

To: Airefrig Australia
From: Dr Jane Sargison BE, DPhil, FIEAust, MASME, MAIE
Date: 16th September 2011
Re: **3rd Party Certification of product: Aeroflex HT Solar Hot Water Piping Insulation**

The solar hot water piping insulation product, Aeroflex HT has been reviewed for third party certification to BCA 2011 (requiring compliance with AS/NZS 4859.1).

Samples of the Aeroflex product, 250mm in length, 19mm ID and 13mm thickness, with and without Aeroflex protective acrylic paint have been assessed, with testing and test reports provided by Netzsch Laboratories, Insultech and AWTA Testing.

In addition to this, samples of standard Aeroflex product, 19mm ID and 13 mm thickness with and without Aeroflex protective acrylic paint have been tested by AWTA Testing for resistance to heat, light and moisture.

A table outlining details of the tests performed and results is provided as an attachment to this document. The key outcomes are summarized below.

AS4859.1 Materials for Thermal Insulation of Buildings

AEROFLEX HT is deemed suitable for purpose according to AS4859.1 based on the test results summarized in the tables attached. In addition, fitness for purpose meets the requirements:

- (a) Known safety issues
- (b) Freedom from objectionable odor and
- (c) The influence of aging

Flammability has been tested to IEC 60691-11-10 flame class V-0

Thermal conductivity

AEROFLEX HT thermal conductivity results are included in Table 2 and are in the range 0.0571 and 0.0336 W/mK for a corresponding mean temperature range of 150 – 24 °C, temperature difference 39°C.

Resistance to heat, light and moisture

AEROFLEX HT and AEROFLEX Standard samples were tested for resistance to heat, light and moisture according to ASTM G 154-04, in a QUV accelerated weathering tester by AWTA testing. The products were tested with and without Aeroflex protective acrylic paint to determine fitness for purpose according to BCA Class 2 to Class 9 Buildings, specification J5.4.

The products showed no deterioration with exposure to heat, UV and moisture according to the AWTA test report.

Insulation wall thickness in accordance with AS/NZS 3500.4:2003

AEROFLEX HT Insulation thickness for the tested sample size is summarized.

Region A (QLD, NT, coastal NSW and WA regions as per figure 8.2) Minimum R value is 0.3.

Insulation size to achieve this R value across the operational temperature range (to 150 °C) is 19mm ID, 13 mm minimum wall thickness

Region B and C (Remainder, see figure 8.2) minimum R value is 0.6

Insulation size to achieve this R value across the operational temperature range (to 150°C) is 19mm ID, 21 mm minimum wall thickness

Material Maximum Service Temperature is 150 °C

Material Melting Point: N/A (decomposition temperature > 250 ° C)

A handwritten signature in blue ink that reads "J Sargison". The signature is written in a cursive style with a horizontal line at the end.

Dr Jane Sargison

Director, JSA Consulting Engineers and Research Associate University of Tasmania