POLAR-BOARD

OFFICE SANWICH PANELS

COMPANY

C A T A L O G

POLAR-BOARD

SANDWICH PANELS



ROOF PANEL & WALL PANEL

Highly durable metallic composite urethane panel with outstanding insulation property.

POLAR-BOARD is a sandwich insulation panel with a rigid polyurethane foam core, producing excellent high heat insulation effects.

Which C.M. MANUFACTURING CO., LTD. contributes to productivity improvement and energy saving in the livestock industry in South – East Asia including Thailand with our long years of technology and quality developed in Japan.

PRODUCT FEATURES

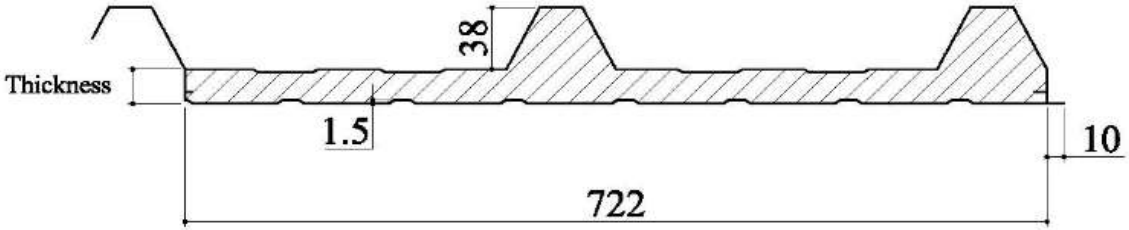
- Finish sheet with polyurethane insulation and articulate by steel coated with galvanizes.
- Materials are durable and last in environment for long.
- Good thermal insulation properties because have high.

  R-Value (R-Value = Value of thermal resistivity) and low

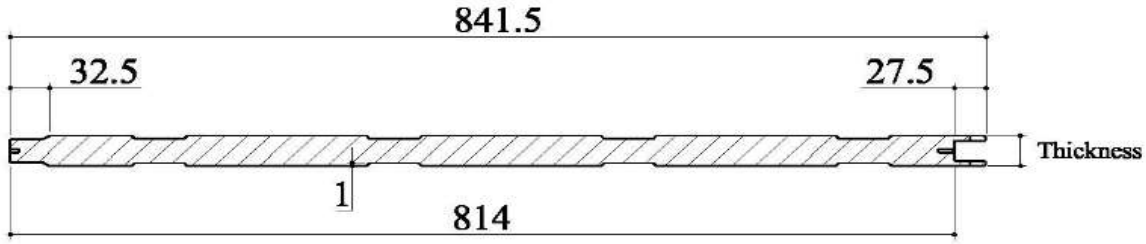
  K-Value (K-Value = Value of thermal conductivity).
- The product is mixed with flame retardant.
- The product is lightweight convenient and easy to install
- Production system is a production line of continuous. Which can be set the length of plate according to customer requirements.
- Production quality control standards by engineers of Japan.
- Production is water blowing system using water as an ingredient and injection forming. This Eco-friendly does not destroy the Ozone layer and causing global warming. On Japan and international standards.

Dimension

1. POLAR-BOARD Roof Panel



2. POLAR-BOARD Wall Panel



R&K Values of POLAR-BOARD

Roof and Wall Panel

Products	Thickness (mm)	Weight (Kgs)	R-value			
			m^2 K/W	m^2h^oC/kcal	cm^2s^oC/cal	ft^2 F/BTU
POLAR-BOARD Roof G I (metal sheet/Aluminium Foil)	25	5.40	1.06	1.23	4.43	6.01
	50	6.40	1.95	2.26	8.16	11.07
POLAR-BOARD Roof G II (double-sided metal sheet)	25	5.40	1.06	1.23	4.43	6.01
	50	6.40	1.95	2.26	8.16	11.07
POLAR-BOARD wall (double-sided metal sheet)	30	8.00	1.07	1.24	4.48	6.07
	40	8.40	1.42	1.65	5.94	8.06
	50	8.70	1.78	2.90	7.45	10.10

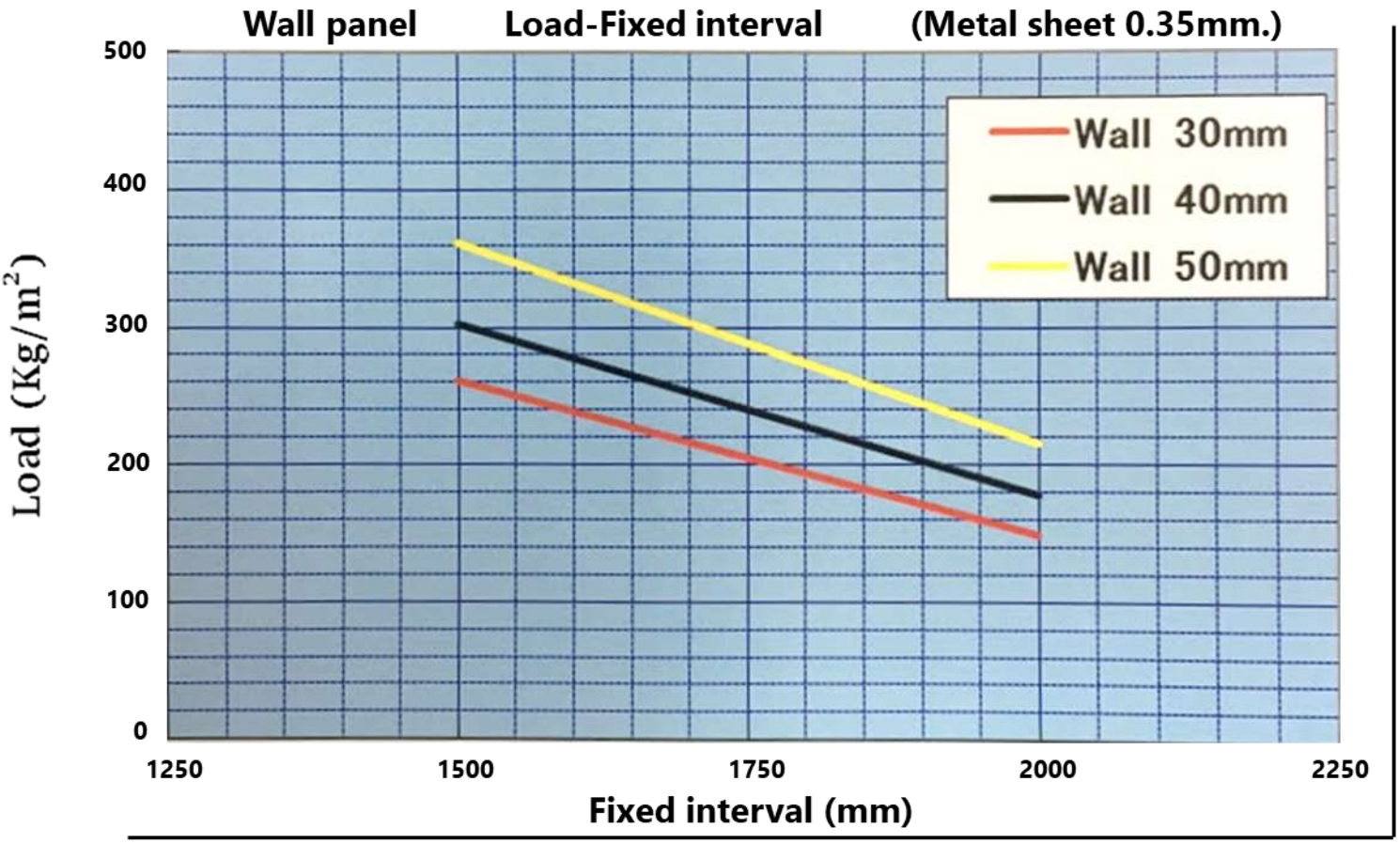
Products	Thickness (mm)	Weight (Kgs)	K-value			
			W/m^2K	$kcal/m^2h^oC$	cal/cm^2s^oC	BTU/ft2F
POLAR-BOARD Roof G I (metal sheet/ Aluminium Foil)	25	5.40	0.94	0.81	0.23	0.17
	50	6.40	0.51	0.44	0.12	0.09
POLAR-BOARD Roof G II (double-sided metal sheet)	25	8.30	0.94	0.81	0.23	0.17
	50	9.30	0.51	0.44	0.12	0.09
POLAR-BOARD wall (double-sided metal sheet)	30	8.00	0.93	0.81	0.22	0.16
	40	8.40	0.70	0.61	0.17	0.12
	50	8.70	0.56	0.34	0.33	0.10

*** Remark : R&K Values for metal sheet TCT 0.35 mm.

Compared the R&K Values to other materials

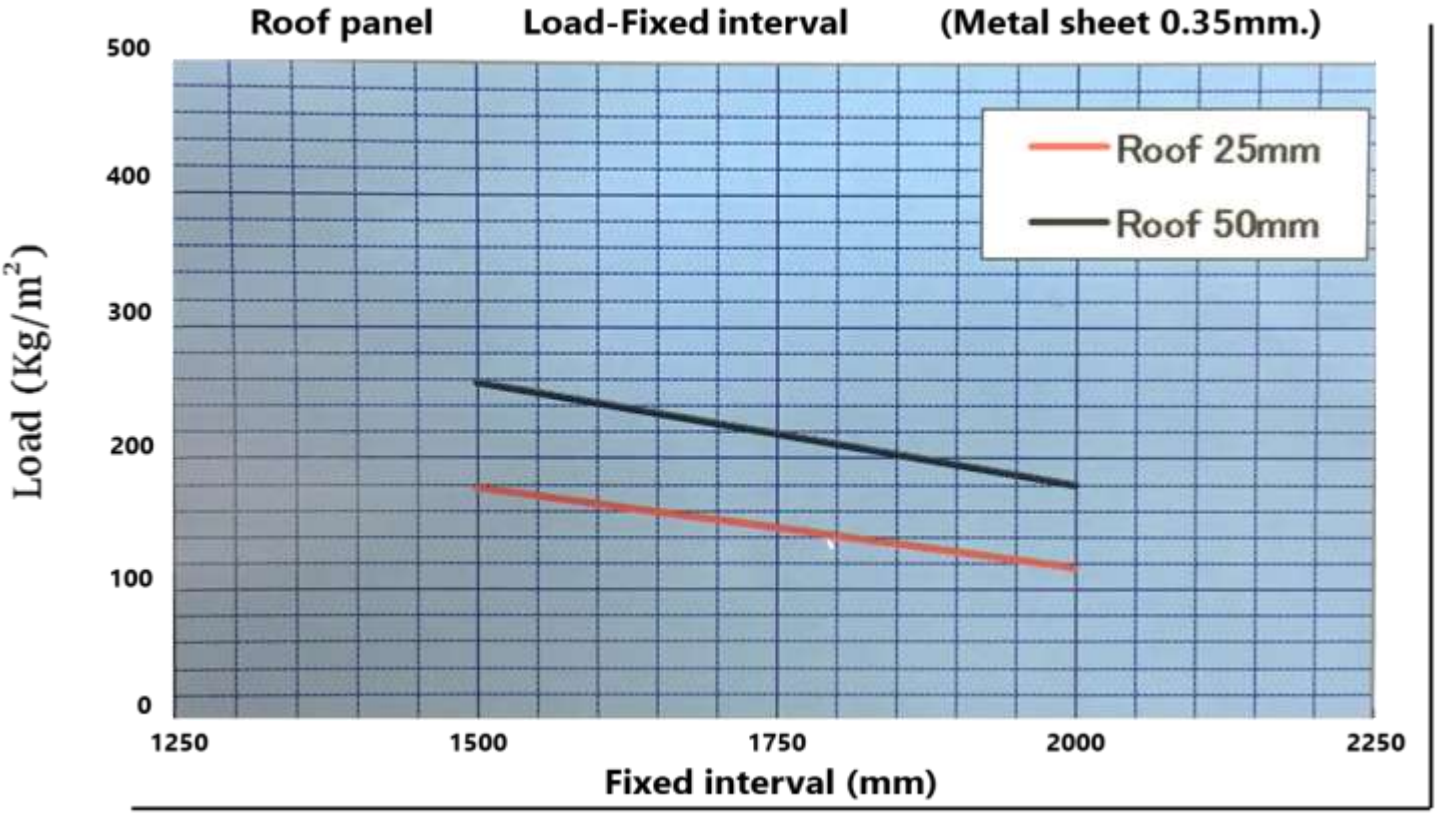
Item	POLAR-BOARD	lightweight brick	Concrete Blocks	Red Blick	Gypsum Board
R-Values (m2 K/W)	1.07-1.78	0.58	0.149	0.34	0.04
K-Values (W/m^2K)	0.56-0.93	0.089-0.132	0.519	0.473	0.14-0.19

Loading test of POLAR-BOARD: Wall Panel



Thickness of panel (mm.)	WALL					
	Purlin Span (m.)					
	1.5	1.6	1.7	1 .8	1.9	2.0
	Load (Kg/m2)					
30	261	240	220	195	175	148
40	303	280	260	225	200	178
50	361	338	300	278	240	216

Loading test of POLAR-BOARD: Roof Panel



Thickness of panel (mm.)	ROOF					
	Purlin Span (m.)					
	1.5	1.6	1.7	1.8	1.9	2.0
	Load (Kg/m²)					
25	178	162	158	140	124	116
50	260	240	222	210	200	180

POLAR-BOARD

Trial

Subject: Performance comparisons of POLAR-BOARD with Curtain PVC wall.

Study title : 1. Energy 2. Productivity

Laboratory animal : Broiler

House size: Width 12.0 m. X Length 120.0 m.

Trial period: April 2014 to February 2015

Table 1 : The table compares the cost of electricity per generation

Item	1st House (PVC Curtain)	2nd House (POLAR-BOARD)
Electricity units	8,683	7,892
Amount of money	38,118	34,645

*** Remark: Electricity price per unit = 4.39 THB.

Table 2 : The table compares the productivity between PVC curtain with POLAR-BOARD.

Item	1st House (PVC Curtain)	2nd House (POLAR-BOARD)
Life of party	43	43
Mortality rate	3.49	4.79
Average Weight	2.75	2.97
Meat production per Sq.m.	63.97	68.95



Table 3 : The table compares the temperature on the wall inside the house.

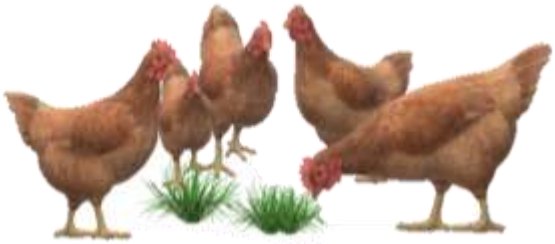
Item	1st House (PVC Curtain)			2nd House (POLAR-BOARD)		
	No.	Left side	Right side	No.	Left side	Right side
In front of the house (30 m.)	1	29.9	29.2	1	28.7	27.1
	2	29.8	29.9	2	28.5	27.8
Behind the house (90 m.)	1	31.0	31.1	1	29.7	29.6
	2	31.0	30.9	2	29.9	29.5
Average	30.33			28.85		
Diff	1.48					

*** Remark: The outside temperature was 40 degree Celsius

Conclusion

1. POLAR-BOARD house with electricity price cheaper than PVC certain housing about 3,473 THB per one production cycle.
2. The chicken house POLAR-BOARD with loss rates higher chicken house PVC curtains. However, the growth rate, averaged weight and the average weight per volume of meat. Sq.m. of chickens in the POLAR-BOARD housing will provide better performance.
3. Temperatures in the area beside the house POLAR-BOARD under PVC curtain house 1.48 degree Celsius.

Reference Project



Machines for the production of insulation panels

ISO–R

(Rigid polyurethane component liquid)

"ISO-R" is blend of polyol (R) and isocyanate (P) components, which are mixed and foamed in an agitator then hardened to form rigid polyurethane foam.

R : P drum

ISO –R foam

Rigid polyurethane foam provides self-adhesive properties during forming and outstanding thermal insulation efficiency making it ideal as a construction material and in refrigeration and freezer applications.

Physical Properties of ISO-R

Property	Values					Standard
	Wall panel			Roof panel		
	30 mm	40 mm	50 mm	25 mm	50 mm	
Over all density (Kg/m^3)	46	42	40	50	42	-
Core density (Kg/m^3)	38	35	34	42	37	ASTM D 1622
Compressive Stress (N/cm^2) 10% compression	11.2	11.5	12	14.7	12.5	ASTM D 1621
Dimensional Stability (%)						ASTM D 2126
At +70 °C	Max 1.2	Max 1.4	Max 1.5	Max 1.5	Max 1.2	
At -30 °C	Max 0.3	Max 0.6	Max 0.6	Max 0.8	Max 0.4	
Water absorption ($g/100\ cm^2$)	0.6	0.6	0.5	0.5	0.5	JIS A 9521
Flammability	B3	B3	B3	B3	B3	DIN 4102
Thermal conductivity (W/m^2K)	0.028	0.028	0.028	0.028	0.028	JIS A 9521

For Product Facilities

Machines for mixing ISO - R

LET'S TALK, CONTACT US

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