T.C.

KOCAELI UNIVERSITY

ENGINEERING FACULTY

DEPARTMENT OF CIVIL ENGINEERING

20/06/2023

HOT-PLATE THERMAL CONDUCTIVITY TEST ON BARKKAFT INSULATION PAINT MATERIAL SENT BY ALTAI YAPI ENDUSTRI A.Ş. AND REPORTING THE RESULTS

1. PURPOSE OF THE REPORT

The purpose of this report is to document the thermal conductivity analysis of the **BARKKAFT** insulation paint material, which was previously tested and reported within the scope of the letter provided by **ALTAI YAPI ENDUSTRI A.Ş.** company, as assigned to me according to the letter with reference number 09.06.2023-E.425293.

2. THE CONDUCTED WORK

BARKKAFT insulation paint material sent to me by **ALTAI YAPI ENDUSTRI A.Ş.** was applied to a known thermal conductivity plate and tested using a hot-plate thermal conductivity device according to EN 12664. The test results were obtained through a computer connected to the device. After conducting two separate thermal conductivity tests, one with the paint and one without the paint, the thermal conductivity coefficient (λ) of the paint was determined by calculating the difference between the two results.

3. TEST RESULTS

The test results of the conducted experiments are presented in Table 1, Table 2, and Table 3.

Umuttepe Kampus **Tel : (262) 3033273**

41380 **İZMİT/KOCAELI**

T.C.

KOCAELI UNIVERSITY

ENGINEERING FACULTY

DEPARTMENT OF CIVIL ENGINEERING

Table 1. Experimental conditions and device data.
Experimental dates: 15/02/2023-16/02/2023

Details regarding the device and experiment	
Type of device	A single-piece device
Test device	Hot-plate
Direction of material	Horizontal
Position of the hot surface of the experimental sample	Top
Direction of heat flow	Downwards
Width of the experimental sample (mm)	300
Length of the experimental sample (mm)	300
Thickness of the experimental sample (mm)	50
Laboratory ambient temperature during the experiment (℃)	21
Laboratory ambient humidity during the experiment (%)	50±5
Temperature difference across the device plates (℃)	10

Conditioning of the sample: The sample was conditioned at 20°C and 80% relative humidity. The experiment was conducted at an ambient temperature of 21°C with a 95% confidence interval.

Table 2. Test screen data.

T1	T2	T3	T4	T5	
30.1	30.4	30.3	30.3	30.4	
T6	T7	T8	T9	T10	
20.4	19.8	20.4	19.9	20	
HOT		COLD		DIFFERENCE	
20	30.3	10	20.1	10.2	
Power (W)	Thickness (m)	Area (m^2)	R*(m^2K/W)	λ (W/mK)	U*(W/m^2K)
1.91	0.05	0.11	0.582	0.085	1.702

Umuttepe Kampus **Tel : (262) 3033273**

41380 **İZMİT/KOCAELI**

T.C.

KOCAELI UNIVERSITY

ENGINEERING FACULTY

DEPARTMENT OF CIVIL ENGINEERING

Tablo 3. Test screen data for the plate and the applied Barkkaft insulation paint.

T1	T2	T3	T4	T5	
30.3	30.5	30.1	30.2	30.4	
T6	T7	T8	T9	T10	
20.6	20.3	20.4	20.1	20.2	
HOT		COLD		DIFFERENCE	
20	30.3	10	20.32	9.98	
Power (W)	Thickness (m)	Area (m^2)	*R(m^2K/W)	λ (W/mK)	U*(W/m^2K)
1.57	0.052	0.11	0.582	0.074	1.430

*R and U values cannot be displayed on the test screen. They have been calculated externally and provided here.

By taking the thermal resistance differences from the data in Tables 2 and 3, the R-value of the insulation paint has been determined using the formula R = d/λ, where λ (lambda) represents the thermal conductivity. Through calculations, the thermal conductivity coefficient (λ) of **Barkkaft insulation paint has been determined as 0.018 W/m.K.**

Assoc.Prof.Dr. Salih Taner YILDIRIM

Umuttepe Kampus **Tel : (262) 3033273**

41380 **İZMİT/KOCAELI**