SLOVENSKI STANDARD
SIST EN ISO 13349:2009

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Industrijski ventilatorji - Izrazi in definicije kategorij (ISO 13349:1999)

Industrial fans - Vocabulary and definitions of categories (ISO 13349:1999)

Ventilateurs industriels - Vocabulaire et définitions des catégories (ISO 13349:1999)

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Industrial fans - Vocabulary and definitions of categories (ISO 13349:1999)

Ventilateurs industriels - Vocabulaire et définitions des catégories (ISO 13349:1999)

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Foreword

The text of ISO 13349:1999 has been prepared by Technical Committee ISO/TC 117 “Industrial fans” of the International Organization for Standardization (ISO) and has been taken over as EN ISO 13349:2008 by Technical Committee CEN/TC 156 “Ventilation for buildings” the secretariat of which is held by BSI.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by April 2009, and conflicting national standards shall be withdrawn at the latest by April 2009.

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Endorsement notice

The text of ISO 13349:1999 has been approved by CEN as a EN ISO 13349:2008 without any modification.

INTERNATIONAL STANDARD

ISO 13349

First edition
1999-10-01

Industrial fans — Vocabulary and definitions of categories

Ventilateurs industriels — Vocabulaire et définitions des catégories

Reference number
ISO 13349:1999(E)

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 13349 was prepared by Technical Committee ISO/TC 117, *Industrial fans.*

Annex A of this International Standard is for information only.

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Introduction

This International Standard reflects the importance of a standardized approach to the terminology of fans.

The need for an International Standard has been evident for some considerable time. To take just one example, the coding of driving arrangements differs from manufacturer to manufacturer. What one currently calls Arrangement 1 may be known by another as Arrangement 3. The confusion for the customer is only too apparent. For similar reasons, it is essential to use standardized nomenclature to identify particular parts of a fan.

Wherever possible, in the interests of international comprehension, this International Standard is in agreement with similar documents produced by Eurovent, AMCA, VDMA (Germany), AFNOR (France) and UNI (Italy). They have, however, been built on where the need for amplification was apparent.

Use of this International Standard will lead to greater understanding among all parts of the air-moving industry. It is hoped that manufacturers, consultants, contractors and users will adopt and refer to this International Standard as soon as possible.

Industrial fans — Vocabulary and definitions of categories

1 Scope

This International Standard provides a vocabulary and defines categories for general purpose industrial fans and their component parts. It is applicable to any fan used for industrial purposes, including the ventilation of buildings and mines, but excluding ceiling, pedestal and similar circulation types of fans such as those commonly used for non-industrial purposes.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 5801:1997, *Industrial fans — Performance testing using standardized airways.*

ISO 5802:—[1)], *Industrial fans — Performance testing in situ.*

ISO 13350:1999, *Industrial fans — Performance testing of jet fans.*

ISO 13351:1996, *Industrial fans — Dimensions.*

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1
fan
rotary-bladed machine which receives mechanical energy and utilizes it by means of one or more impellers fitted with blades to maintain a continuous flow of air or other gas passing through it and whose work per unit mass does not normally exceed 25 kJ/kg

NOTE 1 The term "fan" is taken to mean the fan as supplied without any addition to the inlet or outlet, except where such addition is specified.

NOTE 2 Fans are defined according to their installation category, function, fluid path and operating conditions.

NOTE 3 If the work per unit mass exceeds a value of 25 kJ/kg, the machine is termed a turbocompressor. This means that, for a mean stagnation density through the fan of 1,2 kg/m^3, the fan pressure will not exceed 1,2 × 25 kJ/kg, i.e. 30 kPa, and the pressure ratio will not exceed 1,30 since atmospheric pressure is approximately 100 kPa.

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1) To be published.

3.2
air
in this International Standard, an abbreviation for the expression "air or other gas"

3.3
standard air
by convention, air with a density of 1,2 kg/m^3

3.4 Fan installation types according to the arrangement of ducting (see figure 1)

3.4.1
installation type A
installation with free inlet and free outlet

[ISO 5801 and ISO 5802]

3.4.2
installation type B
installation with free inlet and ducted outlet

[ISO 5801 and ISO 5802]

3.4.3
installation type C
installation with ducted inlet and free outlet

[ISO 5801 and ISO 5802]

3.4.4
installation type D
installation with ducted inlet and ducted outlet

[ISO 5801 and ISO 5802]

3.5 Types of fan according to their function

3.5.1
ducted fan
fan used for moving air within a duct

NOTE Such a fan may be arranged in an installation of type (B), (C) or (D) (see figures 2, 3 and 5).

3.5.2
partition fan
fan used for moving air from one free space to another separated from the first by a partition having an aperture in which or on which the fan is installed

NOTE Such a fan should be arranged in an installation of type (A) (see figure 6).

3.5.3
jet fan
fan used for producing a jet of air in a space and unconnected to any ducting (see figures 7 and 8)

NOTE The air jet may be used for example for adding momentum to the air within a duct, a tunnel or other space, or for intensifying the heat transfer in a determined zone.

3.6 Fan types according to the fluid path within the impeller

3.6.1
centrifugal fan
fan in which the air enters the impeller with an essentially axial direction and leaves it in a direction perpendicular to this axis (see figure 2)

NOTE 1 The centrifugal fan is also known as a radial-flow fan.

NOTE 2 The impeller may have one or two inlet(s) and may or may not include a shroud and/or a backplate (centreplate) (see figure 14).

NOTE 3 The impeller is defined as "backward-curved or inclined", "radial" or "forward-curved" depending on whether the outward direction of the blade at the periphery is backward, radial or forward relative to the direction of the rotation (see figure 14).

NOTE 4 A centrifugal fan may be of the low, medium or high pressure type, according to the aspect ratio of fan inlet diameter to outside diameter of the impeller. These terms indicate that the pressure generated at a given flowrate is low, medium or high.

NOTE 5 Figure 5 shows a cross-section through a family of impellers having the same inlet diameter. Fans with ratios of fan inlet/outside impeller diameter of greater than approximately 0,63 are considered "low aspect ratio", and lower than approximately 0,4 are considered "high aspect ratio". Medium aspect ratio centrifugal fans are intermediate between these two figures.

NOTE 6 The impeller diameter and the casing scroll radii increase with the pressure range for which the fan is designed.

NOTE 7 These categories will also be affected by the ability to run at the necessary peripheral speed (see 5.2 and table 1).

3.6.2
axial-flow fan
fan in which the air enters and leaves the impeller along essentially cylindrical surfaces coaxial with the fan (see figure 3)

NOTE 1 An axial-flow fan may be of the low, medium or high pressure type according to the aspect ratio of hub diameter to outside impeller diameter. These terms indicate that the pressure generated at a given flowrate is low, medium or high.

NOTE 2 Figure 10 shows a cross-section through a family of impellers having the same outside diameter. Fans with ratios of hub/outside impeller diameter of less than approximately 0,4 are considered "low aspect ratio", and greater than approximately 0,71 are considered "high aspect ratio". Medium aspect ratio axial fans are intermediate between these two figures.

NOTE 3 These categories will also be affected by the ability to run at the necessary peripheral speed.

3.6.2.1
contra-rotating fan
axial-flow fan which has two impellers arranged in series and rotating in opposite directions

3.6.2.2
reversible axial-flow fan
axial-flow fan which is specially designed to rotate in either direction regardless of whether the performance is identical in both directions

3.6.2.3
propeller fan
axial-flow fan having an impeller with a small number of broad blades of uniform material thickness and designed to operate in an orifice

3.6.2.4
plate mounted axial-flow fan
axial-flow fan in which the impeller rotates in an orifice or spigot of relatively short axial length, the impeller blades being of aerofoil section

3.6.2.5
vane axial fan
axial-flow fan suitable for ducted applications which has guide vanes before or after the impeller, or both

3.6.2.6
tube axial fan
axial-flow fan without guide vanes, suitable for ducted applications