

ASSESSMENT REPORT

Fire Resistance Performance of Insulated KINGTEC 'HAWK' Board Ceiling Systems

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Report Sponsor

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REVISION HISTORY

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11/05/2015	0	Initial version

FIRE RESISTANCE PERFORMANCE OF INSULATED KINGTEC 'HAWK' BOARD CEILING SYSTEMS

1 INTRODUCTION

This assessment report presents an appraisal of insulated KINGTEC 'HAWK' board ceiling systems with construction referenced to the one tested and described in R10F04 issued by Research Engineering Development Façade Consultants Limited (RED). This assessment report is prepared for Kingtec Building Materials (HK & Macau) Limited of Unit 1, 3/F, Block B, Shatin Industrial Center, 5-7 Yuen Shun Circuit, Shatin, N.T., Hong Kong.

The proposed ceiling systems are required to provide a fire resistance performance of 120 minutes integrity and insulation with respect to BS 476: Part 22: 1987.

2 ASSUMPTIONS

The proposed systems are assumed to be installed in a similar manner to that of the previously tested systems by competent installers. It is assumed that the modified systems will be constructed in a similar manner from materials and components of the same manufacture and equivalent quality as tested with supporting test evidence or otherwise appraised by RED. Further assumptions related to the specific modifications will be stated in the report.

It is also assumed that the supporting structures to which the perimeter of the systems will be fixed are capable of supporting the proposed structure effectively.

Assuming that the issue of the original test report is valid, the current testing standard or testing experience has not been changed and the procedures adopted for the original report have been re-examined and reviewed that there have been no changes to the specification of the construction considered in the original report. If contradictory data or any related evidence becomes available to RED, the assessment will be unconditionally withdrawn and the sponsor will be notified. This report is based on the given information, in which is declared by report sponsor that no contradictory data has become available.

3 SUPPORTING DATA

3.1 Summary of test evidence

Report no.	Sections	Description
Primary Test Evidence		
R10F04	4.1	Supporting test evidence for the general construction of insulated KINGTEC 'HAWK' board ceiling systems for 120 minutes FRP

3.2 Primary test evidence (For proposal section 4.1)

3.2.1 RED TEST REPORT NO. R10F04

A fire resistance test in accordance with Section 9 of BS 476: Part 22: 1987 on an insulated KINGTEC 'HAWK' board ceiling system was performed at the RED laboratory on 20 July 2010. The test sponsor was Kingtec (Hong Kong) Building Materials Industrial Company Limited who had permitted to use this data. The specimen was unsymmetrical and only one side of the specimen was tested as per test sponsor's request.

The ceiling system had overall dimensions of 4,000 mm wide by 3,000 mm long. The ceiling system was comprised of a 1,000 mm deep steel frame, with a layer of 12 mm thick KINGTEC 'HAWK' fire-rated boards at the exposed side and a layer of 100 mm thick 'CSR' rockwool with density of 100 kg/m³ mounted on unexposed side. The ceiling system was supported by hangers of G.M.S. channels with sizes of 75 mm by 35 mm by 0.6 mm thick, at 3 positions of each runners at 1,000 mm spacing. The perimeter of ceiling frame was constructed by steel channels with sizes of 75 mm by 35 mm by 0.6 mm and the frame was fixed to the concrete testing frame by M5 anchor bolts at 380 mm spacing. The boards were fixed to the steel frame by 3.5 mm diameter screws at 300 mm spacing.

The ceiling system satisfied 120 minutes integrity and 114 minutes insulation criteria with respect to Section 9 of BS 476: Part 22: 1987 and the test was discontinued after a heating period of 120 minutes (see R10F04 for full details).

4 PROPOSAL & DISCUSSION

4.1 Insulated KINGTEC 'HAWK' board ceiling systems for 120 minutes integrity and insulation with respect to BS 476: Part 22: 1987

Proposal

The proposed construction are insulated KINGTEC 'HAWK' board ceiling systems which are basically similar to the one tested and described in R10F04, except that 120 mm thick 'CSR' rockwool with density of 100 kg/m³ is used instead of 100 mm thick as tested.

The proposed systems may provide 120 minutes integrity and insulation in accordance with BS 476: Part 22: 1987.

Discussion

From the test evidence of R10F04, the insulated KINGTEC 'HAWK' board ceiling system satisfied 120 minutes integrity and 114 minutes insulation criteria in accordance with BS 476: Part 22: 1987. The ceiling system as tested and described in R10F04 was comprised of a 1,000 mm deep steel frame, with a layer of 12 mm thick KINGTEC 'HAWK' fire-rated boards at the exposed side and a layer of 100 mm thick 'CSR' rockwool with density of 100 kg/m³ mounted on unexposed side.

The proposed insulated KINGTEC 'HAWK' board ceiling systems are basically similar to the one tested and described in R10F04, except that 120 mm thick 'CSR' rockwool with density of 100 kg/m³ is used instead of 100 mm thick as tested. From our experience, the insulation performance of the ceiling system mainly depends on the thickness of rockwool. Based on the assumption that the insulation property of the ceiling system is linear proportional to the thickness of rockwool, the required thickness to achieve 120 minutes insulation period may be estimated as follows:

The required thickness = (120 minutes / 114 minutes) x 100 mm = 105 mm thick.

Therefore, for conservation, it is reasonable to anticipate that the use of 120 mm thick 'CSR' rockwool with density of 100 kg/m³ will achieve an insulation period of 120 minutes. In the above proposal, the increase in thickness of rockwool shall not affect the integrity performance achieved by the tested prototype. Consequently, the insulated KINGTEC 'HAWK' board ceiling systems, with 120 mm thick 'CSR' rockwool with density of 100 kg/m³, is expected to satisfy the integrity and insulation criteria of BS 476: Part 22: 1987 for at least 120 minutes. All other construction and fixing details of the ceiling system shall the same as tested.

资料仅供参考 不做验收使用

5 CONCLUSION

The proposed insulated KINGTEC 'HAWK' board ceiling systems are based on the specimen as tested and described in R10F04 and modified as described in section 4.

The proposed systems may provide a fire resistance performance of 120 minutes integrity and insulation with respect to BS 476: Part 22: 1987.

6 DECLARATION BY APPLICANT

We, Kingtec Building Materials (HK & Macau) Limited, confirm that the material, component or element of structure, which is the subject of the test report being reviewed, has not to our knowledge been subjected to another test to the standard against which the assessment is being made.

We agree to withdraw this assessment from circulation should the component or element of structure be the subject of another test to the standard against which the assessment is being made.

We are not aware of any information that could affect the conclusions of this assessment.

If we subsequently become aware of any such information we agree to ask the assessing authority to withdraw the assessment.

7 VALIDITY

This assessment is based on test data, experience and the information supplied. The assessment will be invalidated if the assessed construction is subsequently tested since actual test data is deemed to take precedence over an expressed opinion. Any changes in the specification of product will invalidate this assessment. This assessment relates only to the specimen assessed and does not by itself infer that the product is approved under any other endorsements, approval or certification scheme. Since the appraisal method is under development, the laboratory reserved the right to supersede this assessment in case the appraisal method had been changed.

This report only relates to the specimen(s) tested and may only be reproduced by the sponsor in full, without comment, abridgement and modifications.

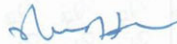
8 SIGNATORIES

Assessment by:



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Reviewed by:



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Authorized Signature
Research Engineering Development
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- End of report -