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SUMMARY OF TESTS ON INSULTEC MEMBRANE
CARRIED OUT AT THE UNIVERSITY OF NEW SOUTH WALES

Introduction

Prior to these tests it was claimed that, if the outside walls and roof of a building were coated with a novel membrane "Insultec", then the interior of that building remained much cooler than a similar uncoated building or one coated with ordinary paint. Our purpose was to carry out tests under controlled conditions to ascertain the validity of the claim.

Nature of the tests:


A number of galvanized steel boxes of about 300mm cube size were constructed. Inside each box was placed an electronic thermometer, the output of which could be continually monitored. The boxes could be left bare or coated with various paints or membranes. The boxes were mounted on the roof of one of the University building in Kensington, New South Wales. The internal temperatures were recorded day and night for several days. The particular tests reported here compared two boxes coated with Insultec with a bare box over the period 30 June 1988 to 10 July 1988. The results refer to the times between 1100 hours and 1500 hours on all the days within that period when it was substantially sunny. It should be noted that even though it was winter, the uncoated box reached some 33 C on some occasions.

Results:

It was found that the boxes coated with Insultec remained of the order of 10 C cooler than the uncoated box when the sun was shining. The actual results are shown in the accompanying graph in which the temperature of the Insultec coated boxes is plotted against that of the uncoated box at the various times. Attention is drawn to the lines of best fit (for the two Insultec coated boxes) these show that the cooling benefit of the Insultec coating is always substantial but becomes even more so under warmer conditions. In other words we might expect a greater difference between the temperatures in the Insultec-coated and uncoated boxes during the summer. We have also obtained evidence that the temperature difference is greater for full size buildings than it is for the test boxes.

Conclusions:

It is concluded that the claims made for Insultec are fully justified. It is clear that this membrane acts as a heat rejecting medium and one can expect that, if the roof of a building is coated with Insultec, then the interior of that building will be 10⁰ C or more cooler than that of a similar building with a plain galvanized roof during the warmest part of the day.


H.J. Goldsmid
Emeritus Professor of Physics
22 February 1990

Personal Profile

The testing program was performed under the supervision of Professor H.J. Goldsmid, Professor of Experimental Physics and Head of the Department of Applied Physics at the University of New South Wales. The following is a brief profile of Professor Goldsmid.

Qualifications: B.Sc.Honours in Physics, Queen Mary College,
University of London
PhD University of London
D.Sc University of London
Fellow of the Australian Institute of Physics

Career

1951-1964 Staff of the Research Laboratories of the General Electric Co.
Wembley England.
(Up to Principal Research Scientist)
1964 – 1969 Reader in Solid State Physics, University of New South Wales
1969 – 1988 Professor of Physics, University of New South Wales
1988 –present Emeritus Professor Physics, Univ. New South Wales
1989-present Chairman. National Standards Commission

Research Record Author of about 150 publications, mainly in the field of thermo-
Electrics and thermal properties of materials, including thermal
Conductivity. These include 6 textbooks.

Consultancies: Consultant to the following organisations:
The General Electric Co. Ltd.
De La Rue Ltd.
AERE Harwell
IBM (UK) Ltd
Marlow Industries, Dallas, USA
Italian Atomic Energy Commission

UNIVERSITY OF NEW SOUTH WALES.

INSULTEC TEST – INTERNAL AIR SPACE

Taken over 19 sunny days in August – September 1989,
Shows plots of maximum temperature during the day
Measurements taken in the late afternoon.

