Singapore Standard SS 472 : 1999

Specification for plugs and switched socket-outlets for domestic and similar purposes

AMENDMENT NO. 1

September 2020

1. Page 7, Foreword

Insert a paragraph following the 3rd paragraph as follows:

Amendment No. 1 was based on materials from BS 1363-2: 2016, "13 A Plus, socket-outlets, adaptors and connection units – Part 2: Specification for 13 A switched and unswitched socket-outlets" and BS EN 60695-10-2: 2014, "Fire hazard testing – Part 10-2: Abnormal heat – Ball pressure test method". Permission to reproduce and adapt these extracts from British Standards is granted by BSI Standards Limited (BSI). No other use of this material is permitted.

2. Page 8, Clause 2

Insert a note at the end of the clause:

NOTE – Plugs and switched socket-outlets specified in this standard are not suitable for any electric vehicle charging application.

3. Page 10, Clause 4, Table 1

Replace Table 1 with the following:

Sequence		Samples	Test	Clause number	
Plug	Socket-outlet			Plug	Socket-outlet
1	1	3	Inspection, measurement, and manipulation	4, 5, 6, 7, 9, 10, 11, 12	4, 5, 6, 7, 8, 9, 10, 11, 13
2	2	3	General	4, 5, 15.1, 17.1, 18, 19	4, 15.2, 16
	3	3		-	4, 21, 14, 16.1, 20
	4	3		-	4, 17.1, 22.2.1, 18, 19, 20
	5	3		-	4, 22.2.2, 16.1, 18, 19
3	6	3	Materials	4, 23.1, 23.2	4, 17, 18, 19
4	7	3		4, 23.3, 24.1, 24.2	4, 23.1, 23.2
	8	3		-	4, 23.3, 24.1, 24.2
5	9	3		4, 25	4, 25
NOTE – The order of tests given in sequence no. 1 above is preferred but not mandatory except where required within the text of the appropriate clause.					

4. Page 18, Clause 17

a) *Amend* the clause title to “Resistance to ageing and moisture resistance”

b) *Insert* a new subclause 17.1 as follows:

17.1 Plugs and socket-outlets shall be resistant to ageing

Conformity is checked by the following test.

Plugs and socket-outlets are subjected to a test in a heating cabinet with an atmosphere having the composition and pressure of the ambient air and ventilated by natural circulation.

The temperature of the cabinet is kept at 70 ^{o}C ± 5 ^{o}C.

The samples are kept in the cabinet for 168 $^{+2}_{0}$ h.

NOTE 1 – The use of an electrically heated cabinet is recommended.

NOTE 2 – Natural circulation may be provided by holes in the walls of the cabinet.

After the treatment, the samples are removed from the cabinet and kept at room temperature and relative humidity for 1 h; and following which they are examined and shall show no damage which:

– would lead to non-conformity with this standard;

– would impair safety; or

– would prevent further use.

c) *Renumber* 17.1 and 17.2 to 17.2 and 17.3 respectively.

5. Page 22, Clause 25

Insert a new Clause 25 as given below:

25 Resistance to heat

25.1 Plugs and socket-outlets shall be resistant to heat.

25.1.1 Conformity shall be checked by the test described in 25.1.2 or 25.1.3.

Parts made from rubber or ceramics in fixed socket-outlets shall not be subjected to these tests.

25.1.2 Plugs and socket-outlets are kept for 60 $^{+5}_{0}$ min in a heating cabinet maintained at the following temperature:

(a) 70 ^{o}C ± 5^{o}C for plugs;

(b) 100 ^{o}C ± 5 ^{o}C for switch socket-outlets.

During the test they shall not undergo any change impairing their further use and the sealing compound shall not flow to such an extent that live parts are exposed.

NOTE – A slight displacement of the sealing compound should be disregarded.

After the test, the socket-outlet shall still conform to Clauses 7 and 19, and it shall not be possible to touch live parts with test probe 11 of BS EN 61032:1998 applied with a force of $30\ ^{0}_{-2}$ N.

25.1.3 Plugs with external parts of resilient material, e.g. thermoplastics and rubber, are subjected to a pressure test by means of an apparatus similar to that shown in Figure 6, the test being made in a heating cabinet at a temperature of 70 °C ± 5 °C.

The plug is clamped between the jaws in such a way that these press against it in the area where it is gripped in normal use, the centreline of the jaws coinciding as nearly as possible with the centre of this area.

The force applied through and including the effect of the jaws is $20\ ^{0}_{-1}$ N.

After $60\ ^{+5}_{0}$ s jaws are removed, and the plugs shall satisfy the tests described in 18.2(b) and Clause 19 and shall accept the gauge of Figure 2.

25.2 Parts of insulating material shall be sufficiently resistant to heat having particular regard to their location and function in the complete plugs and socket-outlets.

25.2.1 Conformity shall be checked as follows:

(a) Parts of ceramic material are deemed to conform without testing;

(b) External parts of plugs tested according to 25.1.3, are deemed to conform without further testing;

(c) For plugs: All other parts of insulating material including ISOD shall be subjected to the ball pressure test in accordance with BS EN 60695-10-2:2014.

For socket-outlets: All other parts of insulating material shall be subjected to the ball pressure test in accordance with BS EN 60695-10-2:2014

The test temperatures shall be as given below.

For parts of insulating material necessary to retain current-carrying parts in position and the material forming the front surface of socket-outlets, within a zone of 2 mm around line and neutral pin entry holes, the test temperature shall be125 °C ± 5 °C.

For parts of insulating material not necessary to retain current-carrying parts in position, even though they may be in contact with them, the test temperature shall be 75 °C ± 5 °C.

25.2.2 The surface of the part to be tested is placed in the horizontal position and the apparatus shown in Figure 7 is placed on this surface such that a force of $30\ ^{0}_{-2}$ N is applied.

The underside of the part being tested is supported to withstand the test force and to minimise the risk of distortion.

The test load and the supporting means are placed within the heating cabinet for a sufficient time to ensure they have attained the stabilised testing temperature before the test commences.

The part to be tested is placed in the heating cabinet, for a period of at least 10 min, before the test load is applied.

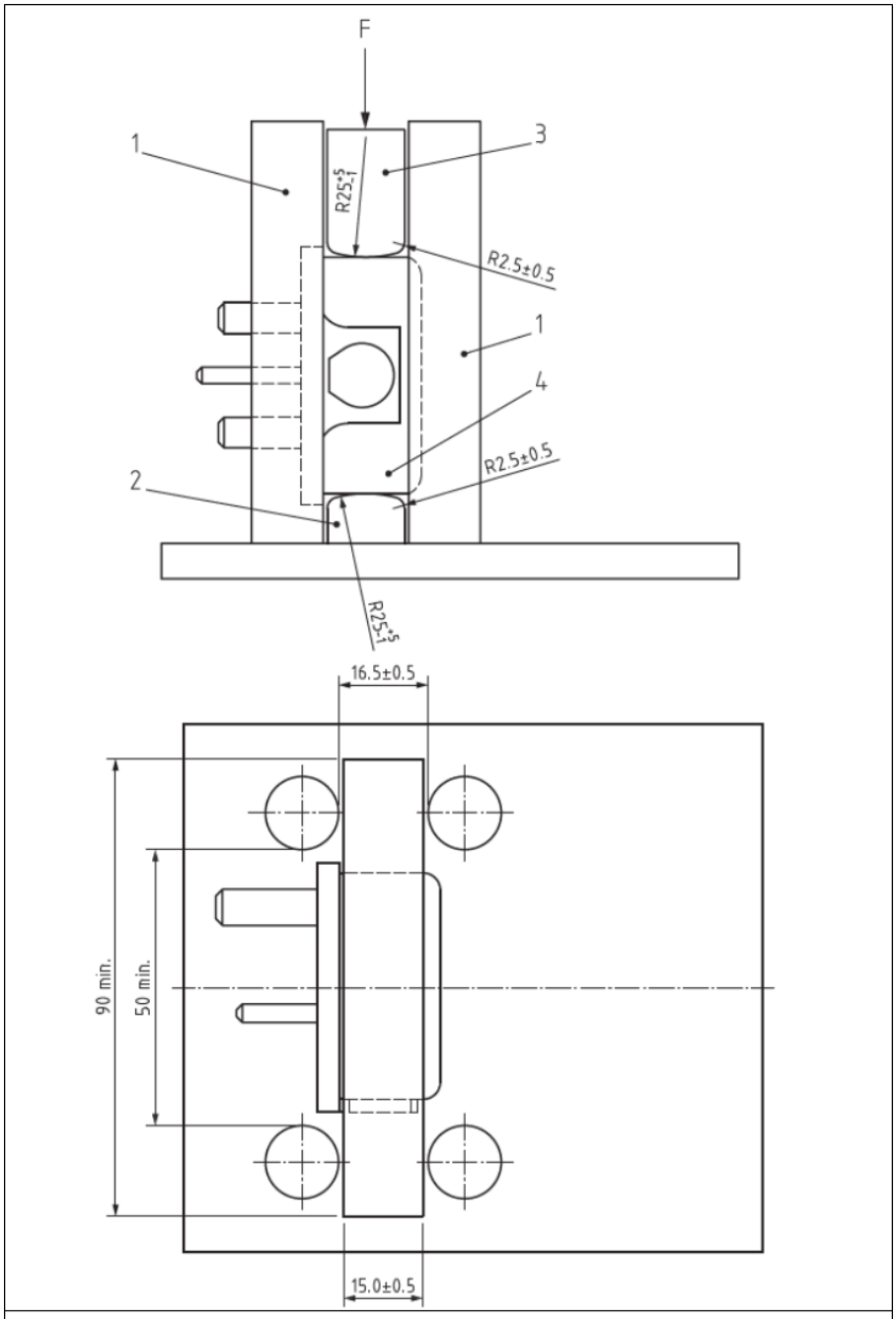
After $60\ ^{+1}_{0}$ min the ball is removed from the specimen which is then cooled down, by immersion for at least 10 s in water at approximately room temperature. The diameter of the impression caused by the ball is measured and shall not exceed 2 mm.

6. Page 26, Figure 6

Insert a new Figure 6 on apparatus for pressure test.

7. Page 27, Figure 7

Insert a new Figure 7 on ball pressure test.



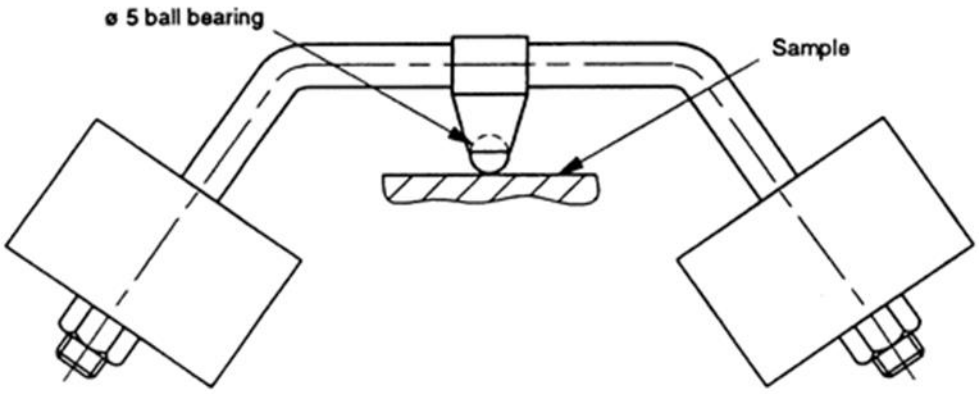
Key

F	Force
1	Guide
2	Fixed jaw
3	Moving jaw
4	Sample

NOTE 1 Dimensions are in millimetres.

NOTE 2 This drawing is not intended to govern design except as regards the dimensions and specific requirements shown.

Figure 6 – Apparatus for pressure test (see Clause 25)



Dimension is in millimetres.

NOTE – This drawing is not intended to govern design except as regards the dimensions and specific requirements shown.

Figure 7 – Ball pressure test (see Clause 25)