

C.2 Elaboration of the essential safety requirements for electrical products

All electrical products should comply with the following essential safety requirements:-

(1) General conditions

(A) The essential information as stated in sub-paragraph (B) below, the recognition and observance of which will ensure that an electrical product will be used safely in applications for which it is made, should be printed on the product in English, Chinese or international standard symbols; or, if this is not possible, on an accompanying notice.

(B) Such information should include:-

(I) rated voltage (or rated voltage range in volts) and rated frequency (or rated frequency range in hertz);

(II) rated power input in terms of watts or kilowatts or rated current input in terms of amperes or milliamperes;

(III) model or type reference number; and

(IV) manufacturer's name or trade mark.

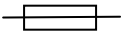



The markings of the product should be durable, legible and clearly discernible from the outside of the product but if necessary after removal of a cover. The cover should be possible to be removed or opened without the use of a tool.

If the products can be adjusted for different rated voltages, the voltage to which the products is adjusted should be clearly indicated.

The following symbols should generally be used :

V	-----	volts
Hz	-----	hertz
W	-----	watts
kW	-----	kilowatts
A	-----	amperes
mA	-----	milliamperes
----	-----	or d.c. direct current
~	-----	or a.c. alternating current

In addition, the following symbols should be used where appropriate:

	-----	rated current of the appropriate fuse-link in amperes
	or  or E	----- earth
	-----	class II appliance
l	-----	litres
kg	-----	kilogrammes
g	-----	grammes
Pa	-----	pascals
Bar	-----	bars
h	-----	hours
min	-----	minutes
s	-----	seconds

- (C) The electrical product, together with its component parts, should be made in such a way as to ensure that it can be safely and properly assembled and connected.

(2) Protection against hazards arising from an electrical product

An electrical product should be so designed and constructed in order to ensure that :

- (A) persons and animals are adequately protected against danger of physical injury or other harm which might be caused by electrical contact whether direct or indirect;

Some examples are:

- (I) An electrical product should be constructed so that there is adequate protection against accidental contact with live parts. This applies for all operating positions of the product, even after opening of lids and doors or removal of detachable parts.
- (II) A class II product should be constructed and enclosed so that there is adequate protection against accidental contact with basic insulation and metal parts separated from live parts by basic insulation only.

- (III) An electrical product if intended to be connected to the supply by means of a plug should be so designed that in normal use there is no risk of electric shock from charged capacitors when touching the pins of the plug.
 - (IV) Shafts of operating knobs, handles, levers and the like of an electrical product should not become live.
- (B) temperatures, arcs or radiation which are not part of the intended function of the product, and likely to cause a danger, are not produced;

Some examples are :

- (I) An electrical product and its surroundings should not attain excessive temperature in normal use. Suitable warning label should be provided if the surface temperature of the product would cause injury when a person gets in touch with it.
- (II) Harmful arcs or radiation should not be emitted from the electrical product.

- (C) persons, animals and property are adequately protected against non-electrical danger caused by the electrical product which are revealed by experience;

Some examples are :

- (I) Moving parts of an electrical product should, as far as it is compatible with the use and working of the product, be so arranged or enclosed as to provide, in normal use, adequate protection against personal injury.
- (II) Protective enclosures, guards and the like should have adequate mechanical strength. They should not be removable without the aid of a tool, unless their removal is necessary in normal use.
- (III) An electrical product and its accessories should have no sharp edges, burrs or the like which might cause injury to the users, other than those necessary for the function of the product.
- (IV) Non-detachable parts of an electrical product which provide the necessary degree of protection against electric shock, moisture or contact with moving parts, should be fixed in a reliable manner and should withstand the mechanical stress occurring in normal use.

(V) Handles, knobs, grips, levers and similar parts should be fixed in a reliable manner so that they will not work loose in normal use if loosening might result in a hazard.

(D) persons and animals are adequately protected against danger due to hazardous materials used in the electrical product; and

An example is :

(I) An electrical product should not be made of toxic material.

(E) the insulation is suitable for foreseeable conditions.

An example is :

(I) Proper insulation with adequate dielectric strength should be provided for the electrical product to cater for normal operating conditions. When the electrical product is subject to leakage current test and insulation strength test detailed in the appropriate international/national safety standards, the leakage current measured should not exceed the maximum allowed values.

(3) Protection against hazards which may be caused by external influences on an electrical product

An electrical product should be so designed and constructed in order to ensure that :

(A) the electrical product meets the expected mechanical requirements in such a way that persons, animals and property are adequately protected against danger caused by the electrical product;

An example is :

(I) The electrical product should have adequate mechanical strength and be constructed to withstand rough handling that may be expected in normal use.

(B) the electrical product is resistant to non-mechanical influences in expected environmental conditions, in such a way that persons, animals and property are adequately protected against danger caused by the electrical product;

An example is :

(I) The electrical product should be constructed such that its electrical insulation would not be affected by water which might condense on cold surfaces or by liquid which might leak from containers, hoses, couplings and similar parts of the product. Moreover, the electrical insulation of a class II electrical product should not be affected, if a hose ruptures or a seal leaks.

(C) in foreseeable conditions of overload, persons, animals and property are adequately protected against danger caused by the electrical product; and

An example is :

(I) The electrical product should be provided with appropriate overload protection device such that any overload current caused by external or internal influences would not cause a temperature rise detrimental to insulation or cause excessive temperature rise to the electrical product and its surroundings.

(D) the electrical product, other than a fixed and hand held product, has such stability that it can be maintained in a specific position.

An example is :

(I) An electrical product, other than a fixed and a hand held product, intended to be used on a surface such as the floor or a table should have adequate stability to prevent overturn.