.089
	W/mK	0.042	0.049	0.065	0.103
100	Kcal/mh°C	0.035	0.041	0.058	0.083
	W/mK	0.041	0.048	0.067	0.097
120	Kcal/mh°C	0.034	0.039	0.055	0.078
	W/mK	0.039	0.045	0.064	0.091

In line with our policy of continuous product development, we reserve the right to change specifications, without notice.





THERMAL CONDUCTIVITY

THERMAL CONDUCTIVITY AT 20°C			
Density 30	λ	0.038 Kcal/mh°C	0.044 W/mK
Density 33	λ	0.034 Kcal/mh°C	0.040 W/mK
Density 40	λ	0.030 Kcal/mh°C	0.035 W/mK
Density 50	λ	0.028 Kcal/mh°C	0.032 W/mK
Density 60	λ	0.027 Kcal/mh°C	0.031 W/mK
Density 70	λ	0.027 Kcal/mh°C	0.031 W/mK
Density 80	λ	0.028 Kcal/mh°C	0.034 W/mK

THERMAL CONDUCTIVITY AT 50°C			
Density 30	λ	0.054 Kcal/mh°C	0.063 W/mK
Density 33	λ	0.050 Kcal/mh°C	0.058 W/mK
Density 40	λ	0.045 Kcal/mh°C	0.052 W/mK
Density 50	λ	0.041 Kcal/mh°C	0.048 W/mK
Density 60	λ	0.040 Kcal/mh°C	0.046 W/mK
Density 70	λ	0.038 Kcal/mh°C	0.044 W/mK
Density 80	λ	0.036 Kcal/mh°C	0.042 W/mK

THERMAL CONDUCTANCE K AT 20°C Expressed in Kcal /mqh°C							
Thickness mm	Density Kg/m ³						
	30	33	40	50	60	70	80
30		1.13	1.00	0.93	0.90	0.90	0.96
40	0.95	0.85	0.75	0.70	0.67	0.67	0.72
50	0.76	0.68	0.60	0.56	0.54	0.54	0.58
60	0.63	0.56	0.50	0.46	0.45	0.45	0.48
80	0.48	0.43	0.38	0.35	0.34	0.34	0.36
100	0.38	0.34	0.30	0.22	0.27	0.27	0.29

THERMAL RESISTANCE R AT 20°C Expressed in mqh°C/Kcal							
Thickness mm	Density Kg/m ³						
	30	33	40	50	60	70	80
30		0.88	1.00	1.07	1.11	1.11	1.03
40	0.05	1.18	1.33	1.41	1.48	1.48	1.38
50	1.31	1.47	1.67	1.78	1.85	1.85	1.72
60	1.58	1.76	2.00	2.14	2.22	2.22	2.07
80	2.10	2.35	2.66	2.85	2.96	2.96	2.76
100	2.63	2.94	2.33	2.57	3.70	3.70	3.45

Insulation Selection Chart by Pakistan Insulations (Pvt) Ltd for Termolan Rockwool Density 100Kg/m³.
Pipework and Equipment up to 750°C

Nominal Pipe Size	Temperature in C°													
	65/69	100/114	150/160	200/214	250/260	300/314	350/360	400/414	450/460	500/514	550/560	600/614	650/660	35/34
CODE	A	B	C	D	E	F	G	H	J	K	L	M	N	P
1/2	40	40	40	50	50	75	75	90	90	90	90	100	100	40
3/4	40	40	40	50	50	75	75	90	90	90	90	100	100	40
1	40	40	40	50	50	75	75	90	90	90	90	100	100	40
1.5	40	40	40	50	50	75	75	90	90	90	90	100	100	40
2	40	40	40	50	50	75	75	90	90	90	90	100	100	40
2.5	40	40	50	65	65	75	80	90	90	90	90	100	100	40
3	40	40	50	65	65	90	90	90	90	100	100	120	120	40
4	40	40	50	65	65	90	90	100	100	120	120	140	140	40
6	50	50	50	75	75	90	90	100	120	120	140	150	180	50
8	50	50	65	75	80	100	100	110	120	140	150	160	180	50
10	50	50	65	75	80	100	110	120	140	140	160	160	180	50
12	50	50	65	90	90	100	120	120	140	160	160	180	190	50
14	50	50	65	90	90	110	120	140	150	160	180	190	210	50
16	50	50	65	90	100	110	120	140	160	180	190	210	210	50
18	65	65	75	90	100	120	140	150	160	180	200	210	210	55
20	65	65	80	90	110	120	140	160	180	190	200	210	220	55
24	65	65	80	100	110	140	150	160	180	200	210	210	220	55
30	65	80	90	110	120	140	160	180	190	200	210	220	230	55

ROCKWOOL SPECIAL PACKING PROGRAM FOR PIPESECTIONS

Approx. Contents per 40 ft. container in linear metres.

Code	20	25	30	40	50	60	70	80	90	100
17	11,340	8,450	6,300	4,725	2,835	-	-	-	-	-
21	11,340	7,875	6,300	3,780	2,835	1,890	1,260	1,244	-	-
27	9,450	6,300	5,040	3,780	2,835	1,890	1,260	1,278	-	-
33	7,815	6,300	5,040	2,835	2,205	1,890	1,260	1,471	-	-
42	6,300	5,040	4,780	2,835	1,890	1,575	1,844	1,427	-	-
48	5,040	3,780	3,450	2,835	1,890	1,260	1,654	1,258	-	-
60	3,780	3,150	2,835	1,890	1,575	1,260	1,427	1,198	987	-
64	-	2,835	2,835	1,890	1,260	1,844	1,405	1,178	987	-
70	-	2,335	2,205	1,575	1,260	1,495	1,236	1,043	951	-
76	-	2,035	2,205	1,575	1,260	1,449	1,218	1,007	830	782
88	-	1,890	1,575	1,260	1,517	1,258	1,043	969	796	657
102	-	1,575	1,260	1,844	1,427	1,188	987	814	766	628
114	-	1,260	1,260	1,471	1,291	1,025	846	782	643	615
121	-	1,260	1,260	1,449	1,198	1,005	830	766	643	599
127	-	1,260	1,078	1,405	1,178	969	844	761	629	602
133	-	1,844	1,471	1,238	1,025	848	782	643	615	502
140	-	1,495	1,427	1,198	987	830	766	629	599	490
158	-	1,258	1,198	1,005	830	766	643	599	490	486
169	-	1,198	1,043	989	798	657	615	502	478	454
194	-	987	846	782	643	615	490	310	354	300
218	-	798	766	629	599	490	466	300	300	260
245	-	643	629	502	478	454	310	290	280	270
273	-	514	490	486	384	300	290	270	260	200
280	-	502	490	466	310	290	280	270	208	200
305	-	466	454	310	290	280	270	200	192	184
324	-	384	310	290	280	270	200	192	184	176
358	-	300	280	270	208	200	192	184	176	188
406	-	-	-	192	184	178	168	168	120	114
456	-	-	-	176	168	120	120	114	108	108
508	-	-	-	120	114	114	108	102	102	96
558	-	-	-	108	108	102	102	96	96	90
610	-	-	-	102	96	96	96	90	90	86

STEEL PIPE SIZES ACCORDING TO ASTM RECOMMENDED PRACTICE C. 450-76

Nominal pipe size inches	Outer diameter inches	Inner diameter Rockwool Pipe sections mm
3/8	0.675	17
1/2	0.840	21
3/4	1.050	27
1	1.315	33
1 1/4	1.680	42
1 1/2	1.900	48
2	2.375	60
2 1/2	2.875	76
3	3.500	89
3 1/2	4.000	102
4	4.500	114
4 1/2	5.000	127
5	5.563	140
6	6.625	169
7	7.625	194
8	8.625	219
9	9.625	245
10	10.750	273
12	12.750	324
14	14.000	356
16	16.000	406
18	18.000	456
20	20.000	508
22	22.000	558
24	24.000	610
26	26.000	660
28	28.000	712
30	30.000	762
32	32.000	813
34	34.000	864
36	36.000	915

