INTERNATIONAL STANDARD

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Building construction — Expression of users' requirements —

Part 2: Air purity requirements

Construction immobilière — Expression des exigences de l'utilisateur —

Partie 2: Pureté de l'air

Reference number
ISO 6242-2:1992(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 6242-2 was prepared by Technical Committee ISO/TC 59, *Building construction*, Sub-Committee SC 3, *Functional/user requirements and performance in building construction*.

ISO 6242 consists of the following parts, under the general title *Building construction — Expression of users' requirements*:

— *Part 1: Thermal requirements*

— *Part 2: Air purity requirements*

— *Part 3: Acoustical requirements*

— *Part 4: Lighting requirements*

Annex A of this part of ISO 6242 is for information only.

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Introduction

This part of ISO 6242 is one of a set dealing with the expression of environmental requirements for buildings, in terms suitable for use in regulations and briefs for building projects. The parameters defined can be used for routine verification of the performance of buildings, either by calculation (for example at the design stage) or measurement (for example of spaces or whole buildings), and are meant to provide readily understood information on users' requirements throughout the building process.

This set of International Standards is not intended to represent the complete state of knowledge about these aspects of environmental science, some of which are the concern of other ISO Technical Committees.

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Building construction — Expression of users' requirements —

Part 2:
Air purity requirements

1 Scope

This part of ISO 6242 defines how the air purity requirements of building users can be identified, expressed and quantified. It describes users' objectives and the parameters used to express them. For each parameter, it specifies units of measurement, preferred increments for values and means of evaluation. It also lists the environmental and human factors affecting the choice of a value (criterion) for each parameter.

It is intended for use

a) in preparing briefs for building projects;

b) in formulating building laws and regulations;

c) in drafting standards and other normative documents; and

d) more generally when specifying the required performance of buildings in terms of users' requirements.

Some of the parameters given in this part of ISO 6242 apply only to certain types of building. Compliance with this part of ISO 6242 does not therefore depend on implementing the whole of its contents in every case.

2 Users' objectives

2.1 Control of air purity within buildings shall fulfil the following objectives:

a) to limit the ingress and/or accumulation in indoor air of contaminants (for example gases, particles, microbes, aerosols) injurious to health, the fabric of the building or its contents, or equipment or processes;

b) to prevent the accumulation in indoor air of contaminants detrimental to comfort;

c) to provide an adequate supply of oxygen for occupants and combustion appliances;

d) to control nuisance due to odours; and

e) to control relative humidity.

2.2 Criteria meeting these objectives shall reflect the following:

a) activities to be accommodated;

b) age and health of the occupants;

c) proportion of likely occupants it is intended to satisfy;

d) character and location of combustion appliances dependent on indoor air;

e) time during which the requirements must be satisfied (taking account of climatic extremes and intermittency); and

f) any facility for local control of the air purity by the occupants.

3 Parameters for expressing users' requirements

The purity of air depends on

a) for health, the maximum content of noxious substances;

b) for comfort, the maximum concentration of CO_2, SO_2, CH_4 and other gases.

These may be interpreted in terms of air supply rate, such as

— air changes per hour;

— air supply per person;

— air supply per square metre of floor area;

— air supply per combustion appliance.

3.1 Location, uniformity and tolerance for air purity parameters

In all but large spaces, it is normal to assume that the mixing of fresh air with contaminated air will be sufficient to achieve uniform dilution of contaminants, but this depends on the correct design and functioning of the air supply and exhaust system. Exceptionally, in certain processes, mixing may not be acceptable and laminar flow systems may be required.

The requirements for air change rates shall be regarded as minima, with no tolerance allowed.

3.2 Expression of air purity parameters

Details of means of expression, together with associated information, are given in table 1.

4 Factors affecting the choice of criteria

Details of factors likely to affect the choice of criteria for particular applications, together with associated information, are given in table 2.

Table 1 — Parameters

Parameter	Definition	Means of expression: units; preferred increments	Nature of criterion	Means of evaluation
Rate of supply of fresh air for occupants	Alternatives:			
	1) Average number of air changes per hour	Air changes/h; chosen from the series: in tenths from 0,1 to 0,9; in fifths from 1 upwards	Minimum	Calculation: in accordance with national standards or codes of practice Measurement: tracer gas techniques
	2) Average volume of air supplied to each occupant	l/s per person; chosen from the series: in units from 1 to 10; then increments of 2	Minimum	
	3) Average volume of air supplied per square metre of floor area	l/(s·m^2); units	Minimum	
Rate of supply of fresh air to combustion appliances without independent air supply	Average volume of air supplied per unit of rated energy input to the combustion appliance	l/s per kW of rated input; units NOTE — Different fuels may require different rates of air supply per kW.	Minimum	Calculation: in accordance with national standards or codes of practice Measurement: tracer gas techniques

Table 2 — Factors affecting criteria

Factor	Examples of classes/categories	Means of expression	Sources of information
Activities and tasks for which ventilation is provided	Reclining Sedentary Standing Light activity Medium activity Heavy activity	Appropriate rate of fresh air supply, taking into account density of occupation and the amount of smoke or fumes generated	National standards or codes of practice
Density of occupation	2 m^2/person 5 m^2/person 10 m^2/person	The higher the density of occupation, the greater the air supply needed per person for odour removal	National standards or codes of practice
Time during which requirements must be satisfied	80 % 90 % 95 %	Where fresh air is supplied solely by natural ventilation, its rate will depend on wind speed and on internal/external temperature difference. The frequency of these factors will need to be checked from local meteorological records	National standards or codes of practice
Fuel type	Gas Oil Coal/peat Wood	Sufficient air must be available to meet the full rated input of a combustion appliance at all times, even though it may operate at a lower rate for part of the time	National standards or codes of practice

Annex A
(informative)

Bibliography

[1] ISO 4225:1980, *Air quality — General aspects — Vocabulary.*

[2] ISO 4226:1980, *Air quality — General aspects — Units of measurement.*

[3] ISO 6240:1980, *Performance standards in building — Contents and presentation.*

[4] ISO 6241:1984, *Performance standards in building — Principles for their preparation and factors to be considered.*

[5] ISO 7162:1992, *Performance standards in building — Contents and format of standards for evaluation of performance.*

[6] ISO 7164-1:—[1], *Performance standards in building — Part 1: Definitions and means of expression for the performance of a whole building.*

[7] International Energy Agency: AIC Technical Note 18: *A subject analysis of the AIC's bibliographic database* — AIRBASE (4th edition, January 1986)[2].

1) To be published.

2) Air Infiltration Centre, Bracknell, RG12 4AH, United Kingdom.

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