

# IGNIS ADVISORY NOTE

Evaluation No. IGNL-7248-99L Issue 01 Revision 00 [2023]

## C-COAT Energy Calculations

Ignis Labs has been engaged to review the energy calculations completed by Dr Sinisa Djordjevic in his letter dated 30 June 2023.

The calculations consider the results provided by Wimpey Labs LLC tests as follows for the substrate:

<b>Thermal resistance:</b>	$R_s = \Delta T/H = 20/13.850 = 1.4440 \text{ m}^2\text{K/W}$
<b>Thermal conductivity:</b>	$\lambda_s = d_s/R_s = 0.050975/1.4441 = 0.0353 \text{ W/mK}$

Testing was undertaken with the C-Coat and substrate by Wimpey Labs LLC with the following results.

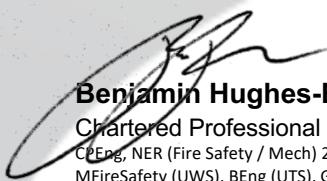
<b>Thermal resistance:</b>	$R = \Delta T/H = 20/13.800 = 1.4493 \text{ m}^2\text{K/W}$
<b>Thermal conductivity:</b>	$\lambda = d/R = 0.05145/1.4493 = 0.0355 \text{ W/mK}$

The resultant values of thermal resistance and conductivity for the C-Coat are as follows:

<b>Thermal resistance (conduction):</b> $R_{cond} = d_c/\lambda_c = 0.0053 \text{ m}^2\text{K/W}$
<b>Thermal conductivity (conduction):</b> $\lambda_{cond} = d_c/R_c = 0.000475/0.0053 = 0.0896 \text{ W/mK}$

Dr Djordjevic has completed calculations for total thermal resistance based on ASTM C518-21 and ISO 6946:2017. The calculations are considered sound where consideration for solar reflectance index is included for a total effective result. The calculations provide the following results.

<b><math>R_{C-COAT} = R_{cond} + R_{conv} + R_{SRI} = 0.0053 + 0.21 + 1.053 = 1.268 \text{ m}^2\text{K/W}</math></b>
For the above thickness $d_c = 0.000475 \text{ (m)}$ the corrected total thermal conductivity of C-Coat is:
<b><math>\lambda_{C-COAT} = d_c/R_{C-COAT} = 0.000475 / 1.268 = 0.00037 \text{ W/mK}</math></b>



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