

BS 5499 : Part 2 : 1986

Appendices

Appendix A. Methods of test for performance

A.1 General

The methods of test described in A.2 to A.5 shall be carried out in the order given and on the same sign.

NOTE. The number of signs to be tested should be agreed between the parties concerned in testing.

A.2 Physical characteristics test

Carry out the procedures described in (a) to (e). After each test, inspect the sign for visual structural failure affecting the mechanical strength or integrity of the sign and for visually apparent loss of light output.

(a) *Ventilation holes.* Insert a rod into the ventilation holes with a force of 10 N until an obstruction is met or to a maximum depth of 15 mm if no obstruction is evident.

Repeat this procedure a total of 30 times at different angles in each vent hole.

(b) *Impact test.* Drop the sign on its face, then on its back and then on one side from a height of 1 m onto a smooth, hard, rigid surface.

(c) *Temperature test.* Heat the sign in air to a temperature of +80 °C within 5 min. Keep the sign at this temperature, then cool to -20 °C in less than 45 min. Keep the sign at this temperature for 1 h.

(d) *Vibration test.* Subject the sign to three complete cycles in the range 25 Hz to 500 Hz at 5g_n. Conduct this test by sweeping through all the frequencies in the range at a uniform rate from the minimum to the maximum frequency, and then return to the minimum frequency for 10 min or longer. Test each axis of the sign, and dwell for 30 min at each resonant frequency found.

(e) *External pressure test.* Expose the sign in air to pressures of 25 kPa absolute and 200 kPa absolute for four periods of 15 min each. Return the pressure to atmospheric between each period.

A.3 Luminance test

Take readings using a photometer in a darkened room and measure over a 9 mm diameter. Make the measurements within a period of 1 month from the date of manufacture of the sign.

A.4 Dose rate measurement

Measure the radiation dose rate at the surface of the assembled sign using an appropriate method.

NOTE. Advice on appropriate methods for the tests in A.4, A.5 and A.8 can be obtained from the National Radiological Protection Board.

A.5 Tritium leakage test

Totally immerse the sign in water at 20 ± 2 °C for 24 h. Remove the sign and measure the activity of the water.

A.6 Water-soluble tritium content

Make measurements using an appropriate method (see A.4) of the water-soluble tritium content of three GTLSs from the sign under test or from the same production batch and of the same type as those in the sign.

Appendix B: Flammability test

NOTE. This method is closely based on that given in BS 6220.

B.1 Apparatus

B.1.1 *Glow-wire*, consisting of a loop of 80/20/Ni/Cr wire, as shown in figure 1. When the loop is being formed, care shall be taken to avoid fine cracking at the tip. The glow-wire shall be electrically heated; the current necessary for heating the tip to a temperature of 980 °C shall be between 120 A and 150 A.

B.1.2 *Sheathed fine wire thermocouple*, having an outside diameter of 0.6 mm, the wires consisting of nickel-chromium and nickel-aluminium. The sheath shall consist of a refractory metal resistant to a temperature of at least 980 °C. The thermocouple shall be arranged in a 0.6 mm diameter pocket hole drilled in the tip of the glow-wire as shown in section A-A of figure 1.

The thermo-voltages shall be in accordance with the international thermocouple tables given in BS 4937 : Part 4. The cold connections shall be kept in melting ice or in a compensation box.

NOTE. The characteristics of the thermocouple should approach as closely to linearity as possible.

B.1.3 *Voltmeter*, for measuring the thermo-voltage, having an accuracy of class 0.5 as specified in BS 89.

B.1.4 *Timing device*, capable of timing to an accuracy of ± 1 s.

B.1.5 *Other apparatus*. The test apparatus shall be so designed that the glow-wire is kept horizontal and that a force of 1 N is maintained on the specimen when either the glow-wire or the specimen is moved horizontally towards the other over a distance of at least 7 mm.

NOTE. An example of the test apparatus is shown in figure 2.

B.1.6 *Chip of silver foil*, 99.8 % pure silver, 0.06 mm thick and of size 2 mm x 2 mm.

B.1.7 *Piece of white pine-board*, approximately 10 mm thick and covered with a single layer of wrapping tissue.

NOTE. Wrapping tissue paper, as defined in 6.26 of BS 3203 : 1979 may be used, i.e. a soft strong light-weight wrapping paper of grammage (basis weight) generally between 12 g/m² and 30 g/m². It is primarily intended for protective wrapping of delicate articles and for gift wrapping.