STANDARDS ASSOCIATION OF AUSTRALIA

Australian Standard

METHODS OF TESTING SMOKE/HEAT RELEASE VENTS

AS 2428.3
DETERMINATION OF OPERATING CHARACTERISTICS

1 SCOPE. This standard sets out the method for determining the operating characteristics of a smoke/heat release vent under a specified heat.

2 APPLICATION. This is a type test to be applied to one size of a range of sizes of vents of similar design. This test shall be conducted before the flame contact test of AS 2428.4.

3 PRINCIPLE. The smoke/heat release vent is mounted over a gas burner and the characteristics of its operation are observed at different temperatures.

4 TEST SPECIMEN. The vent to be tested shall be full-size or have a total area of 2.5 m^2 to 3.5 m^2. Full-size vents having an area less than 2.5 m^2 shall be mounted in roof sheeting to provide a total area of 2.5 m^2 to 3.5 m^2.

The vent shall be mounted on legs so that a sheet metal draught curtain can be fitted. The draught curtain shall surround the legs and extend to a depth of 300 ± 10 mm from the lowest part of the vent opening. The lower edge of the draught curtain shall be approximately horizontal and not less than 300 mm above floor level.

5 APPARATUS. A gas burner shall be located beneath the vent and shielded by a non-combustible sheet so that flames do not extend above the level of the lower edge of the draught curtain.

NOTE: The shield ensures that gases beneath the vent are heated as evenly as possible. A 300 mm x 300 mm porous refractory burner, shielded with 600 mm x 450 mm board, non-combustible in accordance with AS 1530, Part 1, has been found to be satisfactory for a 2.4 m x 1.2 m vent.

Type K thermocouples (see BS 4937, Part 4*) with wires 0.8 mm diameter and welded junction, shall be located as follows:

(a) 100 ± 10 mm beneath the centre of the vent.
(b) Within 5 mm, but not touching, the thermally released link.
(c) Against the top surface of the opening element of the vent, near the centre of the vent. The thermocouple shall be held by an oven-dry pad, not less than 50 mm square and manufactured from material having a value of $\sqrt{kpc}$ not greater than 600 at 150°C, and of a thickness that gives a thermal resistivity of not less than 0.014 + 0.003, -0 m.K/Wat 150°C, secured to the element by a self-tapping screw.

In the expression $\sqrt{kpc}$ —

k = thermal conductivity, in watts per metre kelvin
p = density, in kilograms per cubic metre
c = specific heat capacity, in joules per kilogram kelvin.

6 PROCEDURE.

6.1 Slow Heating Rate. The burner shall be controlled so that the temperature as recorded by the thermocouple located 100 mm beneath the centre of the vent shall increase at a rate of 10 ± 2°C/min until the vent operates or a maximum temperature of 300°C is reached.

The time for the vent to operate (or its failure to operate) and the temperature recorded by the three thermocouples at the time of operation of the vent shall be recorded.

* BS 4937, International Thermocouple Reference Tables: Part 4 — Nickel-chromium/Nickel-aluminium Thermocouples. Type K.

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