

Our ref: FCO-0670/3932

Mr Lorenzo Fazzini
L & A Fazzini Manufacturing Pty Ltd
23-25 Wentworth Street
GREENACRE NSW 2190

Dear Mr Fazzini,

LIKELY FIRE-RESISTANCE OF FLOOR/CEILING SYSTEMS

Assessment No. FCO – 0670

Your e-mail of 11 November 2010

INTRODUCTION

As requested in your fax of 8 October 2010 we have re-examined the information referenced by you on the likely effects of using your floor/ceiling systems incorporating a Vermitex "AF" sprayed ceiling membrane on fire-resistance level.

The information included:

- our sponsored investigation report numbered 1589 on a sprayed ceiling/roof system tested on 14 July 1982;
- our test report numbered 81 on a floor/ceiling system tested on 18 October 1966;
- our test report numbered 20 on a roof/ceiling system tested on 18 January 1966;
- our previous assessments (opinions) numbered FCO-0285, FCO-0286, FTO-140, FTO-409 and FTO-167; and
- your letter of 20 April 1993 which included the specification for your proposed floor/ceiling systems and drawing numbered 01, dated 20 April 1993 "2HRS.FIRE PROT. SYSTEM UNDER TIMBER FLOOR."

We have retained these documents and information.

ANALYSIS

National Building Technology Centre sponsored investigation numbered SI 1589

On 14 July this Division conducted a fire-resistance test in accordance with AS 1530.4–1975 on a low-slope metal-deck roof with a ceiling system suspended beneath it. The low-slope metal-deck roof was of conventional construction comprising steel purlins and bracing and steel roof sheeting. The underside of the roof sheeting was insulated with fiberglass insulation supported on a steel wire mesh.

A ceiling system was suspended beneath the roof on steel hanger rods. The ceiling membrane comprised a 60 mm thickness of material supplied and applied by the sponsor and identified as a vermiculite based product "Vermitex 7. The material was spray applied in two

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layers each nominally 30 mm thick with layer of galvanised steel reinforcing fabric being fixed beneath the first layer prior to the application of the second layer.

Weights were placed on the roof structure in order to subject the steel purlins to their maximum permissible design stress.

Weights were fixed to the steel rods provided for the attachment of underhung luminaires to simulate a 4.5 kg luminaire.

The tested specimen achieved 4 hours fire-resistance rating in accordance with AS 1530.4-1975.

Experiment Building Station sponsored investigation numbered SI 81

On 18 October 1966 this Division conducted a fire-resistance test of a hardwood floor supported by a steel beam encased in precast cementitious sections and protected with a ceiling system of corrugated steel sheeting fixed to the underside of the floor joints and sprayed with 25 mm of "Vermitek 4" vermiculite plaster. The structure also incorporated a timber beam. The specimen was tested in accordance with the requirements of Australian Standard No. A30-1958, Section Four.

The tested specimen, excluding timber beam, qualified for 2 hours fire-resistance rating. The timber beam suspended beneath the floor structure and protected with a ceiling system of corrugated steel sheeting fixed to the underside of the floor joints and the surface of the timber beam, sprayed with a minimum thickness of 25 mm "Vermitek 4" vermiculite plaster and had the member been directly supporting the hardwood floor and carrying its maximum permissible design stress it would have qualified for 90 minutes fire-resistance rating.

Experiment Building Station sponsored investigation numbered SI 20

On 18 January 1966 this Division conducted a fire-resistance test on a traditional softwood – framed terra-cotta tiled roof protected with a ceiling of corrugated steel sheeting fixed to the underside of the ceiling joints and sprayed with a minimum thickness of 25 mm of "Vermitek 2" vermiculite plaster.

The tested specimen qualified for a 90 minutes fire-resistance rating in terms of Australian Standard No. A30-1958.

CONCLUSION/ASSESSMENT

It is the opinion of this Division that based upon the evidence presented in regards to insulation and stickability properties of your Vermitek sprayed insulation, that a floor/ceiling system as detailed in the specification and drawings listed above would be capable of achieving the fire-resistance levels listed in Table 1 below, if they were subjected to the test conditions of AS 1530.4 provided that:

- for timber beams protruding below the ceiling line, the minimum thickness of Vermitek "AF" is 25 mm for rating up to 90 minutes and 35 mm for those up to 120 minutes; and
- the ratio of actual stress to allowable stress in the structural members of the proposed systems does not exceed the ratio of the tested specimen.

Table 1

Fire-resistance levels (Minutes)	Vermitek "AF"(mm) Without Incipient Spread	Vermitek "AF" (mm) With Incipient Spread
60/60/60	25	25
90/90/90	25	25
120/120/120	30	35

TERM OF VALIDITY

This assessment report will lapse on 31 January 2016. Should you wish us to re-examine this assessment 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 report in the light of new knowledge.

Yours faithfully



Russell Collins
For Manager, Fire Testing and Assessment

3 March 2011