

THE COMBUSTION CHARACTERISTICS OF MICROFLOOR RAISED FLOORING SYSTEM

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1. SPONSOR

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2. USE OF THIS REPORT

The use of this report is subject to the conditions of Annexure A which forms an integral part of the report.

3. PURPOSE OF THE INVESTIGATION

The purpose of the investigation was to determine the combustion characteristics of the MicroFloor raised flooring system, with special reference as to its suitability for use in office accommodation.

4. DESCRIPTION OF THE PRODUCT

MicroFloor raised flooring system consists of pedestals injection moulded from uPVC (PVC Compounders No.R17/J701/901) fitted with adhesive (Pekay Chemicals Neoprene 443) bonded polypropylene carpet squares 500 mm by 500 mm (Dunlop Marathon). Figures 2 and 3 show the structure of the pedestals and attached carpet. The mass of the pedestals and carpet is approximately 7kg/m².

5. TEST PROCEDURE

The MicroFloor pedestals were laid as they would be in practice on a concrete floor in a test room with a ceiling height of 2,9m. A wooden crib consisting of 10 kg of pine laths 600 mm X 60 mm X 25 mm was assembled on one corner of the Microfloor (Figure 4). A little paraffin was applied to the crib to facilitate ignition. Temperatures were measured at one minute intervals by means of thermocouples placed as follows.

- (a) Immediately above the ignition source
- (b) Two meters above the ignition source
- (c) At a join in the carpet tiles 500 mm from the ignition source.
- (d) At a join in the carpet tiles 1 m from the ignition source.
- (e) At a join in the carpet tiles 1,5 m from the ignition source.

6. TEST RESULTS

The temperatures measured during the test are presented graphically in Figure 1.

SEQUENCE OF EVENTS

TIME (MINS)	OBSERVATIONS
00:00	Ignition of the crib
03:00	Carpet tiles nearest the crib lifting at the edges (Figure 5). Smoke emission moderate with no smell of hydrogen chloride
05:25	Carpet starting to burn in the area nearest the crib (Figure 6). Smoke (not visible in Figure 6 due to buoyancy effect of hot gases) considerable. Hydrogen chloride concentration at 2m above floor and 3m from the ignition source was determined as 2640 ppm (Parts per million)
07:00	Smoke considerable (Figure 7)
08:00	uPVC pedestals starting to melt under the carpet tiles
10:00	Ignition crib almost consumed (Figure 8)
11:00	Hydrogen chloride concentration at 2m above the floor and 3m from the ignition source was determined as 3366 ppm
15:00	Ignition crib almost completely consumed - carpet continues to burn slowly - smoke considerable but still buoyant (Figure 9)
17:00	Crib glowing - no flaming combustion - carpet continued to burn slowly
25:05	Crib almost completely extinguished. Carpet only just burning (Figure 10)
43:11	Carpet no longer burning - crib still glowing (Figures 11 and 12)

DISCUSSION OF RESULTS

Both visual observations and the temperature measurements indicate that the Microfloor system does not propagate flame and is essentially self extinguishing when out of the influence of an external ignition source.

CONCLUSIONS

It is considered that MicroFloor raised flooring complies with the requirements of SABS 0400, in particular with clause TT11 in respect to its suitability for use in buildings. The product does not support combustion, is self extinguishing when out of the influence of an external ignition source and can be considered suitable for use in the manner intended subject to the carpet used having a suitable fire rating in accordance with the schedule in SABS 0400.

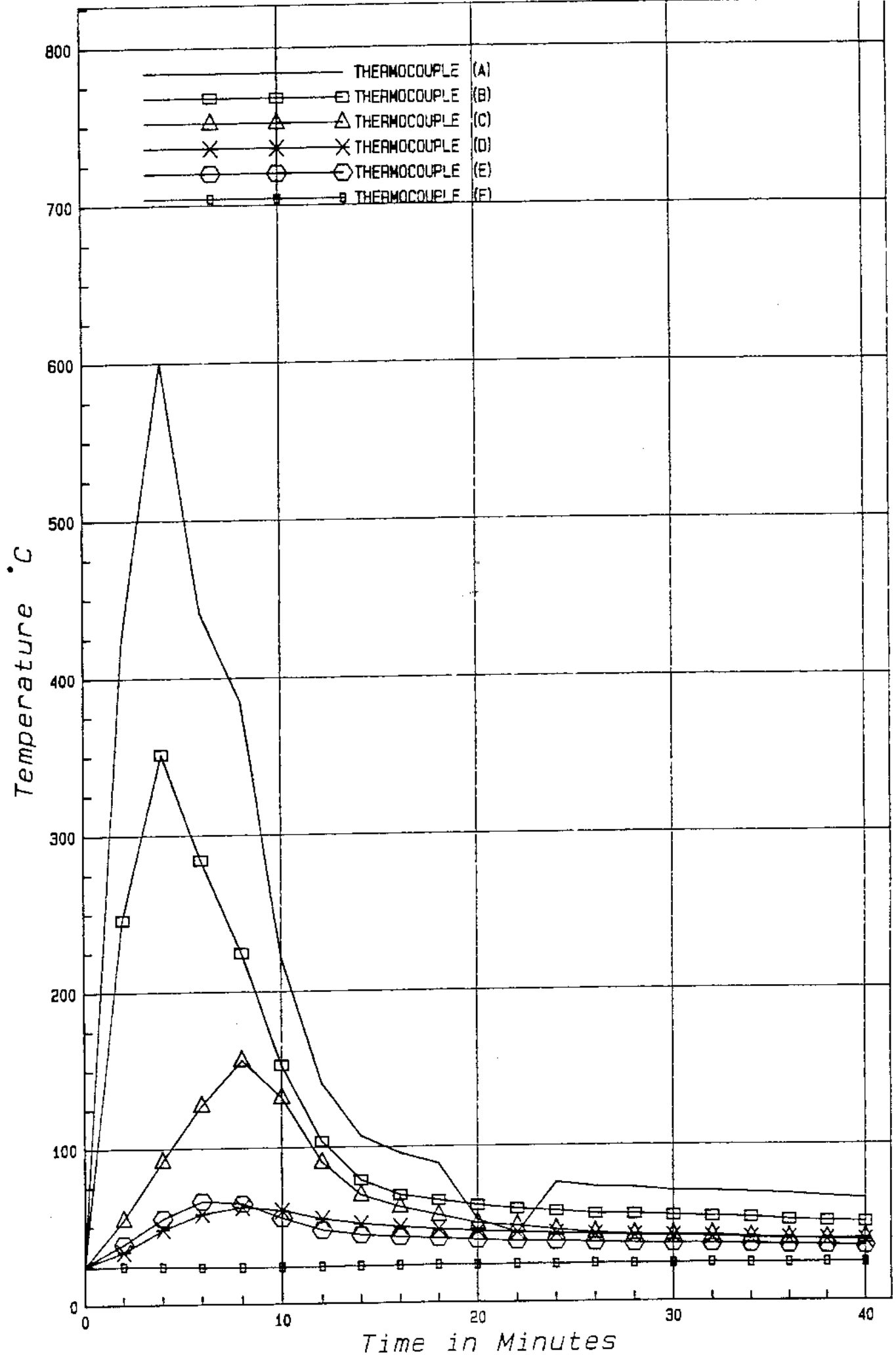


Figure 1 : TEMPERATURES RECORDED DURING TEST :

C D P - MICROFLOOR - 93:06:23



Figure 2: Underside of MicroFloor



Figure 3: MicroFloor fitted with carpet



Figure 4: Test arrangement



Figure 5: 3 minutes after ignition



Figure 6: Carpet starting to burn 05:25 minutes after ignition



Figure 7: 7 minutes after ignition
Note buoyant smoke cloud



Figure 8: 10 minutes after ignition
Note small extent of flame spread



Figure 9: Ignition crib almost consumed



Figure 10: Carpet barely burning



Figure 11: Carpet extinguished - ignition source still glowing



Figure 12: Close-up view of remnants of crib
Note limit of flame spread