

Likely fire performance of masonry wall systems

Assessment Report

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Commercial-in-confidence

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Executive summary

This report provides the re-assessment of this Division on the likely performance masonry wall systems if it was tested in accordance with AS 1530.4-2005.

The proposal is to analyse the likely effect on the fire-resistance levels of a concrete or masonry wall having a two coat system of 600 – 650 microns of Ff88 fire paint applied to the either face of the wall.

It is the opinion of the Division that a concrete or masonry wall system with established fire-resistance levels (FRL) of 120/120/90 or higher, in the bare unpainted or unlined form, would be capable of achieving fire-resistance levels (FRL) of 120/120/120 if tested to AS 1530.4-1997 after having a two coat system of 600 – 650 microns of Ff88 fire paint applied to the either face of the wall.

Likely fire performance of masonry wall systems

1 Introduction

This report provides the re-assessment of this Division on the likely performance masonry wall systems if it was tested in accordance with AS 1530.4-2005.

2 Supporting Data

2.1 CSIRO Sponsored Investigation report numbered FSP 0653

On 18 March 1999 this Division conducted a full-scale fire-resistance test on a plasterboard lined steel-stud framed wall system. The plasterboard sheeting was 13-mm thick standard-grade plasterboard. The plasterboard was painted with a specified 560-630 microns of Ff88 intumescent paint. The test wall collapsed at 55 minutes with insulation failure at 53 minutes and integrity failure at 54 minutes.

2.2 Test data from CSIRO test numbered FS 3197/1884

On the 3 August 1999 this Division conducted a pilot-scale fire test on a 110-mm thick masonry wall. The test was on common clay brick wall.

2.3 Test data from CSIRO test numbered FS 3198/1884

On 4 August 1999 this Division conducted a pilot-scale fire test on a 110-mm thick masonry wall. The test was on common clay brick wall protected with a two coat system of 600 – 650 microns of Ff88 fire paint applied to the fire side of the wall. This direction of testing was considered the most severe for the purpose of demonstrating bi-directional performance.

3 Proposal

The proposal is to analyse the likely effect on the fire-resistance levels of a concrete or masonry wall having a two coat system of 600 – 650 microns of Ff88 fire paint applied to the either face of the wall.

4 Analysis

Because of the relatively small size of the test specimen any improvement of the structural adequacy or integrity of the wall cannot be accessed. The insulation performance of the unpainted brick wall was measured against the insulation criterion of AS 1530.4-1997 and was observed to exceed the allowable rise at 109 minutes. The painted specimen exceeded the same criterion at 139 minutes. The addition of the Firefree 88 intumescent paint therefore represented an improvement in the fire performance of masonry wall systems, which have the required fire-resistance levels for structural adequacy and integrity.

5 Conclusion

It is the opinion of the Division that a concrete or masonry wall system with established fire-resistance levels (FRL) of 120/120/90 or higher, in the bare unpainted or unlined form, would be capable of achieving fire-resistance levels (FRL) of 120/120/120 if tested to AS 1530.4-1997 after having a two coat system of 600 – 650 microns of Ff88 fire paint applied to the either face of the wall.

6 Term of validity

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References

The following informative documents are referred to in this Report:

AS 1530.4-1997	Methods for fire tests on building materials, components and structures Part 4: Fire-resistance tests of elements of building construction.
FSP 0653	CSIRO Sponsored Investigation test report for test conducted on 18 March 1999.
FS 3197/1884	CSIRO test conducted on 3 August 1999.
FS 3198/1884	CSIRO test conducted on 4 August 1999.

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