

[HEAT TRANSMISSION EFFICIENCY ANALYSIS]

1. HEAT TRANSMISSION RESULT ACCORDANCE WITH THERMAL CONDUCTIVITY

Item Name	Thermal Conductivity of Insulation Kcal/mh °C (w/m °C)	Heat Transmission of 50mm T Panel (Kcal/m²h °C)	Heat Transmission Resistance (1/K)	Remark
Construction Wall Panel (Rockwool)	0.036(0.042)	0.637	1.5688	KSF 4724

* $1 \text{ w/m}^\circ\text{C} = 0.85998 \text{ kcal/mh}^\circ\text{C}$

2. HEAT TRANSMISSION ANALYSIS

* Heat Transmission (K) : $\text{kcal/m}^2\text{h}^\circ\text{C}$ $K = 1/\text{Heat Transmission Resistance}(R)$

* Heat Transmission Resistance(R) = $(1/a^1) + (d/\lambda) + (1/a^0)$

λ	Thermal Conductivity (Kcal/mh °C)
d	Thickness of Insulation(m)
$1/a^1$	Heat traveling Resistance($\text{m}^2\text{h}^\circ\text{C}/\text{kcal}$)of inner skin
	Exterior wall(0.13)-Regulation on No.2001-118 of Construction Transportation Bureau
$1/a^0$	Heat traveling Resistance($\text{m}^2\text{h}^\circ\text{C}/\text{kcal}$)of outer skin
	Exterior wall(0.05)-Regulation on No.2001-118 of Construction Transportation Bureau

Therefore, **The Heat Transmission** value of 50T Rockwool Insulated Wall panel is,
 $0.13 + (0.05/0.036) + 0.05 = 1.5688(\text{Heat Transmission Resistance})$
 $\Rightarrow 1 / 1.5688 = \underline{\underline{0.637 \text{ kcal/m}^2\text{h}^\circ\text{C}}}$

Dongyang Panel Industry Co., Ltd

DONG SHIN ENGINEERING CORP.


D. J. LEE / GENERAL MANAGER

KOREA CONSTRUCTION MATERIALS TEST RESEARCH INSTITUTE

TEST(INSPECTION) REPORT

Application No. : TE 03-2246

Application date : 2003.06.11

Applicant : Mr. Kwon, O B Dongyang panel industry Co., Ltd.

Address : 17-21, Sangsu-ri, Yangju-kwun, Kyonggy Province

Specimen : Rockwool Insulation Board(90K 50mm)

TEST RESULT

Test Items		Result	Test method
Thickness(mm)		53	KS L 9102-97
Density(kg/m ³)		89	
Heat Shrinkage temperature(°C)		745	
Heat Transmission (W/m.K)	Average Temp. : 70°C	0.042	

- The Purpose of test report : Quality Management

Remark : 1. This test report is a result from the test by the specimen provided by applicant and it is not allowed to be used for other purpose except above usage.

Manager : Mr. Choi Yongmuk (02)3415-8815. 8807

June 19, 2003

CHIEF OF KOREA CONSTRUCTION MATERIALS TEST RESEARCH INSTITUTE

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[HEAT TRANSMISSION EFFICIENCY of Rockwool Roof Panel]

HEAT TRANSMISSION ANALYSIS

Thickness (mm)	50mm T	75mm T	100mm T
Heat traveling Resistance(m^2 h $^{\circ}C$ /kcal)of inner skin	0.1	0.1	0.1
Heat traveling Resistance(m^2 h $^{\circ}C$ /kcal)of outer skin	0.05	0.05	0.05
Thermal Conductivity (Kcal/mh $^{\circ}C$)	0.034	0.034	0.034
Thickness of Insulation / Thermal Conductivity	1.4706	2.2059	2.9412
Heat Transmission Resistance(1/K)	1.6206	2.3809	3.1412
Heat Transmission kcal/mh $^{\circ}C$	0.6171	0.4200	0.3184

*Calculation of Heat Transmission Efficiency for Rockwool Roof Panel

- ▶ Heat Resistance of inner skin + (Thickness of Insulation / Thermal Conductivity) + Heat Resistance of outer skin = Heat Transmission Resistance
- ▶ 1/ Heat Transmission Resistance = Heat Transmission Efficiency

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[HEAT TRANSMISSION EFFICIENCY of Rockwool Wall Panel]

HEAT TRANSMISSION ANALYSIS

Thickness (mm)	50mm T	75mm T	100mm T
Heat traveling Resistance($m^2 h^\circ C/kcal$)of inner skin	0.13	0.13	0.13
Heat traveling Resistance($m^2 h^\circ C/kcal$)of outer skin	0.05	0.05	0.05
Thermal Conductivity (Kcal/mh $^\circ C$)	0.034	0.034	0.034
Thickness of Insulation / Thermal Conductivity	1.4706	2.2059	2.9412
Heat Transmission Resistance(1/K)	1.6506	2.4109	3.1712
Heat Transmission kcal/mh $^\circ C$	0.6058	0.4148	0.3153

*Calculation of Heat Transmission Efficiency for Rockwool Roof Panel

- ▶ Heat Resistance of inner skin + (Thickness of Insulation / Thermal Conductivity) + Heat Resistance of outer skin = Heat Transmission Resistance
- ▶ 1/ Heat Transmission Resistance = Heat Transmission Efficiency

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