

# INTERNATIONAL STANDARD IEC 60335-1

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## Household and similar electrical appliances – Safety –

### Part 1:

### General requirements

#### 11.7 The appliance is operated for a duration corresponding to the most unfavourable conditions of normal use.

NOTE The duration of the test may consist of more than one cycle of operation.

#### 13 Leakage current and electric strength at operating temperature

**13.1** At operating temperature, the leakage current of the appliance shall not be excessive and its electric strength shall be adequate.

Compliance is checked by the tests of 13.2 and 13.3.

The appliance is operated under **normal operation** for the duration specified in 11.7.

**Heating appliances** are operated at 1,15 times the **rated power input**.

**Motor-operated appliances** and **combined appliances** are supplied at 1,06 times **rated voltage**.

Three-phase appliances which, according to the instructions for installation, are also suitable for single-phase supply are tested as single-phase appliances with the three circuits connected in parallel.

**Protective impedance** and radio interference filters are disconnected before carrying out the tests.

**13.2** The leakage current is measured by means of the circuit described in figure 4 of IEC 60990 between any pole of the supply and **accessible metal parts** connected to metal foil having an area not exceeding 20 cm · 10 cm which is in contact with **accessible surfaces** of insulating materials.

NOTE 1 The voltmeter shown in figure 4 of IEC 60990 is to be capable of measuring the true r.m.s. value of the voltage.

For single-phase appliances, the measuring circuit is shown in the following figures:

- if of **class II**, figure 1;
- if other than **class II**, figure 2.

The leakage current is measured with the selector switch in each of the positions a and b.

For three-phase appliances, the measuring circuit is shown in the following figures:

- if of **class II**, figure 3;
- if other than **class II**, figure 4.

For three-phase appliances, the leakage current is measured with the switches a, b and c in the closed position. The measurements are then repeated with each of the switches a, b and c open in turn, the other two switches remaining closed. For appliances intended to be connected in star connection only, the neutral is not connected.

#### After the appliance has been operated for a duration as specified in 11.7, the leakage current shall not exceed the following values:

- for **class II appliances** 0,25 mA
- for **class 0, class 0I and class III appliances** 0,5 mA
- for **portable class I appliances** 0,75 mA
- for **stationary class I motor-operated appliances** 3,5 mA
- for **stationary class I heating appliances** 0,75 mA or 0,75 mA per kW **rated power input** of the appliance with a maximum of 5 mA, whichever is higher

higher

For **combined appliances**, the total leakage current may be within the limits specified for **heating appliances** or **motor-operated appliances**, whichever is the greater, but the two limits are not added.

If the appliance incorporates capacitors and is provided with a single-pole switch, the measurements are repeated with the switch in the **off position**.