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PLUGS AND SOCKET-OUTLETS FOR HOUSEHOLD AND SIMILAR PURPOSES- SAFETY REQUIREMENTS AND TEST METHODS 250 V/13 A

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PLUGS AND SOCKET-OUTLETS FOR HOUSEHOLD AND SIMILAR PURPOSES- SAFETY REQUIREMENTS AND TEST METHODS 250 V/13 A

FOREWORD

This Saudi Standard "**Plugs and socket-outlets for household and similar purposes - safety requirements and test methods - 250 V/13 A**" has prepared on the basis of BS 1363-1:2016 "**13 A plugs, socket-outlets, adaptors and connection units- Part 1: Specification for rewirable and non-rewirable 13 A fused plugs**" and BS 1363-2:2016 "**13 A plugs, socket-outlets, adaptors and connection units- Part 2: Specification for 13 A switched and unswitched socket-outlets**" with national modifications applied to suit the conditions in the Kingdom of Saudi Arabia.

This standard after approval will replace and supersede SASO 2203:2٠١٥ "**Plugs and socket-outlets for household and similar purposes – Safety requirements and test methods 250 V/13 A**".

CONTENTS

PLUGS AND SOCKET-OUTLETS FOR HOUSEHOLD AND SIMILAR PURPOSES- SAFETY REQUIREMENTS AND TEST METHODS 250 V/13 A

1.0 SCOPE AND OBJECT

This standard is concerned with the systems of plugs and socket-outlets rated 13 A which are mainly used for household and similar purposes in residential, commercial, light industrial and similar general purposes suitable for the connection of portable appliances, sound-vision equipment, luminaires, etc in a.c. circuits only, operating at voltages not exceeding 250 V r.m.s. at 60 Hz. This standard specifies requirements for the following:

1.0.1 Fused plugs (maximum 13 A) having insulating sleeves on line and neutral pins. The plug may be rewirable or non-rewirable complete with flexible cable. The plugs shall incorporate a fuse complying with BS 1362:1973 incorporating amendments numbers 1 and 2.

This standard also applies to non-rewritable 13 A plugs which have the metallic earth pin replaced with a similarly dimensioned protrusion made of insulating material designated as an insulated shutter opening device (ISOD) designed to operate the shutter mechanism of a socket-outlet.

Plugs containing switches and devices other than indicator lamps are outside the scope of this standard.

1.0.2 13 A switched and unswitched shuttered socket-outlets. The 13 A shuttered socket-outlets may be in single or multiple arrangements with or without switches, for flush mounting in suitable boxes or for surface or panel mounting for fixed installations.

Socket-outlets containing devices other than switches, USB and indicator lamps are outside the scope of this standard.

Portable socket-outlets are outside the scope of this standard.

1.1 CONDITIONS FOR USE AND TESTING

1.1.1 Conditions of use

Plugs and socket-outlets shall be suitable for use under the following conditions:

a) an ambient temperature in the range -5ºC to +45ºC, the average value over 24 h not exceeding 35 °C;

b) a situation not subject to exposure to direct radiation from the sun or other source of heat likely to raise temperatures above the limits specified in a);

c) an altitude not exceeding 2 000 m above sea level;

d) an atmosphere not subject to abnormal pollution by smoke, chemical fumes, rain, spray, prolonged periods of high humidity or other abnormal conditions.

1.1.2 Conditions for testing

Unless otherwise specified in this standard, the plugs and socket-outlets shall be tested as per clause 5 in BS 1363-1:2016 and BS 1363-2:2016.

Plugs or socket-outlets used for the tests shall be representative of normal production items in respect of all details which may affect the test results.

All inspections and tests, of any one classification, shall be carried out as specified in the relevant clauses listed in this standard and the relevant schedule of tests given in the relevant reference standards on the number of samples in the sample column and in the order given.

2.0 REFERENCES

The following referenced documents are indispensable for the application of this SASO Standard.

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

2.1 BS 1363-1:2016 concerned with "13A plugs, socket-outlets, adaptors and connection units - Part 1: Specification for rewirable and non-rewirable 13 A fused plugs".

2.2 BS 1363-2:2016 concerned with "13 A plugs, socket-outlets, adaptors and connection units - Part 2: Specification for 13 A switched and unswitched socket-outlets".

2.3 BS 1362:1973 Concerned with "General purpose fuse links for domestic and similar purposes (primarily for use in plugs)", incorporating amendments numbers 1 and 2.

2.4 SASO IEC 60670-1, “Boxes and enclosures for electrical accessories for household and similar fixed electrical installations - Part 1: General requirements”.

3.0 Definitions:

Throughout this standard the definitions of the BS 1363-1:2016 and BS 1363-

2:2016 standards apply.

4.0 MATERIALS, DESIGN AND CONSTRUCTION

The following requirements shall be met for the plugs and socket-outlets:

4.1 Materials and construction

4.1.1 The materials used in the component parts shall be in accordance with Table (1).

Table (1)

Materials and components parts

PART	MATERIAL
Non resilient base and cover of a plug, socket-outlet plate (non-metallic).	Moulded, tough, non ignitable insulating material.
Resilient base or resilient covers of a plug.	Rubber or other insulating materials free from blisters, cracks, embedded impurities and defects likely to affect insulating and mechanical protecting properties.
Socket-outlet plates (metallic).	Sheet metal, cast metal or die-cast metal. Provision shall be made for the effective earthing of all metal parts that may become live in the event of failure of insulation of the socket-outlet and are being touched during normal operation.
Socket-outlet base.	An insulating material with rigid mechanical characteristics and no flame propagating characteristics like suitable grade of Polly Carbonates (PC), Urea and/or suitable equivalent material.
Current carrying parts.	Brass, phosphor-bronze, and/or suitable equivalent material.
Shutter.	Moulded, tough, non-ignitable insulating material.

4.1.2 Moulded insulating material and the vitrified ceramic material shall be nonhygroscopic and shall be resistant to the formation of carbonized paths.

4.1.3 Parts made of ferrous material shall be treated to resist rusting.

4.1.4 Conformity shall be checked by inspection and/or relevant tests in this standard and the reference standards.

4.2 Terminals

4.2.1 Terminals and terminations shall provide for effective clamping and securing of conductors connected to them, so that efficient electrical connection is made.

4.2.2 Conformity shall be checked by inspection and/or relevant tests in this standard and the reference standards.

4.3 Plugs

4.3.1 Plugs shall comply with the relevant dimensional standard figures in the reference standard BS 1363-1:2016.

4.3.2 Conformity shall be checked by inspection, measurement, by the use of the gauges and/or relevant tests as described in this standard and the reference standard BS 1363-1:2016.

4.3.3 Fuses

The plug shall be provided with a fuse inside it. This fuse shall fulfill the following:

4.3.3.1 Fuses shall have rating not exceeding 13A.

4.3.3.2 Conformity shall be checked by inspection and/or relevant tests in this standard and the reference standard BS 1362:1973.

4.4 Socket-outlets

4.4.1 Socket-outlets shall comply with the relevant dimensional standard figures in the reference standard BS 1363-2:2016.

4.4.2 The socket-outlet shall be either of the following.

a) Single or double

b) With or without a switch

c) With or without an indication lamp

d) Flush or surface mounted.

e) With or without USB outlet

4.4.3 Conformity shall be checked by inspection, measurement, by the use of the gauges and/or relevant tests as described in this standard and the reference standard BS 1363-2:2016.

4.4.4 Switches

4.4.4.1 If the socket-outlet is provided with a switch, the switch shall be a double pole.

4.4.4.2 Conformity shall be checked by inspection, measurement, by relevant tests as described in this standard and the reference standard BS 1363-2:2016.

4.4.5 USB Outlet

4.4.5.1 If the socket-outlet is provided with a USB outlet, the outlet shall be of the characteristics of the USB outlet specified in Annex I from BS 1363-2:2016.

4.4.5.2 Conformity shall be checked by inspection, measurement, by relevant tests as described in this standard and Annex I from BS 1363-2:2016.

4.4.6 Shutters

4.4.6.1 Socket-outlets shall be provided with shutters.

4.4.6.2 Conformity shall be checked by inspection, measurement, by the use of the gauges and/or relevant tests as described in this standard and the reference standard BS 1363-2:2016.

4.4.7 Boxes

4.4.7.1 Socket-outlets shall be put in use by fixing them on suitable surfaces using suitable boxes, these boxes shall comply with SASO IEC 60670-1.

NOTE: Box sizes allowed in Saudi Arabia are 72x72 mm (Width x Height) (external dimension) for one gang, and 132x72 mm for duplex type (two gangs) socket-outlets

4.4.7.2 Conformity shall be checked by inspection, measurement, or relevant tests as described in this standard and the reference standard SASO IEC 60670-1.

4.5 Clearance and creepage distances

4.5.1 Clearance and creepage distances shall comply with the relevant clause/sub clauses in the reference standards.

4.5.2 Conformity shall be checked by inspection, measurement, and/or relevant tests as described in this standard and clause 8 in the two reference standards BS 1363-1:2016 and BS 1363-2:2016.

5.0 RATING AND CHARACTERISTICS

5.1 Rating, shape and dimensions

The rating, shape and dimensions of plugs and socket-outlets shall be as follows:

5.1.1 13A maximum two-pin plug with earthing pin.

5.1.2 13A two pin shuttered socket-outlet with earthing contact.

5.1.3 Conformity shall be checked by inspection, measurement by the use of the gauges and/or relevant tests as described in this standard and clause 6 of the two reference standards BS 1363-1:2016 and BS 1363-2:2016.

5.2 Protection against electric shock

5.2.1 Plugs and socket-outlets shall be so constructed that when they are mounted and wired as in normal use, live parts are not accessible.

5.2.2 Conformity shall be checked by inspection, measurement, by the use of the gauges and/or relevant tests as described in this standard and the two reference standards BS 1363-1:2016 and BS 1363-2:2016.

5.3 Insulation resistance

5.3.1 The insulation resistance for the plugs and socket-outlets shall be not less than the relevant values specified in BS 1363-1:2016 and BS 1363-2:2016.

5.3.2 Conformity shall be checked by relevant tests as described in this standard and clause 15 of the two reference standards BS 1363-1:2016 and BS 1363-2:2016.

5.4 Electrical strength

5.4.1 Plugs and socket-outlets shall withstand a high voltage test and pass a momentary high voltage without any flash over or breakdown of insulation.

5.4.2 Conformity shall be checked by relevant tests as described in this standard and clause 15 of the two reference standards BS 1363-1:2016 and BS 1363-2:2016.

5.5 Temperature rise

5.5.1 The temperature rise measured for any part shall not exceed the relevant values specified in BS 1363-1:2016 for plugs and BS 1363-2:2016 for sockets.

5.5.2 Conformity shall be checked by relevant tests as described in this standard and clause 16 of the two reference standards BS 1363-1:2016 and BS 1363-2:2016.

5.6 Contact resistance

5.6.1 The resistance between the earthing terminal or termination of plug or socket-outlet and any other nominated metal part shall not exceed the relevant values specified in BS 1363-1:2016 and BS 1363-2:2016.

5.6.2 Conformity shall be checked by relevant tests as described in this standard and the two reference standards BS 1363-1:2016 and BS 1363-2: 2016.

5.7 Current breaking capacity of socket-outlets

5.7.1 The breaking capacity of socket contacts and switches incorporated in socket-outlets shall be adequate.

5.7.2 Conformity shall be checked by the tests described in the clause 17 of the reference standard BS 1363-2:2016 as applicable.

5.8 Normal operation

5.8.1 Plugs and socket-outlets shall withstand, without excessive wear or other harmful effects, the electrical and mechanical stresses occurring in use.

5.8.2 Conformity shall be checked by the tests described in the clause 18 of the reference standard BS 1363-2:2016.

5.9 Resistance to heat

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

5.9.2 Conformity shall be checked by the tests described in the clause 22 of the reference standard BS 1363-1:2016 and BS 1361-2:2016.

5.10 Mechanical strength

5.10.1 Plugs and socket-outlet shall have adequate mechanical strength and be so constructed as to withstand such handling as may be expected in normal use.

5.10.2 Conformity shall be checked by the tests described in the clause 20 of the reference standard BS 1363-1:2016 and BS 1363-2:2016.

5.11 Resistance to abnormal heat and fire

5.11.1 Plugs and socket-outlets shall be proof against abnormal heat, fire and tracking.

5.11.2 Conformity shall be checked by the glow wire test described in the clause 23 of the reference standard BS 1363-1:2016 and BS 1363-2:2016.

5.12 Resistance to ageing and to humidity

5.12.1 Resistance to ageing

5.12.1.1 Plugs and socket-outlets shall be resistance to aging.

5.12.1.2 Conformity shall be checked by the test described in the clause 14 of the reference standard BS 1363-1:2016 and BS 1363-2:2016.

5.12.2 Resistance to humidity

5.12.2.1 Plugs and socket-outlets shall be proof against humid conditions which may occur in normal use.

5.12.2.2 Conformity shall be checked by the test described in the clause 14 of the reference standard BS 1363-1:2016 and BS 1363-2:2016.

5.13 Resistance to excessive residual stresses and to rusting

5.13.1 Press-formed or similar current-carrying parts of copper alloy containing less than 80% of copper shall be resistant to failure in use due to stress corrosion.

5.13.2 Ferrous parts, the rusting of which might cause the unit to become unsafe, shall be adequately protected against rusting.

5.13.3 Conformity shall be checked by the tests described in the clause 24 of the reference standard BS 1363-1:2016 and BS 1363-2:2016.

6.0 TESTS

6.1 For all types of plugs and socket-outlets which are newly produced or delivered for the first time, a sample shall be selected at random for type approval.

6.2 Type tests shall be carried out on the samples selected in accordance with clause 5 of the two reference standards BS 1363-1:2016 and BS 1363-2:2016.

6.3 Conformity shall be checked by the tests described in "Table 1 - schedule of tests" for plugs and socket-outlets from the reference standard BS 1363-1:2016 and BS 1363-2:2016.

7.0 MARKING

7.1 Each plug or socket-outlet shall have the following information clearly and durably marked on it, in Arabic or English.

a. Country of origin.

b. Manufacturer’s name or purchaser’s name or trade-mark or both.

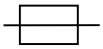
c. Rated current in amperes: (plug, socket outlet and USB).

d. Rated voltage in volts.

e. Identification of each of the live, the neutral and the earthed pole.

f. For fused plugs, the word “Fuse” or “Fused” or symbol.

g. If symbols are used they shall be as follows:

- Amperes : A
- Volts : V
- Fuse : 
- Neutral or live : N or L
- Earth : G or E or 
- Fused live : L

7.3 Conformity shall be checked by the inspection and tests described in the clause 7 of the reference standard BS 1363-1:2016 and BS 1363-2:2016.