Ignis Engineering Certificate

Evaluation No.4099.1 [2016]

Technical Desktop Review for compliance of incipient spread of fire to the National Construction Code – Volume One – Building Code of Australia 2016

ResCom Board Incipient Spread of Fire

IGNIS Professional Engineering Certificate

No. 4099.1 I01R00

Resistance to the incipient spread of fire **70 minutes**

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Date

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Introduction

Ignis Solutions has been engaged by ResCom to evaluate the test reports by SGS in establishing the products compliance in-line with the resistance to incipient spread of fire as established by the National Construction Code – Volume One – Building Code of Australia – 2016 (BCA).

Clause A2.2(a)(iii) of the BCA establishes that evidence to support that the use of a material, form of construction or design meets a Performance Requirement or a Deemed-to-Satisfy Provision may be in the form of a certificate from a professional engineer or other appropriately qualified person which –

(A) Certifies that a material, design, or form of construction complies with the requirements of the BCA; and

(B) Sets out the basis on which it is given and the extent to which relevant specifications, rules, codes of practice or other publications have been relied upon.

The BCA details the process of documentation of decisions made under the BCA should be fully documented, detail supporting documentation, details of tests and any standards or other information relied upon.

This document is a certificate from a professional engineering in accordance with Clause A2.2(a)(iii).

Scope of Certification

This engineering certificate has reviewed the SGS AS 1530.4 testing inline with the requirements of the BCA as well as that established by AS 1530.4:2014. The evaluation of the reference documents is provided on the next page.

Conclusion

It is considered in the opinion of the author that based on the testing undertaken by SGS and documented in their test report SHCCM150401181 that the ResCom board achieves a resistance to the incipient spread of fire of 70 minutes where the temperature rise of 180 K did not occur.

Document Review

A number of documents were reviewed within this engineering certificate. This includes:

- The National Construction Code – Volume One – Building Code of Australia 2016
- Standards Australia AS 1530.4:2014 Methods for fire tests on building materials, components and structures Part 4: Fire-resistance tests of elements of building construction
- SGS test report SHCCM150401181 dated 03 June 2015.

SGS has undertaken testing of the 10mm product in accordance with AS 1530.4 in their report SHCCM150401181. The specimen was installed into a prepared masonry wall with the opening size 3010mm width by 3010mm height. C75 light gage steel joists were fixed to masonry wall by expansion bolts. The exposed and unexposed face testing panels were fixed to C75 light gage steel joists by self-tapping screw (spaced about 10mm). Gaps between the sample panels as well as gaps around the specimen and masonry wall were covered by a fire resistance bolting and glue. The specimen had a single layer of 10mm ResCom board on either side of the C75 light gage steel joists with mineral wool (50kg/m^3) within the wall cavity.

In accordance with Clause A1.1 of the BCA, SGS is considered a Registered Testing Authority based on its International Laboratory Accreditation Cooperation Mutual Recognition Agreement recognised by the National Association of Testing Authorities (NATA).

Documentation of Decision Making

The National Construction Code (NCC) is an initiative of the Council of Australian Governments developed to incorporate all on-site construction requirements into a single code. The Building Code of Australia (BCA) is Volume One and Volume Two of the NCC.

The BCA is produced and maintained by the Australian Building Codes Board (ABCB) on behalf of the Australian Government and each State and Territory government.

The BCA is a uniform set of technical provisions for the design and construction of buildings and other structures throughout Australia whilst allowing for variations in climate and geological or geographic conditions.

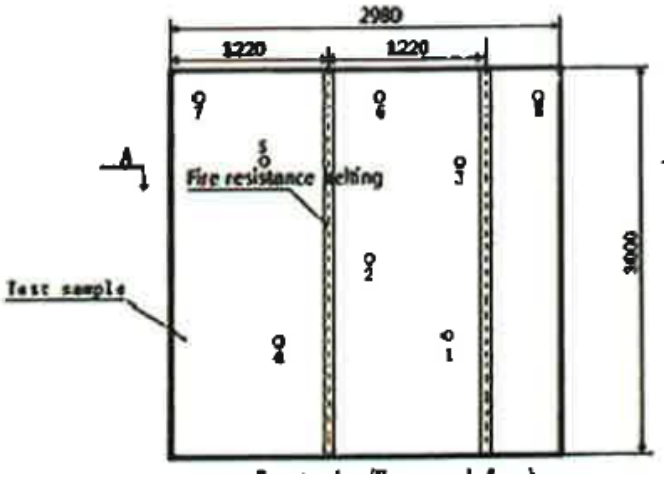
Clause A2.5 details the requirements for Resistance to the incipient spread of fire. A ceiling is deemed to have the resistance to the incipient spread of fire to the space above itself if-

(a) It is identical with a prototype that has been submitted to the Standard Fire Test and the resistance to the incipient spread of fire achieved by the prototype is confirmed in a report from a Registered Testing Authority which-
  (i) describes the method and conditions of the test and form of construction of the tested prototype in full; and
  (ii) certifies that the application of restraint to the prototype complies with the Standard Fire Test.

Clause A1.1 provides a definition for the Resistance to the incipient spread of fire, in relation to a ceiling membrane, means the ability of the membrane to insulate the space between the ceiling and roof, or ceiling and floor above, so as to limit the temperature rise of materials in this space to a level which will not permit the rapid and general spread of fire throughout the space.

The BCA sets the requirement in a number of provisions for a ceiling to have a resistance to the incipient spread of fire.

AS 1530.4 provides details of establishing the incipient spread of fire through testing. An array of thermocouples were provided on the unexposed side of the panel in accordance with Clause 4.3.3(b) of AS 1530.4 and detailed in the following figure.

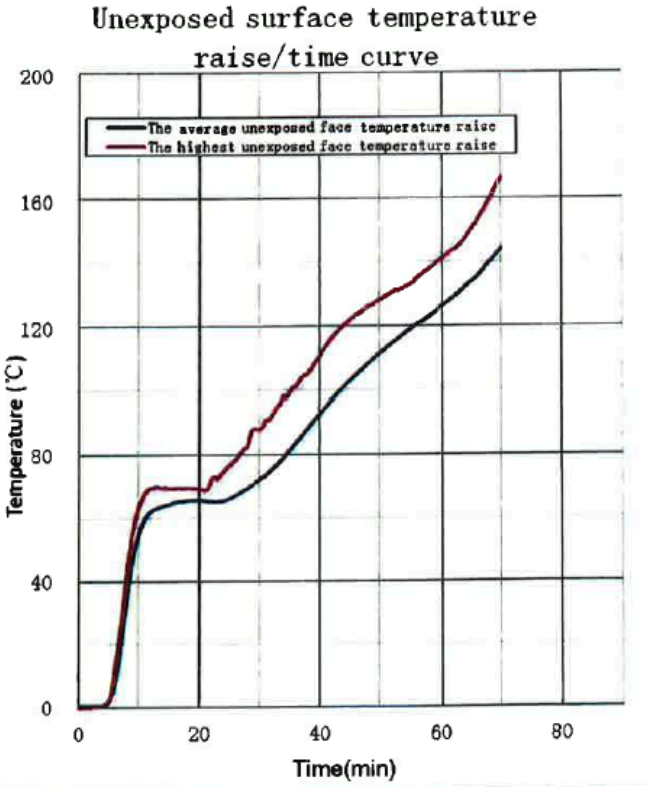


Clause 4.7.4 of AS 1530.4 details the criteria of failure for the incipient spread of fire being deemed to have occurred when the average temperature of the five thermocouples at any one of the locations has risen by more than 180K above the initial temperature.

Clause 4.8 of AS 1530.4 details the results shall be stated in terms of the time in whole minutes from the start of the test until failure has occurred under incipient spread of fire. It is noted that the incipient spread of fire is not taken into account in the determination of fire-resistance.

The ResCom 10mm board when tested achieved an FRL of -/60/90 minutes.

The temperature raise/time curve is detailed below. The temperature was measured for 65 minutes consecutively before being terminated. The rise in temperature did not exceed 180 K.



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