

**IEC 60335-1 ED. 4.0 - SAFETY OF HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES**

This Standard deals with the safety of electrical appliances for household and similar purposes; the rated voltage of the appliances being not more than 250 V for single-phase appliances and 480 V for other appliances.

Recently the Standard has been modified and requirements are reportedly much stricter than those previously used, in order to avoid fire risks and provide further guarantees of safety in electrical

appliances.

Such modifications involve, above all, components made of an insulating material that support electrical connections carrying a current >0.2A, including components at a distance of less than 3 mm from the connection.

The flowchart for the material and / or part evaluation according to **IEC 60335-1**, is schematically illustrated in figure.

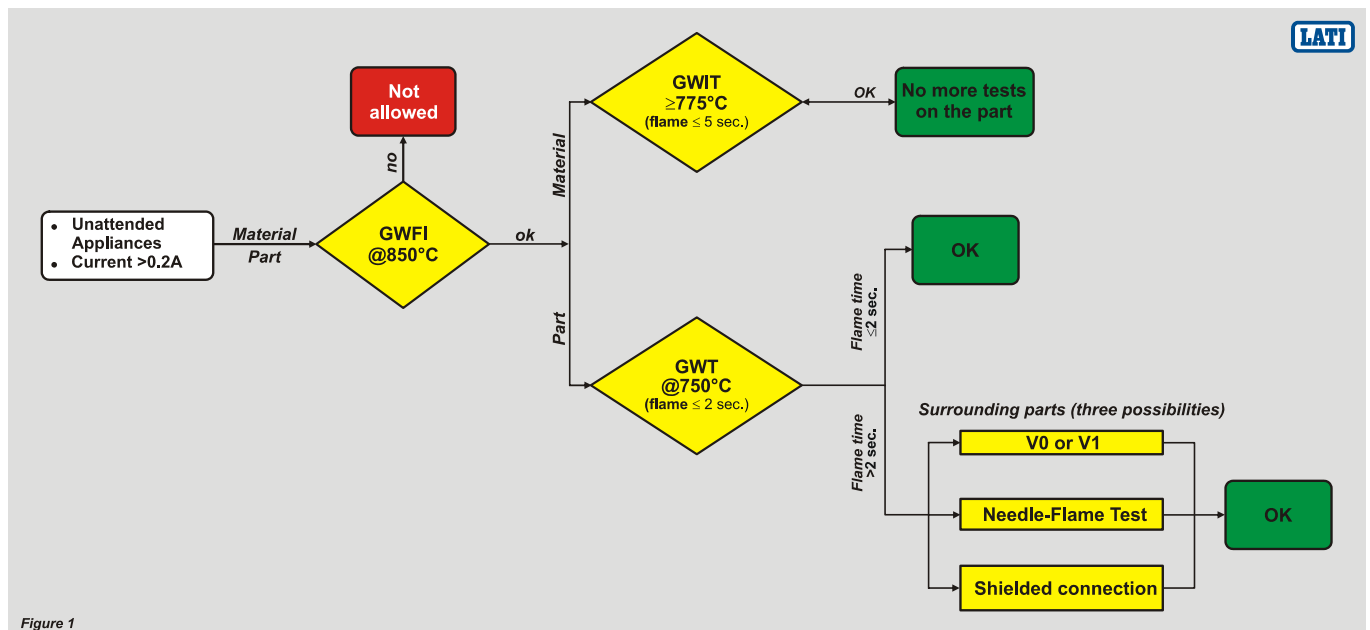


Figure 1

**Paragraph 30 - Resistance to heat and fire**

**30.1 - Heat resistance:** the parts must comply with the Ball Pressure Test of IEC 60695-10-2. The test is carried out at a temperature of 40°C ± 2°C plus the maximum temperature rise determined during the test of clause 11, but it shall be at least 75°C ± 2°C for external

components and 125°C ± 2°C for components supporting live parts.

**30.2 - Fire resistance**

**30.2.2 - Attended Appliances:** according to the Standard parts ought to be subjected to the Glow-Wire Test of IEC 60695-2-11, which is carried out at 750°C for connections that carry a current >0.5A and 650°C for other connections.

### 30.2.3 - Unattended Appliances

**30.2.3.1:** parts that carry a current  $>0.2A$  shall have a Glow-Wire Flammability Index of  $\geq 850^{\circ}C$  (IEC 60695-2-12).

**30.2.3.2:** parts supporting current-carrying connections, shall always be subjected to the Glow-Wire Test according to IEC 60695-2-11. However, the GWT is not carried out on parts of material classified as having a Glow-Wire Ignition Temperature, according to IEC 60695-2-13, of  $\geq 775^{\circ}C$  for connections that carry a current  $>0.2A$  and  $\geq 675^{\circ}C$  for other connections.

Test samples ought to be no thicker than the relevant part. The maximum flame-persistence-time admitted during the test is of 5 seconds.

When the Glow-Wire Test of **IEC 60695-2-11** is carried out on the parts, the temperatures are of  $750^{\circ}C$  for connections which carry a current  $>0.2A$  and  $650^{\circ}C$  for other connections. If during the test a flame that persists for longer than 2 seconds is produced, the Needle-Flame.

Test must be carried out for all parts above the connection within the envelope of a vertical cylinder having a diameter of 20 mm and a height of 50 mm.

However, the latter test is not needed if between the connections and the other parts there is a "protection" that meets the Needle-Flame Test.

The Needle-Flame Test is not carried out on parts of material classified as V-0 or V-1, according to IEC 60695-11-10, provided that the test sample was no thicker than the relevant part.

