
NICO JANSE VAN RENSBURG

Raadgwende Ingenieurs/ Consulting Engineers BK/CC
(Reg no. CK 96/26389/23)

20, Heidelberg Ave.
Durbanville 7550
Ph; 021 962729

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Insulation Coatings (Pty) Ltd.
P.O. Box 229
WITKOPPEN 2068

For the Attention of Mr. A de Comarmond

COMPARISON OF DIFFERENT ROOF COVERINGS

The effect of different roof coverings on the internal temperature of a typical industrial building located in a warm climate area (ie Phalaborwa) was investigated. A proven computer programme was used to simulate the heat flow to predict the thermal conditions inside the building and to calculate the expected surface temperature of the roof. The temperature profiles of the following alternatives were calculated and shown on the attached graph

- A galvanized roof (as the reference)
- A galvanized roof with clean white paint
- A galvanized roof with white paint partly covered with dust and soot
- A heat radiating paint similar to Insultec/Heatgard.


From the graph it can be seen that the best thermal insulation, and therefore the lowest internal temperatures are obtained with the use of a heat radiating paint. An ordinary clean and uncontaminated white paint is also effective but the maximum internal temperatures is in the order of 4⁰C higher than the temperature obtained from painting the roof with the heat radiating paint. When the paint surface becomes dirty, the thermal insulating properties are reduced considerably and this results in the average maximum temperature being almost 11.5 ⁰C higher than that of the heat radiating paint.

It is also evident that it is not only the maximum that is being reduced by the heat radiating paint but the average internal daily temperature is also the lowest of the alternatives.

The expected surface temperatures on the underside of the roof for the various alternatives are approximately the following:

- Galvanized roof 53⁰C
- White paint – clean 42⁰C
- White paint – soiled 50⁰C
- Heat radiating paint 37⁰C

The benefits of the lower roof surface temperature resulting from the application of the heat radiating paint, ie: lesser contraction and expansion of roof sheeting can be seen from the above figures.


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TEMPERATURE PROFILE

