



AGRÈMENT TEST AND EVALUATION REPORT

TITLE	:	Assessment of the fire behaviour of the Use-It building system
REQUESTED BY	:	Mr Lebo Mahape
AGRÈMENT REF NO	:	Not provided
OUR REF NO	:	FTA11/104
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1. PURPOSE OF EVALUATION

The purpose of the evaluation was to assess the fire behaviour of a wall specimen constructed using the Use-It building system and the suitability of the system, from a fire safety point of view, for the intended uses as defined in the Agrément application.

2. EVALUATION OF THE SYSTEM

The wall panel specimen was built on site by contractors of the applicant into 2.8 m x 2.85 m test frame. The wall was constructed from earth bricks, each 80 mm high, 375 mm long and 250 mm wide. The bricks were bonded with a wet soil mixture and built in a conventional manner.

The vertical furnace is fired by 16 air-aspirated diesel burners. The temperature inside the furnace enclosure is controlled in such a manner that it follows the ISO Standard Time-Temperature curve.

A Fire Resistance Rating (FRR) is awarded based on the following criteria:

- The stability of the test specimen should be retained, i.e. the specimen should not collapse during the test period.
- The integrity of the test specimen should not be compromised during the test period. No flaming is allowed on the unexposed side, nor is any cracks exceeding 150 mm in length or 10 mm in width.
- The sample should insulate the unexposed face from heat flow from the exposed side. The average temperature of the five required surface thermocouples on the unexposed side is not allowed to exceed 140 °C plus ambient temperature. The maximum temperature at any of these five positions is also not allowed to exceed 180 °C plus ambient temperature.

3. RESULTS

The test specimen prior to the commencement of the test is shown from the unexposed side in Figure 3.1 while the temperatures recorded during the test period are graphically displayed in Figure 3.2.



Figure 3.1: Wall test specimen as seen from unexposed side prior to test

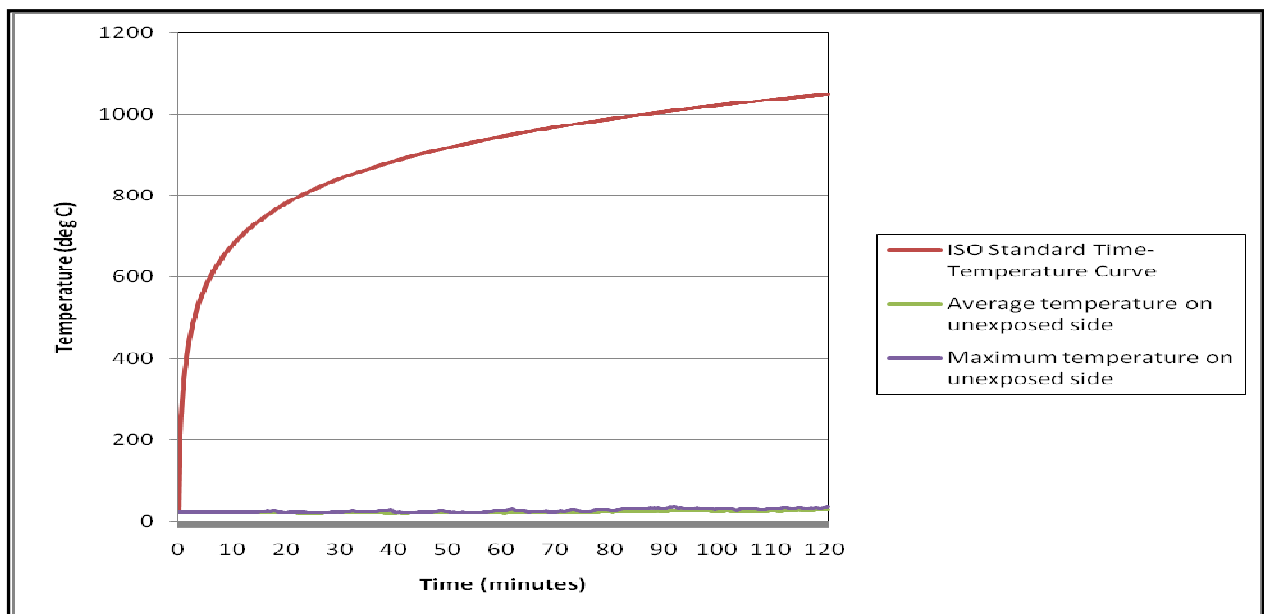


Figure 3.2: Temperatures recorded during the test on Use-It wall specimen

The furnace was operated within the allowable tolerances as stipulated in the test protocol. The test was terminated after 120 minutes with none of the specified criteria having been breached.

Figure 3.3 shows the unexposed side of the wall upon termination of the test with Figure 3.4 showing the exposed side of the test specimen immediately after removal from the test furnace. The wall deflected inwards by approximately 30 mm at the end of the test. The white paint square notable on the exposed side was applied by the contractor in order to assess the performance of the paint. While the paint did not add to or detract from the fire resistance performance of the wall it was noted that slight spalling of the bricks only occurred in the painted square. This could be indicative of the paint sealing moisture that would otherwise have escaped from the bare wall. On a 250 mm thick wall this was however not a crucial factor in the outcome of the test.



Figure 3.3: Unexposed side of test wall upon termination of the test



Figure 3.4: Exposed side of test specimen immediately after removal from furnace

4. CONCLUSION

The Use-It building system as tested achieved a Fire Resistance Rating (FRR) of 120 minutes for load-bearing wall systems. It is therefore deemed suitable for the intended occupancies as listed in the Agreement application.

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