

PAKISTAN STANDARD

HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES SAFETY –

PART 2-80: PARTICULAR REQUIREMENTS FOR FAN



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**PAKISTAN STANDARDS AND QUALITY CONTROL AUTHORITY,
STANDARDS DEVELOPMENT CENTRE,
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PAKISTAN STANDARDS & QUALITY CONTROL AUTHORITY

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HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES SAFETY –

PART 2-80: PARTICULAR REQUIREMENTS FOR FAN

0. FOREWORD

- 0.1 This Pakistan Standard was adopted by the authority of the Board of Directors of Pakistan Standard and Quality Control Authority after the draft prepared by the Technical Committee for “Electric Fans (EDC-1)” had been approved & endorsed by the Electro-technical National Standards Committee on 27-04-2010.
- 0.2 This Pakistan Standard Specification was adopted in 2007. This was based on IEC Standard. Since IEC has revised their standard and Ammendment-II/2008 incorporated. So, it was deemed necessary to revise our exiting standard as per latest IEC Standard in order to keep abreast with latest technological development in industry.
- 0.3 This revised standard is an adoption of latest IEC: 60335-2-80/2008 and its use hereby acknowledged with thanks.
- 0.4 This Standard is subject to periodical review in order to keep pace with the changing requirements and latest development in the industry. Any suggestion for improvement will be recorded and placed before the revising committee in due course.
- 0.5 This Standard covers the technical provisions and it does not purport to include all the necessary provision of a contract.

**HOUSEHOLD AND SIMILAR ELECTRICAL APPLIANCES –
SAFETY –
PART 2-80: PARTICULAR REQUIREMENTS FOR FANS**

1. Scope

This clause of part 1 is replaced by the following.

This International standard deals with the safety of electric fans for household and similar purposes, their rated voltage being not more than 250 V for single-phase appliances and 480 V for other appliances.

NOTE: 101: Example of fans that are within the scope of this standard are

- ceiling fans;
- duct fans;
- Partition fans;
- Pedestal fans;
- Table fans.

This standard also applies to separate controls supplied with fans.

Appliances not intended for normal household use but which nevertheless may be a source of danger to the public, such as appliance intended for use in shops, in light industry and on farms, are within the scope of this standard.

As far as is practicable, this standard deals with the common hazard presented by appliances that are encountered by all persons in and around the home. However, in general, it does not take into account.

- the use of appliances by young children or infirm persons without supervision;
- playing with the appliance by young children.

NOTE: 102 Attention is drawn to the fact that

- for appliances intended to be used in vehicles or on board ships or aircraft, additional requirements may be necessary;
- in many countries additional requirements are specified by the national health authorities, the national authorities responsible for the protection of labour and similar authorities.

NOTE: 103 This standard does not apply to

- appliances intended exclusively for industrial purposes;
- appliances intended to be used in locations where special conditions prevail, such as the presence of a corrosive or explosive atmosphere (dust, vapour or gas);
- fans incorporated in other appliances.

2. Normative references

This clause of part 1 is applicable.

3. Definitions

This clause of part 1 is applicable except as follows.

3.1.9 Replacement:

Normal operation

Operation of the appliance under the following conditions

Table and pedestal fans are operated with any oscillating mechanism in operation.

Ceiling fans are fixed to a ceiling

Partition fans are installed in the centre of a suitable partition having dimensions at least four times the diameter of the air inlet.

Duct fans are installed in a duct accordance with the installation instructions, the length of the duct being approximately four times the diameter of the fan.

3.101 Duct fan

Fan for installation within an enclosed airway so that the airflow is ducted on both the inlet and outlet sides.

4. General requirement

This clause of part 1 is applicable.

5. General conditions for the tests

This clause of part 1 is applicable expect as follows.

5.7 Addition:

For fans intended to be used in tropical climates, the tests of clause 10, 11 and 13 are carried out at an ambient temperature of $40^{\circ}\text{C} \pm 2^{\circ}\text{C}$.

For fans marked with an ambient operating temperature, the tests of clauses 10, 11 and 13 are carried out at the marked value $\pm 2^{\circ}\text{C}$.

6. Classification

This clause of part 1 is applicable except as follows.

6.2 Addition:

Duct fans shall be at least IPX2.

6.101 fans shall be of one of the following classes with respect to climatic conditions:

- fans for temperate climates;
- fans for tropical climates;

compliance is checked by inspection

7. **Marking and instructions**

This clause of part 1 is applicable except as follows.

7.1 Addition:

Fans for tropical climates shall be marked with the letter T.

Fans intended for operation in locations where the local ambient temperature exceeds 40 °C shall be marked with the ambient operating temperature.

7.12 Addition:

If the instructions state that guard has to be removed for cleaning purposes, the instructions shall state the substance of the following:

Ensure that the fan is switched off from the supply mains before removing the guard.

7.12.1 Addition:

The installation instructions shall include the substance of the following:

- the model or type reference of a luminaire that may be installed in a fan constructed for this purpose;
- whether the fan is intended for mounting in outside windows or walls (for partition fans);
- that the fan is to be installed so that the blades are more than 2,3 m above the floor (for fans intended to be mounted at high level);
- that precautions must be taken to avoid the back-flow of gases into the room from the open flue of gas or other fuel-burning appliance (for duct and partition fans).

8. **Protection against access to live parts**

This clause of part 1 is applicable except as follows.

8.1.1 Modification:

Lamps are not removed. However, during insertion or removal of lamps, protection against contact with live parts of the lamp cap shall be ensured.

8.2 Addition:

After the removal of detachable parts for the purposes of user maintenance, the basic insulation of internal wiring may be touched provided that it is electrically equivalent to the insulation of cords complying with IEC 60227 or IEC 60245.

9. **Starting of motor-operated appliances**

This clause of part 1 is not applicable.

10. **Power input and current**

This clause of part 1 is applicable except as follows.

10.1 Addition:

Appliances are tested with shutters or similar devices in the open position.

10.2 Addition:

Appliances are tested with shutters or similar devices in the open position.

11. **Heating**

This clause of part 1 is applicable except as follows.

11.7 Replacement:

Appliances are operated until steady conditions are established.

11.8 Addition:

The temperature rise limits for appliances for tropical climates are reduced by 15 K.

The temperature rise limits for fan marked with an ambient operating temperature are reduced by the difference between the marked value and 25 °C.

12. **Void**

13. **Leakage current and electric strength at operating temperature**

This clause of part 1 is applicable.

14. **Transient over voltages**

This clause of part 1 is applicable.

15. **Moisture resistance**

This clause of part1 is applicable except as follows.

15.1.1 Addition:

The outer part of fans intended to be installed in the external structure of a building is subjected to the test of sub-clause 14.2.4 (a) of IEC 60529, the part of the fan not mounted on the outside surface being protected against spray from the oscillating tube. The test is carried out with the appliance in the rest position and then in operation while supplied at rated voltage, shutters or similar devices being in the open position.

Fans marked with the second numeral of the IP system are subjected to the appropriate test of IEC 60529 both at rest and in operation while supplied at rated voltage.

16. **Leakage current and electric strength**

This clause of part1 is applicable.

17. **Overload protection of transformers and associated circuits**

This clause of part 1 is applicable.

18. **Endurance**

This clause of part1 is not applicable

19. **Abnormal operation**

This clause of part 1 is applicable expect as follows.

19.1 Addition:

Fans incorporating shutters or similar devices operated by a control are also subjected to the test of 19.101.

19.7 Addition:

Separate controls are mounted on a dull black-painted plywood board. Approximately 50 % of the area of each ventilating opening is blocked. The temperature of windings shall not exceed the values specified in Table 8 and the temperature rise of the board shall not exceed

- 50 K, for appliances with T marking;
- 65 K, for other appliances.

19.9 Not applicable.

19.101 fans incorporating shutters or similar devices that are operated automatically are supplied at rated voltage and operated with the shutters or similar devices held in the closed or open position, whichever is more unfavourable.

20. **Stability and mechanical hazards**

This clause of part 1 is applicable except as follows.

20.1 Addition:

Portable pedestal fans having a height exceeding 1,7 m and a mass exceeding 10 kg are placed on a horizontal surface. A force of 40 N is applied to the appliance at a height of 1,5 m in the most unfavourable horizontal direction.

The appliance shall not overturn.

NOTE: 101 Suitable means may be used to prevent the appliance from sliding.

20.101 Fan blades, other than those of fans for mounting at high level, shall be guarded unless their leading edges and tips are rounded and

- they have a hardness less than D 60 Shore, or
- they have a peripheral speed less than 15 m/s when the fan is supplied at rated voltage, or
- the fan has a power output not exceeding 2 W when supplied at rated voltage.

NOTE: An edge with a radius of not less than 0.5 mm is considered to be rounded.

Compliance is checked by inspection and by measurement.

21. **Mechanical strength**

This clause of part 1 is applicable except as follows.

21.1 Appliances are also subjected to the test of 21.101.

21.101 Fan guards are subjected to a push force and a pull force of 20 N applied along the axis of the fan motor. After the test, it shall not be possible to touch dangerous moving parts with a test probe that is similar to test probe B of IEC 61032, but having a circular stop face with a diameter of 50 mm instead of the non-circular face.

21.102 Ceiling fans shall have adequate strength.

Compliance is checked by the following test.

Ceiling fans are mounted in accordance with the installation instructions. A load equal to four times the mass of the fan is suspended from the body of the fan for 1 min.

A torque of 1 Nm is then applied to the fixed body of the fan for 1 min. The test is repeated with the torque applied in the reverse direction.

The suspension system shall not break and the fan shall not be damaged to such an extent that compliance with 8.1, 16.3 and clause 29 is impaired.

22 Construction

This clause of part 1 is applicable except as follows.

22.1 Addition:

NOTE: 101 The enclosure defined in IEC 60529 does not include guards for fan blades.

22.11 Modification:

The 50 N force is not applied to clips used to fasten fan guards. Instead, a force of 15 N is applied in any direction to the clips in an attempt to release them.

22.101 Appliances having provision for attaching a luminaire shall incorporate appropriate terminals and internal wiring.

Compliance is checked by inspection.

23. Internal wiring

This clause of part 1 is applicable except as follows.

23.3 Modification:

Instead of moving the movable part backwards and forwards, fans with an oscillating mechanism are tested as follows.

Fans are supplied at rated voltage and operated under normal operation, the angle of oscillation being the maximum allowed by the construction. The test is carried out for 100 000 cycles of oscillation.

24. Components

This clause of part 1 is applicable except as follows.

24.2 Addition:

Appliances having a rated power input not exceeding 25 W may be fitted with a switch in the supply cord.

24.101 **Thermal cut-outs** incorporated in duct fans in order to comply with clause 19 shall not be self-resetting.

Compliance is checked by inspection.

25. Supply connection and external flexible cords

This clause of part1 is applicable except as follows.

25.5 Addition:

Type Z attachment is allowed for **portable fans**.

26. Terminals for external conductors

This clause of part 1 is a applicable.

27. Provision for earthing

This clause of part 1 is applicable.

28. Screws and connections

This clause of part 1 is applicable.

29. Clearances, creepage distances and solid insulation

This clause of part 1 is applicable except as follows.

29.2 Addition:

The microenvironment is pollution degree 3 unless the insulation is enclosed or located so that it is unlikely to be exposed to pollution during normal used of the appliance.

30. Resistance to heat and fire

This clause of part 1 is applicable except as follows.

30.2.2 Not applicable

31. Resistance to rusting

This clause of part1 is applicable.

32. Radiation, toxicity and similar hazards

This clause of part 1 is applicable.

ANNEXES

This annexes of part1 are applicable.

BIBLIOGRAPHY

The bibliography of part 1 is applicable.