Australian Standard™

Fire detection, warning, control and intercom systems—Methods of test

Method 1: Heat sensitivity testing of types A, B, C and D heat detectors

1 SCOPE

This Standard sets out the method for determining the alarm state temperature and actual time of activation for Type A, B, C and D heat detectors. (See performance requirements in the appropriate device Standard.)

2 PRINCIPLE

The detector is placed in an oven which is heated at a controlled rate until the detector enters an alarm state. The elapsed time and the oven temperature when the detector enters an alarm state are recorded.

3 APPARATUS

The test apparatus consists of the following:

3.1 General

(a) A closed-circuit oven equipped with an adjustable fan to produce the required draught, heating units and controls, equipment for measuring the temperature of the air in the working space, and a monitoring circuit to register the operation of the detectors.

(b) An anemometer for measuring the air speed.

(c) Automatic timing devices for measuring the elapsed time to activation with an accuracy of ±0.5 s.

3.2 Test oven

The test oven shall conform to the design and dimensions given in Figure 1. It is essentially a continuous duct of 305 mm × 200 mm rectangular cross-section, constructed from 0.50 mm zinc-coated steel sheet. It is 3050 ±25 mm long and 610 ±15 mm high. The exterior is painted flat black, and the interior is left unpainted.

Three movable windows of methyl-methacrylate sheet are fitted to the side of the upper section of the duct to serve as observation windows and as means for inserting line detectors and for adjusting the thermocouples. Into the top of the oven is bolted a sheet of close fitting building hardboard for mounting single point detectors, and, if required, hooks are fitted at appropriate centres for suspending line detectors. A baffle of brass wire mesh complying with the requirements for a 600 μm sieve as specified in AS 1152 is fitted across the leading edge of the upper section of the duct.

3.3 Draught fan

At one end of the lower section of the oven a 180 mm nominal diameter fan is mounted to provide the required draught. The fan is driven through a flexible shaft by means of a motor, mounted external to the duct, provision being made for adjustment of the air speed in the working space of the oven by varying the pitch of the fan blades or the speed of