

TERRESTRIAL HEAT FLOW AND  
THERMAL CONDUCTIVITY  
IN SOUTHWESTERN VIRGINIA

by

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TABLE I

## Thermal Conductivity of Pre-Cambrian and Cambrian Samples

Sample	Density (gm/cm <sup>3</sup> )	Thermal Conductivity (mcal/cm-sec-°C)		
		K <sub>z</sub>	K <sub>x</sub>	K <sub>y</sub>
Pre-Cambrian				
Lynchburg (gneiss)	2.72	4.90	6.47	7.56
Cambrian				
Unicoi (sandstone)	2.64	10.7	10.1	
Unicoi (siltstone)	2.76	6.80	6.56	
Unicoi (basalt)	2.85	6.32 6.31*	9.62	9.33
Hampton (shale)	2.76	7.44	7.42	
Erwin (quartzite)	2.64	15.8	15.4	
Shady (dolomite)	2.83	12.4	12.3	
Shady (dolomite)	2.84	14.4	14.0	
Shady (dolomite)	2.82	13.1	13.8	
Shady (dolomite)	2.82	11.4	11.4	
Wytheville (dolomite)	2.82	13.7	13.3	
Rome (siltstone)	2.69	6.51 5.87*	6.94	7.67
Rome (mudstone)	2.67	3.90	6.30	
Elbrook (dolomite-ls.)	2.77	7.66	8.85	
Elbrook (dolomite)	2.83	9.18	9.16	
Cambrian and Ordovician				
Knox (dolomite)	2.82	11.1	11.5	

\* second specimen taken from the same sample

TABLE II.

Thermal Conductivity of Ordovician, Silurian,  
Devonian, and Mississippian Samples

Sample	Density (gm/cm <sup>3</sup> )	Thermal Conductivity (mcal/cm-sec-°C)		
		K <sub>z</sub>	K <sub>x</sub>	K <sub>y</sub>
Ordovician				
limestone	2.73	7.33	7.34	
limestone	2.70	6.90	7.32	
Liberty Hall (limestone)	2.68	7.20	7.50	
Bays (sandy shale)	2.73	6.31 5.63*	7.64	7.10
Moccasin (limestone)	2.69	7.05	7.37	
Moccasin (mudstone)	2.65	4.75	6.18	
Eggleston (shale)	2.70	4.55 4.48*	6.75	6.39
Juniata (sandstone)	2.54	12.1	12.0	
Silurian				
Rose Hill (sandstone)	3.00	14.7	15.7	
Devonian				
Millboro (carb. shale)	2.26	2.17	5.26	
Millboro (sandstone)	2.27	4.46	5.51	
Brallier (sandstone)	2.65	10.6	12.0	
Brallier (shaly ss.)	2.62	8.32	9.63	9.32
Chemung (sandstone)	2.72	9.20	8.92	
Mississippian				
Price (sandstone)	2.58	11.9	12.8	
Price (sandstone)	2.61	10.7	12.1	
Stroubles (mudstone)	2.61	5.69	6.90	

\* second specimen taken from the same sample

TABLE III

Thermal Conductivity of Samples Cored at  
Angles to the Bedding or Foliation

Sample	Thermal Conductivity (mcal/cm-sec-°C)		
	K <sub>45°</sub>	K <sub>30°</sub>	K <sub>60°</sub>
Elbrook (ls.-dolo.)	8.28 8.25*		
Millboro (carb. shale)	2.48 3.69*		
Brallier (sandstone)	11.0 11.3*		
Brallier (shaly ss.)	8.63 8.98*		
Price (sandstone)	11.4 11.4*		
Lynchburg (gneiss)		7.33 5.29*	10.1 6.08*
Unicoi (basalt)		6.97 7.14*	7.32 7.70† 8.79*
Rome (siltstone)		6.78 6.62	6.24 6.65† 6.83*
Bays (sandy shale)		5.81 6.63† 6.64*	6.66 7.30*
Eggleston (shale)		3.98 5.58† 5.10	6.03 6.20*

\* calculated value using K<sub>z</sub> and K<sub>x</sub>

† second specimen taken from the same sample