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DATE: Jan. 15, 1998

To: J.E. Pritchett
Superior Products International II, Inc.

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FROM: Dave Taylor

Total Number of Pages (Including This): 1

MESSAGE:

Dear Sir:

We used the ASTM Standard Test Method for Thermal Diffusivity of Solids by the Flash Method (E1461-92) and the Standard Test Method for Determining Specific Heat Capacity by Differential Scanning Calorimetry (E1269) to measure the thermal diffusivity (α) and the specific heat C_p of Super Therm paint. The thermal conductivity (λ) was calculated as a product of these quantities times the bulk density (d), i.e. $\lambda = \alpha C_p d$.

Sincerely,

David L. Taylor

David L. Taylor
Researcher

UNCOATED
METAL PLATE

TABLE 4

Thermal Conductivity Calculations

Sample (No.)	Temp. (C)	Density (gm cm ⁻³)	Specific Heat (W-g-gm ⁻¹ K ⁻¹)	Diffusivity (cm ² sec ⁻¹)	Conduct. (W-cm ⁻¹ K ⁻¹)	Conduct. (BTU *)	Temp (F)
Plate	23.0	7.746	0.4407	0.14800	0.50523	350.54	73.4
	50.0	7.746	0.4638	0.14700	0.52808	366.39	122.0
	75.0	7.746	0.4800	0.14200	0.52796	366.10	167.0
	100.0	7.746	0.4951	0.13800	0.52925	367.20	212.0

* (BTU in hr⁻¹ ft⁻² F⁻¹)

✓
MULTIPLIER 695

.52925 x 695 = 367.83

Coated Plate
with SUPER THERM

TABLE 5

Thermal Conductivity Calculations

Sample (No.)	Temp. (C)	Density (gm cm ⁻³)	Specific Heat (W-s-gm ⁻¹ K ⁻¹)	Diffusivity (cm ² sec ⁻¹)	Conduct. (W-cm ⁻¹ K ⁻¹)	Conduct. (BTU *)	Temp (F)
t=0.0149	23.0	1.639	1.1871	0.00279	0.00543	3.77	73.4
	50.0	1.639	1.2657	0.00272	0.00564	3.92	122.0
	75.0	1.639	1.3211	0.00271	0.00587	4.07	167.0
	100.0	1.639	1.3695	0.00256	0.00575	3.99	212.0
t=0.0397	23.0	1.639	1.1871	0.00324	0.00630	4.37	73.4
	50.0	1.639	1.2657	0.00303	0.00629	4.36	122.0
	75.0	1.639	1.3211	0.00287	0.00621	4.31	167.0
	100.0	1.639	1.3695	0.00274	0.00615	4.27	212.0
t=0.0474	23.0	1.639	1.1871	0.00324	0.00630	4.37	73.4
	50.0	1.639	1.2657	0.00311	0.00645	4.48	122.0
	75.0	1.639	1.3211	0.00300	0.00650	4.51	167.0
	100.0	1.639	1.3695	0.00285	0.00640	4.44	212.0

* (BTU in hr⁻¹ ft⁻² F⁻¹)

Multiplier 695

0.00575 x 695 = 3.99