

BS ISO 4225:2020



BSI Standards Publication

Air quality — General aspects — Vocabulary

National foreword

This British Standard is the UK implementation of [ISO 4225:2020](#). It supersedes [BS 6069-2:1994](#), which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee EH/2/4, General aspects.

A list of organizations represented on this committee can be obtained on request to its secretary.

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© The British Standards Institution 2020
Published by BSI Standards Limited 2020

ISBN 978 0 539 04338 9

ICS 13.040.01; 01.040.13

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 May 2020.

Amendments/corrigenda issued since publication

Date	Text affected
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INTERNATIONAL STANDARD

BS ISO 4225:2020
ISO 4225

Third edition
2020-05-14

Air quality — General aspects — Vocabulary

Qualité de l'air — Aspects généraux — Vocabulaire



Reference number
ISO 4225:2020(E)

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 146, *Air quality*, Subcommittee SC 4, *General aspects*.

This third edition cancels and replaces the second edition ([ISO 4225:1994](http://www.iso.org/iso/4225:1994)), which has been technically revised. The main changes compared to the previous edition are as follows:

- where appropriate, terms and definitions have been harmonized with [ISO 18158:2016](http://www.iso.org/iso/18158:2016);
- obsolete terms have been removed;
- references have been updated.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Introduction

The work programme of ISO/TC 146, Air quality, includes the standardization of procedures for sampling and measurement of gases, vapours and airborne particles. Many terms that are commonly used in relation to air quality, sampling and measurement are defined within individual standards or technical documents and are often defined differently from one standard or document to the next. This creates ambiguities and inconsistencies in the use of such terms. This document was developed to ensure that commonly used terms have agreed-upon definitions and to eliminate ambiguities and inconsistencies in their usage. It will be of benefit to agencies concerned with air quality, sampling, and laboratory analysis.

The terms given in this document are those in common use. The list should not be considered complete, however, and further terms will be added as the need arises.

Air quality — General aspects — Vocabulary

1 Scope

This document specifies terms and definitions that are related to *air quality* (see [3.1.1.1](#)). These are either general terms or are used in connection with the *sampling* (see [3.3.3.1](#)) and measurement of gases, *vapours* (see [3.1.5.8](#)) and *airborne particles* (see [3.2.2.1](#)) for the determination of air quality.

The terms included are those that have been identified as being fundamental because their definition is necessary to avoid ambiguity and ensure consistency of use.

An alphabetical index of the terms is provided in [Annex A](#).

This document is applicable to all International Standards, ISO Technical Reports, ISO Technical Specifications, and ISO Guides related to air quality.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1 General terms

3.1.1 Terms describing air quality

3.1.1.1

air quality

features of the air which have an impact on humans (e.g., safety and health) and/or the environment

Note 1 to entry: Air quality is typically expressed in terms of the presence or absence of *air pollution* ([3.2.1.2](#)) (e.g. *emissions* ([3.2.1.4](#)) or conversions resulting from emissions, e.g., ozone), using one or more measurements.

Note 2 to entry: The concept of air quality can be used in reference to *ambient air* ([3.1.1.3](#)), *indoor air* ([3.1.1.5](#)), or *workplace air* ([3.1.1.7](#)).

3.1.1.2

air quality standard

specified attribute of the air intended to prevent or minimize impacts on humans (e.g. safety and health) and/or the environment

Note 1 to entry: Air quality standards are frequently defined statistically by setting a limit to the concentration of an *air pollutant* ([3.2.1.1](#)) over a specified *averaging time* ([3.1.1.9](#)).

Note 2 to entry: Air quality standards can have legal or advisory status in one or more jurisdictions.

3.1.3.4

nanoparticle

material with all three dimensions in the size range from approximately 1 nm to 100 nm

3.1.3.5

nanostructured particle

particle with structural features smaller than 100 nm, which can influence its physical, chemical and/or biological properties

Note 1 to entry: A nanostructured particle can have a maximum dimension substantially larger than 100 nm.

EXAMPLE A 500 nm diameter *agglomerate* (3.1.3.6) of *nanoparticles* (3.1.3.4) would be considered a nanostructured particle.

3.1.3.6

agglomerate

<aerosols> group of particles held together by relatively weak forces, including van der Waals forces, electrostatic forces and surface tension

3.1.4 Terms related to exposure

3.1.4.1

breathing zone

space around the nose and mouth from which air is inhaled

Note 1 to entry: Technically, the breathing zone corresponds to a hemisphere (generally accepted to be 30 cm in radius) extending in front of the human face, centred on the midpoint of a line joining the ears. The base of the hemisphere is a plane through this line, the top of the head and the larynx. This technical description is not applicable when measuring air within respiratory protective equipment.

3.1.4.2

inhalation exposure

situation in which a *chemical agent* (3.1.2.2) or *biological agent* (3.1.2.1) is present in the air that is inhaled by a person

3.1.4.3

dermal exposure

contact between a *chemical agent* (3.1.2.2) or *biological agent* (3.1.2.1) and human skin

3.1.5 Other terms

3.1.5.1

cyclone

<meteorology> large circulatory wind system around a region of low atmospheric pressure

3.1.5.2

stability

<atmosphere> state of hydrostatic equilibrium of the atmosphere in which a parcel of air moved from its initial level undergoes a hydrostatic force which tends to restore it to this level

3.1.5.3

chimney effect

phenomenon consisting of upwards movement of a localized mass of air or other gases caused by temperature differences

3.1.5.4

effective chimney height

height used for the purposes of calculating the dispersion of emitted gases from a chimney, and which differs from the real chimney height by an amount which depends on such factors as the exit velocity, buoyancy effects and wind speed as well as topography

3.1.5.5
dispersion parameters, Gaussian

parameters which describe the size of an assumed Gaussian *plume* ([3.2.1.20](#)) as a function of atmospheric *stability* ([3.1.5.2](#)) and travel distance or time

3.1.5.6
lapse rate

variation of an atmospheric parameter with height

Note 1 to entry: The parameter is temperature unless otherwise stated.

Note 2 to entry: This variation is taken as positive when temperature decreases with increasing height. If meteorological conditions are such that the atmospheric lapse rate is the same as that for an adiabatically rising parcel of dry air (about 10 °C km⁻¹), the atmosphere is said to have a dry adiabatic lapse rate.

3.1.5.7
micrometeorology

part of meteorology that deals with observations and processes in the smallest scales of time and space, approximately smaller than 1 km and less than a day (i.e., local processes)

[SOURCE: American Meteorological Society Glossary of Meteorology]

3.1.5.8
vapour

gas phase of a substance in a state of equilibrium or disturbed equilibrium with the same substance in a liquid or solid state below its boiling or sublimation point

3.1.5.9
fog

type of *aerosol* ([3.1.3.1](#)) consisting of a suspension of *droplets* ([3.1.5.12](#)) in air

Note 1 to entry: In meteorology, fog refers to a suspension of water *droplets* ([3.1.5.12](#)) resulting in a visibility of less than 1 km.

3.1.5.10
haze

type of *aerosol* ([3.1.3.1](#)) consisting of a suspension of extremely small *airborne particles* ([3.2.2.1](#)) in air, individually invisible to the naked eye, but which are numerous enough to give the air an appearance of opalescence together with reduced visibility

3.1.5.11
mist

suspension of *droplets* ([3.1.5.12](#)) in a gas

Note 1 to entry: A mist reduces visibility to a lesser extent than *fog* ([3.1.5.9](#)).

[SOURCE: ISO 29464:2017, 3.2.109]

3.1.5.12
droplet

liquid particle of small mass, capable of remaining in suspension in a gas

Note 1 to entry: In some turbulent systems, for example clouds, the diameter of a droplet can reach 200 µm.

3.1.5.13
particle aerodynamic diameter
aerodynamic diameter

diameter of a sphere of 1 g/cm³ density with the same terminal settling velocity in calm air as the particle, under the prevailing conditions of temperature, pressure and relative humidity

Note 1 to entry: The particle aerodynamic diameter depends on the size, density and shape of the particle.

Note 2 to entry: Aerodynamic diameter is related to the inertial properties of aerosol particles.

3.1.5.14

equivalent diameter

diameter of a spherical particle which will give behaviour equivalent to that of the particle being examined

[SOURCE: ISO 29464:2017, 3.2.39]

3.1.5.15

rain-out

mechanism by which *airborne particles* (3.2.2.1) in the clouds are removed by the formation of raindrops

Note 1 to entry: Rain-out can also be included as part of *wash-out* (3.1.5.16).

3.1.5.16

wash-out

removal from the atmosphere of gases and sometimes *airborne particles* (3.2.2.1) by their solution in or attachment to raindrops as they fall

Note 1 to entry: Wash-out can include *rain-out* (3.1.5.15).

3.2 Terms related to air pollution and pollution control

3.2.1 Terms generally describing air pollution

3.2.1.1

air pollutant

contaminant

substance emitted into the air either by human activity or natural processes and adversely affecting air quality

3.2.1.2

air pollution

contamination

presence of *air pollutants* (3.2.1.1) in sufficient concentration and for a sufficient time

3.2.1.3

background concentration

portion of the concentration of an *air pollutant* (3.2.1.1) which cannot be directly related to the *sources* (3.2.1.23) under study

Note 1 to entry: The background concentration can be the same as the *natural background concentration* (3.2.1.10) or can include other sources not under study.

3.2.1.4

emission

discharge of substances into the air

Note 1 to entry: The term “emission” is used to describe the discharge and the rate of discharge.

3.2.1.5

emission concentration

concentration of *air pollutant* (3.2.1.1) in an *emission* (3.2.1.4) at its point of discharge

3.2.1.6

emission factor

expression for the ratio of the rate at which an *air pollutant* (3.2.1.1) is emitted as a result of some activity, to the rate of that activity

EXAMPLE Kilograms of sulfur dioxide emitted per tonne of steel produced.

3.2.1.7

emission flux

emission rate (3.2.1.8) per unit area of the appropriate surface of an emitting *source* (3.2.1.23)

3.2.1.8

emission rate

mass (or other quantity) of pollutant transferred into the air per unit time

3.2.1.9

emission limit value

emission standard

specified limit on one or more components within an *emission* (3.2.1.4), typically having a legal or advisory status

Note 1 to entry: Emission limit values are frequently defined statistically e.g. by setting a limit to the *emission rate* (3.2.1.8) or to the *emission concentration* (3.2.1.5) at a defined dilution level.

3.2.1.10

natural background concentration

concentration of a given substance in a pristine air mass in which anthropogenic *emissions* (3.2.1.4) are negligible

3.2.1.11

odour

sensation perceived by means of the olfactory organ in sniffing certain volatile substances

[SOURCE: ISO 5492:2008, 3.18]

3.2.1.12

odorant

substance which, when volatilized in neutral gas, has the potential to stimulate the human olfactory system so that an *odour* (3.2.1.11) is perceived

3.2.1.13

odour panel

group of assessors performing the assessment of *odour* (3.2.1.11)

3.2.1.14

odour concentration

number of *odour units* (3.2.1.15) in a cubic metre of gas at standard conditions for olfactometry

3.2.1.15

odour unit

number of times the *odour* (3.2.1.11) in the air is to be diluted with odourless air to reach the threshold

3.2.1.16

odour detection threshold

minimum concentration at which half of a population can detect the *odour* (3.2.1.11)

Note 1 to entry: For determination of the odour detection threshold, *odour panels* (3.2.1.13) are used as a representative part of a population.

3.2.1.17

odour recognition threshold

minimum concentration at which half of a population can identify the *odour* (3.2.1.11)

Note 1 to entry: For determination of the odour recognition threshold, *odour panels* (3.2.1.13) are used as a representative part of a population.

3.2.1.18

odour threshold

term that can refer to either an *odour detection threshold* ([3.2.1.16](#)) or an *odour recognition threshold* ([3.2.1.17](#))

3.2.1.19

opacity

<plume or smoke> degree to which *emissions* ([3.2.1.4](#)) of *airborne particles* ([3.2.2.1](#)) reduce the intensity of transmitted daylight and obscure the view of an object

3.2.1.20

plume

dispersion of an *emission* ([3.2.1.4](#)), often visible, from a specific *source* ([3.2.1.23](#))

3.2.1.21

remote sensing

determination of substances in the air, or of *emissions* ([3.2.1.4](#)), or of meteorological parameters in the air, by means of instruments not in immediate physical contact with the *sample* ([3.3.1.1](#)) being examined

3.2.1.22

separator

apparatus for separating solid or liquid particles or gases from a gaseous stream in which they are suspended or mixed

Note 1 to entry: A separator (also known as an inertial separator or a collector) takes larger *contaminants* ([3.2.1.1](#)) out of the air stream, often to prevent them from reaching filters downstream.

[SOURCE: ISO 29464:2017, 3.2.156]

3.2.1.23

source

emission source

point or area from which an *emission* ([3.2.1.4](#)) takes place

3.2.2 Components or forms of air pollution

3.2.2.1

airborne particles

particulate matter

fine matter, in solid or liquid form, dispersed in air

3.2.2.2

ash

solid residue of effectively complete combustion

[SOURCE: ISO 29464:2017, 3.2.20]

3.2.2.3

deposition

transfer of an *air pollutant* ([3.2.1.1](#)) to a surface due to gravity or another mechanism

Note 1 to entry: Deposition can be wet (e.g., due to precipitation) or dry (e.g., all other forms of deposition).

3.2.2.4

fly ash

ash ([3.2.2.2](#)) entrained by combustion gases

[SOURCE: ISO 29464:2017, 3.2.21]

3.2.2.5

fume

solid *aerosol* ([3.1.3.1](#)) generated by condensation, generally after evaporation from melted substances such as metals and often accompanied by chemical reactions such as oxidation

Note 1 to entry: In popular usage, gaseous effluent, often unpleasant and malodorous, which can arise from chemical processes.

[SOURCE: ISO 29464:2017, 3.2.99]

3.2.2.6

photochemical smog

result of reactions in the atmosphere between nitrogen oxides, organic compounds and oxidants under the influence of sunlight, leading to the formation of oxidizing compounds or possibly causing poor visibility, eye irritation or damage to material and vegetation if sufficiently concentrated

Note 1 to entry: Photochemical smog can be a component of *smog* ([3.2.2.12](#)).

3.2.2.7

ozone precursor

chemical compound, such as *volatile organic compounds* ([3.2.2.8](#)) or nitrogen oxides (NO_x), which in the presence of solar radiation react with other chemical compounds to form ozone, mainly in the troposphere

3.2.2.8

volatile organic compound

VOC

organic compound that is gaseous, or that evaporates spontaneously, at the prevailing temperature and pressure of the atmosphere with which it is in contact

3.2.2.9

semi-volatile organic compound

SVOC

subgroup of *volatile organic compounds* ([3.2.2.8](#)) that tend to have a higher molecular weight and higher boiling point temperature

3.2.2.10

primary pollutant

air pollutant ([3.2.1.1](#)) directly emitted from a *source* ([3.2.1.23](#))

Note 1 to entry: Primary pollutants can be compared to *secondary pollutants* ([3.2.2.11](#)) which are formed in the air.

3.2.2.11

secondary pollutant

air pollutant ([3.2.1.1](#)) which can be produced in the air by physical or chemical processes from one or more *primary pollutants* ([3.2.2.10](#)) or other substances present as the result of *emissions* ([3.2.1.4](#)) from stationary or mobile *sources* ([3.2.1.23](#))

3.2.2.12

smog

atmospheric pollution by *aerosols* ([3.1.3.1](#)), arising partly through natural processes and partly from human activities

Note 1 to entry: The term “smog” is derived from the terms *smoke* ([3.2.2.13](#)) and *fog* ([3.1.5.9](#)).

Note 2 to entry: *Photochemical smog* ([3.2.2.6](#)) can be a component of smog.

3.2.2.13

smoke

solid or liquid *aerosol* (3.1.3.1) resulting from combustion of organic materials including fossil fuels, wood and cigarettes

Note 1 to entry: This does not include steam.

3.2.2.14

soot

agglomerated carbonaceous particles formed by incomplete combustion

3.2.3 Terms related to control of air pollution

3.2.3.1

abatement

reduction or lessening of a type of discharge or *air pollutant* (3.2.1.1)

Note 1 to entry: Abatement contrasts with complete elimination.

3.2.3.2

arrester

equipment designed to remove *particulate matter* (3.2.2.1) from a gaseous medium

3.2.3.3

bag filter

fabric shaped to remove *particulate matter* (3.2.2.1) from a gas stream by filtration

3.2.3.4

baghouse

assembly of one or more *bag filters* (3.2.3.3) and a mechanism for discharging *particulate matter* (3.2.2.1) into containers inside a protecting outer structure

3.2.3.5

electrostatic precipitator

device for removing *particulate matter* (3.2.2.1) from a gas stream using electrodes across which a very high voltage is maintained

3.2.3.6

elutriation

method of separating a mixture of particles according to their settling velocities within a fluid

[SOURCE: ISO 29464:2017, 3.2.65]

3.2.3.7

scavenging

removal of *air pollutants* (3.2.1.1) from the air by natural processes

3.2.3.8

filtration

removing one or more *air pollutants* (3.2.1.1) from a gas by passing the gas stream through filter media

3.2.3.9

scrubber, wet

device by which particulate or gaseous *air pollutants* (3.2.1.1) are removed from a gas stream by contact with or impingement on wetted surfaces, or by the use of liquid sprays

3.2.3.10

scrubbing

process used in gas *sampling* (3.3.3.1) or gas cleaning in which components in the gas stream are removed by contact with a liquid surface on a wetted packing, on spray drops, *droplets* (3.1.5.12), or in an *absorber* (3.3.2.1), etc.

3.2.3.11

settling chamber

chamber designed to reduce the velocity of gases in order to promote the settling of *airborne particles* ([3.2.2.1](#)) out of the gas stream

3.3 Terms related to air quality sampling

3.3.1 Samples

3.3.1.1

sample

air sample

product of the process of (*air*) *sampling* ([3.3.3.1](#))

3.3.1.2

static sample

area sample

product of using a *sampler* ([3.3.2.10](#)) in a stationary location that collects gases, *vapours* ([3.1.5.8](#)) and/or *airborne particles* ([3.2.2.1](#)) for the purpose of measuring exposure to *air pollutants* ([3.2.1.1](#))

3.3.1.3

personal sample

product of the process of using a *sampler* ([3.3.2.10](#)), attached to a person, to collect gases, *vapours* ([3.1.5.8](#)), and/or *airborne particles* ([3.2.2.1](#)) in the *breathing zone* ([3.1.4.1](#)) for the purpose of measuring exposure to *air pollutants* ([3.2.1.1](#))

3.3.2 Sampling equipment

3.3.2.1

absorber

bubbler

apparatus for passing a gas *sample* ([3.3.1.1](#)) through a liquid absorption medium

Note 1 to entry: The gas inlet tube terminates beneath the surface of the liquid and can be fitted with a distributor to disperse the gas thoroughly in the liquid.

3.3.2.2

impactor

sampler ([3.3.2.10](#)), using *impaction* ([3.3.2.6](#))

3.3.2.3

cascade impactor

sampler ([3.3.2.10](#)), using *impaction* ([3.3.2.6](#)), that can simultaneously collect *particulate matter* ([3.2.2.1](#)) separately in a number of size ranges, based on particle momentum

3.3.2.4

cut-off

size of *airborne particles* ([3.2.2.1](#)) at which the retention efficiency of an instrument device drops below a specified value under defined conditions

3.3.2.5

cyclone

<sampler> dust *separator* ([3.2.1.22](#)) or *droplet* ([3.1.5.12](#)) separator utilizing essentially the centrifugal force derived from the motion of the gas

3.3.2.6

impaction

inertial separation due to mass and velocity of a particle causing divergence from the airflow stream lines

3.3.2.7

elutriator

device for separating a mixture of particles according to their settling velocities within a fluid

3.3.2.8

impinger

sampling instrument employing wetted *impaction* (3.3.2.6) and retention for the collection of *airborne particles* (3.2.2.1)

Note 1 to entry: Gases and *vapours* (3.1.5.8) can be absorbed in the liquid of an impinger.

Note 2 to entry: Fine particles can be emitted in the outlet of an impinger through the bursting of bubbles.

3.3.2.9

probe

device, commonly in the form of a tube, used for *sampling* (3.3.3.1) or measurement

3.3.2.10

sampler

air sampler

device for separating and/or collecting *air pollutants* (3.2.1.1) from the surrounding air

Note 1 to entry: (Air) samplers are generally designed for a particular purpose, e.g. for sampling gases and *vapours* (3.1.5.8) or for sampling *airborne particles* (3.2.2.1).

3.3.2.11

passive sampler

sampler (3.3.2.10) that collects gases, *vapours* (3.1.5.8) or *airborne particles* (3.2.2.1) on a *collection substrate* (3.3.3.7) without active air movement

Note 1 to entry: Passive samplers include *diffusive samplers* (3.3.2.12) for collection of gases and *vapours* (3.1.5.8) and samplers for collection of *airborne particles* (3.2.2.1) based on turbulent diffusion and separation by electrical or other forces.

3.3.2.12

diffusive sampler

passive sampler (3.3.2.11) that collects gases or *vapours* (3.1.5.8) at a rate governed by diffusion through a static air layer and/or permeation through a membrane

3.3.2.13

active sampler

sampler (3.3.2.10) that collects gases, *vapours* (3.1.5.8) or *airborne particles* (3.2.2.1), by means of active air movement

Note 1 to entry: Active samplers can collect *samples* (3.3.1.1) onto a *collection substrate* (3.3.3.7) such as a filter or a sorbent tube or can collect samples into a canister or bag.

3.3.2.14

pumped sampler

active sampler (3.3.2.13) that collects gases, *vapours* (3.1.5.8) or *airborne particles* (3.2.2.1) where the active air movement is induced by means of a pump

3.3.2.15

aerosol sampler

airborne particle sampler

device that is used to collect *airborne particles* (3.2.2.1)

Note 1 to entry: The term “aerosol sampler” is commonly used although it is not in line with the definition of “aerosol” given in *aerosol* (3.1.3.1).

3.3.2.16

sampling efficiency **sampler efficiency**

<aerosol sampler> for each *particle aerodynamic diameter* ([3.1.5.13](#)), relative fraction of the concentration of *airborne particles* ([3.2.2.1](#)) collected from the undisturbed air onto the *collection substrate* ([3.3.3.7](#)) for *analysis* ([3.4.1.2](#))

Note 1 to entry: As used in this definition, the word “undisturbed” applies in the area of *workplace air* ([3.1.1.7](#)) to ideal laboratory conditions where the presence of the *sampler* ([3.3.2.10](#)) and the body onto which it is mounted do not disturb the determination of the reference concentration. The word “undisturbed” does not refer to movement of the air itself.

Note 2 to entry: For an *aerosol sampler* ([3.3.2.15](#)) with internal separation, e.g. size-selective sampling, the *sampling efficiency* ([3.3.2.16](#)) is the product of the inlet efficiency and the internal penetration.

3.3.2.17

mixed-phase sampler

sampler ([3.3.2.10](#)) or *sampling train* ([3.3.2.19](#)) that is used to collect *airborne particles* ([3.2.2.1](#)) and *vapours* ([3.1.5.8](#)) onto one or more *collection substrates* ([3.3.3.7](#))

3.3.2.18

static sampler **area sampler**

stationary *sampler* ([3.3.2.10](#)), not attached to a person, that collects gases, *vapours* ([3.1.5.8](#)) or *airborne particles* ([3.2.2.1](#)) at a particular location

3.3.2.19

sampling train

apparatus consisting of one or more (*air*) *samplers* ([3.3.2.10](#)) connected in series, along with associated sampling equipment and connecting tubing, used to collect one or more *air pollutants* ([3.2.1.1](#))

3.3.3 Sampling methods

3.3.3.1

sampling **air sampling**

process consisting of the collection of *air pollutants* ([3.2.1.1](#)) from air or the withdrawal or isolation of a fractional part of a larger volume of air

3.3.3.2

continuous sampling

sampling ([3.3.3.1](#)), without interruptions, throughout an operation or for a predetermined time

3.3.3.3

grab sampling **spot sampling**

taking of a *sample* ([3.3.1.1](#)) in a very short time

3.3.3.4

isokinetic sampling

method of sampling *particulate matter* ([3.2.2.1](#)) suspended in a gas stream, in such a way that the sampling velocity (speed and direction) is the same as that of the gas stream at the sampling point

3.3.3.5

static sampling **area sampling**

process of using a *sampler* ([3.3.2.10](#)) in a stationary location that collects gases, *vapours* ([3.1.5.8](#)) or *airborne particles* ([3.2.2.1](#)) for the purpose of measuring exposure to *air pollutants* ([3.2.1.1](#))

3.3.3.6

sampling method **air sampling method**

all steps of the *measuring procedure* (3.4.1.1) that describe the physical process of taking an (*air*) *sample* (3.3.1.1)

Note 1 to entry: As defined herein, *sampling* (3.3.3.1) does not include *sample transport* (3.3.3.9), *sample preparation* (3.4.1.3) or *analysis* (3.4.1.2).

3.3.3.7

collection substrate **sampling substrate** **collection medium** **sampling medium**

medium on which *air pollutants* (3.2.1.1) are collected for subsequent *analysis* (3.4.1.2)

3.3.3.8

sampling duration

interval of time over which a single *sample* (3.3.1.1) is taken

3.3.3.9

sample transport

physical operation of delivering a *sample* (3.3.1.1) from the sampling location to the location where the *analysis* (3.4.1.2) is performed

Note 1 to entry: *Sample preparation* (3.4.1.3) can occur in part or in whole prior to sample transport or after sample transport.

3.3.3.10

sampling time

time of day when collection of a *sample* (3.3.1.1) commences

3.4 Terms related to air quality measurement

3.4.1 Measurement methods

3.4.1.1

measurement method **measurement procedure** **measuring procedure**

set of operations described specifically for the *sampling* (3.3.3.1) and *analysis* (3.4.1.2) of *air pollutants* (3.2.1.1)

Note 1 to entry: A measuring procedure usually includes preparation for *sampling* (3.3.3.1), conducting the sampling, transportation and storage, and *sample preparation* (3.4.1.3) for *analysis* (3.4.1.2) and conducting the analysis.

3.4.1.2

analysis

all operations carried out after *sampling* (3.3.3.1) or after *sample preparation* (3.4.1.3) to determine the amount or concentration of the *air pollutants* (3.2.1.1) of interest present in the *sample* (3.3.1.1)

3.4.1.3

sample preparation

all operations carried out on a *sample* (3.3.1.1), usually after *sample transport* (3.3.3.9) and storage, to prepare it for *analysis* (3.4.1.2), including transformation of the sample into a measurable state, where necessary

**3.4.1.4
analytical method**

steps of the *measurement method* ([3.4.1.1](#)) that describe the process of *sample preparation* ([3.4.1.3](#)) and *analysis* ([3.4.1.2](#))

Note 1 to entry: In the context of this document, determination of mass by weighing is considered to be an analytical method.

**3.4.1.5
analyte**

substance or chemical constituent that is determined in an *analytical method* ([3.4.1.4](#))

**3.4.1.6
measurand**

quantity intended to be measured

[SOURCE: JCGM 200:2012, 2.3]

**3.4.1.7
interferent**

any constituent of the (*air*) *sample* ([3.3.1.1](#)), excluding the measured constituent, that affects the result of the measurement

**3.4.1.8
influence quantity**

quantity that is not the *measurand* ([3.4.1.6](#)) but that affects the result of measurement

**3.4.1.9
measurement period**

interval of time between the first and last measurements in a series

**3.4.1.10
monitoring**

<general> repeated measurement to follow changes over a period of time

Annex A (informative)

Alphabetical index of terms defined

[Table A.1](#) provides an alphabetical index of terms defined in this document.

Table A.1 — Index of terms defined

Term	Number
abatement	3.2.3.1
absorber	3.3.2.1
active sampler	3.3.2.13
aerodynamic diameter	3.1.5.13
aerosol	3.1.3.1
aerosol sampler	3.3.2.15
agglomerate <aerosols>	3.1.3.6
air pollutant	3.2.1.1
air pollution	3.2.1.2
air quality	3.1.1.1
air quality standard	3.1.1.2
air sample	3.3.1.1
air sampler	3.3.2.10
air sampling	3.3.3.1
air sampling method	3.3.3.6
airborne particle sampler	3.3.2.15
airborne particles	3.2.2.1
ambient air	3.1.1.3
ambient air quality standard	3.1.1.4
analysis	3.4.1.2
analyte	3.4.1.5
analytical method	3.4.1.4
area sample	3.3.1.2
area sampler	3.3.2.18
area sampling	3.3.3.5
arrester	3.2.3.2
ash	3.2.2.2
averaging time	3.1.1.9
background concentration	3.2.1.3
bag filter	3.2.3.3
baghouse	3.2.3.4
bioaerosol	3.1.3.2
biological agent	3.1.2.1
breathing zone	3.1.4.1
bubbler	3.3.2.1

Term	Number
cascade impactor	3.3.2.3
chemical agent	3.1.2.2
chimney effect	3.1.5.3
collection medium	3.3.3.7
collection substrate	3.3.3.7
contaminant	3.2.1.1
contamination	3.2.1.2
continuous sampling	3.3.3.2
cut-off	3.3.2.4
cyclone <meterology>	3.1.5.1
cyclone <sampler>	3.3.2.5
deposition	3.2.2.3
dermal exposure	3.1.4.3
diffusive sampler	3.3.2.12
dispersion parameters, Gaussian	3.1.5.5
droplet	3.1.5.12
effective chimney height	3.1.5.4
electrostatic precipitator	3.2.3.5
elutriation	3.2.3.6
elutriator	3.3.2.7
emission	3.2.1.4
emission concentration	3.2.1.5
emission factor	3.2.1.6
emission flux	3.2.1.7
emission limit value	3.2.1.9
emission rate	3.2.1.8
emission source	3.2.1.23
emission standard	3.2.1.9
equivalent diameter	3.1.5.14
filtration	3.2.3.8
fly ash	3.2.2.4
fog	3.1.5.9
fume	3.2.2.5
grab sampling	3.3.3.3
haze	3.1.5.10
impaction	3.3.2.6
impactor	3.3.2.2
impinger	3.3.2.8
indoor air	3.1.1.5
indoor air quality standard	3.1.1.6
influence quantity	3.4.1.8
inhalation exposure	3.1.4.2
interferent	3.4.1.7
isokinetic sampling	3.3.3.4
lapse rate	3.1.5.6

Term	Number
measurand	3.4.1.6
measurement method	3.4.1.1
measurement period	3.4.1.9
measurement procedure	3.4.1.1
measuring procedure	3.4.1.1
micrometeorology	3.1.5.7
mist	3.1.5.11
mixed-phase sampler	3.3.2.17
monitoring	3.4.1.10
nanoaerosol	3.1.3.3
nanoparticle	3.1.3.4
nanostructured particle	3.1.3.5
natural background concentration	3.2.1.10
odorant	3.2.1.12
odour	3.2.1.11
odour concentration	3.2.1.14
odour detection threshold	3.2.1.16
odour panel	3.2.1.13
odour recognition threshold	3.2.1.17
odour threshold	3.2.1.18
odour unit	3.2.1.15
opacity <plume or smoke>	3.2.1.19
ozone precursor	3.2.2.7
particle aerodynamic diameter	3.1.5.13
particulate matter	3.2.2.1
passive sampler	3.3.2.11
personal sample	3.3.1.3
photochemical smog	3.2.2.6
plume	3.2.1.20
primary pollutant	3.2.2.10
probe	3.3.2.9
pumped sampler	3.3.2.14
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remote sensing	3.2.1.21
sample	3.3.1.1
sample preparation	3.4.1.3
sample transport	3.3.3.9
sampler	3.3.2.10
sampler efficiency <aerosol sampler>	3.3.2.16
sampling	3.3.3.1
sampling duration	3.3.3.8
sampling efficiency <aerosol sampler>	3.3.2.16
sampling medium	3.3.3.7
sampling method	3.3.3.6
sampling substrate	3.3.3.7

Term	Number
sampling time	3.3.3.10
sampling train	3.3.2.19
scavenging	3.2.3.7
scrubber, wet	3.2.3.9
scrubbing	3.2.3.10
secondary pollutant	3.2.2.11
semi-volatile organic compound	3.2.2.9
separator	3.2.1.22
settling chamber	3.2.3.11
smog	3.2.2.12
smoke	3.2.2.13
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source	3.2.1.23
spot sampling	3.3.3.3
stability <atmosphere>	3.1.5.2
static sample	3.3.1.2
static sampler	3.3.2.18
static sampling	3.3.3.5
vapour	3.1.5.8
volatile organic compound	3.2.2.8
wash-out	3.1.5.16
workplace air	3.1.1.7
workplace air quality standard	3.1.1.8

Bibliography

- [1] [ISO 5492:2008](#), *Sensory analysis — Vocabulary*
- [2] [ISO 18158:2016](#), *Workplace air — Terminology*
- [3] [ISO 29464:2017](#), *Cleaning of air and other gases — Terminology*
- [4] JCGM 200, *International vocabulary of metrology — Basic and general concepts and associated terms (VIM)*
- [5] AMERICAN METEOROLOGICAL SOCIETY GLOSSARY OF METEOROLOGY. <http://glossary.ametsoc.org/wiki>

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