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REPORT

ON

TESTS, EXPERIMENTS AND SIMULATIONS ON 'INSULTEC' PAINT

PREPARED FOR:

MULTI-SINDO (SINGAPORE) PE LTD
1 GOLDHILL PLAZA #02-19
SINGAPORE 308899

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EXECUTIVE SUMMARY

The laboratory phase of the study on 'Insultec' paint revealed the following properties: -

- Thermal conductivity value (K-value) of 0.0625 W/mk (ASTM E1530-04)
- Average reflectivity of
  - 10.2 % (Ultraviolet)
  - 79.8 % (Visible)
  - 83.8 % (Near-infrared)
- Near Room Temperature emissivity of 0.87 to 0.89 (ASTM C1371-04)

Controlled experiments on the roofs of a building in Singapore indicated a surface temperature of about 10 ^{0}C and 11 ^{0}C lower, respectively externally and internally, between a surface that had been coated with 'Insultec' compared to a similar surface which was left uncoated.

Energy simulations indicated a potential 39% energy savings in the topmost unit of a 15-storey apartment block if the roof is coated with 'Insultec'.

4.0 CONCLUSION

4.1 A study was commissioned to measure the conductivity, reflectivity and emissivity of 'Insultec' paint coated samples, as well as potential energy savings, using a computer simulation, from the use of the paint.

4.2 The average conductivity values of 'Insultec' were about 0.0625 W/mK. The results thermal conductivity value is comparable to that typical of fiberglass (~0.06 W/mK).

4.3 Reflectivity of 'Insultec' paint over the ultraviolet, visible light and near infrared ranges was averaged respectively to about 10.2%, 79.8% and 83.8%.

4.4 Near room temperature emissivity ranged from 0.87 to 0.89.

4.5 From the controlled experiments, it was found that surface temperatures of the 'unpainted box' and 'box painted with Insultec' externally and internally differed by about 10 ^{0}C and 11 ^{0}C respectively. The surface temperatures of the 'painted box' were lower that the 'unpainted box' during the mixed weather conditions.

4.6 Internally within the experimental boxes, the ambient temperature within the 'painted box' was about 6 ^{0}C lower than that within the 'unpainted box'.

4.7 Lower internal surface temperatures result in better indoor thermal comfort. It also reduces radiant heat to surrounding buildings.

4.8 Energy savings (up to 39%) could potentially be achieved if the roof of the top floor unit is applied with 'Insultec' coating. This concurs with the findings of the experimental boxes, where surface temperature differences of about 10 ^{0}C between 'painted' versus 'unpainted' were registered.