FIRELAB

TITLE	**:**	Report on the small-scale fire properties of Elastopor H" polyurethane spray foam material as determined by the SANS 10177 Part10 test protocol
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1 Introduction

The purpose of this investigation was to assess the small-scale fire properties of "Elastopor H" polyurethane spray foam material. The medium-scale horizontal flame spread properties were determined in the inverted channel facility in accordance with the SANS 10177 Part 10 test protocol.

The material is intended for use as a roof insulation material that is sprayed onto an existing roof structure, mostly within agricultural applications.

2 Description of material

"Elastopor H" is a polyurethane spray foam system which produces a rigid yellow foam with a rough finish.

3 Test method

3.1 SANS 10177 Part 10

The delivered test specimen consisted of the foam sprayed to a thickness of between 20 and 30 mm onto a non-combustible fibre-cement board backing material. The delivered panels were installed in the inverted channel tunnel facility (Figure 3.1.1).

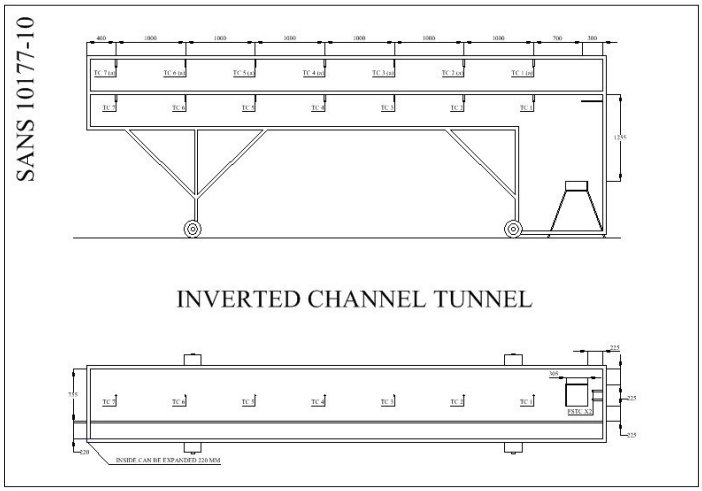

Figure 3.1.1: Diagram of SANS 10177 Part 10 inverted channel testing facility

Temperatures were measured during the investigation with thermocouples located below the installation at 1 m centres. The test installation was exposed to the thermal output of three litres of n-hexane, which was placed in the fire source tray. Temperatures were continuously recorded and observations were noted of the behaviour of the material.

The installation prior to the ignition of the fire source is shown in Figure 3.1.2.

Figure 3.1.2: Test installation prior to ignition of fire source

4 Test results

4.1 SANS 10177 Part 10

The material above the fire source discoloured and delaminated after approximately 90 seconds. The material above the fire source ignited sporadically from 7 minutes and 45 seconds (Figure 4.1.1) but no sustained burning of more than 10 seconds was noted. This pattern continued up to 12 minutes after commencement of the test when the sporadic ignition also seized.

Figure 4.1.1: Sporadic ignition of material above fire source (t = 7 ¾minutes)

Figure 4.1.2 shows the installation subsequent to completion of the test. No fire propagation beyond the area under direct influence of the fire source was observed.

Figure 4.1.2: Test installation subsequent to completion of test

The temperatures recorded in the furnace are depicted graphically in Figure 4.1.3.

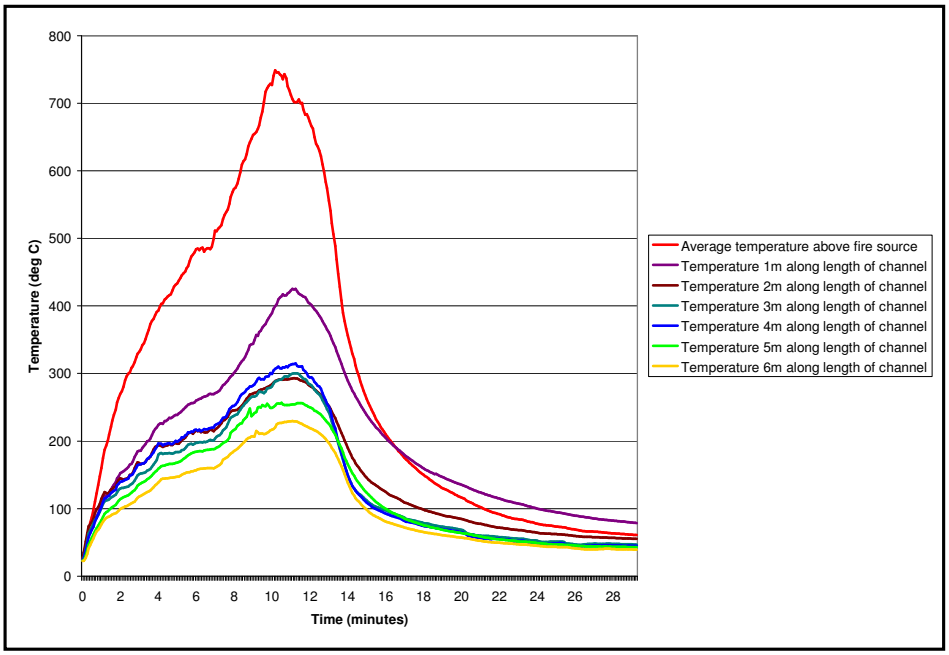

Figure 4.1.3: Temperatures recorded during SANS 10177-10 test on Elastopor H

5 Conclusions

The material as tested did not display a propensity to propagate fire from a single point of origin. The material would therefore be suitable for use within agricultural applications from a fire safety point of view. The material would also be suitable for external application during roof refurbishment as well as under-tile application in domestic dwellings.