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CSIRO

Our ref: FCO-1897/CO4018

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Attention: Mr Jack Chum Pak Kuan
Technical Specification Engineer

FIRE PERFORMANCE OF ZINCALUME AND COLORBOND SHEETING
Opinion Number FCO-1897
Your e-mail of 28 June

## INTRODUCTION

We have re-examined the information referenced by you on the likely performance of your steel sheeting if tested in accordance with ASTM E 136, ASTM E 84 and ASTM E 648. The information included

- CSIRO Sponsored Investigations test reports numbered E4957, E4958, E4959, E4960 E4961and FNE6657 being result of AS 1530.3 tests on your Zincalume Colorbond steel sheeting;
- CSIRO Sponsored Investigation test reports numbered C128, C129, C131 and C134 being results of AS 1530.1 tests on your Zincalume Colorbond steel sheeting;
- AS 1530.1 and AS 1530.3; and
- ASTM E 136, ASTM E 84 and ASTM E 648.

We have retained these documents.

## ANALYSIS

The materials under consideration are Zincalume, which is a Zinc/aluminium alloy coated steel sheeting, and Colorbond, which is a pre-painted Zincalume. Both of these material have been subjected to the test conditions of AS 1530.1, which is a test to determine combustibility (equivalent to ASTM E136), and AS 1530.3, which is a test to determine the ignition, flame spread, heat evolved and smoke developed of a product.

Our report numbered C134 demonstrates that the bare Zincalume steel sheet is deemed not combustible and would achieve the same result if tested to ASTM E 136. The pre-painted sheets, due to the nature of the test, which requires the sample to be tested as a multi-layed laminate, fall into the category of combustible material. This particular result is more an indication of the unsuitability of the test procedure for these types of sheeting material than an indication of the fire risk imposed by its use.

ASTM E 648 is designed to determine flame spread for floor covering and is not applicable to your steel sheeting although only low levels of flame travel would be expected if the sheeting was subjected to this test. With regard to ASTM E 84, the test conditions of AS 1530.3 are similar, in that the specimen is subjected to an exposure of a heat source and is a measure of the ignition, burning and smoke production of the sample. The test procedures differ in the size of the specimen, the orientation of the specimen to the heat source and the characteristics. As such it is not possible to give a complete correlation between specimens subjected to AS 1530.3 and ASTM E 84. What can be said with some confidence is that a product that has no or very little reaction to the AS test would most likely achieve equivalently low levels of flaming, spread and heat output if subjected the ASTM tests.

The products, being considered here, achieved test indices of 0:0:0:0-1 in AS 1530.3 where the absolute best results possible are 0:0:0:0 and the worst possible is 20:10:10:10. This indicates the products would contribute little to the spread of any fire exposure.

OPINION/CONCLUSION

Based on the factors detailed above and our experience with similar materials it is the opinion of the Division that the proposed steel sheeting materials would achieve the following results if subjected to the specified test standards.

| Material | ASTM E 136 | ASTM E 84 |
|---|---|---|
| Zincalume (base metal thickness 0.2-1.2 mm) | Not Combustible | *Classification A (Flame Spread Index <25)* |
| Colorbond (base metal thickness 0.2-1.0 mm) | Combustible | *Classification A (Flame Spread Index <25)* |

Thus both sheeting materials would qualify as Class A under ASTM E 84 classification. Additionally Zincalume is non-combustible. Also, changes in thickness would not only improve the performance, as it is the non-combustible component (ie the steel) that is being increased.

TERM OF VALIDITY

This opinion will lapse on 31 July 2016. Should you wish us to re-examine this opinion with a view to the possible extension of its term of validity, would you please apply to us three to four months before the date of expiry. This Division reserves the right at any time to amend or withdraw this opinion in the light of new knowledge.

Yours faithfully,

Garry E Collins
Manager, Fire Testing and Assessment

13 July 2011