

PUF Panels

COOLSWAY as single window solution for cold storage



Advantage PUF Panels

- High thermal efficiency ensures low heat transfer means low refrigeration load
- Reduces operational cost. Major cost for any cold chain operation is electricity. Lower the refrigeration load, lower the electricity consumption.
- The sandwiched panel has significant mechanical strength, which makes it possible to go for larger spans as well as large partition walls.
- It gives aesthetic appearance, easy housekeeping.
- Panels are joined with CAMLOCK and also additionally joint with tongue and groove configuration.
- It is easy to erect or dismantle the panels.
- The thermal efficiency of panel does not deteriorate over a period of time, making it long lasting insulation solution.

Recommended IS Codes for cold storage:

1. Overall Heat Transmission Coefficient : IS 661-2000 and IS 3792
 2. Insulation Section of cold storage design : IS 661-2000
- Thermal Conductivity (K) of the material decides the insulation property of the material. Lower the K value, better the insulation property. K value of some of the insulation materials are given below:

Mineral Wool:	0.028 W / mK	[Open Cell]
EPS:	0.036 W / mK	[Open Cell]
PUF:	0.023 W / mK	[Close Cell]

PUF is better insulating material than rest of the two. More over it is close cell. The open cell allows moisture ingress and deposition causing poor insulation. Since K value for PUF is lower than rest, so for the same insulation effect, the thickness required by PUF will be lesser than rest two, means more space in cold storage ^{See table below}. Major advantage of better insulation is energy saving as well as lesser cost on maintenance of refrigeration compressors.

Insulation Selection

Name of Material	Insulation thickness in mm, Temp in °C			
	-30 to -20	-20 to -15	-15 to -4	-4 to +2
Mineral Wool 24-48 Kg/m ³	175	150	125	100
EPS 18Kg/m ³	175	150	125	100
PUF 40 Kg/m ³	120	100	80	60



COOLSWAY Plant Facilities at Ghaziabad, UP



ISO 9001:2008, ISO 14001:2004 and OHSAS 18001:2007 certified company

*All data, design, specifications and calculations are indicative and for reference only. This may be changed.

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Energy Calculation at a Glance

$K = (Q \times L) / (A \times \Delta T)$
 Q is time rate of heat flow through unit area A and unit thickness L when unit temperature difference ΔT is maintained

An energy calculation with certain assumption just to understand saving in terms of money:
 Storage capacity 6000 MT. Size 32m (L) x 32m (W) x 18m (H)

Conventional System

WALL - Brick wall 225mm (9"), Cement 12mm both side, EPS 100mm, Aluminium foil 0.05mm
 CEILING- EPS 100mm, RCC slab at roof.
 FLOOR- EPS 60mm, after tar felting and finish with concrete PCC (75mm).

Thermal conductivity of EPS 0.036 W / mK. For ambient temperature of 40 °C and operation at 6 °C, thermal transmission values:

Q wall and Ceiling = 12.24 W/m²

Q Floor = 9.06W/m²

For total area of wall, ceiling and floor are 1152m², 1024m², 1024m² respectively,

Q (Total) = 35.91 KW

Modern PUF Panel System

WALL – PUF Panel 80mm
 CEILING – PUF Panel 100mm
 FLOOR – As in case of conventional system

Thermal conductivity of PUF 0.023 W / mK. For ambient temperature of 40°C and operation at 6 °C, thermal transmission values:

Q wall and Ceiling = 9.78 W/m²

Q Floor = 7.82 W/m²

For total area of wall, ceiling and floor are 1152m², 1024m², 1024m² respectively,

Q (Total) = 29.28 KW

Saving by putting modern PUF technology is 35.91-29.28 = 6.63 KW at 100% efficiency. If plant runs for 24 hours, units saved will be 6.63x24=159 Units. Cost of a unit of electricity is Rs 6.00, saving per day = 159x6=Rs 954, saving in month = 954*30= Rs 28641. **Saving in a year = 28641*12 = Rs 343699**

Opt PUF Panels →

Energy Saving

Early Revenue Earning

Less Load on refrigeration unit

Mechanical Strength

Long Life

Aesthetic look

Better profitability

Maintenance Free

Easy housekeeping

Fast deployment



PUF Panels at COOLSWAY Warehouse

Panels of various thicknesses and lengths are manufactured at COOLSWAY plant. Some common dimensions:

Up to 3m: 60mm, 80mm, 100mm, 120mm

Up to 5m: 60mm, 80mm, 100mm, 120mm

Up to 7m: 60mm, 80mm, 100mm, 120mm

Option for corners: instead of flushing, corner panel is preferred. Up to 7m of corner panel can be manufactured in the plant.

All panels are thoroughly tested for CAM LOCK setting, PUF quality and filling, sheet wavering and finally dimension and thickness. COOLSWAY product is time tested and proven.

For any enquiry, please contact:

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