



COLD STORAGE SOLUTIONS

- POLYURETHANE SANDWICH PANELS
- REFRIGERATED MOBILE TRUCKS
- PORTA CABINS
- GSM CABINS



Pakistan Insulations (Private) Ltd.

The Company

Pakistan Insulations Pvt Ltd an ISO 9000 certified company was established in 1990 as a dedicated company to the cause of energy conservation. It started its operation as a manufacturer of Rockwool under technical collaboration with Termolan spa Italy. The company has since insulated numerous prestigious projects in Pakistan and abroad mainly in the fields of petrochemical and power generation.

The company in 1995 started insulation with Polyurethane Foam for Domestic and Cryogenic use. Pakistan Insulations Pvt Ltd has since insulated numerous cold rooms, cold boxes for fishing boats and other cryogenic applications.

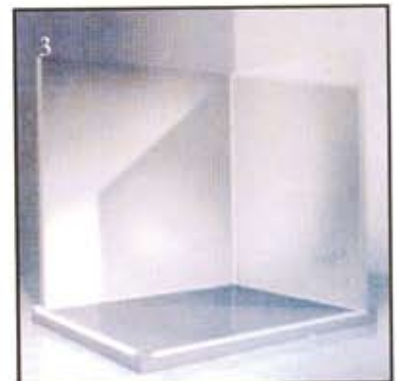
Over the years Pakistan Insulations Pvt Ltd has earned a distinguished reputation for producing quality insulation products. This has been brought about by quality raw material selection and uncompromising dedication to quality during manufacturing process. The total dedication to quality has earned Pakistan Insulations Pvt Ltd the ISO 9000 certification.

The Polyurethane Sandwich panels manufactured by Pakistan Insulations Pvt Ltd represent same dedication towards total quality. The company selects the best quality cladding sheets and Polyurethane Foam to manufacture the Sandwich Panels on its European plant. All the accessories are also selected for their strength and long life.

The sandwich panels manufactured by Pakistan Insulations Pvt Ltd have the lowest thermal conductivity value in the market and are covered with food grade steel cladding (coated or stainless). The interlocking sides are made to fit in a tight manner preventing any passage of air. The doors are fully sealed and made with rigid and strong accessories like hinges and locks.

The insulated refrigerated vehicles are made especially for the climatic and road conditions of the region. They are accompanied by a choice of Eutectic and Forced Air refrigeration system. The cold box is well insulated and based on a rigid and strong frame to withstand the shocks.

Pakistan Insulations Pvt Ltd provides total after sales solution with prompt service whenever required. The highly trained technical staff of Pakistan Insulations Pvt Ltd are cooperative and can assist you in all possible ways like calculating your requirement for refrigeration system & preparing layout.



PAKISTAN INSULATIONS' SANDWICH PANEL SYSTEM

The flexibility of the sandwich panels offered by Pakistan Insulations Pvt Ltd is ideal for solving the numerous insulation problems occurred in lightweight pre-fabrication. These panels offer the unique flexibility to the user to get the cold room disassembled & shifted to other location if required. Particular care is taken over the constant analysis of adequate adhesion of the polyurethane foam to the back of the sheet, proper density of polyurethane over the entire length and its dimensional stability, producing superior products at all times for all applications.

CLADDING

Following options are available in the sheets used as cladding:

- Polyester pre-painted galvanized steel
- Galvanized steel with 200 micron PVC coating system (Plastisol)
- Stainless steel
- Stucco embossed Aluminum

The cladding is precisely formed at the edges in L shape to guarantee superior adhesion between the sheet and polyurethane and is shallow ribbed to provide additional strength and dimensional stability.

INSULATION

All the panels are insulated with polyurethane using foaming agents which are environment friendly and CFC free, but which retain the essential thermal insulation features needed for proper product storage. Panel insulation does not deteriorate over time and does not absorb smells. The panels are neither toxic nor irritating and they do not support the development of fungi or mildew. These products are classified as B2 according to European Fire retardant standards. The high-pressure system used for injecting the polyurethane ensures the highest dimensional stability of the product and ensures closed cell density.

THICKNESS & DIMENSION

Panels are available in **50, 75, 100, 125, 150, 180 and 200 mm** thickness. The standard width of the panels is 1150 mm, a size which has been found to optimize on transport space. Panel length can range up to 9.5 meters and can be produced according to the size required by the customer and / or project demands.

THK	MAX.WIDTH	MAX. LENGTH
100	1150 mm	7000 mm
125 & over	1150 mm	9500 mm



TECHNICAL DATA

TEST	MEASURED VALUE			UNIT	STANDARD				
Density (core)	42			Kg/m ³	DIN EN ISO 845				
Compressive strength	0.21			N/mm ²	DIN 53 421				
Compression	10			%	DIN 53 421				
Flexural strength	0.58			N/mm ²	DIN 53 423				
Bending	13			mm	DIN 53 423				
Water absorption after 24 hrs	1.9			Vol. %	DIN 53 428				
Closed cells	93			%	ISO 4590				
Dimensional Stability	H	W	L	%	DIN 53 431				
-30°C	-0.2	-0.2	+0.2						
+80°C	-0.6	-0.4	-0.3						
+100°C	-0.6	-0.8	+0.2						
Long-term temperature resistance range					-50°C to + 110°C				
Thermal conductivity (K Value)	0.013 Btu/hr. ft. ² °F 0.023 W/m.K								
Transmission Coefficient (U Value)	0.013/ft. Thickness = Btu/hr.ft. ² °F 0.023/meter Thickness = W/m ² K								
Thickness of insulation to be determined by contractor using design U Value									
A: Thermal conductivity "K"	W/m. K	Kcal/hr.m.°C		Btu/hr.ft. °F					
	1	0.860		0.578					
	1.163	1		0.672					
	1.730	1.488		1					
B: Transmission Coefficient "U"	W/m² K	Kcal/hr.m².°C		Btu/hr.ft².°F					
	1	0.860		0.176					
	1.163	1		0.205					
	5.678	4.882		1					
C: Heat transfer "Q"	W	Kcal/hr		Btu/hr					
	1	0.860		3.413					
	1.163	1		3.969					
	0.293	0.252		1					
THERMAL TRANSMISSION									
Thermal conductivity of polyurethane K=0. 023 W/m ² K									
Thickness in mm		50	80	100	120	150	180	200	
Useful U(W/m ² °K)		0.460	0.288	0.230	0.192	0.153	0.128	0.115	
▲ t = Temperature variatio	Q = Thermal Transmission in W/m ²	10	4.60	2.88	2.30	1.92	1.53	1.28	1.15
		15	6.90	4.32	3.45	2.88	2.29	1.92	1.72
		20	9.20	5.76	4.60	3.84	3.06	2.56	2.30
		25	11.50	7.20	5.75	4.80	3.82	3.20	2.87
		30	13.80	8.64	6.90	5.76	4.59	3.84	3.45
		35	16.10	10.08	8.05	6.72	5.36	4.48	4.02
		40	18.40	11.52	9.20	7.68	6.12	5.12	4.60
		45	20.70	12.96	10.35	8.64	6.89	5.76	5.17
		50	23.00	14.40	11.50	9.60	7.65	6.40	5.75
		55	25.30	15.84	12.65	10.56	8.41	7.04	6.32
		60	27.60	17.28	13.80	11.52	9.18	7.68	6.90
		65	29.90	18.72	14.95	12.48	9.94	8.32	7.47
70	32.20	20.16	16.10	13.44	10.71	8.96	8.05		
75	34.50	21.60	17.25	14.40	11.47	9.60	8.62		
80	36.80	23.04	18.40	15.36	12.24	10.24	9.20		

DOORS

Choice of polyurethane insulated doors available in different thickness and applications. They can be either hinged or sliding. All types of doors are equipped with standard high quality fittings and accessories (all imported from Europe) such as safety release handles, heater wires, gaskets, aluminum or stainless steel railing, etc.

Optional accessories, where required, include:

- Hydraulic self closing doors
- Controlled atmosphere doors
- Traffic / Swing doors
- Display thermal glass

LOCKING

The jointing is ensured by the specially sized tongue and groove joints extending along the entire length of the panels, which also provides their alignment. Locking system by cam-locks (imported from Europe), which are permanently anchored into the injected rigid polyurethane foam core during the manufacture of the panels, tightly joins the panels into a unified assembly. The system ensures total air tightness to the cold store, and increases the strength and stability of the structure. Locks are imported from Europe.

FLOOR INSULATION

For large, medium, small cold stores, Pakistan Insulations recommends P.U. boards for floor insulation. For large forklift operated cold rooms i.e. more than 7 meters height, RCC over PU is more effective due to high compressive strength.

For best result, a vapor proof barrier e.g. polyethene sheets should be laid down under and above the P.U. boards.

For large low temperature cold store applications, Pakistan Insulations recommends and can assist in the design of under ground pipe ventilation to prevent any ice formation underneath the cold store.

ACCESSORIES

There is a vast range of accessories available to complete the Pakistan Insulations Cold store sandwich panel so that the system can be tailored to the specific demands of each installation

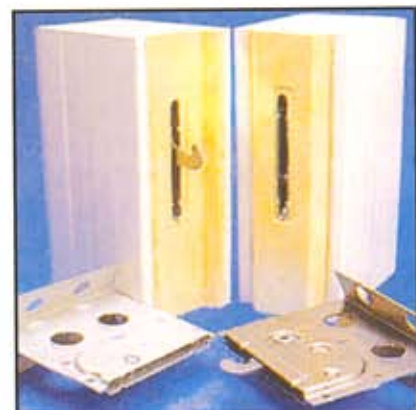
SLIDING DOOR



HINGED DOOR



CAMILOCK SYSTEM



VEHICLE COLD STORAGE BODIES

Our reliable insulated vehicle bodies are based on proven and well-researched technology and construction techniques. The average refrigerated body consists of six individually insulated panels that are reinforced with embedded steel frames to give maximum strength and durability. All outer corners and edges are protected by specially extruded attractive aluminum profiles. Temperatures can range from + 15°C to -20°C. Rigid Polyurethane sectional wall, roof and floor elements are built in single spans up to 7 meters and to vehicle chassis size and type. Thoroughly reinforced & weather sealed opening is provided in the front wall for refrigeration units. The internal floor is of a high-grade chequered aluminium finish plate or aluminium extruded profiles laid over reinforced panels covered with WBP plywood (marine plywood optional)

Truck bodies are available to suit pickups, truck, van, trailers and semi trailer (up to 40ft long.)

Truck bodies are supplied with doors manufactured individually to meet each client's specific requirement. This includes everything from double leaf rear doors with 270° opening to single leaf doors or side hatches. All doors are fitted with top quality European and American stainless steel hardware & provided with PVC strip curtains to reduce infiltration up to 50% during loading/unloading.

Pakistan Insulations Pvt Ltd could supply the vehicle cold storage bodies with both Eutectic & Forced air systems, depending on the client's requirement



PORTA-CABINS

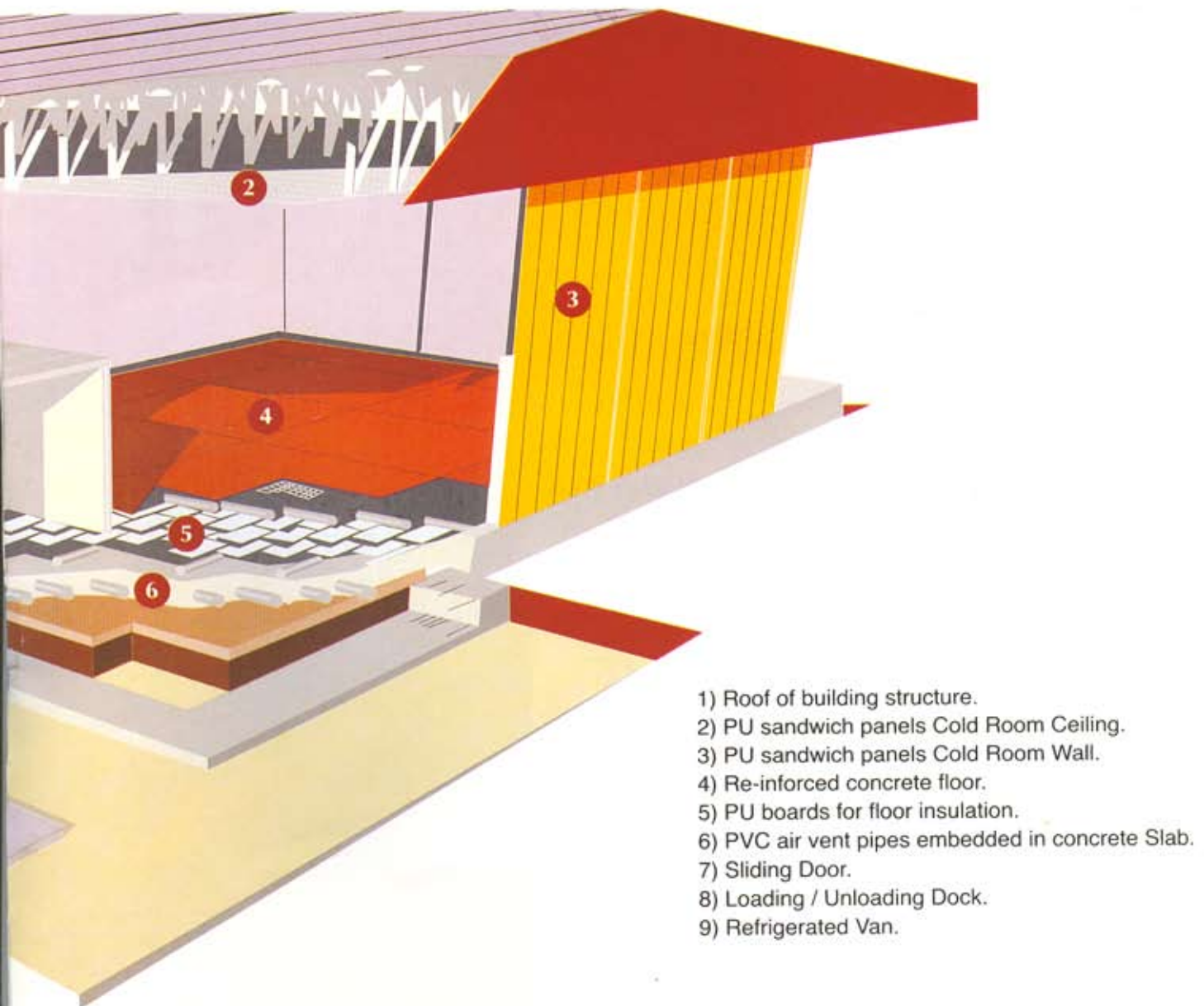
Pakistan Insulations Pvt Ltd also supplies the porta-cabins specially designed to meet various client's requirements for following applications:

Factory-built skid-mounted portable cabins for instant accommodation upon delivery. Electrical wiring and fixtures, drainage, sanitary ware and pipes are pre-connected to their respective inlets and outlets built in skid for ready coupling to external supplies.

Site-erected, re-locatable modular accommodations Fast assembly & dismantling of modular building components supplied in knockdown form for short or medium-term accommodation. These structures offer the advantages of occupying very little space when dismantled for transport & storage. Electrical, drainage and sanitary pipes are prebuilt in panels. Sanitary ware and electrical fixtures are prelocated in our factory into their appropriate panels for easy removal and fitting. Precut profiles and fixtures are fully recovered upon dismantling of building since no permanent fixing devices are used for assembly.

GSM CABINS

Factory fitted or site erected GSM cabins have the same fine finish as that of refrigerated truck bodies. These cabins are specially designed & built to undertake rough weather conditions & mechanical stresses. To achieve this special reinforcement is provided in the walls, ceiling & floor panels. GSM cabins could also be supplied with the necessary accessories like air-conditioning units, standby generator sets, intelligent alarm systems & electrical connections as an option.



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