a temperature of 60° F. after one minute's electrification at a pressure of at least 500 volts direct current shall not be less than that given in Table IX in Division VII hereof.

62–32. The insulation resistance of each insulated conductor of a multicore cable shall not be less than that given in the said Table IX for single conductors of the same cross-sectional area.

62–33. The insulation resistance of the insulating material separating the two conductors of a concentric cable shall not be less than that given in the said Table IX for single conductors having the same diameter as the inner conductor.

62–34. The insulating material of flexible cords shall withstand for fifteen minutes the alternating pressure and frequency set out in Table X in Division VII hereof.

62–35. (1) Samples of tinned copper wire taken from a conductor, either before or after the insulating material has been vulcanized, shall be coiled into helices of six turns, the diameter of which shall be not less than twenty-four times nor more than thirty times the diameter of the wire. Each helix shall be provided with suitably long ends. The samples shall be cleaned by immersion in a suitable solvent, such as alcohol or ether, to remove any grease.

(2) Each sample shall be immersed for three complete cycles in not less than 100 cubic centimeters of the test solutions, prescribed by clause (3) of this regulation, maintained at a temperature of approximately 60° F. Each cycle shall consist of immersion for—

(*a*) One minute in the hydrochloric acid solution, after which the sample shall be washed in running water; and

(*b*) Thirty seconds in the sodium polysulphide solution, after which the sample shall be washed in running water.

On completion of three complete cycles each sample shall be carefully examined and if there is any visible blackening effect on the surface of any sample the conductor shall be deemed not to comply with these regulations.

In the event of any one sample of a set giving results widely dissimilar from the other samples a fresh sample shall be tested.

(3) The test solutions shall be prepared as follows:—

(*a*) The hydrochloric acid solution shall be made by diluting pure hydrochloric acid with distilled water to a specific gravity of 1·088 at 60° F.

(*b*) The sodium polysulphide solution shall be made by dissolving 25 grammes of pure sodium sulphide crystals (Na_2 S $9H_2O$) in distilled water to a total volume of 100 cubic centimeters. Sufficient powdered sulphur shall be added to saturate the solution. The solution shall be boiled for approximately one hour and shall be constantly stirred. The solution shall be cooled and filtered and shall then be diluted with distilled water to a specific gravity of 1·142 at 60° F.

(4) The hydrochloric acid solution shall be deemed to be exhausted when twenty wires have been tested in it and it shall then be discarded.

The sodium polysulphide solution shall be tested for specific gravity immediately before use. It shall be capable of thoroughly blackening a piece of clean plain copper in five seconds before being used for testing purposes.

RADIO APPARATUS.

62–41. Every transformer which is used with any radio apparatus, and which is, or which may be, in electrical contact with any submain, or subcircuit, which is connected to a service-main shall while still hot after a full-load temperature test be capable of withstanding the following tests:—

(*a*) A test pressure of 1,000 volts (R.M.S. value) alternating current plus twice the highest primary open-circuit pressure shall be applied for one minute between the primary winding and the secondary windings. Throughout the test the secondary windings, core, frame, and case of the transformer shall be connected together.

(*b*) A test pressure of 1,000 volts (R.M.S. value) alternating current plus twice the highest open-circuit pressure of each secondary winding shall be applied for one minute between the secondary winding under test and all other windings (both primary and secondary), these latter being connected to the core, frame, and case of the transformer.

(*c*) The insulation resistance between the primary winding and the secondary windings when measured after the above pressure tests shall be not less than 20 megohms when tested with a direct current pressure of 500 volts or twice the maximum working pressure whichever is the greater.

62–42. Every condenser which is used with any radio apparatus, and which is, or which may be, in electrical contact with any submain, or subcircuit which is connected to a service-main, shall be capable of withstanding for one minute a test pressure of three times the highest pressure to which it is possible to subject it during normal use.

WIRING INSTALLATIONS.

62–51. There shall be the following insulation resistance tests of every wiring installation with a direct current pressure in each case of not less than twice the pressure to which the circuits will normally be subject, provided that in the case of medium pressure circuits the test pressure need not exceed 500 volts:—

(*a*) Where a test is desired of the permanent wiring before any fittings, accessories, appliances, or lamps are installed the conductors shall be connected together so as to ensure that all parts of every circuit are simultaneously tested. The test shall be made between the conductors as a whole and earth:

Provided that such test shall be deemed to be satisfied if the insulation resistance is not less in megohms than the result of dividing the number 100 by the number of outlets (points and switch positions) from the fixed wiring.

(*b*) (i) A test of the completed installation, or an addition to or alteration of an existing installation, with all fuse-links in place, all switches in the "on" position (including the main switch if practicable), and all lamps in position. The test shall be made between the conductors as a whole and earth:

Provided that such test shall be deemed to be satisfied if the insulation resistance is not less in megohms than the result of dividing the number 50 by the number of outlets (points and switch positions) from the fixed wiring.

(ii) Control rheostats, heating, cooking, and power appliances, and outdoor electric signs may be disconnected from the circuits during the test, in which case the insulation resistance between the case or framework and all live parts of each such rheostat, appliance, and sign shall be tested:

Provided that such test shall be deemed to be satisfied if the insulation resistance is not less than half a megohm.

(*c*) Where practicable a test between conductors:

Provided that such test shall be deemed to be satisfied if the insulation resistance is not less in megohms than that prescribed in paragraph (*b*) (i) of this regulation.

62–52. There shall be the following continuity tests of every wiring installation:—

(*a*) A test between the connection to earth and any other part of the completed installation in all cases where metal conduits, metallic sheathed cables, or armoured cables which have no other metallic sheath are used; and

(*b*) A test between the connection to earth and any part of any earthing-lead:

Provided that each such test shall be deemed to be satisfied if the electrical resistance of such conduit, sheathing, or earthing-lead does not exceed 2 ohms.

62–53. A test shall be made on every wiring installation to verify that no single-pole switch or circuit-breaker has been fitted in any neutral conductor or earthed conductor, and in the case of a non-earthed two-wire system that every such switch or circuit-breaker is fitted in the same conductor throughout. This test shall not apply to a switch mounted on a portable appliance.

62–54. A test shall be made of every two-pin non-reversible type plug-socket and every three-pin plug-socket to verify that the conductors have been connected in accordance with Regulations 47–73 and 47–74 hereof.

62–55. Except where the metal conduit or metallic sheathing of cables is connected to the neutral bus-bar (or stud) as provided in Regulation 54–25 hereof, there shall be, in the case of earths made in accordance with Regulation 54–31 (2) hereof, the following earth resistance tests:—

(*a*) A test between the earth-plate, pipe, or rod, and the general mass of earth; and

(*b*) A test between the metal conduit or metallic sheathing and the general mass of earth:

Provided that each such test shall be deemed to be satisfied if the electrical resistance does not exceed 10 ohms.

TRANSFORMERS.

62–61. Every step-down transformer shall be capable of withstanding the tests prescribed by Regulation 62–41 hereof.

GENERAL.

62–71. All moulded insulating material shall be capable of withstanding the tests prescribed by British Standard Specification No. 488.